# Draft Malheur Subbasin Summary

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Prepared for the
Northwest Power Planning Council

Chinook salmon caught in the Malheur River near Vale, Oregon 1915


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DRAFT: This document has not yet been reviewed or approved by the Northwest Power Planning Council

# Malheur Subbasin Summary

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# Malheur Subbasin Summary

## Subbasin Description

### General Description

#### Subbasin Location

The Malheur River Subbasin, situated in southeastern Oregon, is a tributary to the Snake River entering at about river mile (RM) 370. The majority of the Subbasin is located in northern Malheur County with smaller portions in Baker, Grant, and Harney counties (Figure 1).

#### Drainage Area

The Malheur Subbasin is approximately 3,021,400 acres in size, or about 5,000 square miles (Figure 2). Total Subbasin acreage as shown in this assessment varies by as much as 400 acres, or .01 percent of the total acreage, due to GIS approximation. Five major drainages contribute to the Malheur Subbasin: North Fork Malheur, Mainstem Malheur, South Fork Mainstem Malheur, Bully Creek, and Willow Creek (Table 1, Figure 3). The mainstem Malheur is often referred to in this report as either the Upper Malheur (upstream of the junction with the South Fork), or the Lower Malheur (below the South Fork). A total of 6,912 stream miles are mapped in the watershed (Streamnet 2001). The Malheur River is approximately 190 miles long. The North Fork Malheur River, the largest tributary, flows approximately 60 miles before entering the mainstem at approximately RM 98 (NWPPC 1999).

Table 1.Watershed acreage

| Watershed | Acres | Percent of Subbasin |
|---|---|---|
| Bully Creek | 383,961 | 13 |
| Mainstem Malheur | 1,328,691 | 44 |
| North Fork Malheur | 356,980 | 12 |
| South Fork Malheur | 448,726 | 15 |
| Willow Creek | 503,067 | 17 |
| Total | 3,021,425 | 100 |

Source: Streamnet 2001

#### Climate

The climate in the Malheur Subbasin is semiarid, characterized by hot dry summers and cold winters. Summer temperatures may exceed 100 Fahrenheit (F), and winter temperature may drop below –20 F. Average annual precipitation over the Malheur Subbasin is 12 inches and ranges from 40 inches in the upper mountains to less than 10 inches in the lower reaches (Figure 4). Precipitation results from short, intensive convection thunderstorms in the summer and from frontal storms in the winter and spring

(Fuste and McKenzie 1987). Most of the precipitation occurs in the winter, usually as snow. Mountain snowpack is the principal source of stream flow (Malheur County 1978).

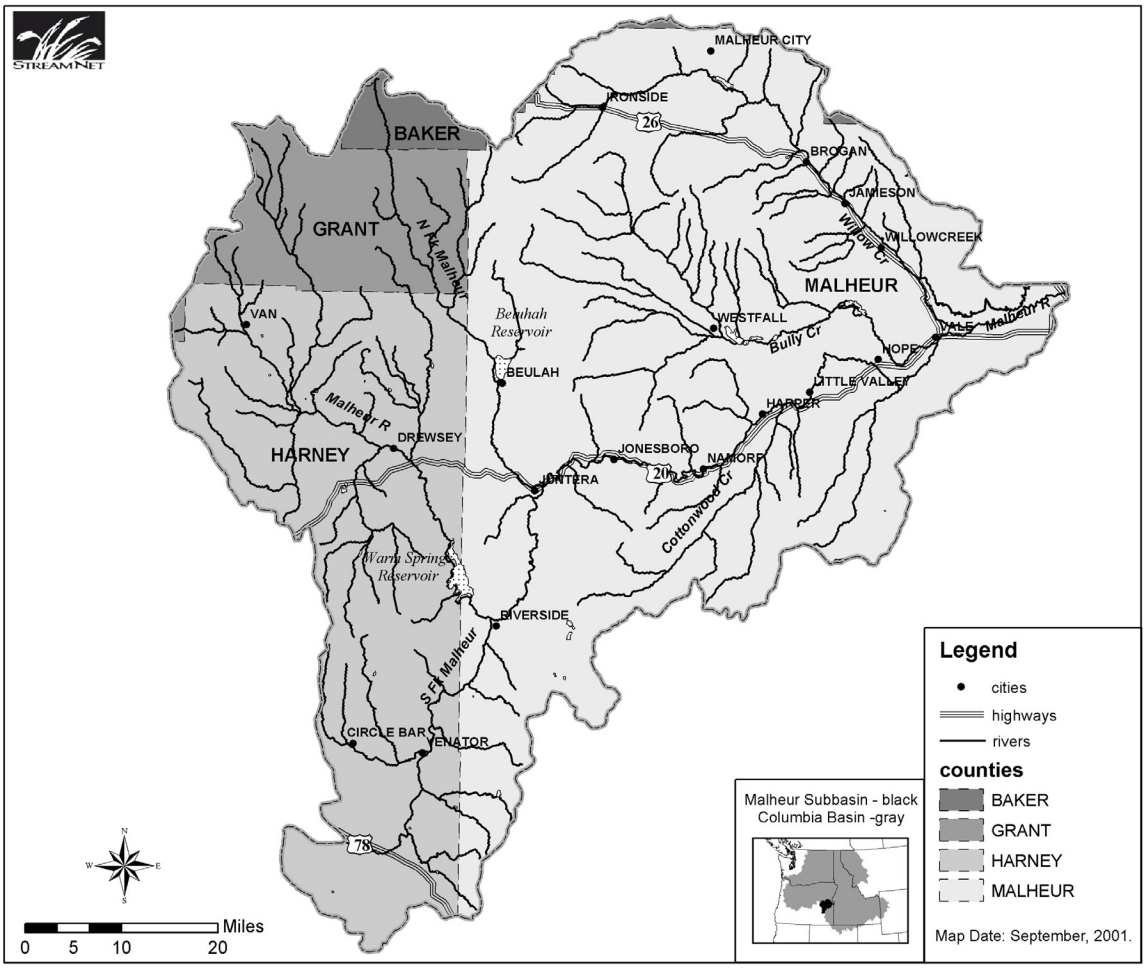


Figure 1. Counties

### Topography

Most of the Malheur Subbasin consists of gently sloping to rolling lava plateau uplands dissected by river canyons or valleys. The northwest portion of the Malheur Subbasin lies in mountainous terrain (Hanson et al. 1990). Headwater tributaries originate in the Blue Mountains at elevations of about 6,000 feet (ft) and a maximum elevation of 8,570 ft at Graham Mountain. Elevations drop to approximately 2,000 ft at the Malheur River's confluence with the Snake River.

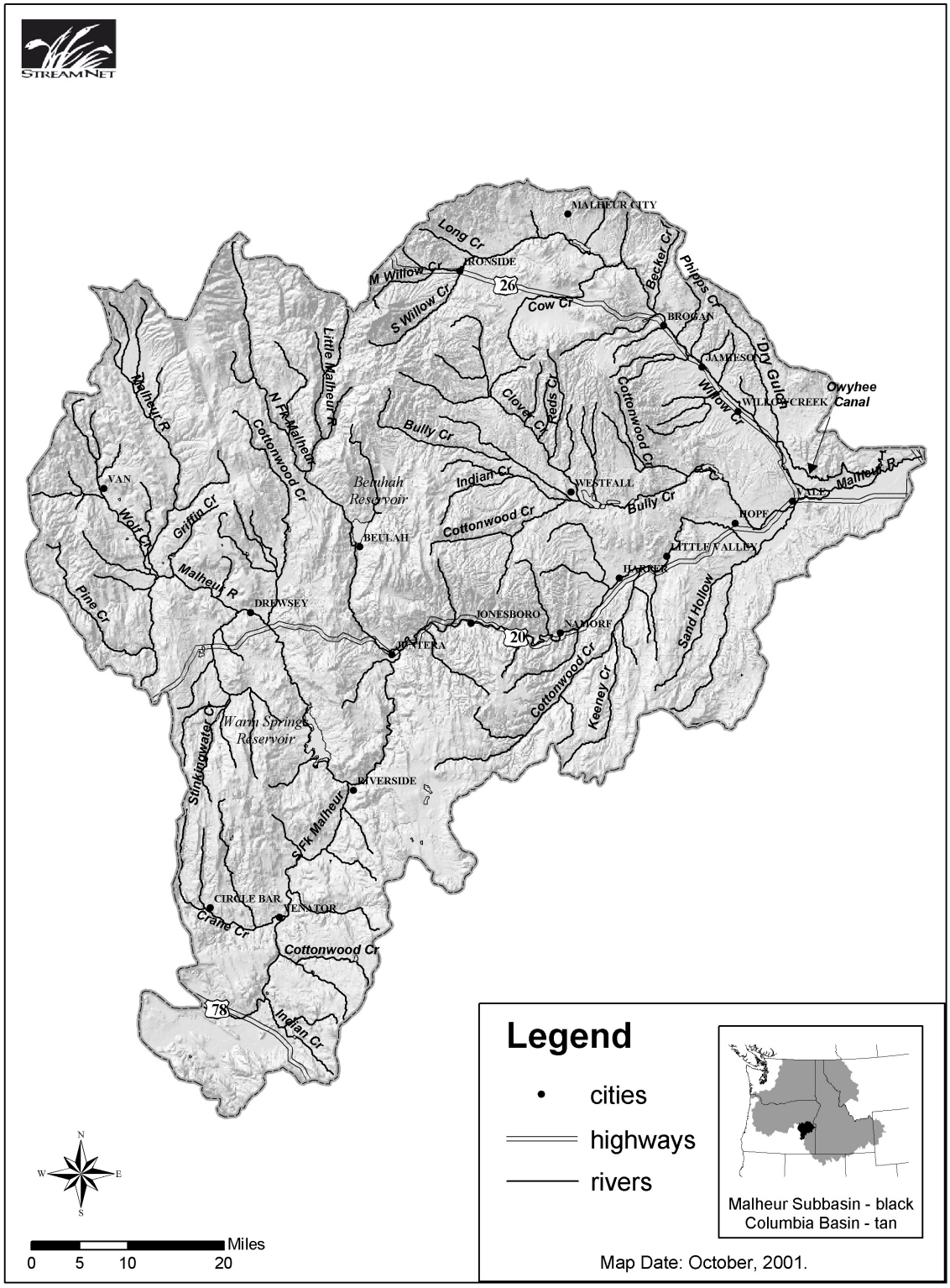


Figure 2. Base map of streams

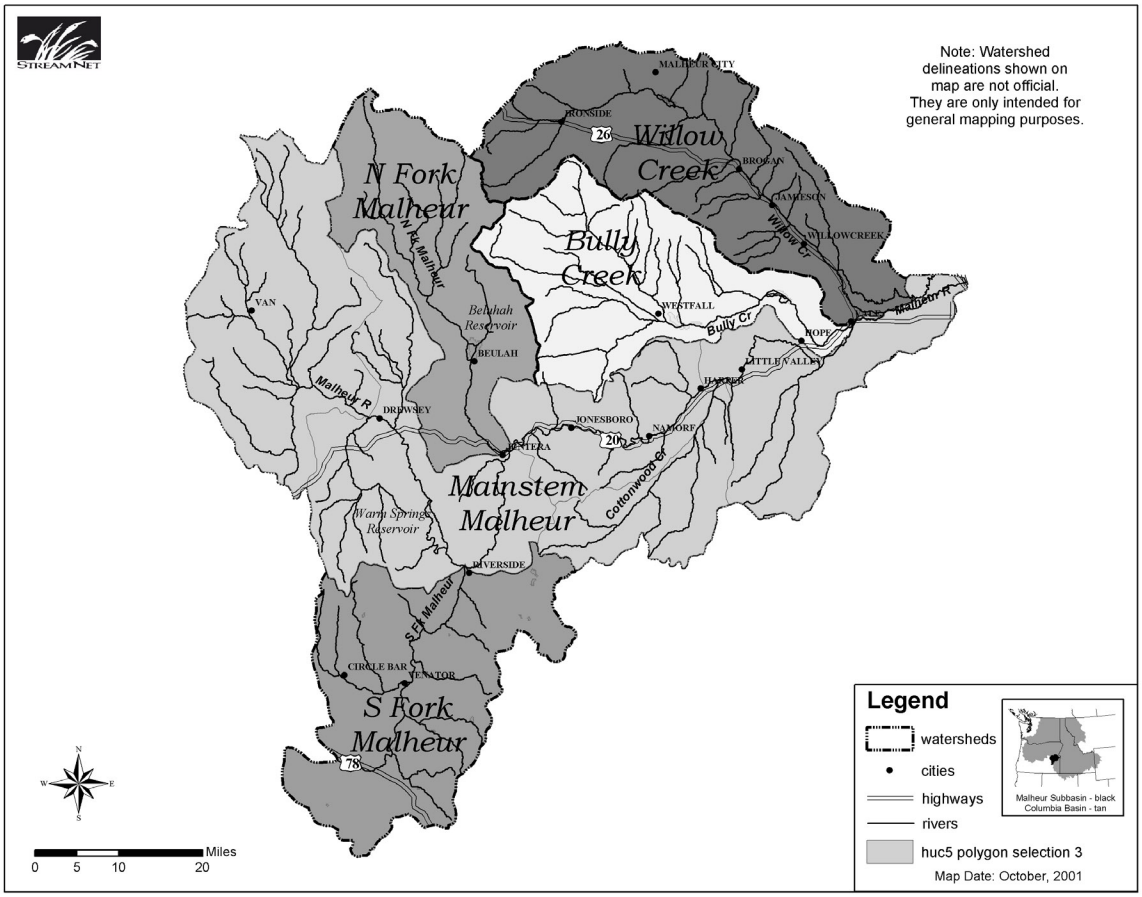


Figure 3. Major watersheds

### Geology

Topography in the Malheur Subbasin is the result of volcanic mountain building processes, limited glaciation, erosion, deposition and faulting (USFS 2000). The Malheur River flows mostly through igneous rock terrain that is composed principally of volcanic rocks. Sedimentary rocks, mostly tuffaceaous stream and lake deposits, also occur throughout the Subbasin (Laird 1964 *in* Fuste and McKenzie 1987). Three main geomorphic divisions occur in the Subbasin: 1) forested mountains in the northwestern portion, 2) grass-shrub uplands comprising the majority of the Subbasin, and 3) low elevation terraces along the lower Malheur River (MOWC 1999). The watershed is bounded to the north by the Strawberry Mountain range, dominated by Tertiary Strawberry volcanics. An episode of glacial activity that ended about 11,000 years ago left glacial u-shaped valleys and limited areas of unsorted glacial deposits and moraines in this area (USFS 2000). Most the Malheur Subbasin consists of rolling, grass-shrub hills underlain by old lacustrine sedimentary formations of Tertiary age, as well as lava flows of Tertiary to Recent age (MOWC 1999). River canyons and valleys that dissect these hills result from block faulting and weathering of volcanic ash, basalts, and sediments. In the lower Subbasin, extensive

low elevation floodplains and terraces parallel the Snake River and extend up the valleys of the Malheur River and Willow Creek (MOWC 1999).

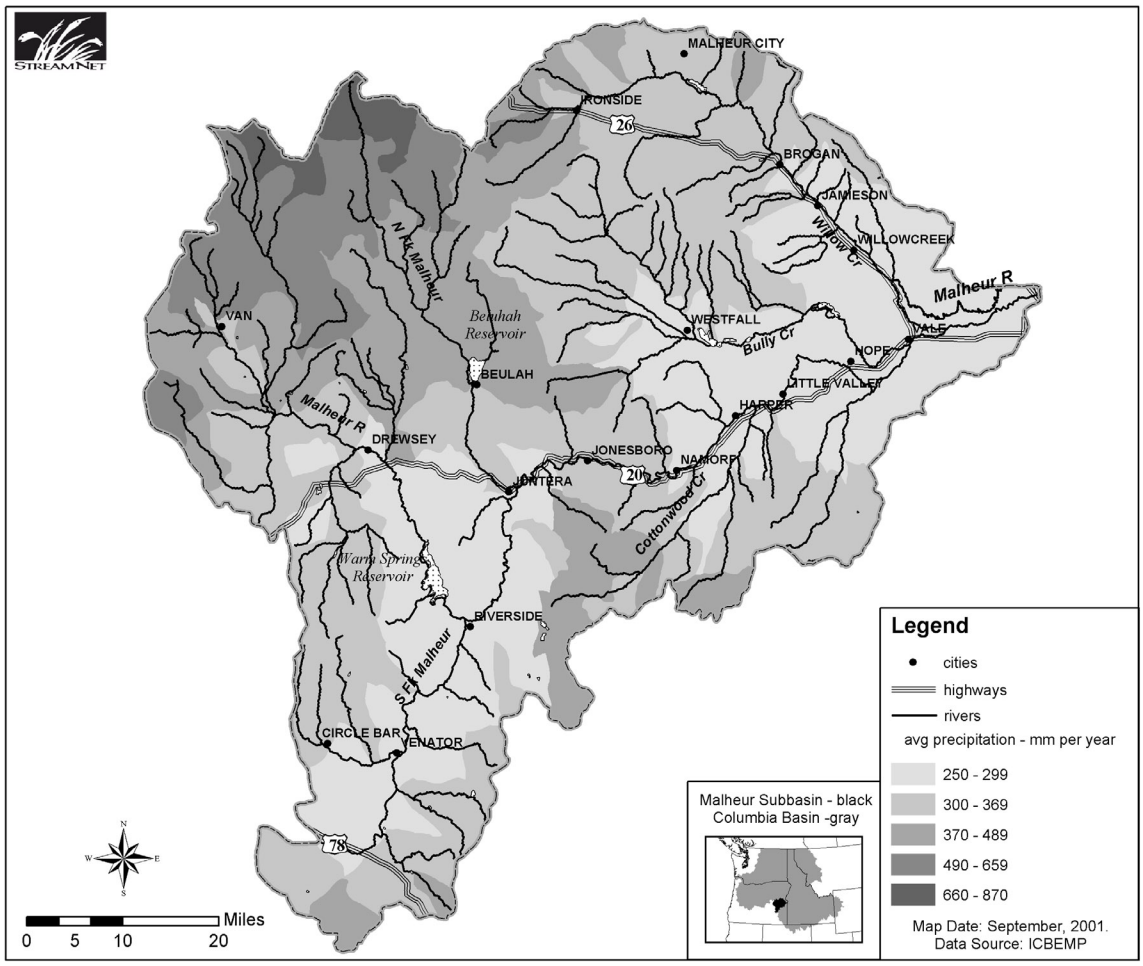


Figure 4. Isopleths map of precipitation

### Hydrology

The streams of the Malheur Subbasin reflect the semi-arid climate. On an average annual basis, low precipitation produces relatively low runoff although large variations can be expected on an annual and on a seasonal basis. Natural flow, except for that resulting from snowmelt in the spring, is usually quite low (Malheur County 1978).

Natural hydrology of the Subbasin has been severely altered by major impoundments and irrigation projects. High stream flows historically occurred during winter and spring months from rainstorms augmented by snowmelt and/or frozen ground conditions. Peak months of discharge were between February and May when 60 to 80 percent of the stream out flows occurred (Malheur County 1978). Due to reservoir storage

of winter and spring flows, and subsequent release of water for downstream irrigation in the summer, stream flow throughout much of the Subbasin has been dramatically altered. Stream flows below the reservoirs are now extremely low from fall through spring and unnaturally high during the summer irrigation season.

### Water Quality

The most complete overview of water quality problems in the Malheur Subbasin is provided by the Oregon Department of Environmental Quality's summary of water quality impaired water bodies listed under section 303(d) of the federal Clean Water Act. Most streams that have been sampled in the Subbasin are listed under section 303(d) for one or more parameters, such as water temperature, e-coli, phosphorus, chlorophyll-a, and arsenic (Figure 5, Figure 6). The majority of water quality problems in the Subbasin result from nonpoint source pollution (Hanson et al. 1990).

The Malheur Subbasin was inventoried for nonpoint source pollution problems in 1978, and moderate and severe problem areas in the Subbasin were mapped. Problems included sedimentation, streambank erosion, elevated water temperature nuisance algae, and decreased stream flow (Malheur County 1978 *in* Hanson et al. 1990). One of the problems most affecting fish is high turbidities (Thompson and Fortune 1967). This problem is normally limited to lowland streams during the irrigation season. Impounded water released during the summer and return water from flood irrigated fields contain heavy loads of silt which settle out in low gradient areas and bury gravel otherwise suitable for spawning (Thompson and Fortune 1967). DEQ identified turbidity and insufficient stream structure as problems throughout the Subbasin, whereas the Malheur River below Harper was found to have problems with nutrients, pesticides, salt water intrusion, bacteria, and viruses (DEQ 1988 in Hanson et al. 1990). A study by USGS in 1984-1985 synthesizes water quality and quantity measurements to provide a good overview of the seasonal fluctuations in river flow and increasing downstream build up of pollutants due to irrigation methods (Fuste and McKenzie 1987).

As a follow-up to 1998 303(d) listing data, MOWC (2000) conducted two years of sampling for e-coli, phosphorus, and chlorophyll-a at 11 of 37 stream reaches in the Malheur Subbasin. Only two of the eleven reaches sampled still indicated a continuing problem for these pollutants, indicating some improvement in water quality conditions may have occurred.

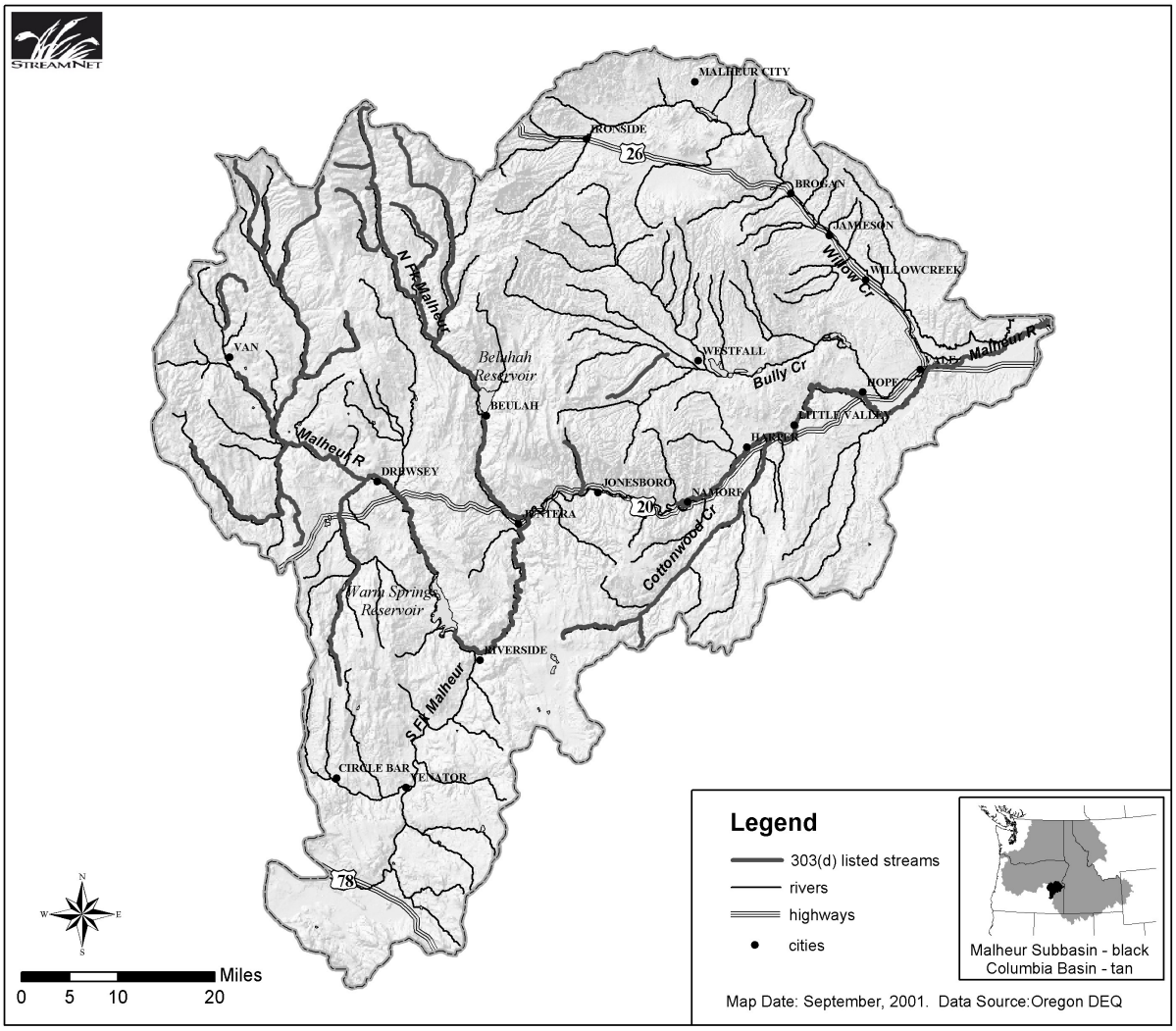


Figure 5. 303(d) listed streams

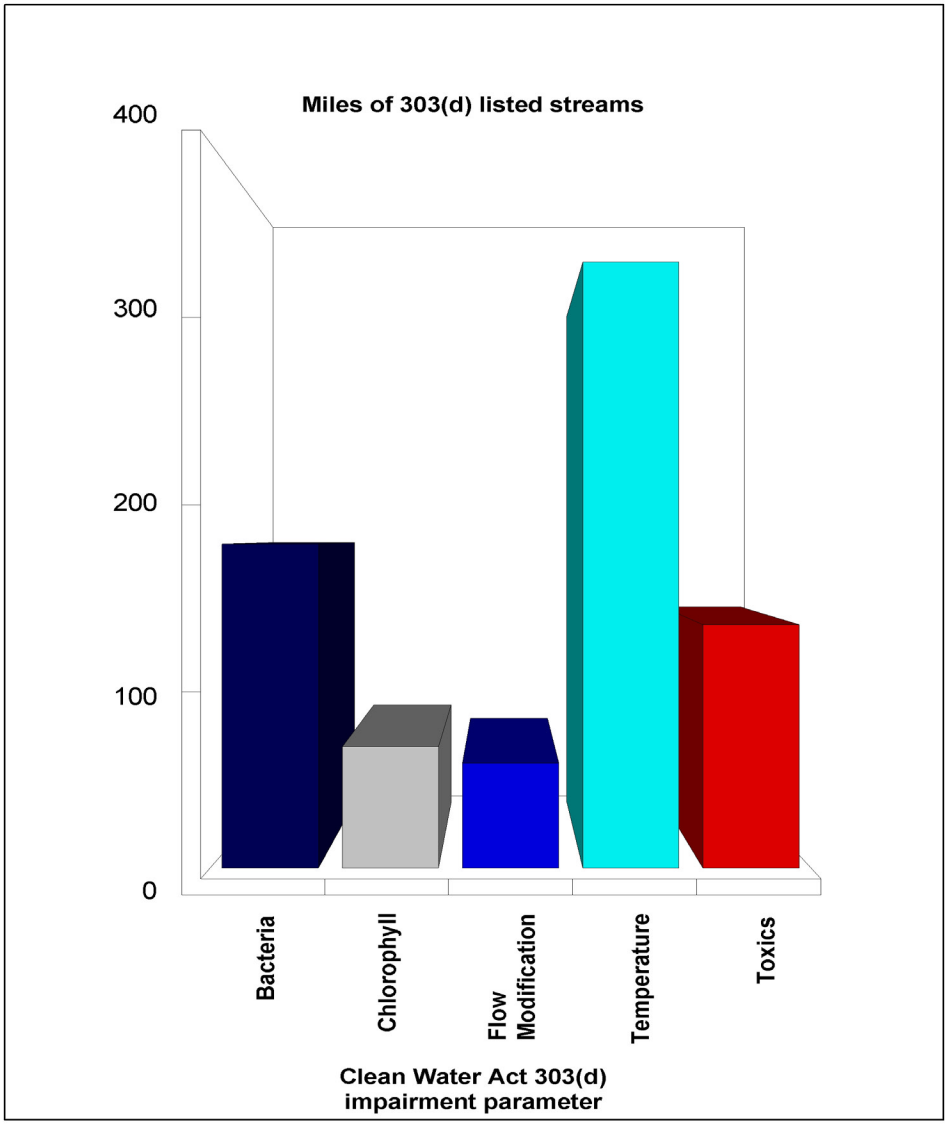


Figure 6. Miles of 303(d) listed stream by type of water quality impairment

## Soils

Soils in this semi-arid Subbasin are generally young, thin, and poorly developed. Soils in the mountainous areas in the northwest part of the Subbasin are extremely diverse, depending on interactions with vegetation, topographic aspect, glacial history, and fluvial processes. Forested north slopes tend to have productive volcanic ash mantles (from the Mount Mazama eruption 6,500 years ago (USFS 2000). Less protected south slopes have eroded over time to soils of underlying silt loams. Ridges tend to be comprised of shallow residual soils. Logan Valley soils are shallow with cemented hardpan (USFS 2000). Many

soils in the forested northwest portion of the Subbasin are of the Klicker series, underlain by basalt and andesite. These are stony, moderately deep, slightly acidic, and fine loamy soils (MOWC 1999). Within the rolling hills that comprise most of the Subbasin, a thin surface mantle of wind-born loess is present in places on top of the lacustrine sedimentary formation. Narrow alluvial floodplains may also occur along streams. These soils are light colored, low in organic matter, and generally calcareous (MOWC 1999). Floodplain soils in the lower watershed are diverse alluvial soils, generally easily erodible and alkali (MOWC 1999). In general, chemical and biological soil-building processes proceed slowly in this semi-arid Subbasin and disruption of soils can lead to long-term changes in ecological condition and productivity (MOWC 1999, USFS 2000).

### Vegetation

Vegetation of the Malheur Subbasin has changed dramatically since encroachment and settlement by Euro-Americans began in the early 1800s. Beaver were trapped intensively by the Hudson's Bay Company in the early 1800s and probably largely extirpated by the mid-1800s (Ogden 1950,1961,1971; USFS 2000). Most of the valley floors, including riparian shrub, wet meadow, and riparian habitats, were cleared for agriculture or pasture by the early 1900s. Sagebrush steppe, which covered much of the mid- and low-elevation portions of the watershed, has been severely altered by over 150 years of livestock grazing, fire suppression, and spread of numerous exotic plant species (MOWC 1999). Juniper has encroached in many higher elevation areas (MOWC 1999). In the forested areas of the Subbasin, intensive logging and fire suppression, begun in the early 1900s and continued through the 1980s, resulted in a conversion of much of the Malheur National Forest from open stands of fire resistant large trees to dense, insect and fire-prone stands of shade tolerant trees (USFS 2000, USFS and BLM 1996). Aspen and cottonwood stands, which generally require fire for regeneration and are sensitive to excessive livestock and elk grazing, have been reduced to rare pockets of their former abundance throughout the forested portions of the Subbasin (USFS 2000).

### Land Uses

Agricultural production and processing are the subbasin's primary economic activities. River valleys from Harper eastward are devoted to intensive and diversified agriculture. Livestock production dominates river valleys in the upper portion of the Subbasin where irrigated lands are used primarily for growing hay and forage crops. Rangeland through the Subbasin also provide livestock forage during the spring and summer months. Timber harvest occurs in the northwest portion of the Subbasin (NWPPC 2000). (Figure 7,Table 2).

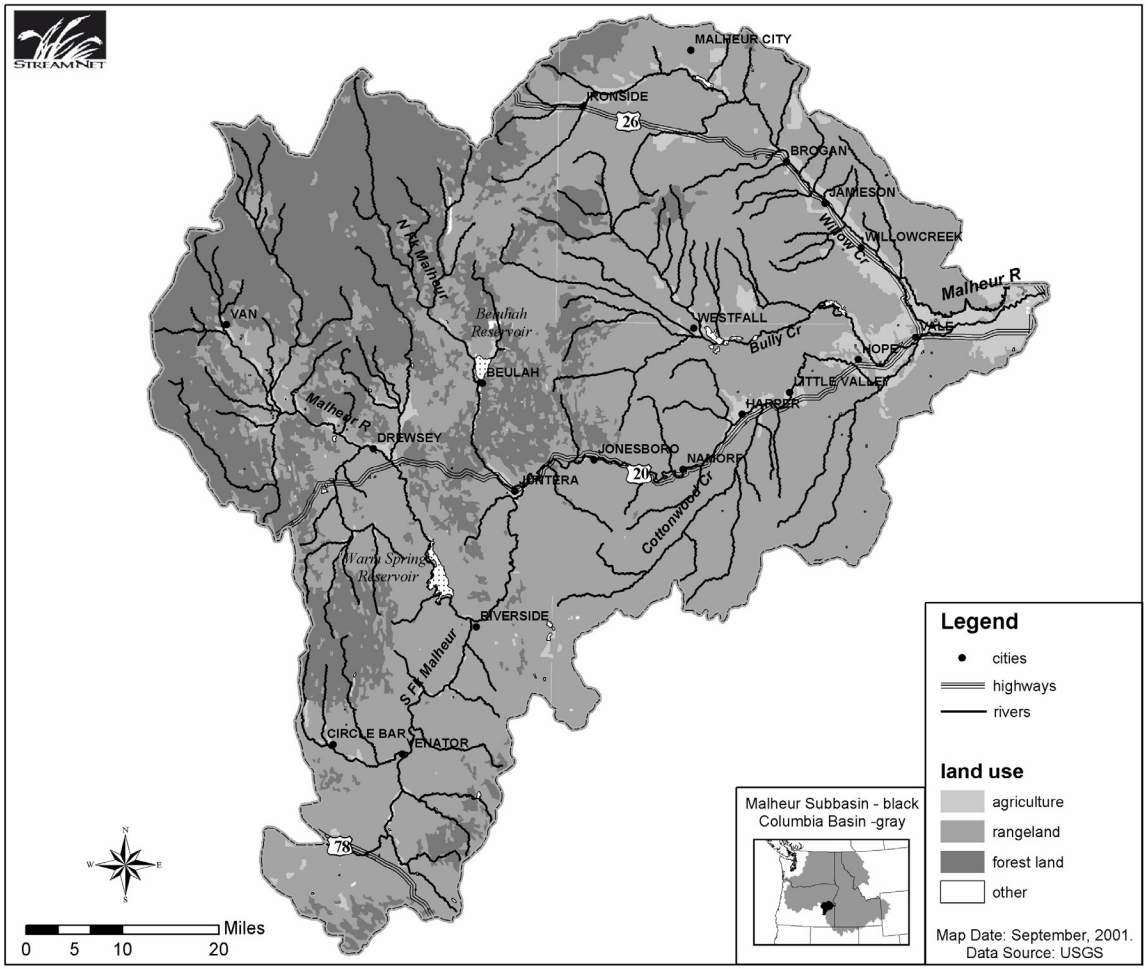


Figure 7. Land uses

Historically, most of the Malheur Subbasin was within the Burns Paiute Tribe's territory. A treaty of 1868 reserved 1,792,000 acres, including most of the Subbasin, as a reservation for the Burns Paiute Tribe. This reservation area was terminated by the U.S. government in 1883 as a result of the conflicts that broke out over increasingly white encroachment and settlement in their area. The current reservation of about 1000 acres is outside of the Malheur Subbasin and located in Burns, Oregon.

Table 2. General land uses

| Land Use | Acres | Percent of Subbasin |
|---|---|---|
| Urban / Residential | 2,411 | 0.1 |
| Agriculture | 160,332 | 5.3 |
| Rangeland | 2,031,951 | 67.2 |
| Forest | 814,624 | 27.0 |
| Other | 12,461 | 0.4 |
| Total | 3,021,779 | 100.0 |

Source: Streamnet 2001

Currently, approximately 60 percent of the watershed is publicly owned and managed by the federal government (Table 3 and Figure 8 ). The Bureau of Land Management (BLM) manages nearly one-half of the total watershed area, mostly managed as rangeland. The Vale District and Burns District of BLM each manage roughly one half of the BLM ownership in the Subbasin. Lands managed by the Forest Service (USFS) are located in the mountainous northwestern part of the watershed, comprising the headwaters of the North Fork and Mainstem of the Malheur River in Malheur National Forest. The Bureau of Reclamation manages lands associated with its impoundment projects. Most state lands in the Subbasin are located in the southern portion of the watershed and are managed by the Division of State Lands primarily for livestock grazing. Oregon Department of Fish and Wildlife owns and manages about 4067 acres along 18 miles of the Malheur River, between Riverside and Juntura, for fish and wildlife recreation (Wayne Bowers, ODFW, pers. comm. 2001). The Burns Paiute Tribe has recently acquired Logan Valley Ranch, consisting of 1,760 deeded acres, and Jones Ranch, 6,385 deeded acres along the Mainstem Malheur, and associated state and BLM leased land for livestock grazing.

Table 3. Property ownership

| Acreage by Property Ownership | Acres | %Subbasin |
|---|---|---|
| Bureau Of Land Management | 1,458,254 | 48.3 |
| Bureau Of Reclamation | 7,710 | 0.3 |
| Forest Service | 366,087 | 12.1 |
| Other (Unresolved) | 59 | 0.0 |
| Private | 1,064,465 | 35.2 |
| State Land | 124,360 | 4.1 |
| U.S. Fish & Wildlife Service | 833 | 0.0 |
| Total | 3,021,768 | 100.0 |

Source: Streamnet 2001

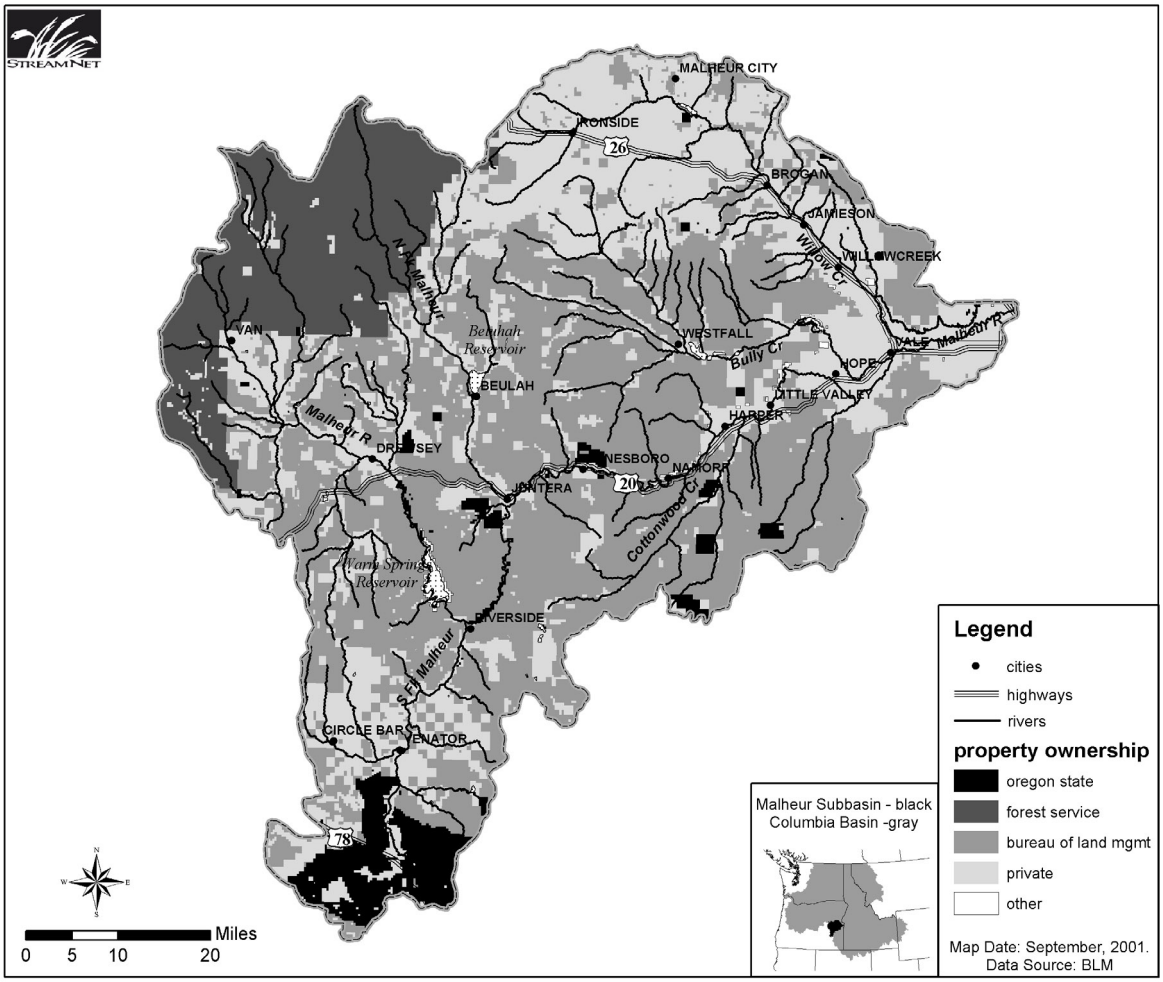


Figure 8. Property ownership

### Impoundments and Irrigation Projects

Much of the river flow in the Malheur River Subbasin is controlled by reservoirs and by a complex system of diversions, canals, and siphons originating near Namorf and extending downstream to the mouth of the Malheur River near Ontario. Warm Springs, Beulah, and Bully Creek reservoirs are major components of the Bureau of Reclamation's Vale Project, which is operated and maintained by the Vale-Oregon Irrigation District. The Vale project provides irrigation water to about 35,000 acres located along the Malheur River and lower Willow Creek and around the town of Vale.

Dams built in the Malheur Subbasin, starting in the late 19th century and continuing through the early 20th century, blocked most of the Malheur River to access by anadromous and migratory fish species. Access to the Malheur from the Snake River was limited after 1881 due to the construction and operation of the Nevada diversion dam located on the

Lower Malheur River immediately downstream of Vale at about RM 19 (Buchanan et al. 1997). Warm Springs Dam and Reservoir, on the Upper Malheur River, began operation in 1919. In a field tour of eastern Oregon watersheds conducted in 1925, the Deputy Fish Warden observed two fish-blocking dams: one at Vale (presumably the Nevada diversion dam) and the other "on the South Fork near Riverside" [possibly the author was referring to Warm Springs Dam on the Mainstem Malheur] (Curtis 1925). The following year, the Master Fish Warden inspected the newly constructed fish ladder at the Nevada diversion dam, which apparently worked, and mentioned that the dam at Warm Springs Reservoir blocked all salmon from accessing historic habitat (Ballagh 1926).

The Master Fish Warden noted that salmon continued to ascend the North Fork Malheur River "where the salmon can be seen at this time in numbers in the holes" (Ballagh 1926 [July 22nd letter]). Beulah Reservoir began operating in 1935, completely blocking access to the North Fork Malheur River for migratory and anadromous fish (Pribyl and Hosford 1985). Locations of some existing dams are shown in Figure 9, based on Streamnet data provided by ODFW. BPA may have more complete dam location data, but it could not be provided on short notice.

Operation of the reservoir system radically altered the seasonal streamflow pattern along most of the Mainstem Malheur River and Bully and Willow Creeks. Stored water is released during the summer, keeping downstream flow high for use in irrigation. Reservoir gates are closed at the end of the irrigation season, usually by mid-October. Thereafter, the only flow immediately downstream is minor leakage through the gates (Fuste and McKenzie 1987). The South Fork Malheur River, which contains only small reservoirs, retains a relatively natural seasonal stream flow and provides most of the winter stream flow to the Mainstem Malheur River where it joins several miles below Warm Springs Reservoir.

The stored water in Warm Springs and Beulah Reservoirs, together with natural stream flow, is diverted from the Malheur River several miles upstream of Namorf by the Harper Diversion Dam to the Vale–Oregon Canal (Hanson et al. 1990). The canal water from the river is used for irrigation of lands within the Vale-Oregon Irrigation District, or alternatively diverted for storage in Bully Creek Reservoir. Some water is also transferred out of the Subbasin for use by the Owyhee Irrigation District. Flow monitoring conducted by the U.S. Geological Survey from July to October, 1985 showed that stream flows were consistently high upstream of the Vale-Oregon Canal; the canal diverted 65 to 79 percent of the total flow from the river (Fuste and McKenzie 1987). Small increases in flow were observed between Namorf and Hope as a result of irrigation return flows; large increase in flow below Hope included flow from Bully and Willow Creeks. When flows from irrigation reservoirs are curtailed and irrigation ceases, flows in the Malheur River were considerably lower (Fuste and McKenzie 1987).

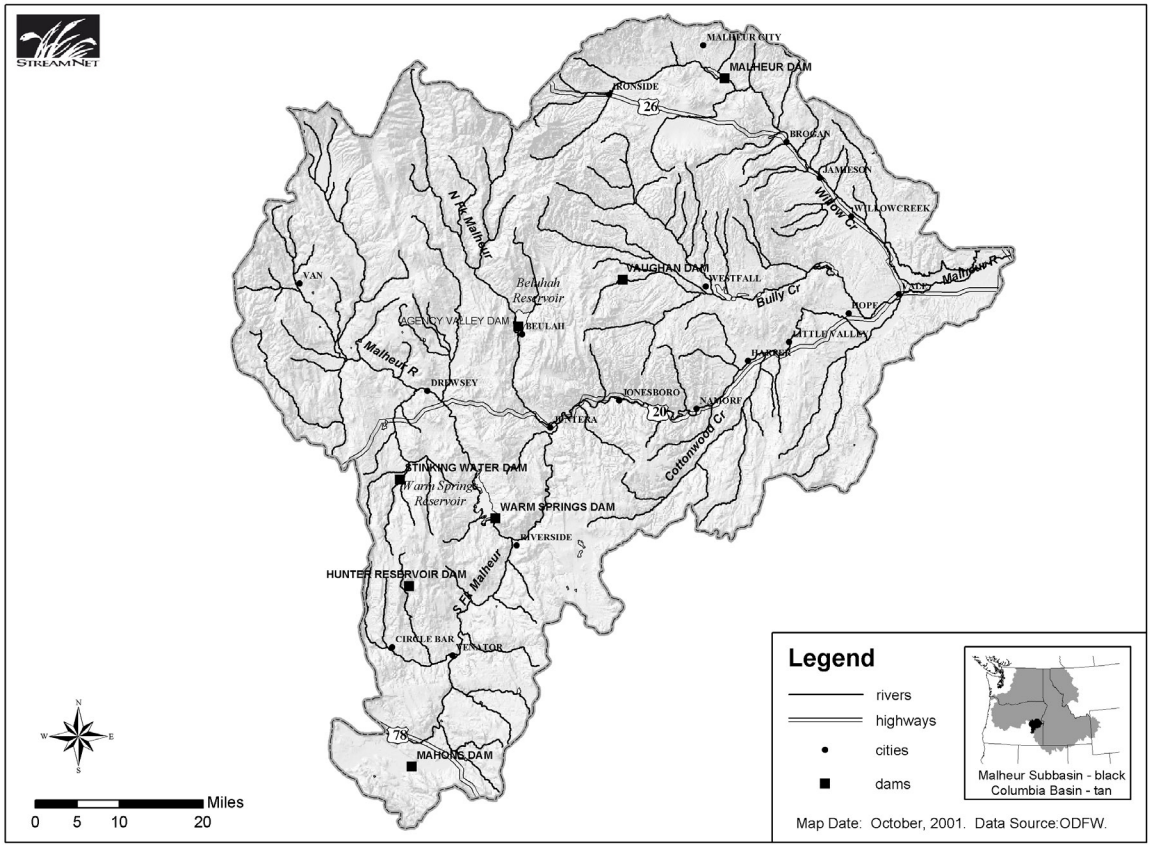


Figure 9. Location of dams

A total of about 132,000 acres are irrigated in the Malheur Subbasin, representing about 4.4 percent of the total Subbasin acreage (Mary Grainey, OWRD, pers. comm. 2001). The primary method of irrigation is flood irrigation through ditch systems that divert water from the streams and rivers. Three irrigation districts in the Subbasin water about one-half of the total irrigated acreage (Table 4, Figure 10). The Oregon Water Resources Department (OWRD) has not completed their GIS data for irrigation district lands. Thus, Figure 10 only shows about 85,000 acres of the total irrigated acreage, some of which has recently been transferred to irrigation district water rights (Mary Grainey, OWRD, pers. comm. 2001).

Although the major diversions of surface waters occur in the Lower Malheur River below Harper Dam and in the Drewsey Valley, diversions occur throughout the Malheur Subbasin (Figure 11). Water is diverted from headwater areas such as Logan Valley and along most stream valleys. Most of the diversions upstream of Namorf are ungaged and unscreened (Wayne Bowers, ODFW, pers. comm. 2001). Most of the diversions downstream of Namorf have continuous gauging stations operated by the State or irrigation districts (Fuste and McKenzie 1987).

Table 4. Irrigated acreage

| Holder of water right | Acres irrigated | Percent of irrigated acreage | Percent of Subbasin |
|---|---|---|---|
| Vale-Oregon Irr. District | 38,000 | 28.8 | 1.3 |
| Warm Springs Irr. District | 20,000 | 15.2 | 0.7 |
| Orchards Water Company | 6,000 | 4.5 | 0.2 |
| Individual water rights | 68,000 | 51.5 | 2.3 |
| Total | 132,000 | 100.0 | 4.4 |

Source: Mary Grainey, OWRD, pers. comm. 2001

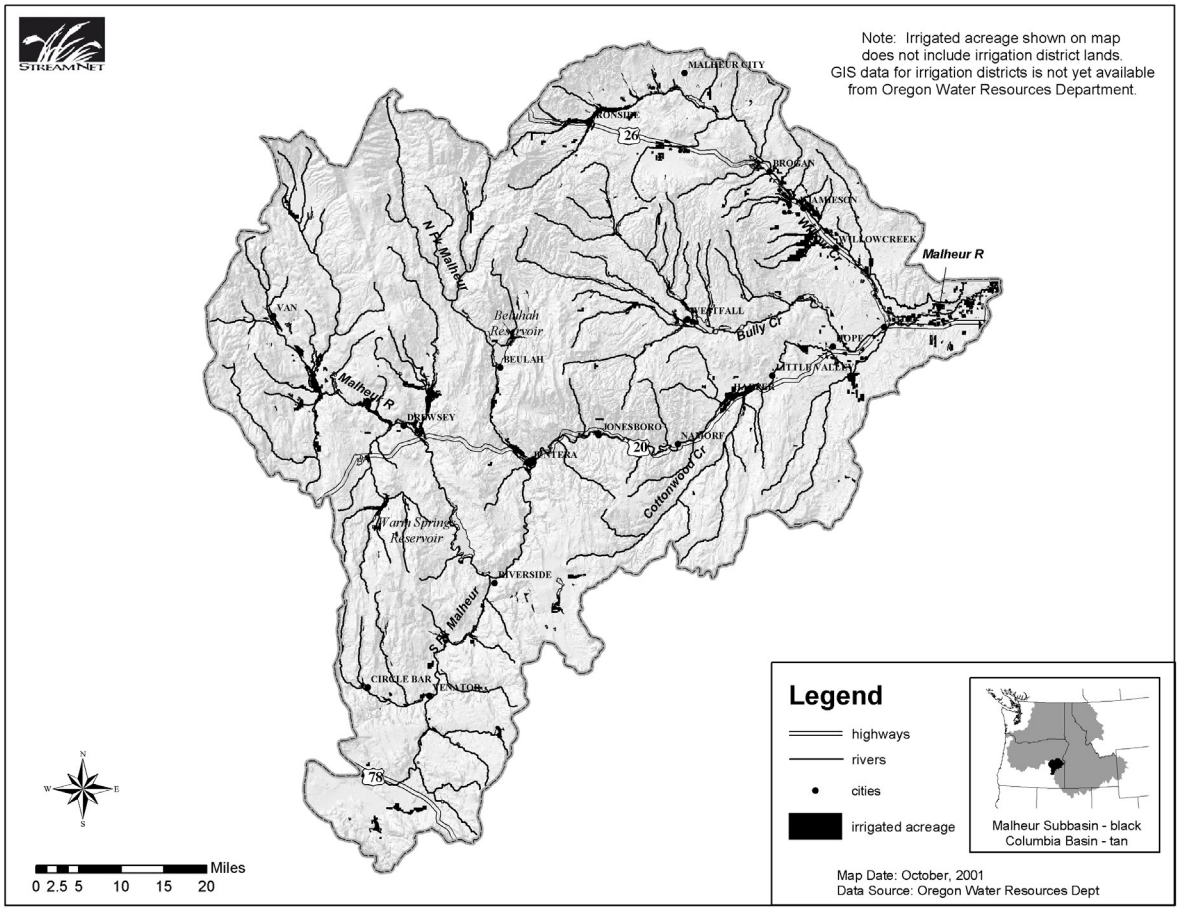


Figure 10. Irrigated acreage

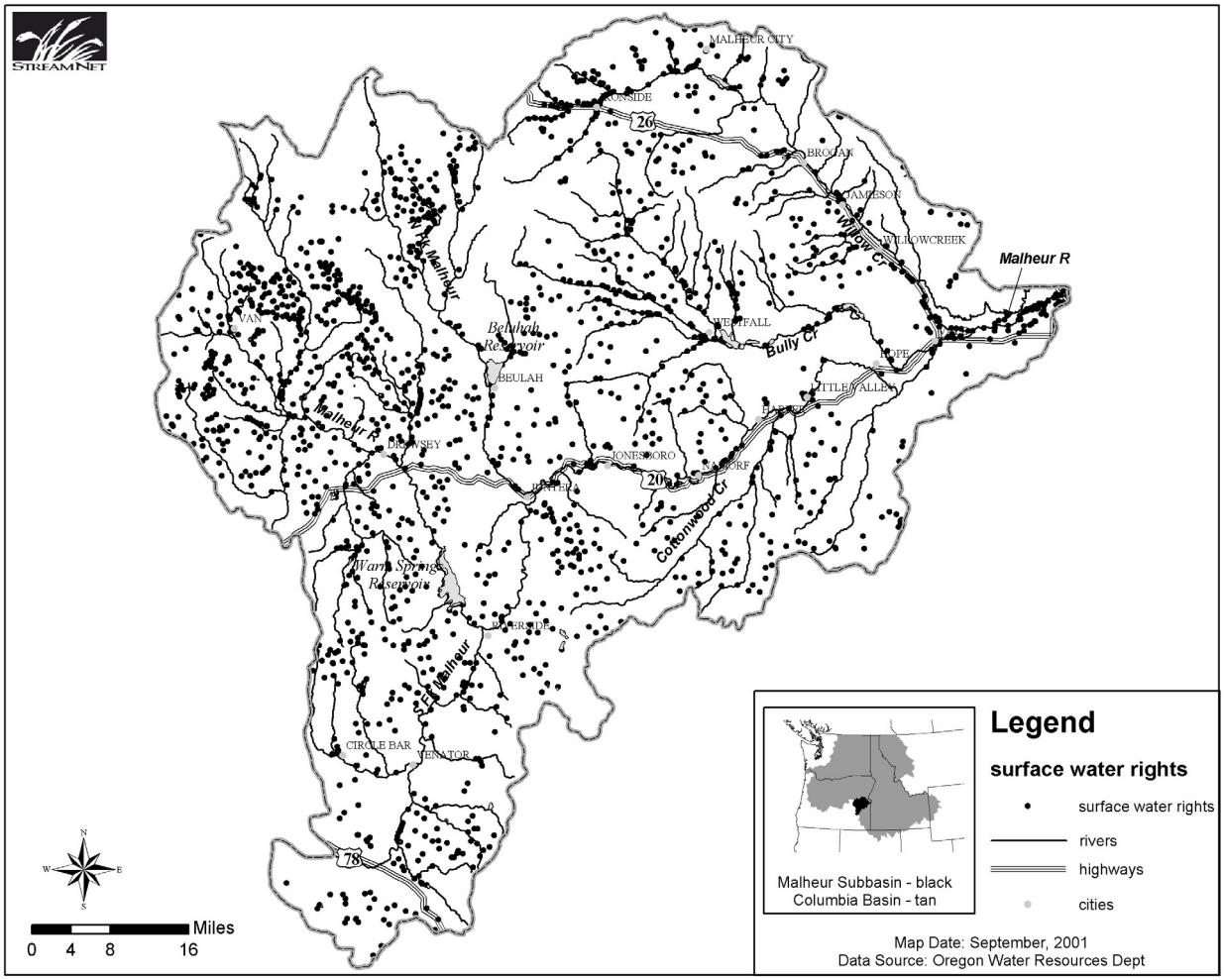


Figure 11. Point of diversion for surface water rights

The Malheur Subbasin has no appreciable quantity of unappropriated surface water subject to the jurisdiction of the State Water Resources Commission (formerly the State Water Resources Board). Legal rights exceed yield in all years except those of unusually high amounts (Hanson et al. 1990).

### Protected Areas

Protected areas have been established on a small percentage of lands within the Malheur Subbasin, as follows:

Most of the headwaters of the Upper Malheur River are protected within the Strawberry Mountain Wilderness of Malheur National Forest (USFS 2000). No logging, or motorized equipment is permitted in the Strawberry Mountain Wilderness and the area does not include any grazing allotments. Table Rock Wilderness protects about 5000 acres primarily in the Little Malheur River drainage. Forest Service roadless areas, such as the

Glacier Mountain roadless area inhabited by bull trout (Hanson et al. 1990), were protected by Clinton's Roadless Area administrative policy, which now has an uncertain future.

There are no congressionally designated Wilderness Areas on BLM lands in Oregon. In 1980, the BLM designated Wilderness Study Areas in Oregon. In 1989, the BLM completed the Wilderness Study Report and Final Wilderness EIS that recommended Wilderness designation for some of these areas and adjacent BLM and non-BLM land (if acquired). In the Malheur Resource Area (including portions of the Malheur and Owyhee Subbasins), the BLM recommended 9 Wilderness Study Areas for designation, for a total of 119,031 acres considered and 155, 199 acres released from further consideration. In 1992, the President submitted his Wilderness recommendations to Congress (the same as BLM's recommendations). Until Congress acts, WSAs are managed in accordance with BLM's Interim Management Policy (BLM 1998).

Twelve miles of the Upper Malheur River, completely on Malheur National Forest land, are designated under the federal Wild and Scenic Rivers Act (Malheur National Forest 1993a). 3,758 acres are within this designated corridor. Six miles of the designated reach have a wild classification and six miles have a scenic classification. No dams are permitted along designated rivers, which are managed to protect their outstanding natural area values.

The North Fork Malheur River includes a 22.9 mile length designated as scenic under the Wild and Scenic Rivers Act (Malheur National Forest 1993b). 7,034 acres are within this designated corridor. Vale District, BLM has listed about 50 additional eligible miles of streams and rivers in the Malheur Subbasin (BLM 1998). They have proposed 3.6 miles, encompassing 996 acres of the North Fork, as Wild in their preferred alternative (C ) in the *Draft EIS for the Southeast Oregon Resource Management Plan* (BLM 1998). In their *Three Rivers Resource Management Plan*, the Burns District proposed designation of a 5.4 mile reach of the Upper Malheur River and Bluebucket Creek, adjacent to the Malheur National Forest, as a Wild River (BLM 1992).

Both the Vale District and Burns District of BLM have proposed other types of land protection as part of their resource management plans, including Areas of Critical Environmental Concern and Special Recreation Management Areas (BLM 1992, 1998).

## Fish and Wildlife Resources

### Fish and Wildlife Status

#### Fish

Twenty-six species of fish occur, or historically occurred, within the Malheur Subbasin, about half of which are non-native warm water species (Table 5). Historically, a mix of salmonids and native nongame fish inhabited the Subbasin with each species dominating in its favored habitat niche. The North Fork and Upper Malheur River that drain from Table Rock and the Strawberry Mountains, respectively, were probably the most important spawning and rearing tributaries in the Subbasin for most anadromous salmonids.

Table 5. Historical and existing fish species of the Malheur Subbasin

| Common Name | Scientific Name | ODFW mgt. | Status | Location |
|---|---|---|---|---|
| Pacific Lamprey | Lampetra tridentata | | Extinct | |
| Chinook Salmon | Oncorhynchus tshawytscha | Gamefish | Extinct | |
| Coho Salmon | Oncorhynchus kisutch | Gamefish | Extinct | |
| Steelhead | Oncorhynchus mykiss | Gamefish | Extinct | |
| Columbia River Redband Trout | Oncorhynchus mykiss | Gamefish | State Sensitive | Higher elevation areas of most major subbasins |
| Hatchery Rainbow Trout | Oncorhynchus mykiss | Gamefish | Introduced | Malheur, Pole Creek, Beulah, Warm Springs, Murphy, Cottonwood reservoirs, 9 small BLM stock ponds, and Malheur River from Gold Cr to Warm Springs Dam |
| Bull Trout | Salvelinus confluentus | Gamefish | Federal Threatened | Headwaters of North Fork and Logan Valley streams |
| Brook Trout | Salvelinus fontinalis | Gamefish | Introduced | Logan Valley streams |
| Whitefish | Prosopium williamsoni | Gamefish | | lower sections of North Fork, Upper Malheur, and lower Malheur River |
| Northern Pike-minnow | Ptychocheilus oregonensis | Nongame | | lower sections of major subbasins |
| Chiselmouth | Acrocheilus alutaceus | Nongame | | Lower Malheur River |
| Redside Shiner | Richardsonius balteatus balteatus | Nongame | | lower sections of major subbasins |
| Speckled Dace | Rhinichthys osculus | Nongame | | lower sections of major subbasins |
| Long-nosed Dace | Rhinichthys cataractae | Nongame | | lower sections of major subbasins |
| Largescale Sucker | Catostomus macrocheilus | Nongame | | Larger river and reservoirs |
| Bridgelip Sucker | Catostomus columbianus | Nongame | | lower sections of major subbasins |
| Shorthead Sculpin | Cottus confusus | Nongame | | Headwater areas of perennial streams |
| Mottled Sculpin | Cottus bairdi | Nongame | | Headwater areas of perennial streams |
| Largemouth Bass | Micropterus salmoides | Gamefish | Introduced | Warm Springs Res, Bully Creek Res. |

| Common Name | Scientific Name | ODFW mgt. | Status | Location |
|---|---|---|---|---|
| Smallmouth Bass | Micropterus dolomieu | Gamefish | Introduced | Warm Springs Res, Bully Creek Res. |
| White Crappie | Pomoxis annularis | Gamefish | Introduced | Warm Springs Res, Bully Creek Res. |
| Bluegill | Lempomis macrochirus | Gamefish | Introduced | Warm Springs Res, Bully Creek Res. |
| Yellow Perch | Perca flavescens | Gamefish | Introduced | Warm Springs Res, Bully Creek Res. |
| Channel Catfish | Ictalurus punctatus | Gamefish | Introduced | Warm Springs Res, Bully Creek Res., and lower Malheur River |
| Brown Bullhead | Ameiurus nebulosus | Gamefish | Introduced | Warm Springs Res, Bully Creek Res. |
| Common Carp | Cyprinus carpio | Nongame | Introduced | Lower Malheur River |
| Oriental Weatherfish | Misgurnus anguillicaudatus | Nongame | Introduced | Irrigation and drain ditches in lower Subbasin |

Source: ODFW, Ontario District Office 2001

Anadromous salmonids were blocked from the watershed by dams early in the 20th century, leaving redband trout and bull trout as the major focus of fisheries management (NWPPC 1999).

#### Salmon

Historically, most of the Malheur River was used by anadromous species (Figure 12). Before construction of Warm Springs Reservoir in 1919, the Malheur River supported runs of spring Chinook salmon, steelhead, and probably coho salmon (USFWS 1950 and Fulton 1970 *in* Pribyl and Hosford 1985, Thompson and Fortune 1967). In July of 1926, the Oregon Fish Commission's Master Fish Warden toured the Malheur Subbasin and noted:

> "About thirty-five miles out of Crane, we crossed Camp Creek, a tributary of the south fork of the Malheur River. Upon investigation there, we found that the stream seemed to be alive with young Chinook salmon and a few steelheads" (Ballagh 1926).

Even before the Snake River dams were built, the fish had been largely eliminated from the Subbasin. In 1950, USFWS biologist Zell Parkhurst wrote:

> The numerous dams and diversion obstruct the passage of fish and utilize the flow of the Malheur river system for irrigation to such an extent that this river system is no longer of any possible value to salmon. Where formerly large runs of Chinook salmon and steelhead trout utilized the extensive spawning areas there have been so few of these fish for so many years that the capture or even the appearance of a single one is a most unusual and rare occurrence"(USFWS 1950).

According to Pribyl and Hosford (1985) "long-time residents of the area can remember spearing salmon in the Logan Valley area of the Upper Malheur and also in the mainstem Malheur near Ontario (Figure 13). Hand forged spears and gaff hooks, used to catch salmon, can still be found at the ranches below Beulah Reservoir on the North Fork Malheur". Logan Valley was ethnographically documented as an important locality for fishing, hunting and gathering by Native American Tribes as well as a trade center

(Couture 1978). Warm Springs Dam on the Upper Malheur, constructed in 1919, had no fish passage facilities and ended anadromous runs into that stream. Agency Dam (Beulah), built in 1935 on the North Fork Malheur also halted anadromous runs. The upper reaches of both streams have miles of excellent spawning gravels and rearing area for anadromous species, but generally lack pool area (Pribyl and Hosford 1985). Construction of Brownlee Dam on the Snake River in 1958 blocked anadromous fish from reaching the Malheur River (NWPPC 2000).

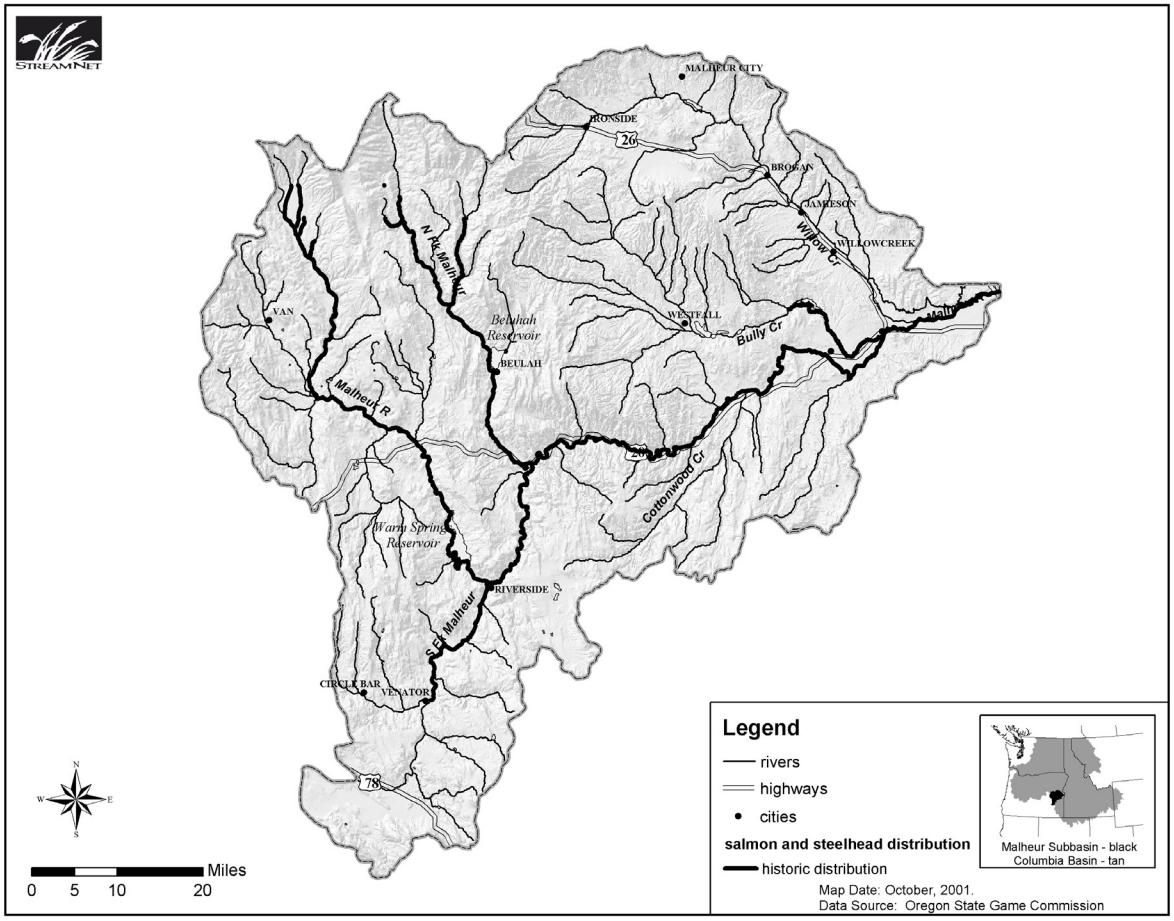


Figure 12. Historic salmon and steelhead distribution (from Thompson and Fortune 1967)

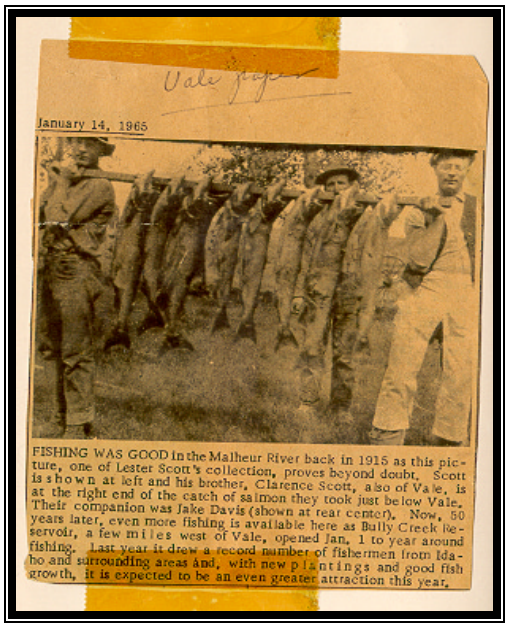


Figure 13. Fish catch from Malheur River, 1915

**Redband trout**

Redband trout are the most prevalent indigenous salmonid in the Subbasin, having been identified by ODFW in 76 streams (Hanson et al. 1990). They are found in tributaries of the South Fork Malheur and the Malheur River below Warm Springs Reservoir, the Mainstem and North Fork and their tributaries and above Bully Creek reservoir and its tributaries (Figure 14). The BLM and USFS GIS data used to show redband distribution for the Subbasin is probably incomplete, but we were not able to check data from the Interior Columbia Basin Ecosystem Management Plan (USFS and BLM 1996) prior to publication of this report. An historic distribution map from Thompson and Fortune (1967) shows trout distribution as more extensive, but undoubtedly includes stocked trout in the lower rivers.

The strongholds for redband trout are similar to that of bull trout – the North Fork and Upper Malheur River upstream of the reservoirs. Downstream of the reservoirs and in smaller tributaries, habitat is considered marginal for spawning and rearing due to low flows, poor water quality, and blockages due to irrigation structures (Hanson et al. 1990, Wayne Bowers, ODFW, pers. comm. 2001). Hatchery rainbow trout continue to be stocked in the mainstem Malheur downstream of Warm Springs Dam between Riverside and Gold Creek. They are also stocked in a number of irrigation reservoirs and small BLM stock ponds. They have not been stocked in the North Fork or Upper Malheur upstream of the reservoirs since 1993 (Wayne Bowers, ODFW, personal communication 2001).

Several populations of redband trout occur in tributaries that do not have perennial flows in their lower reaches, thus these populations are isolated for most of the year (Hanson et al. 1990). ODFW considers these populations to be distinct breeding populations. It is probable that distinct populations of redband trout also occur in other tributaries with perennial flows, but genetic analysis has not been conducted.

The redband trout was considered a candidate species for listing under the federal Endangered Species Act (ESA) until March 20, 2000 when a final decision was made to not list redband (USFWS 2000). It is listed as a Sensitive Species under Oregon's Endangered Species Act. The health of the redband population in the Malheur River watershed is currently unknown and an interagency team has initially begun research on life history characteristics (Schwabe et al. 2000).

**Bull trout**

The U.S. Fish and Wildlife Service listed bull trout in the Columbia River Basin (including the Malheur Subbasin) as threatened in June 1998. Under the listing Malheur Subbasin bull trout are considered members of the Columbia River Bull Trout Distinct Population Segment (DPS). This DPS is represented by relatively widespread, geographically isolated subpopulations throughout the entire Columbia River Basin within the United States and its tributaries, excluding bull trout found in the Jarbidge River, Nevada (63 FR 31647). The species was listed range wide in 1999 (64 FR 58910). Past land management activities, construction of dams and ODFW's fish eradication projects by poisoning in the North Fork and upper Mainstem Malheur River have worked in concert to cumulatively impact bull trout in the Subbasin (Bowers et al. 1993). Survival of remaining bull trout in the Subbasin is severely threatened (Buchanan et al. 1997).

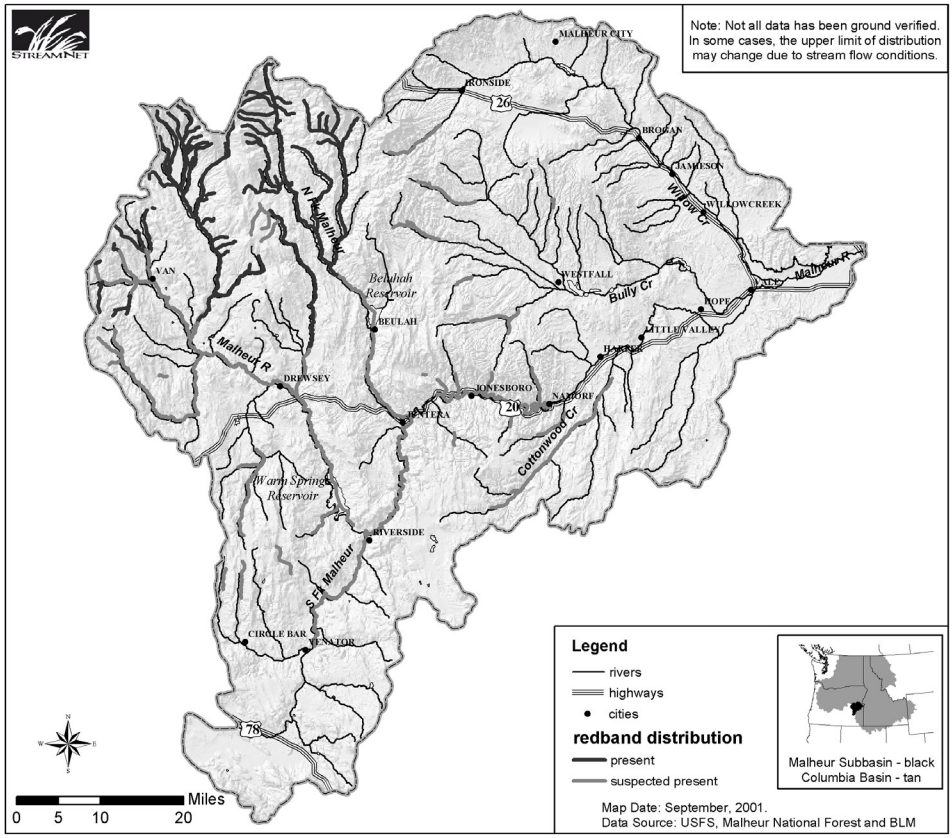


Figure 14. Redband distribution

Information on the historic distribution of bull trout in the Malheur Subbasin is limited; ODFW records date from around 1955 (Buchanan et al. 1997). However, bull trout would have had access to the Snake River prior to dam construction. The lower Malheur River was most likely too warm for bull trout spawning or juvenile rearing, but would have provided migration and overwintering habitat (Hanson et al. 1990).

Current distribution of bull trout includes the North Fork Malheur River and upper Malheur River (upstream of Drewsey). Spawning and juvenile rearing takes place in selected headwater tributaries of both systems, as well as in the upper mainstem North Fork Malheur. Fluvial and resident life forms occur in both populations. Bull trout in the North Fork Malheur River also migrate to and overwinter in Beulah Reservoir, providing an adfluvial component to the population. (Figure 15). Bull trout occur in several headwater tributaries of the Mainstem and in the Malheur River as far downstream as Bluebucket Creek. Bull trout use below Bluebucket Creek to Warm Springs Reservoir is currently restricted seasonally probably due to elevated stream temperatures, lack of water, and lack of fish passage facilities at irrigation diversions.(USFS 2000, Hanson et al. 1999, Wayne Bowers, ODFW, pers. comm. 2001). Brook trout also occur in the upper Mainstem Malheur River, and hybridization and displacement of bull trout by non-native brook trout is a major concern (USFS 2000, Hanson et al. 1999).

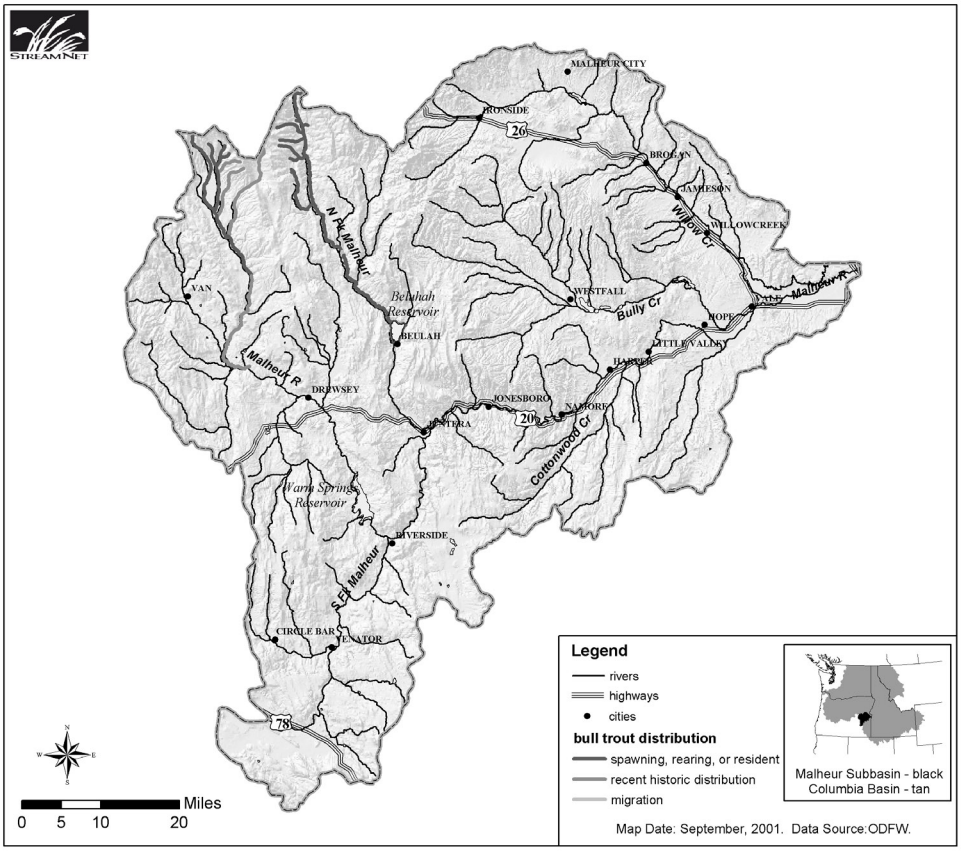


Figure 15. Bull trout distribution

The status of bull trout in the Malheur Subbasin was assessed by Ratliff and Howell (1992). The North Fork Malheur population was ranked "of special concern" attributed to habitat degradation, downstream losses, and past chemical treatment projects. The Upper Malheur population was ranked at "high risk" of extinction attributed to habitat degradation, a 1955 chemical treatment project, and competition and hybridization with brook trout. Re-assessment by Buchanan et al (1997) showed no change in the status.

Recent life history studies provide extensive data on spawning locations and seasonal migrations of bull trout in the North Fork (Gonzalez et al. 1998, Schwabe 2000). During two years of surveys, bull trout were found to migrate to Beulah Reservoir in the winter and from the reservoir to headwater spawning areas in the spring and summer, traveling as much as 50 km (Schwabe 2000). Some fish migrated, or were entrained during flow release from the reservoir, and found downstream of the dam (Schwabe 2000).

One of the greatest threats to native bull trout is the non-native brook trout. Brook trout occur in the upper Malheur River, but not in the North Fork. An intensive study of feeding behavior and diet of bull trout and brook trout was recently conducted at two study sites, including one site located in the Malheur Subbasin (Meadow Fork of Big Creek) (Gunckel 2000). The study found that due to similar habitat use, feeding behavior and diet of the two species, and aggressive interactions between the species, that when habitat and prey resources are scarce, direct interference competition is likely and the dominant behavior of brook trout may potentially displace bull trout (Gunckel 2000).

A current population estimate for bull trout is not available. However, standardized redd counts from 1996 through 2000 show an increasing trend from less than 50 to more than 150 redds for the North Fork Malheur population (Tinniswood and Perkins, 2000).

#### Pacific lamprey

Another anadromous species that may have been present historically in the Malheur River is the Pacific lamprey. It is known to have existed in the Owyhee and Snake Rivers and may have been taken as a food fish by Native Americans (Hanson et al. 1990). Construction of the dams on the Malheur River and Snake River would have eliminated this species from the Subbasin.

#### Mountain whitefish

Mountain whitefish are another cold water game fish that occur in sections of the upper North Fork and upper Malheur River, Crane Creek, and Big Creek where the channel is relatively large, deep pools are common, and water quality is still good. The populations in the North Fork and Upper Malheur are considered distinct breeding populations because of the geographic isolation created by the construction of the dams.

#### Other fish species

Indigenous, non-game species include bridgelip sucker, largescale sucker, chiselmouth, redside shiner, longnose dace, specked dace, northern pikeminnow, mottled sculpin, and shorthead sculpin. Non-native, warm water species generally occur in the lower Subbasin and include largemouth and smallmouth bass, black and white crappie, bluegill, warmouth, pumpkinseed, channel catfish, brown bullhead, yellow perch, and flathead catfish (Hanson et al. 1990, MOWC 1999).

### Wildlife

Within the Malheur Subbasin, the major big game species are Rocky Mountain elk, mule deer, pronghorn antelope, and bighorn sheep. Black bear and mountain lion are also found in the Subbasin but are not as abundant as other game species (MOWC 1999). Other species discussed below include upland game birds, waterfowl, non-game wildlife, wild horses, and BLM special status species.

#### Rocky Mountain elk

Elk populations throughout much of the west were decimated during the late 1800s. In Oregon, elk hunting was prohibited from about the turn of the century to the late 1930s when herds had rebounded to high population levels. Since then, increased hunter numbers and harvest have substantially decreased hunter success and statewide bull ratios. Bull ratios improved somewhat from the mid-1970s and leveled off during the 1980s for Rocky Mountain elk. This was probably influenced by several regulation changes, including making the Malheur –Ochoco zone limited-entry in 1986 (ODFW 1992). Between 1998 and 2000 seasons, hunter success and total number of Rocky Mountain elk killed has declined slightly (ODFW 2001).

The elk population of the Malheur Subbasin is considered to be stable and increasing in distribution. Prior to the mid-1970s, elk were only found in the timbered portions of the Mainstem, North Fork, and Willow Creek Resource Units. Approximately 15 to 20 years ago, elk started to colonize some of the more open shrub/bunchgrass habitats in the Willow Creek, Bully Creek, Main Malheur, South Fork, and Lower Willow Creek watersheds. With this expansion came increasing amounts of elk damage to agricultural crops, a problem that persists today (MOWC 1999). Protection of elk winter range, and reduction of conflicts with other uses, is a high priority for managers (Wayne Bowers, ODFW, pers. comm. 2001, Figure 16)

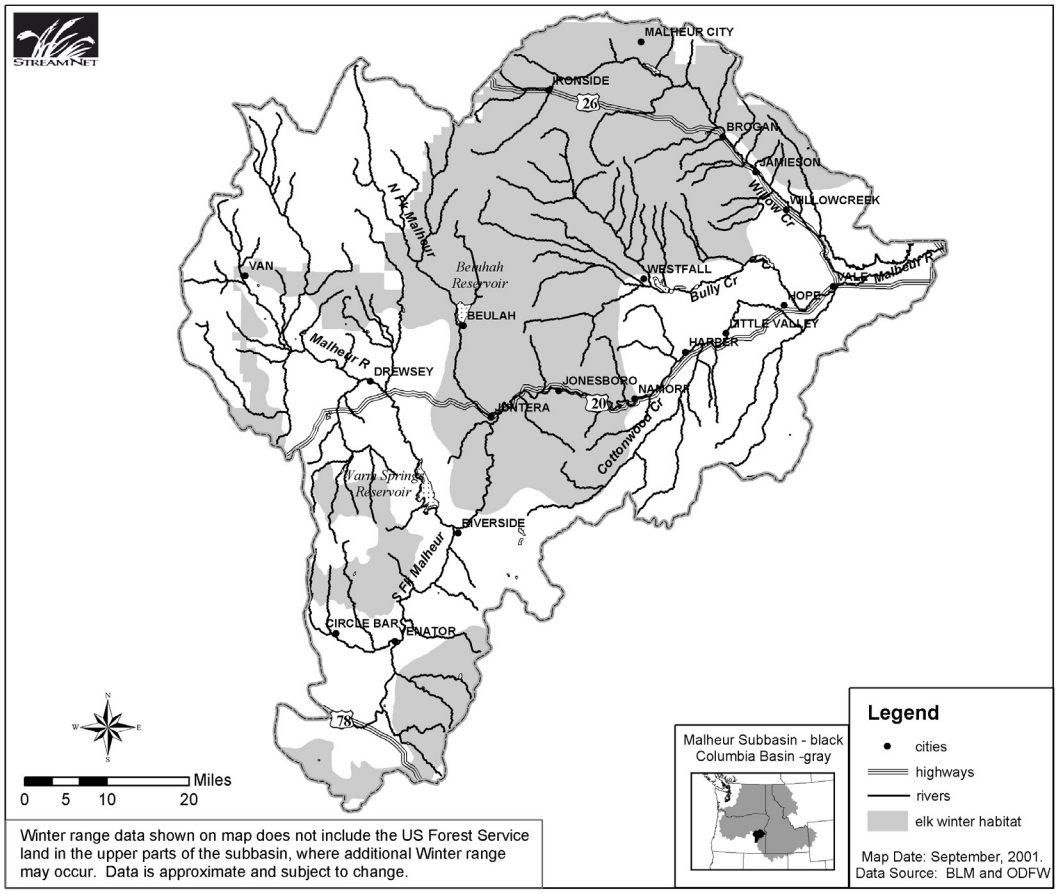


Figure 16. Elk winter range

#### Mule deer

Mule deer populations have fluctuated greatly over the years, largely due to hunting pressure and range conditions (ODFW 1991). Currently, their numbers are much lower than they were in the 1960s (MOWC 1999), but have increased in recent years (ODFW 2001). The annual ODFW survey of deer-per-mile was 7.7 in 2000, an increase over the previous year's census of 3.8, but still below the benchmark of 9.1. Spring fawn survival and the buck: doe ratio in 2001 increased from the previous three years and was above management objectives.

Several theories have been advanced to explain fluctuations in deer numbers. Extensive road building during the 1950s and 1960s is thought to have increased hunter access to remote areas and temporarily increased the harvest (Dan Gonzalez, Burns Paiute Tribe, pers. comm. 2001). However, the decline since the 1950s may be due to insufficient forage vegetation in both the high elevation summer ranges and low elevation winter ranges that is needed to ensure over-winter survival, as was found in a study conducted in Southwest Idaho (Trout and Thiesen 1968 *in* MOWC 1999). Historical vegetation changes

toward shrub dominated rangelands due to livestock grazing and fire suppression initially favored mule deer. However, the current 60 to 100 year old senescent browse plants and maturing juniper stands have reduced the amount of palatable shrubs and forbs (ODFW 1991, MOWC 1999). Also, some shrub-dominated ranges have been converted to grass for livestock and agriculture, which is generally not suitable for mule deer (ODFW 1991). Protection of summer and winter range shrublands to avoid conversion to other vegetation types is critical for the long-term health of the mule deer population in the Subbasin (Figure 17).

#### Bighorn sheep

Prior to Euro-American colonization in the region, California bighorn sheep were common throughout the Malheur Subbasin (MOWC 1999, ODFW 1997). According to archeological studies, bighorn sheep were highly important to Native Americans in much of the West as a source of food and clothing. Indiscriminate hunting, unregulated grazing by livestock, and parasites and diseases carried by livestock (primarily domestic sheep) contributed to the extinction of Oregon's native bighorns. The last California bighorn disappeared from southeastern Oregon about 1915 (ODFW 1997).

Bighorn sheep were reintroduced to the South Fork Malheur watershed, near Riverside, in 1987 and 1988. This population is estimated at 95 head as of the last census in 2000, with increasing lamb to ewe ratios since 1997 (ODFW 2001). There is still considerable suitable historic habitat found within the Subbasin that would support bighorn sheep populations, but as long there are domestic sheep operations in the vicinity, no further introductions are planned (MOWC 1999). Habitat protection and the retirement or changes in federal grazing allotment uses are necessary prerequisites to expand the range of bighorn sheep (Dan Gonzalez, Burns Paiute Tribe, pers. comm. 2001).

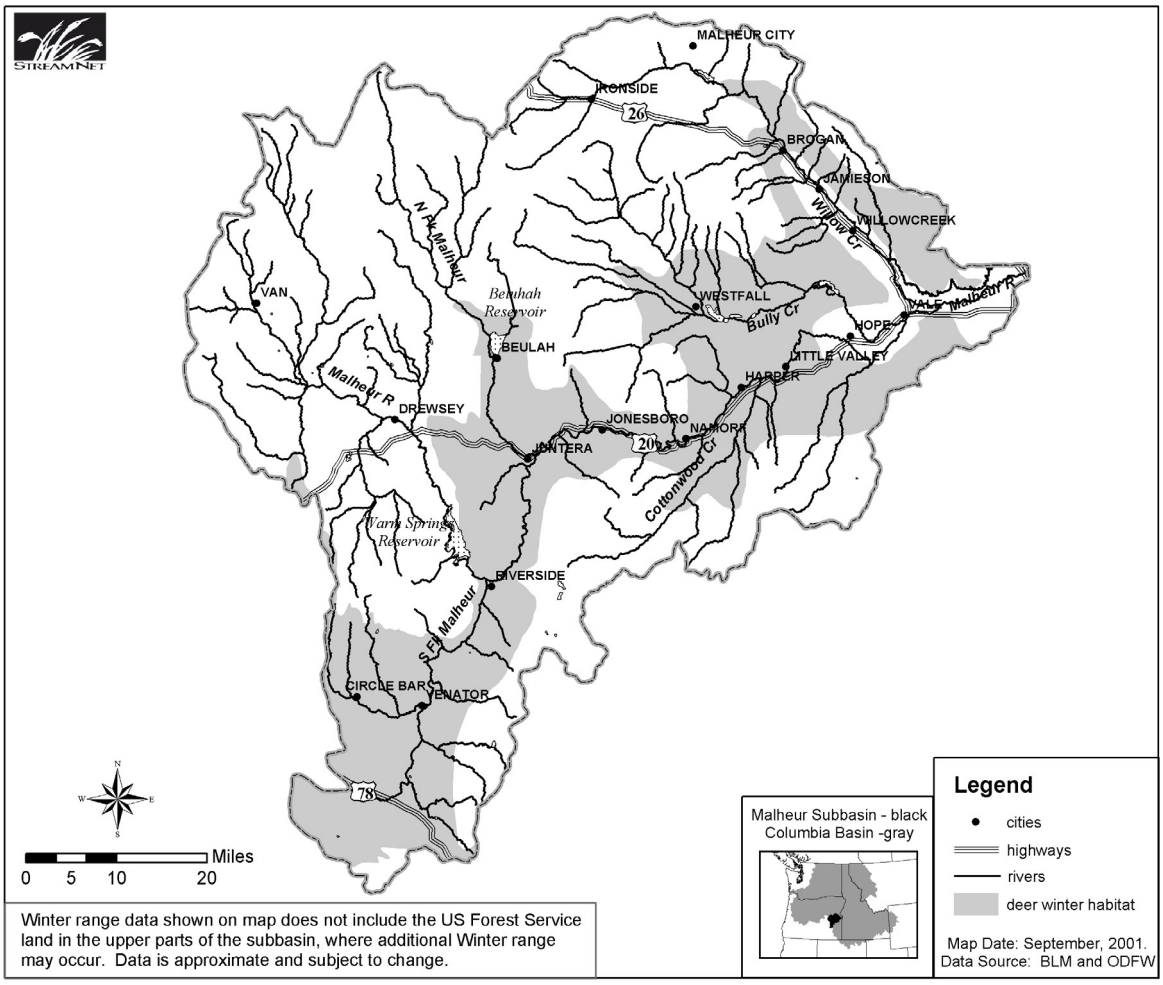


Figure 17. Deer winter range

#### Antelope

Pronghorn antelope occupy the shrub-dominated habitats on more gentle terrain, primarily in the southern and eastern areas of the Subbasin. Pronghorn numbers have varied substantially over the last 60 years in relation to winter severity and fawn survival. The February 2001 census count indicates a healthy and increasing population (ODFW 2001). Since most of their diet during winter consists of sagebrush, any sagebrush management proposals must be carefully considered if the quality of pronghorn habitat is to be protected (MOWC 1999).

#### Sage grouse

Sage grouse numbers in Oregon fluctuated during the last 100 years from periods of scarcity to abundance (Willis et al. 1993). Large populations existed during the late 1940s and the late 1950s. Since that time, populations have declined, but viable populations are still distributed throughout the sagebrush habitats of the Subbasin (MOWC 1999, Willis et

al. 1993). Throughout the range of the species, the most detrimental factor to sage grouse abundance was the complete conversion of large areas of sagebrush steppe habitat, primarily to intensive agriculture. In southeastern Oregon, this has not occurred to the extent experienced elsewhere, but an estimated 2,760 square miles of big sagebrush was converted, mostly to crested wheat grass (Willis et al. 1993). Today, the primary threat to sage grouse is loss of sagebrush habitat to wildfire (Walter VanDyke, ODFW, pers. comm. 2001). The spread of non-native cheatgrass into sagebrush habitats has increased the frequency and extent of wildfire (Walter VanDyke, ODFW, pers. comm. 2001).

#### Grizzly bear

Historically, both black and grizzly bears were native to Oregon; however, the last grizzly bear documented in Oregon was killed in Wallowa County in 1937 (ODFW 1998). Eastern Oregon was home to the Idaho grizzly and a smaller subspecies, the Small Yellowstone Park grizzly. An old Paiute Indian chief provided notes to Bailey (1936) indicating that a bear population existed on Steens Mountain that was sufficiently large enough to prevent Indians from traveling alone in the area. Grizzly bears are currently listed under the federal Endangered Species Act. There is some public sentiment favoring the reintroduction of grizzlies in Oregon. However, concerns regarding livestock and other potential property damage and public safety concerns could preclude such reintroductions (ODFW 1998).

#### Black Bear

The Idaho black bear subspecies occurs in eastern Oregon. Black bear distribution tends to be restricted to forested zones of the state. All the data indicate a stable or increasing population statewide (ODFW 2001). Only the timbered areas in the northwest portion of the Malheur Subbasin are considered to be black bear habitat.

#### Gray wolf

Gray wolf is federally listed as an endangered species. The last wolf observed in the Malheur River Subbasin was shot by a rancher near Brogan, Oregon on January 29, 1974. Wayne Bowers, ODFW, picked up the animal, took slide photographs (stored at Ontario District Office). The skull was sent to the Smithsonian Institute and verified as a wolf.

#### Beaver

Beaver were common to abundant throughout the Malheur River system, based on the 1826 to 1829 journal accounts of Peter Skene Ogden, a trapper for the Hudson's Bay Company (Ogden 1950, 1961, 1971). On a major trip through the Subbasin in October of 1828, Ogden traveled with his party of trappers from the mouth of the Malheur River up the mainstem to the headwaters of the South Fork, trapping beaver at camping sites along the way, including Cottonwood Creek (Lower Malheur River), North Fork (near Beulah), and Lower North Fork (four miles northwest of Juntura), near Juntura, at the Junction of the South Fork and mainstem, and Coleman and Indian Creek on the South Fork. Hudson's Bay Company trappers decimated beaver populations in eastern Oregon in the early 1800s as part of a deliberate Company strategy to dissuade encroachment by American trappers on favored trapping areas along the Columbia River.

Beaver probably exerted a tremendous influence on the aquatic and riparian ecosystems of the Malheur Subbasin (USFS 2000). The ponds and meadows that beaver created provided habitat for numerous fish and wildlife species (USFS 2000). Beaver dams and ponds may also have played a key role in reducing summer stream temperature,

augmenting summer low flows, and reducing the intensity of peak winter flows (USFS 2000). Beavers and their dams were probably instrumental in creating and maintaining the wet meadow habitats of Logan Valley, stringer meadows, and floodplains along most of the lower river valleys.

Currently, beaver are present in low numbers throughout much of the watershed. Fur trapping records for a five year period between 1961-62 and 1965-66 indicate that only 82 to 130 beaver per year were trapped in Malheur County (Thompson and Fortune 1967). Beaver occasionally cause problems during the irrigation season by damming canals and plugging culverts (MOWC 1999). Several beaver dam complexes are known to occur on streams in the Logan Valley area (USFS 2000).

#### Upland game birds

Important upland game bird species currently found within the Subbasin are sage grouse (discussed above), chukar partridge, ring-necked pheasant, valley quail, Hungarian partridge, ruffed grouse, blue grouse and mourning dove. In recent years, wild turkeys have been introduced with some success. In Harney County, a total of 297 birds were released in the winter of 1999-2000, and 138 birds in 2001 (ODFW 2001).

#### Waterfowl and shorebirds

Most of the waterfowl and shorebird data in the region is focused on Malheur National Wildlife Refuge and surrounding lakes. In Malheur Subbasin proper, existing information is extremely limited. Game birds include pond ducks, diving ducks, geese, mergansers, coots, and snipe (Thompson and Fortune 1967). All species in these groups are migratory and utilize the Subbasin's reservoirs and rivers most during the fall and spring migrations. The greatest concentrations of migrant ducks and geese occur on the Mainstem Malheur River, and Warm Springs, Beulah, Bully Creek, and Malheur Reservoirs (Thompson and Fortune 1967).

#### Special Status species

Federally listed and proposed endangered and threatened species, candidate species, and species of concern that may occur within the Malheur Subbasin are listed in Table 6. Federal candidate species are those that are being considered for listing but are not yet subject to a proposed rule. Federal species of concern are those whose conservation status is of concern, but for which further information is still needed.

Of the federally listed species, the bald eagle winters along the Malheur River (MOWC 1999). The Peregrine falcon can occasionally be found along the Malheur River corridor, but whether or not it will breed there is unknown (MOWC 1999). Bull trout distribution is discussed in the fish section, above.

### Habitat Areas and Quality

#### Fish

The Upper Malheur and North Fork upstream of the Reservoirs contain the best remaining coldwater fish habitat in the watershed (Hanson et al. 1990). Both tributaries are the only strongholds for bull trout in the Subbasin and contain the greatest extent of redband habitat. However, the Warm Springs and Agency Valley dams block genetic interchange between populations in the two streams. Only the North Fork remains free of introduced brook trout. The South Fork retains the most intact hydrology and remains relatively free flowing,

with only a small dam located in its headwaters. The South Fork drains the most arid part of the Subbasin and streamflows are low in the summer and high temperatures and lack of habitat area provide only marginal conditions for coldwater fish survival. Many of the smaller tributaries in the Subbasin go dry in their lower reaches, but redband trout populations persist in their headwaters (Wayne Bowers, ODFW, pers. comm. 2001). The Mainstem Malheur is largely dewatered during the winter and has elevated temperatures and turbidity that limit coldwater fishes. Within the agricultural valleys of Harper and Vale, the Lower Malheur has severe water quality and temperature problems and is used by only the hardiest of non-native warm water fish (Hanson et al. 1990).

### Wildlife

The Malheur Subbasin contains a diverse array of wildlife habitats, ranging from Subalpine meadows to Big Sage desert (USFS 2000, MOWC 1999). The Malheur headwaters portion of the Subbasin is targeted as a priority Conservation Opportunity Areas by the Oregon Biodiversity project. Within the headwaters, Logan Valley is an exceptional, large wet meadow system that historically was very important to migrating shorebirds, waterfowl, and other species and is now largely converted to irrigated pastureland.

Table 6. Special status species

| Species | State or federal status |
|---|---|
| *Birds* | |
| Bald eagle | Federal threatened |
| Peregrine falcon | Federal endangered |
| Northern goshawk | State sensitive/Federal concern |
| flammulated owl | State sensitive |
| White-headed woodpecker | State sensitive |
| Pileated woodpecker | State sensitive |
| Williamson's sapsucker | State sensitive |
| Pygmy nuthatch | State sensitive |
| Northern pygmy owl | State sensitive |
| Black rosy finch | State sensitive |
| Loggerhead shrike | State sensitive |
| Ferruginous hawk | State sensitive/Federal concern |
| Burrowing owl | State sensitive/Federal concern |
| Swainsons hawk | State sensitive |
| Bobolink | State sensitive |
| Greater sandhill crane | State sensitive |
| Bank swallow | State sensitive |
| Black-throated sparrow | State sensitive |
| Black tern | Federal concern |
| Olive sided flycatcher | Federal concern |
| Northern sage grouse | Federal concern |
| *Amphibians* | |
| Northern leopard frog | State sensitive |

| Species | State or federal status |
|---|---|
| Columbia spotted frog | Federal candidate |
| *Fish* | |
| Bull trout | Federal threatened |
| Interior redband trout | Federal concern |
| *Reptiles* | |
| Mojave black-collared lizard | State sensitive |
| Desert horned lizard | State sensitive |
| Northern sagebrush lizard | Federal concern |
| Western ground snake | State sensitive |
| *Mammals* | |
| Pale western big eared bat | Federal concern |
| Gray wolf | Federal endangered |
| Pacific western big eared bat | Federal concern |
| Canada lynx | Federal proposed threatened |
| California wolverine | Federal concern |
| Small footed myotis bat | Federal concern |
| Long-eared myotis bat | Federal concern |
| Long-legged myotis bat | Federal concern |
| Fringed myotis bat | Federal concern |
| Yuma myotis | Federal concern |
| Northern kit fox | State threatened |
| Pygmy rabbit | State sensitive/Federal concern |
| California bighorn sheep | Federal concern |
| Prebles shrew | Federal concern |

### Watershed Assessments and Landscape Planning

Three watershed assessments have been completed in the Malheur Subbasin:

The Malheur-Owyhee Watershed Council (MOWC) wrote the *Malheur Basin Action Plan* (MOWC 1999); a broad based summary of existing information on physical, biological, and land use conditions. The plan lists seven watershed goals and corresponding strategies for improving water quality in the Malheur Subbasin. The plan includes a preliminary condition assessment of watersheds within the Subbasin. A proposed monitoring strategy is considered a key part of the plan. In general, MOWC authors believe that more information is needed to describe appropriate stream functions for the Subbasin and ensure that resources go to solve ecological problems that are well defined (MOWC 1999).

David Evans and Associates, Inc. and the Prairie Ranger District of the Malheur National Forest completed the *Malheur Headwaters Watershed Analysis* (USFS 2000). This analysis covers only the headwaters of the Upper Malheur River. The Forest Service

and consulting team used the approach and methods recommended in federal guidelines for conducting watershed analysis, including developing key issues and questions, an evaluation of reference and existing conditions, synthesis, and site-specific recommendations. The report evaluates changes in plant communities, aquatic and terrestrial species and habitats, and human-uses. Site-specific and synthesized recommendations are provided for protection and restoration of ecosystems and human uses impaired by a history of intensive road building, timber harvest, livestock grazing, and fire suppression.

ODFW has synthesized most of the collective aquatic survey information and management history in the *Malheur Basin Fish Management Plan* (Hanson et al. 1990). This plan also provides the management framework for trout and warmwater fisheries in the Malheur, including goals, policies and objectives.

Three major landscape planning efforts have been conducted by the BLM:

The *Three Rivers Resource Management Plan*, completed by the Burns District of BLM in 1992, addresses management on 1,709,918 acres of public land administered by the District (BLM 1992). The Burns District includes about one-half of the total BLM ownership in the Malheur Subbasin.

The Vale District of the BLM has completed the *Draft Southeast Oregon Resource Management Plan/Environmental Impact Statement* (BLM 1998) for managing 6.3 million acres. The planning area involves the Malheur, Jordan, and Andrews Resource Areas in the Burns and Vale Districts, and is bounded on the north by the Three Rivers Resource Area. All BLM planning documents incorporate the interim management strategies of the Interior Columbia Basin Ecosystem Management Project (USFS and BLM 1996).

The Bureau of Land Management's Vale District completed the final draft of the Bulley Creek Landscape Area Management Project in 2001 (BLM 1992). This plan provides more detailed analysis and planning using the Resource Area plan as a foundation.

### Limiting Factors

No formal limiting factors analysis has been conducted for the Malheur Subbasin. However, *Malheur River Basin Fish Plan* (Hanson et al. 1990), *Malheur Headwaters Watershed Analysis* (USFS 2000), the scientific findings of the *Interior Columbia Basin Ecosystem Management Project* (USFS and BLM 1996) and other reports conducted over the years continually point to rather obvious factors limiting the populations of native fish and wildlife in the Subbasin that have been discussed in above sections of this assessment. These limiting factors are briefly summarized below.

#### Fish

1. Dams block anadromous fish and prevent genetic exchange and migration by bull trout and other native fish species.
2. Irrigation projects include unscreened diversions that trap fish in unsuitable habitat, reduce instream flows, and degrade water quality.
3. Livestock grazing and farming have impacted stream channel morphology, riparian zones and floodplains resulting in loss of shade and channel structure and function.

4. Exotic species – introduced brook trout are known to limit bull trout populations in the Upper Malheur through competition and hybridization. Warmwater non-natives displace redband trout in some cases.
5. Roads (forest and highway) have increased sediment delivery to streams and encroached on floodplains and stream channels. Forest road densities are of special concern.
6. Much of the Malheur River system, including the North Fork and Upper Malheur upstream of the reservoirs has been poisoned repeatedly since 1950s to kill undesirable fish. Cold water game fish and other aquatic life (amphibians, invertebrates were also susceptible.
7. Past liberal harvest regulations and stocking of hatchery rainbow trout may have impacted bull trout to some degree.
8. Loss of beaver and beaver dam complexes from most streams and meadows has eliminated productive riparian and floodplain habitat important to salmonids.
9. Extirpation of salmon due to dams has eliminated a critical food and nutrient source for bull trout and other native fish species in the Subbasin.

#### Wildlife

1. Livestock grazing, fire suppression, and introduction of non-native plant species has caused major changes in native vegetation communities, including riparian areas, wet meadows, and upland habitats over the past century that has directly impacted many native bird and mammal species.
2. Conversion of low elevation shrublands and valley floors to pasture or cropland has reduced overwintering habitat for ungulates.
3. Livestock grazing, primarily by sheep, has helped eliminate native bighorn sheep from much of their previous range through disease.
4. Road densities have decreased suitable habitat for deer, elk, and bighorn sheep.
5. Loss of beaver and beaver dam complexes from most streams and meadows has eliminated productive riparian and floodplain habitat important to many native wildlife species.
6. Extirpation of salmon due to dams has eliminated a critical food and nutrient source for many other wildlife species in the Subbasin.

#### Native American losses

The Burns-Paiute Tribe descended from the Wadatika band, named after the wada seeds they gathered near the shores of Malheur Lake for food. Their territory included Oregon east of the Cascades (except the Wallowas) and parts of southwestern Idaho (BPT 2001a). Many Wadatika were killed in the early and mid-1800s by small pox, cholera, and other diseases brought by Europeans. Yet, they continued their seasonal migrations into the 1870s, almost two decades after other Tribes in the region were confined to reservations. The diet of the Paiute people included fish (including a great deal of salmon), birds, deer, elk, small mammals, plants, and seeds (BPT 2001a). Logan Valley and the North Fork in the vicinity of Beulah Reservoir are widely known as rich archeological sites where the Paiute gathered to hunt, fish for salmon, and gather in seasonal settlements (BPT 2001b, 2001c, 2001d). In 1868, after a terrible winter of fighting and losing half their population to starvation, the Paiute were forced to surrender. In that year they signed a treaty with the

U.S. government guaranteeing the Wadatika a reservation of 1,778,560 acres in the southeast corner of Oregon and including much of the Malheur Subbasin within its boundaries, including the North and South Forks of the Malheur River.

The executive order designating the reservation was signed into law in 1872 by the President of the United States. The reservation included rich farmland, forests, rivers, and places sacred to the Wadatika. Euro-American encroachment of reservation lands was swift, with increasing conflicts. By January of 1876, President Grant, under pressure from settlers, ordered the north shore of Malheur Lake open to white settlement. This was an important area to the Tribe for gathering wada seeds. Conflicts worsened and the Bannock Indian wars started. In 1879, the Northern Paiute were rounded up and forced off the reservation. In 1882, the treaty was terminated because the cutoff date for signing Indian treaties was passed before the treaty went before Congress. In 1883, the reservation was transferred into public domain and opened to homesteading. The current reservation includes about 1000 acres outside of the Malheur Subbasin near Burns.

In terms of tribal losses, in 1876 Chief Egan gave an eloquent speech against a hostile Indian Agent who was intent on forcing the Tribe off the reservation:

> Did the government tell you to come here and drive us off this reservation? Did the Big Father say, go and kill us off so you can have our land? Did he tell you to pull our children's ears off, and put handcuffs on them, and carry a pistol to shoot us with? We want to know how the government came by this land. Is the government mightier than the Spirit father or is he our Spirit-father? Oh, what have we done that he is to take all from us that he gave us? His White children have come and taken all our mountains, and all our valleys and all our rivers; and now, because he has given us this little place without our asking him for it, he sends you here to tell us to go away…(BPT 2001a).

In 1969, after a 35-year lawsuit, 850 Paiute received about $741 each for the loss of their land. This was because the price of the land was set at 1890 prices, approximately .28 to .45 cents an acre. Besides the loss of their land, the Burns Paiute Tribe lost abundant salmon and steelhead runs that were eliminated by irrigation projects and dam construction. Livestock grazing, conversion of lands to agricultural production, and flooding of major valleys for reservoirs resulted in significant losses of wildlife and plant resources used by the Tribe.

#### Artificial production

No artificial production facilities for fish occur within the Malheur Subbasin. However, stocking of hatchery rainbow trout to augment native redband fisheries has occurred on an annual basis in the Subbasin since the 1950s (Hanson et al. 1990). Brook trout were stocked early in the 20$^{th}$ century, probably from a hatchery that apparently was located near Canyon Creek (Wayne Bowers, ODFW, pers. comm. 2001; Ballagh 1926). The headwaters of the Malheur drainage were stocked with hatchery trout, including sections of the Mainstem, North Fork, and Little Malheur Rivers on National Forest land near Forest Service Road 16. A total of about 6,000 yearling rainbow trout were stocked annually at 11 sites. Starting in 1994, ODFW ceased fish stocking in the North Fork and Upper Malheur Rivers upstream of Beulah and Warm Springs Reservoirs to reduce competition and

incidental hooking mortality on bull trout. Fingerling trout continue to be stocked in sections of the mainstem between Riverside and Gold Creek on an annual basis. Fingerling rainbow trout are still stocked in larger irrigation storage reservoirs and a few suitable small BLM stockwater ponds. Surveys to date indicate that most legal sized hatchery fish were removed by fishers or died off fairly rapidly.

Benke (1982 in Hanson et al. 1990) examined redband trout from small tributaries and the mainstem Malheur and Bully Creek and found very little evidence for introgression of hatchery trout characteristics. He attributed this to natural selection strongly favoring the native genotype. However, according to Hanson et al. (1990), additional genetic and life history work is needed to explain relationships between populations of redband trout in the Malheur Subbasin, their relationship with the rainbow group, and possible interactions with hatchery rainbow trout.

### Existing and Past Efforts

#### Summary of Past Efforts

Local fish and wildlife managers from various agencies are currently implementing specific actions for the Malheur Subbasin in an attempt to achieve a variety of management goals. These actions include: managing habitat and harvest, inventorying genetic diversity of current fish populations, assessing these populations and their distribution, and monitoring the responses of harvest and habitat management actions (NWPPC 1999). Managers are using hatchery supplementation to augment natural redband trout fishing opportunities in the lower Malheur River.

##### ODFW Bull trout angling closure

ODFW management actions include the closure of bull trout fishing since spring of 1991. The closure was preceded by a cooperative campaign between the Malheur National Forest and the BLM begun in 1990, to encourage angler release of bull trout using educational signs and pocket picture cards to aid in identification of bull trout. Enforcement of the angling closure on bull trout is a high priority for Oregon State Police during the fall spawning season (Mary Hanson, ODFW, pers. comm. 2001).

##### ODFW fish stocking restrictions

In addition, stocking of hatchery rainbow trout has been curtailed in all streams used by bull trout (upstream of Warm Springs and Beulah Reservoirs) to reduce competition and incidental hooking mortality on bull trout. Brook trout are no longer stocked in high lakes that overflow or have to potential to overflow into the stream system.

##### Malheur Bull Trout Recovery Unit Team

A technical working group was formed in 1997 to coordinate fieldwork and compare information concerning bull trout. This group formed the nucleus of the Malheur Bull Trout Recovery Unit Team currently working on a bull trout recovery plan for the Malheur.

##### Logan Valley Wildlife Mitigation Project (#20090)

The Burns Paiute Tribe acquired 1,760 deeded acres in Logan Valley in 1999 using BPA wildlife mitigation funds and with the assistance of The Nature Conservancy. This acquisition provides for long-term protection and restoration of critical bull trout habitat. The project also aims to protect and restore wetland prairie habitat, which is now rare in Logan Valley and is used by a number of wildlife species, including upland sandpipers.

#### Malheur Wildlife Mitigation Site (#20137)

In 2000, the Burns Paiute Tribe purchased the Jones Ranch, a total of 6,385.23 deeded acres in three parcels, with additional state and BLM grazing lease lands. The Tribe used BPA wildlife mitigation funds and had the assistance of the Trust for Public Land. This land provides habitat for a resident elk herd of about 70 animals, and includes 9 miles of mainstem Malheur River and associated riparian areas and irrigated meadows, as well as uplands important for sage grouse and other wildlife species.

## Present Subbasin Management

### Existing Agencies, Management Plans, Policies, and Guidelines

With permission from Ecovista, much of the following sections on Existing Management Plans and Goals and Objectives were originally obtained from the draft Owyhee Subbasin Summary (Ecovista 2001), and modified as necessary for the Malheur Subbasin Summary.

#### Federal Government

As a result of the federal government's significant role in the Columbia Basin, not only through the development of the federal hydropower system but as a land manager, and its responsibilities under Section 7(a) of the Endangered Species Act (ESA), several important documents have been published in the last year that will guide federal involvement in the Middle Snake Subbasin. These documents are relevant to and provide opportunities for states, tribes, local governments, and private parties to strengthen existing projects, pursue new or additional restoration actions, and develop the institutional infrastructure for comprehensive fish and wildlife protection. The key documents include the Federal Columbia River Power System (FCRPS) Biological Opinion, the federal All-H paper entitled, *Conservation of Columbia Basin Salmon: A Coordinated Federal Strategy for the Recovery of the Columbia-Snake River Basin Salmon*, and the Interior Columbia Basin Ecosystem Management Project (ICBEMP).

##### ICBEMP (http//:www.icbemp.gov)

This document is a framework for management of federal lands over the interior Columbia Basin, and was produced by the primary federal land management agencies, including the Forest Service (USFS) and the Bureau of Land Management (BLM). Significantly, this document (if approved) will affect how these federal agencies prioritize actions and undertake and fund restoration activities. The Interior Columbia Basin Ecosystem Management Project (ICBEMP) is a regional-scale land-use plan that covers 63 million acres of federal lands in Oregon, Washington, Idaho, and Montana (USFS and BLM 1996, www.icbemp.gov). The BLM and USFS released a Supplemental Draft Environmental Impact Statement for the ICBEMP Project in March 2000. The EIS focuses on the critical broad scale issues related to landscape health, aquatic and terrestrial habitats, human needs, and products and services. If approved, ICBEMP will replace the interim management strategies, providing for longer-term management of lands east of the Cascades. As ICBEMP is implemented, Subbasin and watershed assessments and plans will target further habitat work (NMFS 2000).

#### Bonneville Power Administration

The BPA is a federal agency established to market power produced by the federal dams in the Columbia River Basin. As a result of the Northwest Power Act of 1980, BPA is required to spend power revenues to mitigate the damage caused to fish and wildlife populations and habitat from federal hydropower development. The BPA provides funding for fisheries and wildlife enhancement projects to mitigate for the damage caused to the Snake River's fisheries from the completion of the four lower Snake River Dams. These funds are provided and administered through the Lower Snake River Compensation Plan (LSRCP).

#### Columbia Basin Fish and Wildlife Authority

The CBFWA is made up of Columbia Basin fish and wildlife agencies (state and federal) and the Columbia Basin tribes. CBFWA's intent is to coordinate management among the various agencies and agree on goals, objectives and strategies for restoring fish and wildlife in the Columbia Basin.

#### Farm Services Agency (FSA)

FSA is a department within the U.S. Department of Agriculture that ensures the well-being of American agriculture, the environment, and the American public through efficient and equitable administration of farm commodity programs, farm ownership, operating and emergency loans, conservation and environmental programs, emergency and disaster assistance, domestic and international food assistance and international export credit programs. Conservation program payments that FSA administers include Conservation Reserve Program (CRP) and the Environmental Quality Incentives Program. Technical assistance for these programs is provided by NRCS. Delivery of programs is completed through county offices usually located at the county seat.

#### Natural Resource Conservation Service - Oregon

NRCS is an agency of the U.S. Department of Agriculture with professionally staffed field. The agency's major purpose is to provide consistent technical assistance to private land users, tribes, communities, government agencies, and conservation districts. NRCS assists in developing conservation plans, provides technical field-based assistance including project designs, and encourages the implementation of conservation practices to improve water quality and fisheries habitat. Programs include Conservation Reserve Program, Public Law 566 (Small watershed program), River Basin Studies, Forestry Incentive Program, Wildlife Habitat Improvement Program, Environmental Quality Incentives Program, and Wetlands Reserve Program.

#### National Marine Fisheries Service

The NMFS is part of the National Oceanic and Atmospheric Administration (NOAA) which is under the U.S. Department of Commerce. NMFS has ESA administration and enforcement authority for anadromous fish. NMFS reviews ESA petitions, provides regulations and guidelines for activities that affect listed species, and develops and implements recovery plans for listed species in the Subbasin. NMFS is also involved in primary research on anadromous and marine species to provide knowledge required for fisheries management.

NMFS developed the recent FCRPS Biological Opinion and the Basinwide Salmon Recovery Strategy that contain actions and strategies for habitat restoration and protection

throughout the Columbia River Basin. Agencies are identified to lead fast-start efforts in specific aspects of restoration on non-federal lands. Federal land management will be implemented by current programs that protect aquatic habitats (PACFISH, ICBEMP). Actions within the FCRPS Biological Opinion are intended to be consistent with or compliment the Northwest Power Planning Council's amended Fish and Wildlife Program and state and local watershed planning efforts.

#### Northwest Power Planning Council

The Northwest Power Planning Council was created by Congress under the Northwest Power Act of 1980. The intent was to give citizens a stronger voice in determining issues related to hydropower and fish and wildlife in the Columbia River Basin. The Northwest Power Planning Council is made up of eight members, with the governors of Idaho, Oregon, Washington, and Montana each appointing two members. The Northwest Power Planning Council has three principal mandates:

1. 20 year electric power plan to use all available resources to ensure adequate and reliable energy and lowest possible economic and environmental costs,
2. Development of a program to protect and rebuild fish and wildlife populations affected by the hydropower system,
3. Educate and involve the public in the Council's decision-making process.

#### U.S. Army Corps of Engineers

The USACE has major responsibility for river and harbor development. The Federal Water Pollution Control Act of 1972 gave the USACE authority to enforce section 404 of the Act dealing with discharge of dredged or fill material into waters of the US, including wetlands. Amendments to the Act in 1977 exempted most farming, ranching, and forestry activities from 404 permit requirements. The Act was amended again in 1987 to modify criminal and civil penalties and add administrative penalties. The USACE is also responsible for flood protection by such means as building and maintaining levies, channelization of streams and rivers (also for navigation), and regulating flows and reservoir levels. The USACE is also responsible for the operation of some federal dams, including fish passage on dams in the Columbia and Snake Rivers.

#### U.S. Bureau of Land Management

The BLM administers federal lands in the West not claimed by the end of the homesteading era of the 19$^{th}$ century, and not set aside as National Forests, National Parks, or other special federal land use designations. The BLM took over the functions of the Grazing Service (established in 1934 by the Taylor Grazing Act) and the General Land Office in 1946 when these agencies were merged to form the BLM. Lands administered by the BLM consist primarily of dry grass lands and desert within the intermountain West. These lands are currently managed for multiple use under authority of the Federal Land Policy and Management Act (FLPMA) of 1976. Primary commodity uses of these lands are grazing and mining. Wildlife, wilderness, archaeological and historic sites, and recreation are also managed on BLM lands. The BLM is also responsible for mineral leasing on all public lands including the outer continental shelf. The Malheur Subbasin includes portions of the Vale District and Burns District of the BLM.

#### U.S. Bureau of Reclamation (USBR)

The primary activity of the USBR is providing irrigation water for the arid West. This was accomplished through an aggressive dam building and reservoir creation program. Although no longer building dams, the USBR continues to run many large dams and irrigation projects in the western United States. The BOR is also involved in multiple use resource management on its lands and facilities, including recreation and wildlife conservation. Most the dams and large irrigation project in the Malheur Subbasin are BOR projects, including Warm Springs and Beulah Reservoirs, Harper Dam, and the Vale-Oregon irrigation network.

#### U.S. Environmental Protection Agency

Formed in 1970, the USEPA administers the Federal Air, Water, and Pesticide Acts. EPA sets national air quality standards, which require states to prevent deterioration of air quality in rural areas below the national standards for that particular area (depending on its EPA classification). The EPA also sets national water quality standards (Total Maximum Daily Load or TMDL) for water bodies that the states must enforce. These standards are segregated into "point" and "nonpoint" source water pollution, with point sources requiring permitting. Although controversial, most farming, ranching, and forestry practices are considered nonpoint sources and thus do not require permitting by the EPA. The EPA provides funding through Section 319 of the CWA for TMDL implementation projects. Section 319 funds are administered by the ODEQ and IDEQ in each state respectively.

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

The USFWS administers the ESA for resident fish and wildlife species. The USFWS also enforces the Lacey Act (1900) to prevent interstate commerce in wildlife taken illegally, and enforcement of the North American Migratory Bird Treaty Act. The USFWS distributes monies to state fish and wildlife departments raised through the federal tax on the sale of hunting and fishing equipment under the authority of the Pitman-Robertson Federal Aid in the Fish and Wildlife Restoration Act (1937) and the Dingle-Johnson Act. The USFWS also manages a national system of wildlife refuges and provides funding that emphasizes restoration of riparian areas, wetlands, and native plant communities through the Partners for Fish and Wildlife Program.

Under Section 6 of the ESA the USFWS has entered into a cooperative agreement with ODFW to assist with implementing the State's conservation programs for threatened and endangered species. Funding through the cooperative agreement has provided assistance with bull trout spawning surveys.

##### *Bull trout recovery plan*

A bull trout recovery plan is being drafted by the USFWS with assistance from bull trout recovery unit teams in each of 27 recovery units. The Malheur Subbasin has been designated a bull trout recovery unit. The Malheur Recovery Unit encompasses the Malheur River mainstem and tributaries from headwaters to its confluence with the Snake River. A single core area[1] consists of the North Fork Malheur and mainstem Malheur and

[1] As defined in Chapter One of the Draft Bull Trout Recovery Plan (In Press) a core areas is the combination of core habitat (*i.e.*, habitat that could supply all elements for the long-term security of bull trout) and a core population (a group of one or more local bull trout populations that exist within core habitat) constitutes the basic unit on which to gauge recovery within a recovery unit. Core areas

tributaries from their confluence upstream. Two local bull trout populations inhabit the core area, the North Fork Malheur complex and the Upper Malheur complex.

The Malheur Recovery Unit Chapter of the USFWS draft Bull Trout Recovery Plan is being prepared with input from the Malheur Recovery Unit Team and with guidance from the USFWS. The Team consists of state, federal, and tribal technical experts from the Subbasin as well as other affected interests. When completed the plan will address current population status, factors limiting production, and identify goals, objectives, and recovery actions to restore bull trout populations in the Malheur Recovery Unit. Publication of the draft recovery plan is expected in 2001.

#### U. S. Forest Service

The USFS was established under the Organic Act of 1897 and is responsible for the management of all National Forests and National Grasslands in the United States. The multiple use mandate of the USFS was emphasized in the Multiple Use Sustained Yield Act of 1960, and the forest planning process used for over the last 20 years was established under the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, and the National Forest Management Act (NFMA) of 1976. The National Forests of the Columbia Basin are currently preparing to update their forest plans based on the preferred alternative of the ICBEMP. The Malheur National Forest is the only Forest within the Malheur Subbasin.

#### U. S. Geological Survey

The USGS monitors hydrology, and maps soil, geological and geomorphological features. The USGS also carries on the fish and wildlife research for the country formerly done by the USFWS.

#### United States v. Oregon

The November 9, 1987 Columbia River Fish Management Plan was an agreement resulting from the September 1, 1983 Order of the United States District Court for the District of Oregon (Court) in the case of United States et al. v, Oregon, Washington et al., (Case No. 68-513). The purpose of the management plan was to provide a framework within which the parties could exercise their sovereign powers in a coordinated and systematic manner in order to protect, rebuild, and enhance upper Columbia River fish runs while providing harvests for both treaty Indian and non-Indian fisheries. US v Oregon does not cover the Malheur River Subbasin, although the Subbasin once produced large salmon runs that were destroyed by dams and irrigation projects. The agreement established goals (rebuild weak runs and fairly share harvest), means (habitat protection, enhancement, artificial production and harvest management), and procedures (facilitate communication and resolve disputes) to implement the plan. Many production activities are guided by the U.S. vs Oregon, agreements, which create a framework within which fish and wildlife restoration proceeds. The legal obligation to provide treaty harvest must be followed as well as Endangered Species Act requirements.

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require both habitat and bull trout to function, and the number (replication) and characteristics of local populations inhabiting a core area provide a relative indication of the core area's likelihood to persist. A core area represents the closest approximation of a biologically functioning unit for bull trout.

## Tribal Government

### Burns Paiute Tribe Department of Fish and Wildlife

In 1995, the Burns Paiute Tribe was granted funding by Bonneville Power Administration to initiate the Tribe's active participation in the Columbia River Basin's Fish and Wildlife Program. For the next two years, Tribal leaders and staff developed partnerships with local land management agencies to identify how their participation could help with research, restoration and enhancement activities in the Malheur River Subbasin. In 1997, the Tribe secured a fish research project through the resident fish program and was able to hire their first biologist (BPT 2001d).

Since then, the Tribal Fish and Wildlife Department has developed and continues to grow. Fish and Wildlife staff have aggressively pursued the interests of the Tribe in the Malheur River Subbasin and have expanded tribal relationships throughout the local community and surrounding counties. Currently, the Tribe is considered to be a key player in the management of the Malheur River and its tributaries. In 1998, the Tribe was awarded funding to conduct two major land acquisitions through BPA's Wildlife Mitigation Program – Logan Valley Ranch and Malheur River Wildlife Mitigation Projects. The Department is now implementing management plans for these areas.

## State Government

### Oregon Department of Environmental Quality

The ODEQ is responsible for implementing the Clean Water Act and enforcing state water quality standards for protection of aquatic life and other beneficial uses. The mission of the ODEQ is to lead in the restoration and maintenance of Oregon's quality of air, water and other environmental media. With regard to watershed restoration, the Department is guided by Section 303(d) of the Federal Clean Water Act and Oregon statute to establish total maximum daily loads (TMDLs) of pollutants and implement water quality standards as outlined in Oregon Administrative Rules 340-041. The ODEQ focuses on stream conditions and inputs and advocates for other measures in support of fish populations (Don Butcher, ODEQ, personal communication February 2, 2001).

### Oregon Department of Fish and Wildlife

Oregon Department of Fish and Wildlife is responsible for protecting and enhancing Oregon's fish and wildlife and their habitats for present and future generations. ODFW co-manages fishery resources in the Subbasin with the Burns Paiute Tribe. Management of fish and wildlife and their habitats is guided by ODFW policies, collaborative efforts with affected tribes, and federal and state legislation. Direction for ODFW fish and wildlife management and habitat protection is based on the amendments and statutes passed by the Oregon Legislature through the 2001 session. For example, Oregon Administrative Rule (OAR) 635 Division 07 – *Fish Management and Hatchery Operation* sets forth policies on general fish management goals, the Natural Production Policy, the Wild Fish Management Policy, and other fish management policies. OAR 635 Division 008 – *Department of Wildlife Lands* sets forth management goals for each State Wildlife Area, OAR Divisions 068-071 set deer and elk seasons, and OAR Division 100 – *Wildlife Diversity Plan* sets outlines wildlife diversity program goals and objectives, identifies species listings, establishes survival guidelines, and creates other wildlife diversity policy. OAR Division 400 – *Instream Water Rights Rules* provides guidelines for inflow measurement

methodologies, establishes processes for applying for instream water rights, and sets forth other instream water rights policies. OAR Division 415 - *Fish and Wildlife Habitat Mitigation Policy* establishes mitigation requirements and recommendations, outlines mitigation goals and standards, and provides other mitigation guidelines. Another pertinent ODFW policy is the Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources (ODFW 1997b). *Vision 2006* is a six-year strategic operational plan providing guidance for the Department in the next six years. In addition to these OARs, ODFW has a variety of species-specific plans (discussed below).

*Malheur Basin Fish Management Plan*

The Malheur Basin Fish Management Plan was adopted by the Fish and Wildlife Commission in 1990, to incorporate direction given in the species plans (e.g., Trout and Warm Water plans), and to identify management strategies specific to the Malheur River Subbasin. The plan provides ODFW fish management objectives in the Malheur Subbasin and an operational strategy for achieving those objectives.

*Mule Deer Management Plan*

The goal of ODFW's Mule Deer Management Plan (ODFW 1990) is to manage mule deer populations to provide optimum recreational benefits to the public, and to be compatible with habitat capability and primary land uses. The plan summarizes the life history of mule deer and their management in Oregon, lists concerns and the strategies to be used in addressing identified problems, and provides management direction to inform the interested public of how mule deer will be managed.

*Elk Management Plan*

The goal of ODFW's Elk Management Plan (ODFW 1992) is to protect and enhance elk populations in Oregon to provide optimum recreational benefits to the public and to be compatible with habitat capability and primary land uses. The plan summarizes the life history of elk and their management in Oregon. The plan also lists concerns and the strategies to be used in addressing identified problems and provides management direction to inform the interested public of how elk will be managed.

*Bighorn Sheep Management Plan*

ODFW's Bighorn Sheep Management Plan (ODFW 1992) summarizes the history and status of Oregon's bighorn sheep and presents a means by which they will be restored to remaining suitable habitat. The plan serves as a guide for transplanting efforts, assists concerned resource management agencies with wildlife planning efforts, and provides management direction for Oregon's bighorn sheep program. The plan describes 16 bighorn sheep management concerns and recommends strategies to address these concerns.

*Cougar Management Plan*

The three goals of ODFW's Cougar Management Plan (ODFW 1993) are 1) recognize the cougar as an important part of Oregon's wildlife fauna, valued by many Oregonians, 2) maintain healthy cougar populations within the state and into the future, and 3) conduct a management program that maintains healthy populations of cougar and recognizes the

desires of the public and the statutory obligations of the Department. The plan summarizes the life history of cougar and their management in Oregon. The plan also lists concerns and the strategies to be used in addressing identified problems. Management direction is provided to inform the interested public of how cougar will be managed.

*Black Bear Management Plan*

The three goals of ODFW's Black Bear Management Plan (ODFW 1987) are 1) recognize the black bear as an important part of Oregon's wildlife fauna, valued by many Oregonians, 2) maintain healthy black bear populations within the state and into the future, and 3) conduct a management program that maintains healthy populations of black bear and recognizes the desires of the public and the statutory obligations of ODFW. The plan summarizes the life history of black bear and their management in Oregon. The plan lists concerns and the strategies to be used in addressing identified problems and provides management direction to inform the interested public of how black bear will be managed.

*Migratory Game Bird Program Strategic Management Plan*

The mission of ODFW's Migratory Game Bird Program Strategic Management Plan (ODFW 1993) is to protect and enhance populations and habitats of native migratory game birds and associated species at prescribed levels as determined by national, state, and flyway plans) throughout natural geographic ranges in Oregon and the Pacific Flyway to contribute to Oregon's wildlife diversity and the uses of those resources. Strategies are described that assist in the development of specific operational plans to achieve the program mission and integrate with other state and federal agencies and private organizations. The plan mandates the formation and implementation of more specific operational plans, especially in regard to habitat programs and biological surveys.

*Oregon Wildlife Diversity Plan*

ODFW's Oregon Wildlife Diversity Plan (ODFW 1993) provides policy direction for the maintenance and enhancement of the vertebrate wildlife resources in Oregon. The plan identifies goals and objectives for maintaining a diversity of non-game wildlife species in Oregon, and provides for coordination of game and non-game activities for the benefit of all species.

**Oregon Department of Forestry**

The ODF enforces the Oregon Forest Practices Act (OFPA) regulating commercial timber production and harvest on state and private lands. The OFPA contains guidelines to protect fish bearing streams during logging and other forest management activities. These guidelines address stream buffers, riparian management, road maintenance, and construction standards.

**Oregon Department of Transportation**

The Oregon Department of Transportation (ODT) maintains highways that cross streams in the subbasin. Under the initiative of the Oregon Plan for Salmon and Watersheds, efforts to improve protection and remediation of fish habitat impacted by state highways are ongoing.

#### Oregon Division of State Lands

Oregon Division of State Lands regulates the removal and filling of material in waterways. Permits are required for projects involving 50 cubic yards or more of material. Permit applications are reviewed by the ODFW and may be modified or denied based on project impacts on fish populations. The Oregon Division of State Lands also owns and manages State School Lands in the southern portion of the watershed. These lands are primarily leased for grazing.

#### Oregon House Bill 3609

This legislation directs the development of plans for fully seeded, sustainable production of natural anadromous fish runs in Oregon river Subbasins above Bonneville Dam through consultation among state and tribal entities. Adopted plans will be based on sound science and adaptive management, incorporate M&E and objectives and outcomes benefiting fish and wildlife, and be consistent with State of Oregon efforts to recover salmonid populations under the ESA.

#### Oregon Plan for Salmon and Watersheds (http//:www.oregon-plan.org)

Passed into law in 1997 by Executive Order, the *Oregon Plan for Salmon and Watersheds* and the *Steelhead Supplement to the Oregon Plan* outlines a statewide approach to ESA concerns based on watershed restoration and ecosystem management to protect and improve salmon and steelhead habitat in Oregon. On January 14, 1999, Governor Kitzhaber expanded the Oregon Plan for Salmon and Watersheds (Oregon 1997) to include all at-risk wild salmonids throughout the State through Executive Order 99-01, expanding the scope to include bull trout. The Oregon Plan Monitoring Program, successfully implemented in coastal watersheds, provides an approach for rigorous sampling design to answer key monitoring questions. The Oregon Watershed Enhancement Board (OWEB) facilitates and promotes coordination among state agencies, administers a grant program, and provides technical assistance to local Watershed Councils and others to implement the Oregon Plan through watershed assessments and restoration action plans.

#### Oregon Land Conservation and Development Department

The Land Conservation and Development Department in Oregon regulates land use on a statewide level. County land use plans must comply with statewide land use goals, but enforcement against negligent counties appears minimal. Effective land use plans and policies are essential tools to protect against permanent fish and wildlife habitat losses and degradation, particularly excessive development along streams, wetlands, floodplains, and sensitive wildlife areas.

#### Oregon Senate Bill 1010

Under this plan, which was developed by the Oregon Department of Agriculture, county-specific agricultural water quality issues are identified and addressed through a committee process. Landowners are encouraged to develop a farm plan to meet the intent of the strategy. Efforts will reduce water pollution from agricultural sources and protect beneficial uses of watersheds. These plans are then incorporated in the Total Maximum Daily Load (TMDL) as a section of the Water Quality Management Plan (WQMP).

#### Oregon State Police

The Fish and Wildlife Division of the Oregon State Police (OSP) is responsible for enforcement of fish and wildlife regulations in the State of Oregon. The Coordinated

Enforcement Program (CEP) ensures effective enforcement by coordinating enforcement priorities and plans by and between OSP officers and ODFW biologists. OSP develops yearly Actions Plans to guide protection efforts for critical species and their habitats. Action Plans are implemented through enforcement patrols, public education, and agency coordination. Voluntary and informed compliance is the cornerstone of the Oregon Plan concept. The need for continued fish protection is a priority in accordance with Governors Executive Order 99-01.

#### Oregon Water Resource Department

The Oregon Water Resources Department (OWRD) regulates water use in the Subbasin in accordance with Oregon Water Law. Guidelines for water appropriation determine the maximum rate and volume of water than can legally be diverted. Statutes for water appropriation (ORS 537) govern the use of public waters; Water Right Certificates pertinent to the different lands within the Subbasin specify the maximum rate and/or volume of water that can be legally diverted. Oregon water law is based on the prior appropriation doctrine, which results in water being distributed to senior water right holders over junior water right holders during times of deficiency. The law also requires diverted water be put to beneficial use without waste. WRD acts as trustee for in-stream water rights issued by the state of Oregon and held in trust for the people of the state. The Water Allocation Policy (1992) tailors future appropriations to the capacity of the resource, and considers water to be "over-appropriated" if there is not enough water to meet all demands at least 80% of the time (80% accidence). The OWRD is a partner in the Oregon Plan and has developed stream flow restoration priorities for fish.

### Local Government

#### Oregon Soil and Water Conservation Districts

The locally based soil and water conservation districts are responsible for protecting and promoting the natural resources within their boundaries. Soil and Water Conservation Districts within the Malheur Subbasin generally run along county boundaries and include the Malheur, Grant, Harney, and Baker Valley Soil and Water Conservation Districts.

### Other Entities and Organizations

#### The Nature Conservancy

The Nature Conservancy protects the lands and waters that plant and animal species need to survive. The conservancy is instrumental in purchasing lands for habitat protection and has recently worked successfully with the Burns Paiute Tribe to acquire properties in the Subbasin.

#### Columbia River Basin Forum

Formerly called The Three Sovereigns, the Columbia River Basin Forum is designed to improve management of fish and wildlife resources in the Columbia River Basin. The process is an effort to create a new forum where the federal government, Northwest states and tribes could better discuss, coordinate, and resolve basinwide fish and wildlife issues under the authority of existing laws. The Forum is included as a vehicle for implementation of the Basinwide Salmon Recovery Strategy.

### Existing Goals, Objectives, and Strategies

Federal

#### USFS and BLM (PACFISH)

*Fish and Fish Habitat Goals*

1. Restore water quality that provides for stable and productive riparian and aquatic ecosystems.
2. Restore stream channel integrity, channel processes, and sediment regimes under which riparian and aquatic ecosystems developed.
3. Restore instream flows supporting healthy riparian and aquatic habitats, stable and effectively functioning stream channels, and rerouted flood discharges.
4. Restore natural timing and variability of the water table elevation in meadows and wetlands.
5. Restore diversity and productivity of native and desired non-native plant communities in riparian zones.
6. Restore riparian vegetation through a) providing large woody debris characteristic of natural aquatic and riparian ecosystems, b) providing adequate summer and winter thermal regulation within the riparian and aquatic zones, c) achieving rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
7. Restore riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region.
8. Restore habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

*Fish and Fish Habitat Objectives (Riparian Management Objectives - RMO)*

**Objective 1. Establish Pool Frequencies based on width of wetted stream** (Table 7)

Table 7. Pool Frequency goals for various stream widths (number of pools per mile)

| **Width** | 10 | 20 | 25 | 50 | 75 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|
| **# Pools** | 96 | 56 | 47 | 26 | 23 | 18 | 14 | 12 | 9 |

**Objective 2. Comply with state water quality standards in all systems (max < 68°F)**

**Objective 3. Establish large woody debris in all forested systems (> 20 pieces/mi, > 12 in diameter, > 35 ft length).**

**Objective 4 Ensure > 80% bank stability in non-forested systems**

**Objective 5. Reduce bank angles (undercuts) in non-forested systems (> 75% of banks with < 90% angle).**

**Objective 6. Establish appropriate width/depth ratios in all systems (< 10, mean wetted width divided by mean depth).**

*General Riparian Area Management*

**Objective 1.** **Identify and cooperate with federal, tribal, and state and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat**

**Objective 2.** **Fell trees in Riparian Habitat Conservation Areas when they pose a safety risk. Keep felled trees on site when needed to meet woody debris objectives.**

**Objective 3.** **Apply herbicides, pesticides, and other toxicants/chemicals in a manner to avoid impacts that are inconsistent with attainment of Riparian Management Objectives (RMOs).**

**Objective 4.** **Locate water drafting sites to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows.**

*Watershed and Habitat Restoration*

**Objective 1.** **Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of RMOs.**

**Objective 2.** **Cooperate with federal, state, and tribal agencies, and private landowners to develop watershed-based CRMPs or other cooperative agreements to meet RMOs.**

*Fisheries and Wildlife Restoration*

**Objective 1.** **Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of the RMOs.**

**Objective 2.** **Design, construct, and operate fish and wildlife interpretive and other use-enhancement facilities in a manner consistent with attainment of RMOs.**

**Objective 3.** **Cooperate with federal, state, and tribal wildlife management agencies to identify and eliminate wild ungulate impacts inconsistent with attainment of RMOs.**

**Objective 4.** **Cooperate with federal, state, and tribal fish management agencies to identify and eliminate impacts associated with habitat manipulation, fish stocking, fish harvest, and poaching that threaten the continued existence and distribution of native fish stocks inhabiting federal lands.**

**USFWS Bull trout management**

The following draft language has been developed by the Malheur Recovery Unit Team for inclusion in Malheur Recovery Unit chapter of the USFWS bull trout recovery plan. The goal for recovery of bull trout in the Malheur Recovery Unit is to increase their stability and long-term persistence to the point where they are no longer threatened by extinction. This goal assumes a healthy stream ecosystem where stable bull trout populations are a

functional component. In order to achieve this goal, the following objectives have been identified for the recovery unit:

**Objective 1. Current distribution of bull trout within the core area is maintained and bull trout are re-established in previously occupied habitats in the upper mainstem Malheur River and tributaries, the Upper Malheur River and tributaries, and the North Fork Malheur River and tributaries.**

**Objective 2. Stable or increasing trends in abundance of bull trout in the Malheur Recovery Unit are maintained. This will require increasing abundance within the two local populations (Upper Malheur complex and North Fork Malheur complex).**

**Objective 3. Suitable habitat conditions for all bull trout life history stages and strategies are restored and maintained.**

**Objective 4. Genetically diverse populations of bull trout populations within the Malheur Recovery Unit are conserved by providing opportunities for genetic exchange between the local populations. This can best be achieved by ensuring at least seasonal connectivity between the North Fork Malheur River and the Upper Malheur River.**

Specific actions to recover bull trout in the Malheur Recovery Unit fall under seven broad strategies common to all recovery units:

Strategy 1. Protect, restore, and maintain suitable habitat conditions for bull trout.

Strategy 2. Prevent and reduce negative effects of nonnative fishes and other nonnative taxa on bull trout.

Strategy 3. Establish fisheries management goals and objectives compatible with bull trout recovery, and implement practices to achieve goals.

Strategy 4. Characterize, conserve, and monitor genetic diversity and gene flow among local populations of bull trout.

Strategy 5. Conduct research and monitoring to implement and evaluate bull trout recovery activities, consistent with an adaptive management approach using feedback from implemented, site-specific recovery tasks.

Strategy 6. Use all available conservation programs and regulations to protect and conserve bull trout and bull trout habitats.

Strategy 7. Assess the implementation of bull trout recovery by recovery units, and revise recovery unit plans based on evaluations.

#### USDA Natural Resources Conservation Service

The following is from the Natural Resources Conservation Service Strategic Plan 2000 – 2005 (USDA Natural Resources Conservation Service 2000)

*Goals and Objectives*

Goal 1. Enhance natural resource productivity to enable a strong agricultural and natural resource sector.
- Objective 1.1. Maintain, restore, and enhance cropland productivity.
- Objective 1.2. Maintain, restore, and enhance irrigated land.
- Objective 1.3. Maintain, restore, and enhance grazing land productivity.
- Objective 1.4. Maintain, restore, and enhance forestland productivity.

Goal 2. Reduce unintended adverse effects of natural resource development and use to ensure a high quality environment.
- Objective 2.1. Protect farmland from conversion to non-agricultural uses.
- Objective 2.2. Promote sound urban and rural community development.
- Objective 2.3. Protect water and air resources from agricultural non-point sources of impairment.
- Objective 2.4. Enhance animal feeding operations to protect the environment.
- Objective 2.5. Maintain, restore, or enhance wetland ecosystems and fish and wildlife habitat.

Goal 3. Reduce risks from drought and flooding to protect individual and community health and safety.
- Objective 3.1. Protect upstream watersheds from flood risks.
- Objective 3.2. Protect watersheds from the effects of chronic water shortages and risks from drought.

Goal 4. Deliver high quality services to the public to enable natural resource stewardship.
- Objective 4.1. Deliver services fairly and equitably.
- Objective 4.2. Strengthen the conservation delivery system.
- Objective 4.3. Ensure timely, science-based information and technologies.

Strategy - NRCS will work with the conservation partnership to achieve stated goals and objectives. Detailed lists of strategies pertaining to individual goals and objectives are presented in the Natural Resources Conservation Service Strategic Plan, 2000 – 2005 (USDA Natural Resources Conservation Service 2000).

Tribal Government

**Burns Paiute Tribe**

*Fish and aquatic species*

Construction of federally regulated and federally operated hydropower projects has resulted in the total loss of anadromous fish in this Subbasin and has greatly reduced native resident fish habitat. Bull trout and redband trout are the only remaining native game fish that are available to the Paiute Tribe. The goal for this Subbasin is to protect, enhance and restore fish populations to near historic conditions and provide fisheries and harvest opportunities on native fish and on introduced game fish where native fish have been extirpated due to habitat alteration.

**Resident Fish Policies for the Malheur Subbasin**

Policy 1. Conduct assessments of losses of resident fish due to the construction and inundation of federal hydropower system reservoirs.

Policy 2. Mitigate and compensate for resident and anadromous fish losses caused by the construction and operation of federally operated and federally regulated hydropower projects.

Policy 3. Substitute lost anadromous populations with resident populations to address the loss of salmon and steelhead in those areas currently blocked to anadromous fish as a result of the construction and operation of hydroelectric dams.

Policy 4. Ensure the continued persistence, health, and diversity of existing resident fish species by reducing or removing impacts caused by habitat degradation (including water quality, water quantity, and hydropower development), competition and/or hybridization with non-native species, and over-harvest (direct and incidental).

Policy 5. Restore native resident fish species (subspecies, stocks and populations) to near historic abundance throughout their historic ranges where habitats exist and where habitats can be feasibly restored.

Policy 6. Administer and increase opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (includes intensive fisheries within closed or isolated systems).

Policy 7. Protecting, enhancing and restoring critical habitats (spawning, rearing and migratory corridors) by acquiring lands that are focused on production.

**Objective 1. To restore native resident fish species (subspecies, stocks and populations) to near historic abundance throughout their historic**

**ranges where habitats exist and where habitats can be feasibly restored.**

Strategy 1.1. Protect critical watershed areas (riparian corridors, sensitive wetlands, and associated uplands) for bull and redband trout habitat in the Malheur River system through fee title or conservation easement acquisition of private lands.

Strategy 1.2. Restore shade and canopy, riparian cover, and native vegetation and reduce grazing impacts with current, proven technology, e.g. fencing, changes in timing and use of riparian pastures, off site watering and salting, etc.

Strategy 1.3. Restore large wood densities into riparian and stream channels to enhance and diversify habitats to a more historical condition.

Strategy 1.4. Restore instream habitats to a more historical condition.

Strategy 1.5. Stabilize roads, crossings, and other sources of sediment delivery.

Strategy 1.6. Coordinate with the US Fish and Wildlife Service and Oregon Department of Fish and Wildlife to design and implement a plan to remove exotic brook trout from the Upper Malheur River drainage.

Strategy 1.7. In association with the Bureau of Reclamation (BOR), identify and study the feasibility of alternatives for preventing entrainment of resident fish from Beulah and Warm Springs Reservoir. This investigation will determine the number of individuals entrained, by species and life stage under different operating conditions. The Tribe and BOR will also consult, design and construct upstream fish passage at Beulah Reservoir, Warm springs, and Owyhee Reservoirs.

Strategy 1.8. Collaborate with state and federal agencies to genetically integrate bull trout meta-populations in the Upper and North Fork Malheur River.

Strategy 1.9. Provide support to the Burns Paiute Tribe to participate in restoration activities in the Malheur Subbasin to benefit fish and wildlife habitat and watershed health.

Strategy 1.10. Establish minimum instream flows below Warm Springs and Beulah Reservoirs and other parts of the Subbasin for the benefit of native aquatic species.

**Objective 2. Meet federal, state, and tribal water quality standards, guidelines, and targets.**

Strategy 2.1. Incorporate the State of Oregon's DEQ standards and TMDL's (currently being developed) into the Tribe's management plan for the Malheur Subbasin.

**Objective 3. Substitute lost anadromous populations with resident populations to mitigate the loss of salmon and steelhead in those areas currently blocked to anadromous fish as a result of the construction and operation of hydroelectric dams.**

Strategy 3.1. Develop an interim fishery for the Burns Paiute Reservation through construction, operation and maintenance of put and take trout ponds.

Strategy 3.2. Design, construct, operate, and maintain a resident trout hatchery for the Burns Paiute Tribe.

Strategy 3.3. In collaboration with the Bureau of Reclamation, determine minimum instream winter flows for aquatic species in the Malheur River below Beulah and Warm Springs Reservoirs.

Strategy 3.4. Substitute the loss of anadromous fish by acquiring culturally significant land that provides many of the natural resources historic to the culture.

**Objective 4. Return of salmon and steelhead to the Malheur River.**

Strategy 4.1. Provide passage at all Bureau of Reclamation water storage reservoirs. This goal could only be accomplished by also providing passage at the Idaho Power, Hells Canyon Complex.

Strategy 4.2. Restore opportunities for migration by securing instream flows and/or water rights.

Strategy 4.3. Reintroduce Chinook salmon and steelhead to the Malheur Subbasin.

**Objective 5. Develop and implement Federal, State and Tribal native fish management plans integrated with adaptive research.**

Strategy 5.1. Incorporate bull trout recover actions into The Oregon Plan for Salmon and Watershed and the Pacific Northwest Power Planning Council Subbasin Plans. Request assistance with implementation of recovery strategies for bull trout through both planning processes.

**Bull trout inter-agency research project**

**Objective 1. Document the complete migratory patterns of adult/subadult bull trout in the Upper Malheur drainage.**

**Objective 2. Determine population trends and age class structures in bull trout and redband trout in the Malheur Subbasin.**

**Objective 3. Determine water quality parameters in the Upper Malheur and North Fork Malheur s.**

**Objective 4. Determine the timing of spawning and preferred spawning sites.**

**Objective 5. Determine bull trout use and entrainment at Beulah and Warm Springs Reservoirs.**

**Objective 6. Evaluate the habitat profile of rearing tributaries of the Upper and North Fork Malheur River.**

**Objective 7. Determine the genetic variability of redband trout within the Upper Malheur River and Warm Springs Reservoir.**

**Objective 8. Determine cold-water micro-refugia within the Upper and North Fork River drainages.**

**Objective 9. Determine adult brook trout migration patterns in the Upper Malheur drainage.**

*Wildlife*

Policy 1. Achieve and sustain levels of habitat and species to mitigate for the fish and wildlife losses that have resulted from the construction and operation of the

federal and nonfederal hydroelectric system in the Columbia and Snake River Basin.

Policy 2. Mitigate and compensate for anadromous and resident fish extirpation caused by the construction and operation of federally operated and federally regulated hydropower projects.

Policy 3. Implement wildlife mitigation projects to protect critical fish and wildlife habitat.

Policy 4. Address habitat degradation in the Subbasin that adversely affects migratory and resident forms of target wildlife species.

Goal 1. Maintain native plant communities and habitat diversity.

**Objective 1.1. Restore and maintain vegetative communities.**
**Objective 1.2. Enhance plant structural diversity.**
**Objective 1.3. Increase forage quality for wildlife.**
**Objective 1.4. Contain and eradicate weed infestations.**

Goal 2. Enhance and maintain culturally important plants.

**Objective 2.1. Locate and protect culturally significant plant populations.**
**Objective 2.2. Design management prescriptions that will promote plant vigor and propagation of these species.**

Goal 3. Maintain the historical distribution of dry and wet meadow types.

**Objective 3.1. Establish methods of irrigation that mimic natural flooding regimes and water table levels.**

Goal 4. Enhance and restore upland communities for wildlife winter range

### State Government

#### Oregon Department of Fish and Wildlife

ODFW's vision is that "Oregon's fish and wildlife are thriving in healthy habitats due to cooperative efforts and support by all Oregonians" (ODFW 2000).

##### *Oregon's Malheur River Basin Fish Management Plan*

The Malheur River Basin Fish Management Plan (Hanson et al. 1990) contains basin-wide policies, objectives, assumptions and rationale, and problems and recommended actions (strategies). The plan also contains objectives and actions for subregions of the watershed, including Malheur River headwaters and tributaries, Upper Malheur (Mainstem) Malheur River above Warm Springs Reservoir and Mainstem South Fork Malheur River, Malheur River and North Fork Mainstems – Reservoirs downstream to Namorf Dam, Lower Malheur River, Reservoirs. These planning objectives are too lengthy to cite in full in this summary assessment. Only the basinwide policies, objectives, and actions (strategies) are

listed below:

Policy 1. Potential losses of fish production from habitat degradation shall be prevented or reduced to the extent possible.

Policy 2. ODFW shall coordinate with appropriate land and water management agencies on habitat protection and rehabilitation activities and shall continue to act in an advisory role to such agencies to promote habitat protection.

**Objective 1. Develop better communication and coordination with land managers regarding land management activities affecting fish habitat.**

Problem 1. Decisions affecting land management activities do not always reflect a concern for fish habitat and the fish resource.

Strategy 1.1. Provide new fisheries information to land managers as it becomes available.
Strategy 1.2. Encourage land managers to take fish into consideration in land management decisions.
Strategy 1.3. Coordinate with land managers to help identify sensitive habitat areas and help develop management plans for those areas, e.g. bull trout and redband trout habitat.
Strategy 1.4. Review U.S. Forest Service and BLM management plans and make recommendations related to fish habitat.
Strategy 1.5. Encourage coordination of land-use activities and restoration projects on a watershed basis.
Strategy 1.6. Provide a list of high priority streams to land managers, and coordinate with them to update complete physical and biological surveys of stream habitat.
Strategy 1.7. Request land management agencies coordinate more closely with ODFW fish biologists on proposed activities affecting fish habitat, such as timber harvest, grazing, road and trail construction, and mining activity.
Strategy 1.8. Coordinate with land managers to summarize historic information on land-use activities such as livestock grazing, timber harvest, mining, and road building, for each watershed in order to identify potential areas of habitat concern.

**Objective 2. Reduce nonpoint source pollution in the Malheur River system.**

Problem 1. Nonpoint source pollution degrades water quality.

Strategy 1.1. Support activities that will reduce nonpoint pollution from agricultural activities.
Strategy 1.2. Encourage the re-establishment of the vegetative cover and better watershed management throughout the Subbasin.

Strategy 1.3. Encourage land managers to address fish habitat needs in land management activities in the Subbasin.

Problem 2. Riparian areas in poor condition contribute to water quality problems that affect fish life in the Malheur Subbasin.

Strategy 2.1. Encourage land managers to institute grazing regimes that benefit the riparian habitat and restrictions on timber harvest and mining activities in the riparian zone to protect fish habitat.
Strategy 2.2. Coordinate with land management entities to identify specific areas of concern and develop cooperative projects to improve riparian habitats.
Strategy 2.3. Provide information to the landowner on the benefits of healthy riparian conditions and methods to achieve them.
Strategy 2.4. Aggressively pursue riparian habitat improvement opportunities.

Problem 3. Reduced stream flow because of out-of-stream diversion aggravates poor water quality conditions and dewaters sections of the river.

Strategy 3.1. Identify stream reaches that would benefit from instream water rights and apply to Water Resources Department for designations.
Strategy 3.2. Negotiate with irrigators and investigate the feasibility of assisting them in obtaining funding for repair of leaky distribution networks in exchange for minimum flow.
Strategy 3.3. Encourage the Water Resources Commission to require legal flow measuring devices on diversions and improved supervision and enforcement.

Problem 4. Increased mining activity could affect aquatic life.

Strategy 4.1. Coordinate with Department of Environmental Quality and Water Resources Department regarding water quality and water quantity issues when reviewing permit applications.
Strategy 4.2. Support strengthening of laws and rules governing mining activities to reduce impacts to fish habitat.

**Objective 3. Prevent fish losses at unscreened diversions**.

Problem 1. Unscreened diversions isolate fish in unsuitable habitat.

Strategy 1.1. Assess fishery costs from unscreened diversion in the Malheur Subbasin and develop priorities for action.
Strategy 1.2. Assist developers in implementing of ODFW rules and standards to comply with ORS 509.615.

**Objective 4. Improve reservoir habitat for game fish in the Malheur Subbasin.**

Problem 1. Reservoir draw down and lack of sufficient minimum pool limits fish production in reservoirs.

Strategy 1.1. Explore options with irrigation districts to provide increased reservoir areas for fish life, i.e. less reservoir draw down or greater minimum pool.

Strategy 1.2. Assist land management agencies in identification of cost-sharing projects to improve reservoir capacities on public lands.

Problem 2. Turbidity caused by runoff from the surrounding watershed and wave action on the barren shoreline inhibits fish production in reservoirs.

Strategy 2.1. Encourage habitat projects to improve the watershed and reduce sediment loading in the reservoirs.

Strategy 2.2. Investigate establishment of plant species in the draw down zone of reservoirs.

Problem 3. Lack of adequate structure to provide escape cover for young fish inhibits fish production in reservoirs.

Strategy 3.1. Identify and implement rearing habitat improvements for game fish.

Problem 4. Many small and medium size reservoirs on public land that could support fish lack adequate riparian vegetation.

Strategy 4.1. Encourage land management agencies to improve vegetation at reservoirs by fencing, seeding, etc.

*Oregon Wildlife Diversity Plan (1993)*

The goal of the Oregon Wildlife Diversity Plan is to maintain Oregon's wildlife diversity by protecting and enhancing populations and habitats of native non-game wildlife at self-sustaining levels throughout natural geographic ranges. To accomplish this goal, the Plan relies upon the following objectives and strategies:

**Objective 1. Protect and enhance populations of all existing native non-game species at self-sustaining levels throughout their natural geographic ranges by supporting the maintenance, improvement or expansion of habitats and by conducting other conservation actions.**

Strategy 1.1. Maintain existing funding sources and develop new sources of public, long-term funding required to conserve the wildlife diversity of Oregon.

Strategy 1.2. Identify and assist in the preservation, restoration and enhancement of habitats needed to maintain Oregon's wildlife diversity and non-consumptive recreational opportunities.

Strategy 1.3. Monitor the status of non-game populations on a continuous basis as needed for appraising the need for management actions, the results of actions, and for evaluating habitat and other environmental changes.

**Objective 2. Restore and maintain self-sustaining populations of non-game species extirpated from the state or regions within the state, consistent with habitat availability, public acceptance, and other uses of the lands and waters of the state.**

Strategy 2.1. Identify, establish standards and implement management measures required for restoring threatened and endangered species, preventing sensitive species from having to be listed as threatened or endangered, and maintaining or enhancing other species requiring special attention.

Strategy 2.2. Reintroduce species or populations where they have been extirpated as may be feasible.

**Objective 3. Provide recreational, educational, aesthetic, scientific, economic and cultural benefits derived from Oregon's diversity of wildlife.**

Strategy 3.1. Develop broad public awareness and understanding of the wildlife benefits and conservation needs in Oregon.

Strategy 3.2. Increase or enhance opportunities for the public to enjoy and learn about wildlife in their natural habitats.

Strategy 3.3. Seek outside opportunities, resources and authorities and cooperate with other agencies, private conservation organizations, scientific and educational institutions, industry and the general public in meeting Program Objectives.

Strategy 3.4. Maintain and enhance intra-agency coordination through dissemination of Program information, development of shared databases and coordination of activities that affect other Department divisions and programs; identify activities within other programs that affect the Wildlife Diversity program, and develop mutual goals.

**Objective 4. Address conflicts between non-game wildlife and people to minimize adverse economic, social, and biological impacts.**

Strategy 4.1. Assist with non-game property damage and nuisance problems without compromising wildlife objectives, using education and self-help in place of landowner assistance wherever possible.

Strategy 4.2. Administer the Wildlife Rehabilitation Program.

Strategy 4.3. Administer the Scientific Taking Permits Program.

Strategy 4.4. Administer Wildlife Holding and other miscellaneous permits.

Strategy 4.5. Provide biological input to the Falconry Program for the establishment of raptor-capture regulations.

Strategy 4.6. Update the Wildlife Diversity Plan every five years.

*Oregon Black Bear Management Plan (ODFW 1987)*

The overriding goal of the Oregon Black Bear Management Plan is to protect and enhance black bear populations in Oregon to provide optimum recreational benefits to the public and to be compatible with habitat capability and primary land uses. To accomplish this goal, the plan relies upon the following objectives and strategies:

**Objective 1. Determine black bear population characteristics.**

Strategy 1.1 Implement or cooperate in research to learn more about black bear ecology in Oregon, develop accurate populations estimates and provide a measurement of population trend.

Objective 2. Determine black bear harvest levels.

Strategy 2.1 Obtain improved harvest information through use of combination report card/tooth envelope.

Strategy 2.2 Monitor black bear harvest and implement harvest restrictions if necessary.

Strategy 2.3 Develop an educational program to alert black bear hunters of the need for improved black bear population information.

Strategy 2.4 If necessary, initiate mandatory check of harvested black bear.

**Objective 3. Continue current practice of allowing private and public landowners to take damage causing black bear without a permit.**

Strategy 3.1 The Department will not seek any changes in current statutes.

Strategy 3.2 Continue to work with other agencies and private landowners in solving black bear depredation problems.

Strategy 3.3 Explore the possibility of using sport hunters for damage control.

*Oregon's Cougar Management Plan (ODFW 1993a)*

1. Recognize the cougar as an important part of Oregon's wildlife fauna, valued by many Oregonians.
2. Maintain healthy cougar populations within the state into the future.
3. Conduct a management program that maintains healthy populations of cougar and recognize the desires of the public and the statutory obligations of the Department.

The preceding goals will be accomplished through the following objectives and strategies:

**Objective 1. Continue to gather information on which to base cougar management.**

Strategy 1.1 Continue to authorize controlled cougar hunting seasons conducted in a manner that meets the statutory mandates to maintain the species and provide consumptive and non-consumptive recreational opportunities.

Strategy 1.2 Continue to study cougar population characteristics as well as the impact of hunting on cougar populations.

Strategy 1.3 Continue to update and apply population modeling to track the overall cougar population status.

Strategy 1.4 Continue mandatory check of all hunter-harvested cougar and evaluate the information collected on population characteristics for use in setting harvest seasons.

Strategy 1.5 Continue development of a tooth aging (cementum annuli) technique.

**Objective 2. Continue to enforce cougar harvest regulations.**

Strategy 2.1 Continue to work with OSP to monitor the level of illegal cougar hunting activity.

Strategy 2.2 Implement appropriate enforcement actions and make the necessary changes in regulations to reduce illegal cougar hunting.

Strategy 2.3 Continue to inspect taxidermist facilities and records to discourage and document the processing of cougar hides lacking Department seals.

**Objective 3. Document and attempt to eliminate potential future human-cougar conflicts.**

Strategy 3.1 Provide information to the public about cougar distribution, management needs, behavior, etc.

Strategy 3.2 Attempt to solve human-cougar conflicts by non-lethal methods.

Strategy 3.3 Consider additional hunting seasons or increased hunter numbers in areas where human-cougar conflicts develop.

Strategy 3.4 Manage for lower cougar population densities in areas of high human occupancy.

**Objective 4. Manage cougar populations through controlled hunting seasons.**

Strategy 4.1 Base regulation modifications on population trends, as annual fluctuations in the weather can greatly influence recreational cougar harvest.

Strategy 4.2 Continue to regulate cougar hunting through controlled permit seasons.

**Objective 5. Continue to allow private and public landowners to take damage-causing cougar without a permit.**

Strategy 5.1 No changes will be sought to existing damage control statutes.

Strategy 5.2 Continue to work with landowners to encourage reporting of potential damage before it occurs, with the goal of solving complaints by other than lethal means.

Strategy 5.3 Continue to emphasize that damage must occur before landowners or agents of the Department may remove an offending animal.

Strategy 5.4 Encourage improved livestock husbandry practices as a means of reducing cougar damage on domestic livestock.

Strategy 5.5 Continue to work with other agencies to solve cougar depredation problems.

**Objective 6. Manage deer and elk populations to maintain the primary prey source for cougar.**

Strategy 6.1 Work with landowners and public land managers to maintain satisfactory deer, elk and cougar habitat.

Strategy 6.2 Evaluate the effects of human activities and human disturbance on cougar.

Strategy 6.3 Take action to correct problems in areas where human access is detrimental to the welfare of cougar or their prey base.

*Mule Deer Management Plan (ODFW 1990)*

**Objective 1. Increase deer numbers in units that are below management objectives and attempt to determine what factors are contributing to long term depressed mule deer populations.**

**Objective 2. Maintain population levels where herds are at management objectives.**

**Objective 3. Reduce populations in the areas where deer numbers exceed population management objectives.**

Population objectives were set by Oregon Department of Fish and Wildlife Commission action in 1982 and are to be considered maximums.

**Objective 1. Set management objectives for buck ratio, population level/density and fawn:doe ratio benchmark for each hunt unit and adjust as necessary.**

Strategy 1.1 Antlerless harvest will be used to reduce populations which exceed management objectives over a two or three year period or to address damage situations.

Strategy 1.2 Harvest tag numbers are adjusted to meet or exceed objectives within 2-3 bucks/100 does.

Strategy 1.3 Population trends will be measured with trend counts and harvest data and may include population modeling.

Strategy 1.4 Update Mule Deer Plan every five years.

**Objective 2. Hunter opportunity will not be maintained at the expense of meeting population and buck ratio management objectives.**

*Oregon's Elk Management Plan (ODFW 1992)*

The primary goal of Oregon's Elk Management Plan is to protect and enhance elk populations in Oregon to provide optimum recreational benefits to the public and to be compatible with habitat capability and primary land uses. This goal will be accomplished through the following objectives and strategies:

**Objective 1. Maximize recruitment into elk populations and maintain bull ratios at Management Objective levels. Establish Management Objectives for population size in all herds, and maintain populations at or near those objectives.**

Strategy 1.1 Maintain bull ratios at management objectives.

Strategy 1.2 Protect Oregon's wild elk from diseases, genetic degradation, and increased poaching which could result from transport and uncontrolled introduction of cervid species.
Strategy 1.3 Determine causes of calf elk mortality.
Strategy 1.4 Monitor elk populations for significant disease outbreaks, and take action when and were possible to alleviate the problem.
Strategy 1.5 Establish population models for aiding in herd or unit management decisions.
Strategy 1.6 Adequately inventory elk populations in all units with significant number of elk.

**Objective 2. Coordinate with landowners to maintain, enhance and restore elk habitat.**

Strategy 2.1 Ensure both adequate quantity and quality of forage to achieve elk population management objectives in each management unit.
Strategy 2.2 Ensure habitat conditions necessary to meet population management objectives are met on critical elk ranges.
Strategy 2.3 Minimize elk damage to private land where little or no natural winter range remains.
Strategy 2.4 Maintain public rangeland in a condition that will allow elk populations to meet and sustain management objectives in each unit.
Strategy 2.5 Reduce wildlife damage to private land.

**Objective 3. Enhance consumptive and non-consumptive recreational uses of Oregon's elk resource.**

Strategy 3.1 Develop a policy that outlines direction for addressing the issues of tag allocation to private landowners and public access to private lands in exchange for compensation to private landowners.
Strategy 3.2 Increase bull age structure and reduce illegal kill of bulls while maintaining recreational opportunities.
Strategy 3.3 Adjust levels of hunter recreation in all units commensurate with management objectives.
Strategy 3.4 Identify, better publicize, and increase the number of elk viewing opportunities in Oregon.

*Oregon's Bighorn Sheep Management Plan (ODFW 1992)*

The primary goal of Oregon's Bighorn Sheep Management Plan is to restore bighorn sheep into as much suitable unoccupied habitat as possible. The following objectives and strategies have been developed to accomplish this goal:

**Objective 1. Maintain geographical separation of California and Rocky Mountain subspecies.**

Strategy 1.1 California bighorn will be used in all sites in central and southeast Oregon
Strategy 1.2 Coordinate transplant activities with adjacent states.

Strategy 1.3 Continue to use in-state sources of transplant stock while seeking transplant stock from out of state.

Strategy 1.4 Historic areas of bighorn sheep range containing suitable habitat will be identified and factors restricting reintroduction will be clearly explained for public review.

**Objective 2. Maintain healthy bighorn sheep populations.**

Strategy 2.1 Bighorn sheep will not be introduced into locations where they may be reasonably expected to come into contact with domestic or exotic sheep.

Strategy 2.2 Work with land management agencies and private individuals to minimize contact between established bighorn sheep herds and domestic or exotic sheep.

Strategy 2.3 Work with land management agencies to locate domestic sheep grazing allotments away from identified present and proposed bighorn sheep ranges.

Strategy 2.4 Maintain sufficient herd observations to ensure timely detection of disease and parasite problems.

Strategy 2.5 Promote and support aggressive research aimed at reducing bighorn vulnerability to diseases and parasites.

Strategy 2.6 Bighorn individuals that have known contact with domestic or exotic sheep will be captured, quarantined, and tested for disease. If capture is impossible, the bighorn will be destroyed before it has a chance to return to a herd and possibly transmit disease organisms to others in the herd.

Strategy 2.7: Bighorns of questionable health status will not be released in Oregon.

**Objective 3. Improve bighorn sheep habitat as needed and as funding becomes available.**

Strategy 3.1 Monitor range condition and use along with population characteristics.

**Objective 4. Provide recreational ram harvest opportunities when bighorn sheep population levels reach 60 to 90 animals.**

Strategy 4.1 To reduce possibility of black-market activity, all hunter-harvested horns will be permanently marked by the Department.

Strategy 4.2 Do not transplant bighorns on those areas where some reasonable amount of public access is not possible.

Strategy 4.3 Consider land purchase in order to put such land into public ownership.

**Objective 5. Conduct annual herd composition, lamb production, summer lamb survival, habitat use and condition, and general herd health surveys.**

Strategy 5.1 Maintain sufficient herd observations so as to ensure timely detection of disease and parasite problems. This will include mid- to late-summer, early winter, and later winter herd surveys.

Strategy 5.2 Initiate needed sampling and collections when problems are reported to verify the extent of the problem. Utilize the best veterinary assistance.
Strategy 5.3 Promote and support an aggressive research program aimed at reducing bighorn vulnerability to disease and parasites.
Strategy 5.4 Continue to test bighorns for presence of diseases of importance to both bighorn sheep and livestock.
Strategy 5.5 Monitor range condition and use along with population characteristics.
Strategy 5.6 Conduct population modeling of all herds.
Strategy 5.7 Determine herd carrying capacity after consultation with the land manager.
Strategy 5.8 Investigate lamb production and survival as an indication of a population at carrying capacity.

*Oregon Migratory Game Bird Program Strategic Management Plan (ODFW 1993)*

The primary goal of the Oregon Migratory Game Bird Program Strategic Management Plan is to protect and enhance populations and habitats of native migratory game birds and associated species at prescribed levels throughout natural geographic ranges in Oregon and the Pacific flyway to contribute to Oregon's wildlife diversity and the uses of those resources. The following objectives and strategies are designed to accomplish this goal:

**Objective 1. Integrate state, federal, and local programs to coordinate biological surveys, research, and habitat development to obtain improved population information and secure habitats for the benefit of migratory game birds and other associated species.**

Strategy 1.1 Establish an Oregon Migratory Game Bird Committee to provide management recommendations on all facets of the migratory game bird program.
Strategy 1.2 Use population and management objectives identified in Pacific Flyway Management Plans and Programs.
Strategy 1.3 Develop a statewide migratory game bird habitat acquisition, development, and enhancement plan based on flyway management plans, ODFW Regional recommendations, and other state, federal, and local agency programs.
Strategy 1.4 Implement a statewide migratory game bird biological monitoring program, including banding, breeding, production, migration, and wintering area surveys based on population information needs of the flyway and state.
Strategy 1.5 Develop a statewide program for the collection of harvest statistics.
Strategy 1.6 Prepare a priority plan for research needs based on flyway management programs.
Strategy 1.7 Annually prepare and review work plans for wildlife areas that are consistent with policies and strategies of this plan.
Strategy 1.8 Develop a migratory game bird disease contingency plan to address responsibilities and procedure to be taken in the case of disease

outbreaks in the state. It will also address policies concerning "park ducks", captive-reared, and exotic game bird releases in Oregon.

**Objective 2. Assist in the development and implementation of the migratory game bird management program through information exchange and training.**

Strategy 2.1 Provide training for appropriate personnel on biological survey methodology, banding techniques, waterfowl identification, habitat development, disease problems, etc.

**Objective 3. Provide recreational, aesthetic, educational, and cultural benefits from migratory game birds, other associated wildlife species, and their habitats.**

Strategy 3.1 Provide migratory game bird harvest opportunity.

Strategy 3.2 Regulate harvest and other uses of migratory game birds at levels compatible with maintaining prescribed population levels.

Strategy 3.3 Eliminate impacts to endangered or threatened species.

Strategy 3.4 Reduce impacts to protected or sensitive species.

Strategy 3.5 Provide a variety of recreational opportunities and access, including viewing opportunities, throughout the state.

Strategy 3.6 Provide assistance in resolving migratory game bird damage complaints.

Strategy 3.7 Develop opportunities for private, public, tribal, and industry participation in migratory game bird programs including, but not limited to, conservation, educational, and scientific activities.

Strategy 3.8 Disseminate information to interested parties through periodic program activity reports, media releases, hunter education training, and other appropriate means.

**Objective 4. Seek sufficient funds to accomplish programs consistent with the objectives outlined in the plan and allocate funds to programs based on management priorities.**

Strategy 4.1 Use funds obtained through the sale of waterfowl stamps and art to fund all aspects of the waterfowl management program as allowable under ORS 497.151.

Strategy 4.2 Develop annual priorities and seek funding through the Federal Aid in Wildlife Restoration Act.

Strategy 4.3 Solicit funds from "Partners in Wildlife" as appropriate.

Strategy 4.4 Seek funds from a variety of conservation groups such as Ducks Unlimited and the Oregon Duck Hunter's Association.

Strategy 4.5 Solicit funds form the Access and Habitat Board as appropriate and based on criteria developed by the Board and the Fish and Wildlife Commission.

Strategy 4.6 Pursue funds from other new and traditional sources, such as corporate sponsors and private grants.

*Oregon's Trout Plan*

The primary goal identified in Oregon's Trout Plan is to achieve and maintain optimum populations and production of trout to maximize benefits and to insure a wide diversity of opportunity for present and future citizens. To achieve this goal, the following objectives and strategies have been developed:

**Objective 1. Maintain the genetic diversity and integrity of wild trout stocks throughout Oregon.**

- Strategy 1.1 Identify wild trout stocks in the state.
- Strategy 1.2 Minimize the adverse effects of hatchery trout on biological characteristics, genetic fitness, and production of wild stocks .
- Strategy 1.3 Establish priorities for the protection of stocks of wild trout in the state.
- Strategy 1.4 Evaluate the effectiveness of trout management programs in providing the populations of wild trout necessary to meet the desires of the public.

**Objective 2. Protect, restore and enhance trout habitat.**

- Strategy 2.1 Continue to strongly advocate habitat protection with land and water management agencies and private landowners.

**Objective 3. Provide a diversity of trout angling opportunities.**

- Strategy 3.1 Determine the desires and needs of anglers.
- Strategy 3.2 Use management alternatives for classifying wild trout waters to provide diverse fisheries.
- Strategy 3.3 Conduct an inventory of public access presently available to trout waters in the state.

**Objective 4. Determine the statewide management needs for hatchery trout.**

- Strategy 4.1 Summarize information on the current hatchery program and determine necessary changes.
- Strategy 4.2 Increase the involvement of the STEP program in the enhancement of trout.
- Strategy 4.3 Publicize Oregon's trout management program through the ODFW office of Information and Education.

*Oregon's Warmwater Game Fish Plan*

The primary goal of Oregon's Warmwater Game Fish Plan is to provide optimum recreational benefits to the people of Oregon by managing warmwater game fishes and their habitats. The following objective and strategies were developed by ODFW to achieve this goal:

**Objective 1. Provide diversity of angling opportunity**

- Strategy 1.1: Identify the public's needs and expectation for angling opportunity.

Strategy 1.2: Choose management alternatives for individual waters of groups of waters, and incorporate the alternatives in management plans subject to periodic public review.
Strategy 1.3: Design management approaches to attain the chosen alternative.
Strategy 1.4: Constantly remind the public of the consequences of unlawful transfers of fishes in order to reduce the incidence of the introductions.
Strategy 1.5: Inform the public as to why ODFW chooses particular management strategies, in order to establish a positive perception of warmwater game fish.
Strategy 1.6: Use existing state and federal laws and regulations to deal with illegal introductions.

### Research, Monitoring, and Evaluation Activities

#### Aquatic species and habitat

##### Fish and habitat surveys

Extensive fish and aquatic habitat surveys have been conducted in the Subbasin. Pribyl and Hosford (1985) conducted a comprehensive electro-fishing survey that included most of the North Fork and Upper Malheur River upstream of the reservoirs. Buckman et al. (1992) and Bowers et al. (1993) summarized population and habitat information on bull trout in the Subbasin. ODFW has conducted aquatic habitat inventories for most of the Mainstem and North Fork of the Malheur River, and the Little Malheur River and tributaries (NWPPC 2000, USFS 2000).

##### Bull trout life history study

The Burns Paiute Tribe, ODFW, and other state and federal agency partners have completed two years of intensive life history studies for bull trout and redband trout (Gonzalez et al. 1998, Schwabe et al. 2000). These studies have employed radio-telemetry, trapping, spawning surveys, electrofishing methods, and temperature monitoring to document the distribution, abundance, and seasonal migration of bull trout and redband trout in the North and upper Mainstem Malheur River. Fieldwork for these studies was started in 1998 and is scheduled to continue through FY 2002.

ODFW provided a seasonal position to assist with the bull trout study and has coordinated annual bull trout spawning ground surveys and written the annual spawning ground survey reports. They have provided additional staff time and equipment (boats, nets, telemetry equipment, vehicles, radio transmitters). ODFW has also monitored stream temperature and flow in the upper NF and upper Malheur River and tributaries annually since 1992.

##### ODFW culvert fish passage survey

ODFW also completed an *Assessment of Road Culverts for Fish Passage Problems on State- and County-owned Roads, Oregon's Southeast and South Central River Basins*, including the entire Malheur Subbasin (Mirati et al. 1999).

##### ODFW minimum flow assessment

*Basin Investigations, Malheur River Basin* by ODFW (1967) provides a brief overview of fish and wildlife resources and water quality of the Subbasin. However, the main purpose

of the report is to provide minimum flow recommendations for consideration by the State Water Resources Board that provide for "minimum flows necessary for spawning and rearing of trout" for the North Fork and Mainstem upstream of the reservoirs. The report also provides "more conservative" recommendations "to provide only for transportation and holding of stocked hatchery trout" in other areas of the Subbasin.

#### Bull trout genetic studies

The Malheur River was included in two DNA analysis of genetic population structure of Oregon bull trout (Spruell and Allendorf 1997, Leary and Allendorf 1991). Both studies found substantial genetic variation among populations and concluded that preserving the genetic diversity of bull trout will require the continued existence of many populations in the region (Leary and Allendorf 1991).

#### Brook trout and bull trout interactions research project

A recent research project conducted by Stephanie Gunckel as part of a Master's Thesis, investigated the effect of brook trout on the feeding behavior and diet of bull trout (Gunckel 2000). Feeding behavior, microhabitat use, and agonistic interactions were examined in a controlled in-stream experiment. One of the two study sites was within the Malheur Subbasin, on Meadow Fork of Big Creek. Results provided little evidence of a niche shift for bull trout in the presence of brook trout and suggest that the more aggressive brook trout may potentially displace bull trout.

#### BOR Evaluation of Conservation Pool for Beulah Reservoir

In 2001, BOR completed an evaluation of structural alternatives for establishing a conservation pool for bull trout at Beulah Reservoir (BOR 2001). Alternatives included adding height to Beulah Dam for additional storage or adding height to Warm Springs Dam and transferring water to Beulah to maintain a pool. Cost estimates are provided.

### Wildlife

#### ODFW Elk telemetry research

ODFW conducted an elk telemetry project in the North Fork Malheur watershed from 1996 to 1998. The purpose of the study was to learn more about elk movements in the Beulah and South Sumpter wildlife management units. ODFW intended to use the data to manage the population in such a way to reduce damage to agricultural land. In this study elk were captured in 1996 and 1997 and fitted with radio collars. They were then aerially monitored monthly for three years to determine movements and survival (Stuart Love, ODFW, pers. comm. 2001).

#### Sage grouse aerial surveys

Sage grouse leks were located aerially in portions of the North Fork Malheur River drainage where their habitat exists. These surveys were done from a helicopter in 1996 and 1997 (Stuart Love, ODFW, pers. comm. 2001).

#### Logan valley ranch

The Burns Paiute Tribe Department of Fish and Wildlife is conducting a wide range of monitoring and research on the recent acquisition in Logan Valley, including:

- Vegetation monitoring using photo image analysis software
- Watertable study

- Wet/moist meadow vegetation trends
- Rangeland trends
- Wildlife composition surveys and utilization trends
- Neotropical bird surveys

#### Jones Ranch

The Burns Paiute Tribe Department of Fish and Wildlife is conducting a variety of restoration, monitoring and research activities at their recently acquired Malheur River Wildlife Mitigation site (aka Jones Ranch), including:

Meadow rehabilitation

- reseeding/ improved irrigation efficiency
- riparian weed control

Upland restoration

- medusahead study
- livestock exclosures

Monitoring and evaluation

- rangeland trends
- elk distribution/land use

Neotropical birds surveys

Waterfowl utilizations and nesting conditions

River channel dynamics and morphology restoration

### Statement of Fish and Wildlife Needs

Malheur Subbasin summary team members from ODFW and Burns Paiute Fish and Wildlife Department met on September 5, 2001 to develop a list of the most pressing future actions needed for fish and wildlife in the Malheur Subbasin. This list incorporates additional feedback from team members and a list of needs developed in 1999 for the NWPPC's 2001 annual implementation work plan (NWPPC 1999). The list is not prioritized.

#### Fish needs

The primary goal for the Malheur Subbasin is to protect, enhance and restore where needed, resident and anadromous fish in their historical habitat (NWPPC 1999). The second goal is to provide fisheries and harvest opportunities of native fisheries and also of introduced game fish where native fisheries have been irrevocably altered. Construction of federally regulated and federally operated hydropower projects has resulted in the total

extirpation of anadromous fish in the Malheur Subbasin and significant damage to native resident fish. Thus, the primary fish species targeted for management is redband trout and bull trout (NWPPC 1999). A third goal is to protect and restore native wildlife species that are important game species, at risk of extinction, or already extirpated from the Subbasin. These wildlife species include elk, mule deer, and non-game at-risk or locally extinct wildlife species, including such as sage grouse, upland sandpiper, gray wolf and grizzly bear. Specific needs are to:

1. Continued monitoring and investigations into the distribution and abundance of known populations, e.g., estimates of abundance to establish trends and measure population response to restoration efforts; extent and magnitude of nonnative species interaction and hybridization to better define treatment options;
2. Provide fish passage at all reservoir dams and irrigation diversion dams in the Subbasin, including Agency Dam, Warm Springs Dam, Nevada diversion dam, Vale-Oregon diversion dam, Harper diversion dam, Bully Creek reservoir dam, and Willow Creek dams;
3. Conduct studies and analyses to determine feasibility of restoring passage at Warm Springs and Agency Dams, and other dams as necessary;
4. Screen all diversion ditches in the Subbasin;
5. Provide a minimum winter flow sufficient for native game fish survival below Warm Springs and Beulah reservoirs;
6. Establish minimum pools in irrigation dams that would not harm or stress fluvial and resident populations of bull trout and redband trout;
7. Eliminate fish entrainment through irrigation dams during withdrawals;
8. Restore anadromous and resident fish to their historic habitats within the watershed;
9. Restore migration routes and connectivity of now isolated populations of bull trout and redband trout within the Subbasin and between the Subbasin and the Snake River;
10. Control or eliminate introduced brook trout in the Mainstem Malheur River, where bull trout are present;
11. Reduce or eliminate the possible hybridization of 1) native chars with introduced species, and 2) redband trout with hatchery rainbow trout;
12. Protect current refugia for bull trout;
13. Protect, restore, and enhance habitat for all redband trout and bull trout life history stages;
14. Improve water quality, with emphasis on reducing summer stream temperature;
15. Protect and restore riparian zones from excessive livestock grazing, timber harvest, and road building;
16. Conduct habitat restoration studies and projects to address riparian habitat, flow issues, and water quality problems;
17. Conduct habitat protection efforts to avoid future cumulative impacts;
18. Continue efforts to educate anglers and the general public as to the importance of bull trout and the need to protect them.

### Wildlife needs

A primary wildlife goal for the Malheur Subbasin is to ensure that the NWPPC's goal to "fully mitigate for wildlife losses from hydropower in the Columbia River Basin" is accomplished. Acquisition of "habitat units" calculated to have been destroyed by hydropower development is the "preferred method" for wildlife mitigation of NWPPC. This can be done by enhancing existing habitat or protecting lands threatened with development. Implementation components of on-going projects 20090 and 20137, consist of enhancement projects to gain the highest priority habitat types for target species to use for mitigation credit for BPA hydropower losses (NWPPC 1999). Specific needs are to:

1. Implement proposed wildlife mitigation projects to begin the needed protection of critical wildlife habitat;
2. Work with state and federal agencies as well as neighboring landowners to complete a wildlife mitigation plan to fulfill the mitigation projects obligations toward wildlife;
3. Protect and restore riparian zones from excessive livestock grazing, timber harvest, and road building;
4. Expand the range of Bighorn sheep;
5. Restrict ATV and snowmobile use in big game winter range;
6. Encourage a long term increase in the sage grouse population and suitable habitat;
7. Reduce high road densities by obliterating and closing roads;
8. Increase native shrub and grass cover in deer and elk winter range;
9. Reduce noxious weeds in big game summer and winter ranges and in riparian areas;
10. Manage upland habitat through the measurement and evaluation of indicators such as a) soil stability and watershed function, b) distribution of nutrients and energy, and c) recovery mechanisms (i.e. plant demography and vigor) (National Research Council 1994).

## Malheur Subbasin Recommendations

### Projects and Budgets

The following subbasin proposals were reviewed by the Malheur River Subbasin Team and the Province Budget Work Group and are recommended for Bonneville Power Administration project funding for the next three years.

Table 1 provides a summary of how each project relates to resource needs, management goals, objectives, and strategies, and other activities in the subbasin.

Continuation of Ongoing Projects

Project: – 199701900 – Evaluate the Life History of Native Salmonids in the Malheur River Subbasin

**Sponsor:** Burns Paiute Tribe

**Short Description:**

Evaluate and determine the life history, distribution, and critical habitats pertinent to populations of bull trout and other salmonids within the Malheur subbasin.

**Abbreviated Abstract**

Past land use practices and construction of hydroelectric facilities have degraded the Upper Columbia basin to the point where survival of the remaining native salmonids are severely threatened. The goal of this project is to gain an understanding of the life history and genetic composition of the native salmonids within the Malheur River Basin. Information is limited concerning native trout populations, seasonal distribution and movements throughout the Malheur River. What information there is indicates that bull trout (*Salvelinus confluentus)* are severely threatened. This project outlines a plan to assess salmonid population structure and dynamics through the use of radio telemetry, screw traps and genetic analyses. This project will assist the Burns Paiute Tribe (BPT) in achieving the goals and objectives defined in the Northwest Power Planning Council's 1994 Columbia River Fish and Wildlife Program. This project also complements the management plans outlined in the Oregon Department of Fish and Wildlife's (ODFW) Malheur Management plan of 1990 and is in line with the Malheur River basins bull trout recovery teams, goals and objectives. Research findings will be the basis of recommendations for enhancement and protection strategies that are in line with council measures. Implementation of these strategies will provide better information for fish & wildlife managers as well as irrigation districts when making decisions concerning native salmonids within the Malheur basin. These strategies will also help provide the native salmonids with more suitable habitat and help increase population numbers.

#### Relationship to Other Projects

| Project ID | Title | Nature of Relationship |
|---|---|---|
| 200002700 | Malheur Wildlife Mitigation Site | Restore riparian habitat and water quality within bull trout core habitat identified by the USFWS as habitat needed for full recovery. |
| 200000900 | Logan Valley Wildlife Mitigation Project | Restore riparian habitat and water quality within bull trout core habitat identified by the USFWS as habitat needed for full recovery and lies within current distribution of bull trout in the upper Malheur River. |
| 199405400 | Bull Trout Life History, Genetics, Habitat Needs, and Limiting Factors In Central and Northeast Oregon" | Feeding behavior and diet of native bull trout *Salvelinus confluentus* and proposed study of *"Tools for Managing Bull Trout Populations Influenced by Non-native Brook Trout Invasions"*. |
| | USGS "Study plan for Beulah Reservoir (2001-) food based studies for bull trout" funded in part by USBR | The USBR has initiated an investigation of alternatives for creating a conservation fisheries pool in Beulah Reservoir. USGS funded by USBR in part has headed up the investigation. The BPT will be working cooperative with USGS on investigations occurring in Beulah Reservoir. Water quality monitoring and modeling are underway to describe the seasonal distribution of dissolved oxygen and temperature relative to bull trout needs. General limnological information is also being collected on a regular basis to describe algal and zooplankton standing crops under wet and dry year conditions. A Beulah Reservoir sedimentation survey was initiated in 2000 to provide updated capacity data, and a bathymetric map for use in developing a conservation pool. These investigations are to be completed by December 2004. |

#### Relationship to Existing Goals, Objectives and Strategies

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 called for recommendations to develop a program to protect, mitigate, and enhance fish and wildlife populations and habitat of the Columbia River and its tributaries that were affected by the development of hydroelectric activity. In 1997, the BPT with funding provided by Bonneville, began developing a Fisheries Natural Resources Department with the intent to recover and preserve the health of native resident fish within the Malheur basin. This

project is part of the on-going life history study that was designed to record the movements and seasonal patterns of bull trout.

This study would comply with the following measures in the Columbia River Basin Fish and Wildlife Program 1994:

| | |
|---|---|
| **Measure 2.2A** | Support Native Species in Native Habitat. |
| **Measure 3.2C.1** | Focuses on identifying key uncertainties associated with program measures. |
| **Measure 10.1** | Resident fish goal to recover and preserve health of native resident fish injured by hydropower system. |
| **Measure 10.1A.1** | Fund the fishery managers' efforts to complete assessments of resident fish losses throughout the Columbia River Basin |
| **Measure 10.2A.1** | Accord high priority to areas of the basin where anadromous fish are not present |
| **Measure10.2C.1** | Implement 7.7 of this program to also apply to resident fish, including the watershed provisions, where applicable. |
| **Measure 10.5** | Bull trout mitigation. |
| **Measure 10.5A** | Study and evaluate bull trout populations. |
| **Measure 10.6** | Other resident fish populations. |

According to the program, the council believes these studies and evaluations should be undertaken and completed in a timely manner. On-the-ground projects need to be identified and implemented as soon as possible to address the needs of this species. In addition, these studies should be coordinated to avoid redundant work and to improve the potential for data sharing.

Following the decision in June 1998, bull trout in the Columbia River Basin were listed as a threatened species under the federal Endangered Species Act (ESA). As part of the 1998 ESA listing the US Fish and Wildlife Service (USFWS) developed two Biological Opinion Documents relative to the Upper Malheur basin and bull trout. The first pertains to USBR reservoir operations in bull trout waters, including Beulah Reservoir (http://www.pn.usbr.gov/). The second Biological opinion pertains to the effects of Malheur National Forest's grazing management program on bull trout (UFWS Biological Opinion 1998).

The BPT is working with the USFWS to insure that our research complies with the Endangered Species Act. We have received a Section 10 Permit from the USFWS authorizing our department biologist to conduct and fulfill our contract obligations.

The primary goal of the Malheur Subbasin is to protect, enhance and restore where needed, resident and anadromous fish in their historical habitat (NWPPC 1994). The second goal is to provide fisheries and harvest opportunities of native fisheries and also of introduced game fish where native fisheries have been irrevocably altered.

Construction of federally regulated and federally operated hydropower projects has resulted in the total extirpation of anadromous fish in the Malheur Subbasin and significant damage to native resident fish. Thus, the primary fish species targeted for management is redband trout and bull trout (NWPPC 1994). This proposal addresses some of the specific fish needs addressed within the subbasin plan.

19. Continued monitoring and investigations into the distribution and abundance of known populations, e.g., estimates of abundance to establish trends and measure population response to restoration efforts; extent and magnitude of non-native species interaction and hybridization to better define treatment options;
6. Establish minimum pools in irrigation dams that would not harm or stress fluvial and resident populations of bull trout and redband trout;
12. Protect current refugia for bull trout;
13. Protect, restore, and enhance habitat for all redband trout and bull trout life history stages;
14. Improve water quality, with emphasis on reducing summer stream temperature;

15. Protect and restore riparian zones from excessive livestock grazing, timber harvest, and road building;
18. Continue efforts to educate anglers and the general public as to the importance of bull trout and the need to protect them.

This proposal is also in line and would comply with the following measures within the Malheur basin's bull trout recovery workgroups action plan to initiate recovery.

1.2 Identify barriers or sites of entrainment for bull trout and implement tasks to provide passage and eliminate entrainment.

1.3 Identify impaired stream channel and riparian areas and implement tasks to restore their appropriate functions.

1.4.1 Review reservoir operational concerns (water level manipulation, methods of release, entrainment, minimum fisheries pool, passage, etc.) and provide operating recommendations through Federal consultation.

3.1 Develop and implement State and tribal native fish management plans integrating adaptive research.

3.1.1 Incorporate bull trout recovery actions into The Oregon Plan for Salmon and Watersheds and the Pacific Northwest Power Planning Council Subbasin plans. Request assistance with implementation of recovery strategies for bull trout through both planning processes.

3.1.2 Coordinate bull trout recovery with recovery efforts, management plans, etc. of other species, e.g., redband trout.

3.1.3 Adaptively integrate research results into management programs (information transfer).

3.2.2 Educate anglers about bull trout identification, special regulations, how to reduce hooking mortality of bull trout caught incidentally, and the value of bull trout and their habitat and their place in the ecosystem.

3.2.3 Improve and implement fisheries management guidelines and policies designed to protect native species, e.g., Oregon Draft Native Fish Conservation Policy, Malheur River Basin Fish Management Plan.

4 Characterize, conserve, and monitor genetic diversity and gene flow among local populations of bull trout.

4.1.1 Assess severity of threat due to hybridization with brook trout in the Middle Fork and Malheur populations.

5 Conduct research and monitoring to implement and evaluate bull trout recovery activities, consistent with an adaptive management approach using feedback from implemented, site-specific recovery tasks.

5.2 Conduct research evaluating relationships among bull trout distribution and abundance, bull trout habitat, and recovery tasks.

5.2.1 Evaluate historic and present conditions in bull trout habitats by life stage.

5.2.2 Identify site-specific threats that may be limiting bull trout in watersheds with historic bull trout habitat.

5.2.3 Determine suitability of temperature regimes in currently occupied and potentially restorable bull trout drainages.

5.2.5 Determine movement and seasonal use of different habitat types of adult and sub-adult migratory bull trout in multiple drainages, with emphasis on reservoirs and mainstem rivers.

5.5 Develop and conduct research and monitoring studies to improve information concerning the distribution and status of bull trout.
5.5.1 Review and update databases for bull trout distribution records.
5.5.2 Conduct regular surveys in potential habitat where bull trout status is unknown or recolonization is anticipated.
5.5.3 Develop and implement a process for sharing all bull trout monitoring data.
5.5.5 Coordinate bull trout recovery monitoring with the Oregon Plan for Salmon and Watersheds monitoring program.
5.5.6 Determine life history requirements of local resident and migratory bull trout populations.
5.5.7 Determine mechanism by which resident forms undergo transition to migratory life forms in the North Fork Malheur and upper Malheur local populations. Coordinate results with other recovery unit teams.
5.5.8 Determine consequences of genetic fragmentation/isolation due to human-made barriers.
6.1 Use partnerships and collaborative processes to protect, maintain, and restore functioning core areas for bull trout.
6.1.1 Promote collaborative efforts to establish or support existing local watershed groups to accomplish site-specific protection/restoration activities. Participate in restoration efforts, provide technical support, organize volunteers, etc.
6.1.4 Develop educational materials on bull trout and their habitat needs, e.g., watershed form and function, riparian and side channel restoration, large wood placement, etc.
7.2.1 Design and implement a monitoring plan to track progress toward achieving recovery criteria for the Malheur Recovery Unit.

**Review Comments**

No comments.

**Budget**

| FY2003 | FY2004 | FY2005 |
|---|---|---|
| $324,401<br>Category: High Priority<br>Comments: | $333,542<br>Category: High Priority | $333,542<br>Category: High Priority |

## Project: – 200000900 - Logan Valley Wildlife Mitigation Project

**Sponsor:** Burns Paiute Tribe

**Short Description:**

Approximately 1,590 acres of palustrine emergent marsh/ wet meadow wetland habitat will be enhanced through various project activities including periodic grazing/ burning treatments, removing encroaching lodgepole pine, and the filling of illegal irrigation ditches. Approximately 200 acres of shrub steppe and 120 acres of forested habitat are also be enhanced by the elimination of intensive, annual grazing from these areas. The wet meadow habitats of Logan Valley comprise one of the largest montane wetland complexes in the state of Oregon and are home to one of the few populations of upland sandpipers in the western United States. This project will also significantly enhance habitat for bull trout (recently listed as a threatened species under the Endangered Species Act), redband trout, a species of management concern and potential candidate for listing, and the Columbia spotted frog, a Federal candidate species. Acquisition has since connected this property to a designated Wild and Scenic Corridor on the Malheur River. It also lies adjacent of the Strawberry Mountain Wilderness Management Area.

**Abbreviated Abstract**

Restore and enhance critical fish and wildlife habitat, enhance historic home range and seasonal habitat for resident and migratory species, control weeds, and improve water quality for headwaters of the Malheur River Basin.

**Relationship to Other Projects**

The management of this project is being coordinated with that of the Malheur Wildlife Mitigation Project (BPA Project # 2000-027-00), which is located approximately 38 miles downstream. Both projects are being managed cooperatively by the Tribe to minimize duplicate equipment purchases and to share staff and other resources as permitted

**Relationship to Existing Goals, Objectives and Strategies**

The Northwest Power Planning Council (2000) outlined three objectives for biological performance that apply to this wildlife mitigation site. They include the coordination of wildlife and fisheries projects to provide connectivity to upland and aquatic areas, maintaining and creating habitat values, and monitoring/evaluating habitat and associated species responses to mitigation actions.

This project accomplishes all relevant goals set for this subbasin because management strategies are created with the active support of U.S. Forest Service, U.S. Fish and Wildlife Service, Oregon State University and Agricultural Research Service (ARS) personnel and neighboring private landowners and allotment holders. Management of most adjacent lands complements that of the Tribe, thereby ensuring a greater potential for success.

**Review Comments**

Proposed work will provide for habitat improvements for bull trout. Reviewers suggest that the budget tasks need to be related strictly to O&M and that construction and implementation activities need to be re-evaluated and reclassified.

**Budget**

| FY2003 | FY2004 | FY2005 |
|---|---|---|
| $146,842<br>Category: High Priority<br>Comments: | $128,408<br>Category: High Priority | $98,908<br>Category: High Priority |

## Project: – 200002700 – Malheur River Wildlife Mitigation Project

**Sponsor:** Burns Paiute Tribe

**Short Description:**

**The Burns Paiute Tribe has acquired the Denny Jones Ranch in Juntura, Oregon. This project allows the Tribe to manage 6385 acres of meadow, wetland, and sagebrush steppe habitats along the Malheur River. The deeded property includes seven miles of the Malheur River, the largest private landholding along this waterway between Riverside and Harper. The property came with approximately 938 acres of senior water rights and 38,377 acres of federal and state grazing allotments. The project will benefit a diverse population of fish, wildlife, and plant species. Objectives include reviving and improving critical habitat for fish and wildlife populations, controlling/ eradicating weed populations, improving water quality, maintaining Bureau of Land Management (BLM) allotments, and preserving cultural resources.**

**Abbreviated Abstract**

Restore and enhance critical fish and wildlife habitat, maintain BLM allotments, enhance historic home range and wintering habitat for resident and migratory species, control weeds, and improve water quality along the Malheur River.

**Relationship to Other Projects**

The management of this project is being coordinated with that of the Logan Valley Project (BPA Project # 2000-009-00), which is located approximately 38 miles upstream. Both projects are being managed cooperatively by the Tribe to minimize duplicate equipment purchases and to share staff and other resources as permitted.

**Relationship to Existing Goals, Objectives and Strategies**

The Northwest Power Planning Council (2000) outlined three objectives for biological performance that apply to this wildlife mitigation site. They include the coordination of wildlife and fisheries projects to provide connectivity to upland and aquatic areas, maintaining and creating habitat values, and monitoring/evaluating habitat and associated species responses to mitigation actions.

Similarly, the United States Fish and Wildlife Service and the BLM have stressed the importance of creating and implementing watershed restoration projects that promotes

long-term ecological integrity and the cooperation between state, federal, and private land managers in creating coordinated resource management plans (CRMPs).

This project accomplishes all relevant goals set for this subbasin because management strategies are created with the active support of BLM, Oregon Department of State Lands personnel and neighboring private landowners. Management of adjacent lands complements that of the Tribe, thereby ensuring a greater potential for success.

**Review Comments**

The elk study component has been removed (M&E objectives 1,2, and 3 as well as the elk objectives of objectives 4 and 5) thus the budget has been reduced to $426,880.

**Budget**

| FY2003 | FY2004 | FY2005 |
|---|---|---|
| $426,880<br>Category: High Priority<br>Comments: | $549,300<br>Category: High Priority | $440,000<br>Category: High Priority |

Proposed New Projects

## Project: 32016 – Assess the feasibility of the Upper Malheur Watershed to support the reintroduction of anadromous populations above the Beulah and Warmsprings reservoirs

**Sponsor:** Burns Paiute Tribe

**Short Description:**

The project is broke into two phases, the first being a feasibility study on the reintroduction of anadromous fish in the Malheur Subbasin. The second phase is the development of a reintroduction plan for the Subbasin.

**Abbreviated Abstract**

Past land use practices and construction of hydroelectric facilities have degraded the Upper Columbia basin to the point where survival of the remaining native salmonids are severely threatened and in many cases the anadromous forms are extinct (Bahls 2001). The goal of this project is to assess the feasibility of reintroducing anadromous fish into the Malheur Subbasin. This project is critical from both a biological and cultural perspective to the restoration of the Malheur Subbasin. The study will focus on compilation of existing information such as elements of pathology, genetics, stock selection, suitable habitat, water quality and potential reintroduction locations. Additional information will be gathered and evaluated on potential impacts to existing populations of native fishes and social/economic impacts to the subbasin. A cost analysis will be generated as part of the feasibility study that will define the steps required for reintroduction and associated economics. This project will assist in achieving the goals and objectives defined in the Northwest Power Planning Council's 1994 Columbia River Fish and Wildlife Program. This project

complements the management plans outlined in the 1990 Oregon Department of Fish and Wildlife's (ODFW) Malheur Management plan, and is in line with the Malheur Basins bull trout recovery team's goals and objectives. Recommendations from this project will guide future planning activities concerning the reintroduction of anadromous fish in the Malheur Subbasin.

#### Relationship to Other Projects

N/A

#### Relationship to Existing Goals, Objectives and Strategies

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 called for recommendations to develop a program to protect, mitigate, and enhance fish and wildlife populations and habitat of the Columbia River and its tributaries that were affected by the development of hydroelectric activity. In 1997, the BPT with funding provided by Bonneville, began developing a Fisheries Natural Resources Department with the intent to recover and preserve the natural resources within the Malheur Basin.

Brief summaries of the specific sections from the Council's Fish and Wildlife Program (NPPC 1994) relating directly and indirectly to this anadromous salmonid reintroduction proposal "T*he Feasibility for Anadromous Fish Reintroduction within the Malheur basin*" -- are presented below:

### Programmatic Measures:

**1.6** Indian Rights
**2.1:** Systemwide Goal: A healthy Columbia River Basin.
**2.1A:** Assess ecological health of Columbia River Basin.
**2.1A1:** Explore methods to assess trends in ecosystem health.
**2.2A:** Support native species in native habitats.
**2.2H:** The need to learn from implementation (monitoring & evaluation).
**2.2E6:** Criteria for establishing constraints on hydroproject operations, including (a) protection and rebuilding of weak native fish stocks and resident fish substitutions, (b) protection of tribal rights to fish at usual and accostomed fishing places and ceded areas.
**3.1D.1** Form subregional teams to assist in implementing fish and wildlife measures in the following subregions of the Columbia River Basin:
**4.1A** Salmon and Steelhead Rebuilding Principles of actions that might provide greater short-term
**3.2C.1** Focuses on identifying key uncertainties associated with program measures.
**7.1B:** Conserve genetic diversity
**7.1C:** Collection of population status, life history and other data on wild and naturally spawning populations.
**7.10K:** Passage into historic habitat.
**7.10K1:** Where appropriate, determine the feasibility of providing passage above blockages to habitat caused by human development activities. Appropriate habitat includes areas where weak stocks are habitat limited and, therefore, would benefit from additional habitat.
**8.4** Stock Identification

**8.4B** Improve Genetic Stock Identification Data Base

**9.1A.2** Assemble from tribal and other sources estimates of economic and cultural losses of Columbia River Basin Indian tribes associated with the construction and operation of the federal hydro-power system. Identify measures taken to date to mitigate or compensate for these losses.

**10.1:** Resident fish goal – The program goal for resident fish emphasizes the long-term sustainability of native fish in native habitats where possible. Use strategies of mitigation & substitution.

**10.1E:** Project Implementation and selection

- Documentation of resident fish losses attributable to the FCRPS;
- Adaptive management principles, and appropriate monitoring and evaluation efficacy;
  - coordination with fish and wildlife agencies and tribes;
  - compliance with the Program policies;
    - achievement of biological results;
    - assessment of trade-offs with anadromous fish and wildlife activities;
    - development of a management plan with sound biological objectives;
    - consultation and coordination with interested parties;
    - estimated costs and a schedule for implementation and evaluation; and
    - fulfillment of standards of the Northwest Power Act.

**10.2A1:** Address resident fish as well as anadromous fish in developing a plan for genetic diversity as called for in measure 7.1.D.1.

**10.2B:** Comprehensive Watershed Management: Good habitat is important for resident fish, just as it is for anadromous fish. The degraded condition of resident fish habitat in the Columbia River Basin often rivals that of anadromous fish. For this reason, the program provisions noted in 7.7 (Cooperative Habitat Protection and Improvement with Private Landowners) should also apply to resident fish.

**10.5B:** Study and Evaluate Native Salmonid Populations Above Hells Canyon Dam

**10.8:** Resident fish substitutions: Salmon and steelhead probably never will be able to return to some areas of the basin because of blockages by dams. These include the areas above Chief Joseph and Grand Coulee dams and the Hells Canyon Complex, as well as other smaller blocked areas. In its analysis of the contribution of the hydropower system to salmon and steelhead losses, the Council has addressed the extent to which resident fish substitutions should be used to mitigate losses of salmon and steelhead production in these areas.

The Council has concluded that: 1) mitigation in blocked areas is appropriate where salmon and steelhead were affected by the development and operation of the hydroelectric projects; 2) to treat the Columbia River and its tributaries as a system, resident fish substitutions are reasonable for lost salmon and steelhead in areas where in-kind mitigation cannot occur; and 3) flexibility in approach is needed to develop a program that complements the activities of the fish and wildlife agencies and tribes and is based on the best available scientific knowledge. For substitution purposes, resident fish may include landlocked anadromous fish (e.g., white sturgeon, kokanee and coho), as well as traditionally defined resident fish species.

**10.8A:** Resident Fish Substitutions Policy: The substitution of resident fish to make up for losses of anadromous fish in areas now permanently blocked to salmon and steelhead reflects the Council's resolve to address complex, long-term problems. Historical records show that the Columbia River Basin Indian tribes relied extensively on salmon and steelhead, and the permanent loss of these resources has had incalculable impacts on tribal economies, cultures and religions. Historically, the Council approved projects in the areas above Chief Joseph/ Grand Coulee, and in the blocked areas above Hell's Canyon Dam.

**10.8C:** Resident Fish Substitution Projects Above Hells Canyon Dam: The following resident fish substitution activities and projects in the blocked area above Hells Canyon Dam will partially mitigate for salmon and steelhead losses incurred in this blocked area as a result of the construction and operation of hydropower projects in the Columbia River Basin.

**11.1:** Wildlife Program goal: Fully mitigate for wildlife losses from hydropower in the Columbia River basin

**11.5A.** Mitigation considerations in dam licensing decisions. (e.g., FERC).

According to the program, the council believes these studies and evaluations should be undertaken and completed in a timely manner. On-the-ground projects need to be identified and implemented as soon as possible to address the needs of this species. In addition, these studies should be coordinated to avoid redundant work and to improve the potential for data sharing.

The primary goal of the Malheur Subbasin is to protect, enhance and restore where needed, resident and anadromous fish in their historical habitat (NWPPC 1994). The second goal is to provide fisheries and harvest opportunities of native fisheries and also of introduced game fish where native fisheries have been irrevocably altered. Construction of federally regulated and federally operated hydropower projects has resulted in the total extirpation of anadromous fish within the Malheur Subbasin. Thus, this proposal is in line with the specific fish needs described with in the Malheur Subbasin summery. This proposal is focusing on the anadromous component that in now extinct within the Malheur basin.

Specific fish needs described within the Malheur Subbasin plan:

1. Continued monitoring and investigations into the distribution and abundance of known populations, e.g., estimates of abundance to establish trends and measure population response to restoration efforts; extent and magnitude of non-native species interaction and hybridization to better define treatment options;
2. Provide fish passage at all reservoir dams and irrigation diversion dams in the Subbasin, including Agency Valley Dam, Warm Springs Dam, Nevada diversion dam, Vale-Oregon diversion dam, Harper diversion dam, Bully Creek reservoir dam, and Willow Creek dams;
3. Conduct studies and analyses to determine feasibility of restoring passage at Warm Springs and Agency Valley Dams, and other dams as necessary;
4. Provide a minimum winter flow sufficient for native game fish survival below Warm Springs and Beulah reservoirs;
5. Establish minimum pools in irrigation dams that would not harm or stress fluvial and resident populations of bull trout and redband trout;
6. Restore anadromous and resident fish to their historic habitats within the watershed.

Following the recent decision in June 1998, bull trout in the Columbia River Basin have been listed as a threatened species under the federal Endangered Species Act. The USFWS have developed two Biological Opinion Documents relative to the Upper Malheur basin and bull trout. The first pertains to United States Bureau Reclamation (BOR) reservoir operations in bull trout waters, including Beulah reservoir (http://www.pn.usbr.gov/) and Effects of Malheur National Forrest's grazing management program on bull trout (USFWS Biological Opinion 1998). This proposal is also in line and would comply with the following measures within the Malheur basins bull trout recovery workgroups action plan to initiate recovery:

**3.1** Develop and implement state and tribal native fish management plans integrating adaptive research.

**3.1.4** Investigate potential for restoring historic prey base by reintroducing anadromous species. Take action based on findings.

**Review Comments**

The proposed budget has been reduced to $49,000 to allow for a literature search and subsequent report. Following the completion of this effort, the product should be sent back the CBFWA for review prior to the initiation of the next phase.

**Budget**

| FY2003 | FY2004 | FY2005 |
|---|---|---|
| $49,000<br>Category: High Priority<br>Comments: | $130,000<br>Category: High Priority | $<br>Category: |

## Project: – 32005 – Burns Paiute Fish and Wildlife Mitigation Coordinator

**Sponsor:** Burns Paiute Tribe

**Short Description:**

Develop wildlife mitigation stategies consisting of selection, scientific analysis, implementation (acquisition, enhancement, etc.), O&M, and evaluation of wildlife mitigation projects for the Burns Paiute Tribe.

**Abbreviated Abstract**

The Burns Paiute Tribe is a federally recognized Tribe with fish and wildlife management responsibilities in the Columbia Basin and as such retains rights to manage its lands and resources to benefit its members. These rights include the authority to co-manage fish and wildlife habitat in the aboriginal territory of the Tribe.

As a sovereign nation adversely affected by the development and operation of the federal hydropower system, there exists a responsibility under the Northwest Power Act for the Northwest Power Planning Council and Bonneville Power Administration to mitigate for those losses.

The 1980 Power Act directed the Power Planning Council to prepare a program to protect, mitigate and enhance fish and wildlife of the Columbia River Basin that have been affected by the construction and operation of hydroelectric dams. The Act also directs the Power Planning Council to inform the public about fish, wildlife and energy issues and to involve the public in its decision making process.

The Burns Paiute Tribe has sought to affirm its duty as a fish and wildlife manager in the region by availing itself to the process by submitting recommendations on the Fish and Wildlife Program revisions.

The 2000 Program marks a significant change in the way the Fish and Wildlife program has operated in the past. Instead of the measures included in each subsequent revision of the Program directing specific fish and wildlife activities, the 2000 Program establishes a basinwide vision for fish and wildlife recovery.

Since the direction that the regional Fish and Wildlife Managers will undertake while the PPC implements its 2000 Fish and Wildlife Program are unknown it is imperative to have our Tribe actively participating in every aspect of the process. The funding of this position would allow the Tribe to achieve that.

The long term goal of this contract is to allow the Burns Paiute Tribe the opportunity to continue participating in Regional Fish and Wildlife Managers activities for the planning and implementation of long term mitigation strategies. This project also provides a Coordinator to integrate/facilitate the remaining facets of the 2000 F&W Program (i.e. Subbasin Planning, implementation of the Subbasin plans and beyond).

The Mitigation Coordinator has contributed much time and effort in the past to planning and implementation processes of the CBFWA Resident Fish and Wildlife Caucuses, and is also a vital component of the Oregon Wildlife Coalition (OWC).

#### Relationship to Other Projects

| Project ID | Title | Nature of Relationship |
|---|---|---|
| 200002700 | Malheur Wildlife Mitigation Site | Consults with Tribal Council on relevant fish and wildlife programmatic issues that arise. |
| 200000900 | Logan Valley Wildlife Mitigation Project | Consults with Tribal Council on relevant fish and wildlife programmatic issues that arise. |
| 199701900 | Evaluate the Life History of Native Salmonids in the Malheur River Subbasin | Consults with Tribal Council on relevant fish and wildlife programmatic issues that arise. |

#### Relationship to Existing Goals, Objectives and Strategies

This position has and will continue to represent the Burns Paiute Tribe and the Burns Paiute Fish and Wildlife Department with the following agencies:

- Northwest Power Planning Council
- Columbia Basin Fish and Wildlife Authority
- Idaho Power Company/FERC relicensing
- National Marine Fisheries Service
- Environmental Protection Agency
- Oregon Wildlife Coalition
- Bureau of Land Management
- U.S. Forest Service
- 13 Tribes Forums

**Review Comments**

No comments.

**Budget**

| FY2003 | FY2004 | FY2005 |
|---|---|---|
| $53,978<br>Category: Recommended action<br>Comments: | $53,978<br>Category: Recommended action | $55,000<br>Category: Recommended action |

## Project: – 32018 – Williams Ranch Fish and Wildlife Acquisition Project

**Sponsor:** Burns Paiute Tribe

**Short Description:**

Acquisition of the Williams Ranch will allow the Burns Paiute Tribe, Bureau of Land Management and Oregon Department of Fish and Wildlife to cooperatively manage 9040 acres of deeded land and 52, 000+ acres of state and federal land for the benefit of fish and wildlife populations. The project site holds 461 acres of senior (1883) water rights and encompasses 16.6 miles of the South Fork and North Fork Malheur River. The ranch has been utilized for livestock production for the last 100 years with little to no regard for fish and wildlife management. Acquisition would allow the cooperators to manage this site and a neighboring mitigation site on a landscape level for fish, wildlife and habitat enhancement.

**Abbreviated Abstract**

Acquisition will expand, restore and enhance habitat for the purpose of fish and wildlife management and will replace critically important habitat for the persistence of T&E, sensitive and culturally important fish, wildlife, and plant species.

**Relationship to Other Projects**

The management of this project is being coordinated with that of the Logan Valley Project (BPA Project # 2000-009-00), which is located approximately 38 miles upstream and the Malheur River Wildlife Mitigation Project (BPA Project #200002700). Both projects are being managed cooperatively by the Tribe to minimize duplicate equipment purchases and to share staff and other resources as permitted.

Securing Wildlife Mitigation Sites – Oregon (BPA Project # 9705900) is also a related ongoing project that captures the mitigation efforts for Oregon at the state level. This projects overlying goals is to facilitate coordination and planning between Oregon wildlife managers via individual funding of wildlife planning and coordination staff for each of the parties involved. Use the GAP analysis, along with other federal, state and tribal wildlife mitigation plans to continue development and implementation of an Oregon wildlife mitigation strategy consisting of selection, scientific analysis, implementation (acquisition, enhancement, etc.), O&M, and monitoring and evaluation of wildlife mitigation projects.

PA project 19970190; Malheur *River Basin Cooperative Bull Trout/Redband Trout Research Project* also closely related to the Williams acquisition. Research is actively being conduction on parts of the Williams property located on the North Fork River sections. Efforts on management and data use will be coordinated with this proposal.

#### Relationship to Existing Goals, Objectives and Strategies

This project is consistent with all known local, state, federal, and tribal laws. The project is covered under the BPA Wildlife and Watershed Programmatic EIS documents (BPA 1997b, BPA 1997c, and BPA 1997a). This acquisition is consistent with several areas of the Council's Fish and Wildlife Program. Specifically, Section 7.6, which calls for watershed-based habitat restoration focusing on the protection of wild and natural populations. It is also consistent with Section 11 of the Program, which identifies wildlife resource needs.

This project accomplishes all relevant goals set for this subbasin because management strategies are created with the active support of BLM, Oregon Department of State Lands, Oregon Department of Fish and Wildlife personnel and neighboring private landowners. Management of adjacent lands complement that of the Tribe, thereby ensuring a greater potential for success.

The specific objectives for biological performance as found in the NPPC's (2000) Fish and Wildlife Program include the coordination of mitigation-related activities throughout the basin, specifically those that promote connectivity between the management of terrestrial and aquatic areas, maintaining existing and created habitat values, and determining species response to mitigation actions through monitoring and evaluation. USFS and BLM objectives include the restoration of habitats through a watershed level approach, conserving the genetic integrity of native species, and cooperating with various agency and private interests to develop watershed-based Coordinated Resource Management Plans (CRMPs) (Bahls 2001).

The Tribe has already begun working with state, federal, and private interests to fulfill its objectives of reviving and improving critical habitat for fish and wildlife populations, controlling/eradicating weeds, improving water quality, preserving cultural resources, and approaching management challenges and opportunities at the watershed level on the Jones Ranch.

#### Review Comments

Proposed work is located in "core" bull trout habitat as identified by the USFWS. The MOA between the Burns Paiute Tribe and BPA provides the following guidance relative to crediting:

Page (1)

> C. The Tribe has developed the Logan Valley and Malheur River Projects, collectively called the Malheur River Basin Project (Project), to assist BPA in fulfilling its wildlife mitigation obligation. A legal description of the Project is in Attachment A of this Agreement. In addition, at some future date the parties may wish to expand the scope of the Project to include other property .If the other

property is added to the Project, its acquisition and management shall be pursuant to this Agreement. (the "in addition" wording pertains to the Willams and Stanbro proposals as far as the Tribe is concerned whether or not BPA as one of the parties to the MOA agrees is another issue, but one would think that a funding of either project is in fact BPA's stamp of approval of where the credits (past, future)will be applied since there is a mechanism for that built into the MOA ).

BPA CREDIT page (7)

(c) BPA shall receive full credit for all HUs, including those from both the acquisition of real property interests and from habitat improvement and management activities which are a direct result of BPA funding. BPA may credit these HUs toward its mitigation duty for wildlife habitat losses at the Lower Monumental, Lower Granite, Little Goose, and Ice Harbor Projects or any other Federal Columbia River Power System project (i) agreed to by BPA, the Tribe and the Council, or (ii) adopted by BPA consistent with the Northwest Power Act and applicable law. (That covers where our HU's for the current project will be credited and the areas where future credits will be assigned. The MOA is a binding legal document agreed to in whole by both parties The Burns Paiute Tribe and Bonneville Power, no outside input was sought or needed.)

**Budget**

| FY2003 | FY2004 | FY2005 |
|---|---|---|
| $2,259,392<br>Category: High Priority<br>Comments: | $260,000<br>Category: High Priority | $235,000<br>Category: High Priority |

## Project: – 32019– Logan Valley Fish and Wildlife Project – Stanbro Ranch Acquisition

**Sponsor:** Burns Paiute Tribe

**Short Description:**

Acquisition will expand, restore, and enhance habitat for the purpose of fish and wildlife management and will replace critically important habitat for the persistence of T&E, and sensitive and culturally important fish, wildlife, and plant species.

**Abbreviated Abstract**

This project proposes to acquire approximately 1,000 acres of the Stanbro Ranch located south of Prairie City, Oregon on the southern boundary of the Strawberry Mountain Wilderness. The focus of this project is for the enhancement and conservation of high mountain meadow habitat in the upper watershed of the Malheur River Basin. Acquisition

is intended to complement the ongoing efforts of the Burns Paiute Tribe and partners to restore and enhance the Malheur River. The acquisition of this property would connect a significant piece of land to a designated wild and scenic corridor and to the ongoing Logan Valley Wildlife Mitigation Project (#200000900). It would also connect boundaries with the Strawberry Mountain Wilderness Management Area. Enhancement and protection of the riparian and wetland areas will provide measurable improvements in habitat suitability for wildlife, water quality and channel stability for fish as well as several other environmental benefits.

#### Relationship to Other Projects

The management of this project is being coordinated with that of the Logan Valley Project (BPA Project # 2000-009-00), which is located approximately 38 miles upstream from the Malheur River Wildlife Mitigation Project (BPA Project #200002700). Both projects are being managed cooperatively by the Tribe to minimize duplicate equipment purchases and to share staff and other resources as permitted.

Securing Wildlife Mitigation Sites – Oregon (BPA Project # 9705900) is also a related ongoing project that captures the mitigation efforts for Oregon at the state level. This project is to facilitate coordination and planning between Oregon wildlife managers via individual funding of wildlife planning and coordination staff for each of the parties involved. It is also designated to use the GAP analysis, along with other federal, state and tribal wildlife mitigation plans to continue development and implementation of an Oregon wildlife mitigation strategy consisting of selection, scientific analysis, implementation (acquisition, enhancement, etc.), O&M, and monitoring and evaluation of wildlife mitigation projects.

BPA Project # 19970190: Malheur River Basin Cooperative Bull Trout/Redband Trout Research Project is also related to the Stanbro acquisition. Research is actively being conduction on parts of the Stanbro property located within the boundaries of the ongoing research activities. Management and use of data will be coordinated with this proposal and future activities of this project.

#### Relationship to Existing Goals, Objectives and Strategies

This project qualifies for consideration and funding to mitigate for hydropower construction and habitat losses created by dams and their operations on the Columbia and Snake River Basins.

This project is consistent with all known local, state, federal, and tribal laws. The project is covered under the BPA Wildlife and Watershed Programmatic EIS documents (BPA 1997b, BPA 1997c, and BPA 1997a). This acquisition is consistent with several areas of the Council's Fish and Wildlife Program. Specifically, Section 7.6, which calls for watershed based habitat restoration focusing on the protection of wild and natural populations. It is also consistent with Section 11 of the Program that identifies wildlife resource needs

This project accomplishes all relevant goals set for this subbasin because management strategies are created with the active support of US Forest Service, Oregon Department of Fish and Wildlife personnel and neighboring private landowners.

Management of adjacent lands compliments efforts conducted by the Tribe, thereby ensuring a greater potential for success.

The specific objectives for biological performance as found in the NPPC's (2000) Fish and Wildlife Program include the coordination of mitigation-related activities throughout the basin, specifically those that promote connectivity between the management of terrestrial and aquatic areas, maintaining existing and created habitat values, and determining the species response to mitigation actions through monitoring and evaluation. USFS and BLM objectives include the restoration of habitats through a watershed level approach, conserving the genetic integrity of native species, and cooperating with various agency and private interests to develop watershed-based Coordinated Resource Management Plans (CRMPs) (Bahls 2001).

The Tribe has already begun working with state, federal, and private interests to fulfill its objectives of reviving and improving critical habitat for fish and wildlife populations, controlling/ eradicating weeds, improving water quality, preserving cultural resources, and approaching management challenges and opportunities at the watershed level on the Logan Valley mitigation site.

#### Review Comments

The MOA between the Burns Paiute Tribe and BPA provides the following guidance relative to crediting:

Page (1)

> C. The Tribe has developed the Logan Valley and Malheur River Projects, collectively called the Malheur River Basin Project (Project), to assist BPA in fulfilling its wildlife mitigation obligation. A legal description of the Project is in Attachment A of this Agreement. In addition, at some future date the parties may wish to expand the scope of the Project to include other property .If the other property is added to the Project, its acquisition and management shall be pursuant to this Agreement. (the "in addition" wording pertains to the Willams and Stanbro proposals as far as the Tribe is concerned whether or not BPA as one of the parties to the MOA agrees is another issue, but one would think that a funding of either project is in fact BPA's stamp of approval of where the credits (past, future)will be applied since there is a mechanism for that built into the MOA ).

BPA CREDIT page (7)

> (c) BPA shall receive full credit for all HUs, including those from both the acquisition of real property interests and from habitat improvement and management activities which are a direct result of BPA funding. BPA may credit these HUs toward its mitigation duty for wildlife habitat losses at the Lower Monumental, Lower Granite, Little Goose, and Ice Harbor Projects or any other Federal Columbia River Power System project (i) agreed to by BPA, the Tribe and the Council, or (ii) adopted by BPA consistent with the Northwest Power Act and applicable law. (That covers where our HU's for the current project will be

credited to and the areas where future credits will be assigned. The MOA is a binding legal document agreed to in whole by both parties The Burns Paiute Tribe and Bonneville Power, no outside input was sought or needed.)

**Budget**

| FY2003 | FY2004 | FY2005 |
|---|---|---|
| $1,355,286<br>Category: High Priority<br>Comments: | $220,000<br>Category: High Priority | $130,000<br>Category: High Priority |

### Research, Monitoring and Evaluation Activities

The on-the-ground BPA-funded project*s* include a number of monitoring, evaluation, and research activities. Specific research, monitoring, and evaluation activities include:

For BPT, on-going BPA-funded research, monitoring and evaluation activities includes:

- Document the complete migratory patterns of bull trout within the Malheur River basin.
- Continue monitoring population trends (index) and age class structure in native salmonids within the Malheur basin.
- Monitor water quality within the Malheur basin.
- Determine the timing of bull trout spawning and critical locations within the Malheur basin.
- Determine the pre-migration use by bull trout in Beulah and Warm Springs Reservoir and the entrainment over the dam.
- Evaluate habitat profiles of critical bull trout spawning and rearing tributaries within the Malheur basin.
- Continue quantifying genetic population structure in salmonid populations within the Malheur basin.
- Determine cool micro-refugia within the Malheur basin.
- Map plant communities and determine approximate boundaries to monitor expansion/retraction trends.
- Monitor general vegetation trends for shrub-steppe/grassland communities.
- Assess wildlife population changes over time.
- Evaluate hydrological conditions and trends on Tribal mitigation lands.

For ODFW, on-going BPA-funded research, monitoring and evaluation activities includes:

- Determine distribution and habitat characteristics of bull trout and brook trout populations.
- Describe patterns of hybridization in brook/bull trout.
- Describe pathways of brook trout invasion as indicated by patterns of among- and within-population genetic variation.
- Implement EMAP sampling framework developed for coastal Oregon watersheds (Firman and Jacobs, 2001; Stevens and Olsen, 1999) to monitor the status and

trends in bull trout and other resident salmonid populations and their habitats throughout the Oregon portion of the Middle Snake Province.

New proposals include the following research, monitoring, and evaluation activities:

- Project 32016 will determine the feasibility of reintroducing anadromous fish into the upper Malheur River Subbasin above Beulah and Warm Springs reservoirs.
- Project 32017 will monitor the reduction of the brook trout population from historical bull trout habitat.

#### Needed Future Actions

For species that are adversely affected by hydropower operations, there is a need to conclusively document population trends for target and high-priority species along with any other species that show declining populations, develop plans for their recovery, and implement projects to mitigate for operational impacts. Furthermore, the extinction of anadromous fish has occurred in the Malheur Subbasin and is considered to be a "blocked area." A corresponding part of the mitigation for these losses must occur. The program has a "Resident Fish Substitution Policy" for areas in which anadromous fish have been extirpated. Given the large anadromous fish losses in the blocked areas, current actions have not mitigated these losses. The following objectives address anadromous fish losses and mitigation requirements in all blocked areas:

- Restore native resident fish species (subspecies, stocks and populations) to near historic abundance throughout their historic ranges where original habitat conditions exist and where habitats can be feasibly restored.
- Take action to reintroduce anadromous fish into blocked areas, where feasible.

Administer and increase opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (includes intensive fisheries within closed or isolated systems).

There is a need for future BPA funding to implement habitat mitigation projects and rehabilitation and enhancement measures that address impacted ecological conditions and functions. There is a need to not only assess and quantify the loss of anadromous fish and fully mitigate for these losses, but to recognize the need for a watershed-based management approach that addresses the role upland communities play in providing habitat not only for wildlife, but resident and anadromous fish as well.

There is a need to augment land acquisitions with conservation easements, management agreements, and cooperative conservation plans as a way of making conservation dollars go farther and keeping land in private ownership in order to maintain the tax base, which is extremely important in the context of our local political setting.

#### Actions by Others

County commissions and tribal governments should work together to insure that comprehensive land use planning occurs in the subbasin to prevent development in floodplains, wildlife habitats, wetlands, riparian areas, and hazard areas. Zoning regulations

that proscribe new development in floodplains need to be enacted and implemented, and there is a need to enact and enforce regulations that prohibit new permits for septic systems and wells within the 100-year floodplain boundary.

Local irrigation districts and irrigators need to develop water conservation plans to reduce the over allocation of water rights in the Malheur Subbasin. These plans need to include actions that will assist irrigators' use of the allocated resource that will comply with federal and state laws (ie. fish passage, fish screens).

The development of the Total Maximum Daily Loads (TMDL's) needs to be completed and enforced. Land users must work with the Oregon Department of Agriculture to assure these standards are met.

Idaho Power Company and the Bureau of Reclamation need to improve and/or develop effective fish passage facilities at their respective project sites. Furthermore, these entities must develop mitigation measures for the current loss of anadromous fish to all stakeholders.

Federal land management agencies such as the Bureau of Land Management and the U.S. Forest Service need to establish regional policies for working with permittees who participate in the mitigation process. Currently, views regarding the permissibility of habitat restoration projects and alternative management options differ between districts.

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