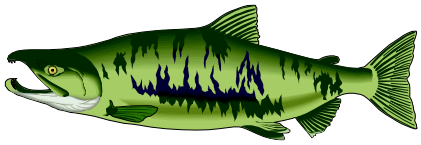
PISTOL RIVER WATERSHED

ACTION PLAN



Prepared for

The Pistol River Watershed Council

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September 2001

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ABSTRACT

The *Pistol River Watershed Action Plan* was prepared for the Pistol River Watershed Council whose members are dedicated to sustaining the health of their watershed. This document utilizes detailed information about the Pistol River watershed from the *Pistol River Watershed Assessment* which followed guidelines described in the *Governor's Watershed Enhancement Board's 1999 Draft Oregon Watershed Assessment Manual*. Funding was provided by the Oregon Watershed Enhancement Board, Oregon Department of Environmental Quality, United States Bureau of Land Management, Oregon Department of Agriculture, Curry County Soil and Water Conservation District and Oregon State University Extension Service.

ACKNOWLEDGEMENTS

The completion of the Pistol River Watershed Action Plan was accomplished through the combined effort of private citizens, watershed council members, contracted technical specialists, and local state and federal government agencies. The South Coast Watershed Council would like to thank the following people who generously provided time and energy to improve the quality of this Action Plan. Additional people helped whose names are not included below. We also acknowledge them.

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WATERSHED ASSESSMENT SUMMARY

The following is an abbreviated summary of a much larger, in-depth watershed assessment available from the South Coast Watershed Office.

INTRODUCTION

The Pistol River watershed drains approximately 67,275 acres or 105 square miles of land. Pistol River, situated entirely within Curry County, is an average size watershed on the southern Oregon coast. Flowing in a westerly direction Pistol River crosses Highway 101 and drains into the Pacific Ocean about ten miles south of the community of Gold Beach. Elevations in the watershed range from sea level to approximately 4,220 feet on Snow Camp Mountain. Major tributaries include the North Fork, East Fork, and South Fork. The upper portion of the watershed is characterized by steeply sloped forested areas with narrow valleys and tributary streams that have moderately steep to very steep gradient. Grazing, rural residential development and other agricultural uses are dominant in the lower portion of the watershed. Over 55% of the watershed is in public ownership.

History

Most Curry County watersheds have received varying impacts from Euro-American populations during the past 150 years (1850 – 2000). The general landscape pattern for Curry streams and rivers is: timber in the uplands (on public & private industrial timberlands) flowing into broader floodplains of the lowlands, where agriculture and some rural residential use predominates. Pistol River tributaries (Crook Creek, Deep Creek, South Fork Pistol) were especially productive for salmon and steelhead. The Pistol River watershed was extensively logged in the 1920's and 30's and again in the 1950's and 60's. This activity occurred before the enactment of the first Forest Practices Act in 1972, so there was widespread erosion, turbidity, and sedimentation from these activities. At one time there were six active lumber mills in the Pistol River area; a series of dairies in the lowlands; and a cheese factory.

Watershed Issues

The Pistol River Watershed Council identified the following issues of concern related to land use; timber harvest (riparian vegetation loss, sedimentation, and herbicides), livestock grazing, and nickel mining in a small area of the North Fork.

Ecoregions

Southern Oregon Coastal Mountains make up 14 percent of the watershed with steep to very steep gradients, high rates of erosion, and high stream densities. Rainfall averages 79-140" per year. High winds, landslides and fires are expected natural disturbances.

The Coastal Siskiyous make up 82 percent of the watershed, with habitat very similar to Southern Oregon Coastal Mountains. Coastal Uplands cover less than 1 percent of the watershed and roughly follow the historic Sitka spruce distribution. High and low gradient habitats are present, with slow moving earthflows common on the hillslopes and many beaver expected in the low gradient streams

Channel Habitat Types

In the Pistol River watershed, 103 miles of stream were classified for channel type. Just over 13 miles were rated as highly responsive/sensitive channel types, including estuary channels, flood plain channels, and moderately confined reaches. Low gradient/moderate confinement (LM), and moderate gradient/moderate confinement (MM) reaches are the most responsive to habitat enhancement activities. Eleven miles of low gradient confined channels were identified, though the confining feature (terrace or hillslope) is not known.

Fish and Fish Habitat Assessment

Aquatic habitat surveys in the Pistol River watershed include the Mainstem and South Fork Pistol in 1991; and Bull Gulch, Deep, Farmer, Koontz and Davis, Scott and Sunrise creeks in 1995. 1991 ODFW surveys lack riparian conifer data as well as "key pieces" of large wood data. Large riparian conifers were not found in the 1995 surveys. Pool quantity is moderate, though simplified pools are a concern. Riffle habitat for spawning is generally moderate. Large wood values are less than adequate for all surveyed reaches, except Bull Gulch reach 2 and South Fork reach 7.

Chinook distribution covers all of the Mainstem Pistol, up to 2/3 of the Sunrise Area, approximately half of the South Fork, and the lower portions of several Mainstem Pistol tributaries. No use is reported on the Upper Pistol and East Fork. Coho distribution is similar to chinook with less use of the South Fork and no use of the Sunrise Area tributary. Steelhead utilize nearly all of the Mainstem, all of South Fork Pistol, one-third of the North Fork, one-third of the East Fork, and all three major mainstem tributaries.

One adult migration barrier, one uncertain adult restricted barrier, and one juvenile barrier are recorded. Hatchery influence was considerable until 1995.

Water Quality Assessment

Water quality is moderately impaired for phosphate and fecal coliform bacteria at Pistol River Loop Road. The Pistol River Mainstem is listed on the 303(d) list for water temperature from the mouth to the headwaters. Temperatures range from the mid to high 60's in the mainstem Pistol above East Fork, the East Fork, North Fork and Deep Creek. Temperatures range from high 60's to low 70's in the mainstem Pistol above the South Fork, Crook Creek, and the South Fork Pistol. Temperatures range from mid to high 70's at the ODFW trap on the mainstem Pistol.

Riparian (Shade) Assessment

Highest potential increases in shade are in Crook Creek, 4th and 5th order South Fork reaches, 5th order Deep Creek reaches, and the Pistol Mainstem reaches. Of the 300 miles of shade assessed, 82 miles have alder/hardwood shade, 16 miles have brush, 6 miles have pioneer vegetation, and 29 miles have high reproduction or mature timber stands.

Wetland Characterization and Functional Assessment

Approximately 177 acres of wetlands (23 wetlands) are found in this watershed. Most have been highly altered and are buffered by either agricultural or rural land use. Most

are connected to another waterbody, and all are located in the Lower Mainstem subwatershed. Assessments were conducted using aerial photographs and field visits are need for confirmation.

Hydrologic Condition Assessment

This assessment is based on runoff estimates for various landuses and soil cover conditions. Peak flow enhancement is an increase in the strongest, and potentially most destructive, part of the flood curve.

The hydrologic assessment of the Pistol watershed rated all watersheds as low risk for peak flow enhancement (PFE) due to timber harvest (rain-on-snow interaction) and forest roads. Risks of PFE due to agricultural use are moderate to low, in those subwatersheds with significant agricultural use. Rural roads pose a high risk (very small acreage) in the Glade and Deep Area, and low risk in the Lower Pistol and South Fork Pistol subwatersheds. All of the roads rankings need to be re-assessed to incorporate revised road data. Flow alteration, road drainage and ditched/drained wetlands, is not addressed in this assessment.

Water Use

In the Pistol watershed, most of the water rights are junior to the 1964 in-stream rights. All subwatersheds are slightly over-allocated from April to October. Pistol River Mainstem is rated a priority streamflow restoration area. Crook Creek has the greatest potential for reduction of consumptive use (restoration of in-stream flows) through conservation and best management practices.

Sediment

The assessment of sediment process in the Pistol River focuses on the density of roads built on slopes greater than 50 percent, and the density of stream/road crossings. These rankings are relative to all South Coast subwatersheds.

Lower Pistol Mainstem, South Fork, and the Sunrise area are ranked low density for roads on steep slopes. Glade and Deep Area and the North Fork are ranked low to moderate density.

The Sunrise Area, North Fork, and South Fork are ranked moderate density for stream crossings. Glade and Deep Area and the Lower Mainstem are ranked moderate to high density.

Pistol River Synthesis

The Pistol River watershed has a mix of ecoregions including the Coastal Siskiyous, Southern Oregon Coastal Mountains, Coastal Uplands and Coastal Lowlands, with a very small portion of Serpentine Siskiyous in the East Fork. All but the Coastal Lowlands have steep hillslope gradients and high natural sediment loads. Over 55 percent of the Pistol watershed is publicly owned.

The lower end of the Pistol near Highway 101 crossing has been straightened and rip-rapped. Hardwood forests dominated the bottomlands in the past. Logging was very heavy in the 1950's and 60's.

Sediment sources and transport are a large concern in the Pistol watershed. Extremely steep gorges, low to moderate densities of roads on steep slopes in Glade and Deep Area, and moderate to high densities of crossings in Glade and Deep Area and the Lower Mainstem all contribute to sediment instability. A high concentration of these roads is in the Deep Creek watershed. Debris flows that alter riparian vegetation and channel structure were most recently triggered in the upper mainstem and South Fork by the November 1996 storm.

The East Fork and Upper Mainstem Pistol have an unknown level of risk of peak flow enhancement (PFE) due to rain-on-snow events relative to timber harvest. Forest roads pose little risk of PFE, and risks due to agricultural use are moderate to low. Risk of PFE is high due to rural roads in the Glade and Deep Creek Area.

Channel habitat typing on non-USFS lands revealed a very high number of stream miles in hillslope confined channels (natural), over thirteen miles in highly sensitive stream types (to disturbance as well as restoration), and eleven miles of low gradient confined (LC) reaches. Most of the LC reaches are in the Glade and Deep Area, South Fork Pistol, and Sunrise Area.

Anadromous fish use all but the upper subwatersheds, with chinook in the mainstem Pistol, half of the South Fork, and the lower mile of Deep Creek. Coho distribution is similar, with less use on the South Fork and some mainstem tributaries. Steelhead use all the tributaries, major and minor, as well as the mainstem itself. Three barriers are reported. Stream habitat surveys in 1991 and 1995 indicate moderate pool and riffle habitat, and poor wood levels for all but one reach in Bull Gulch and the highest reach of the South Fork.

The Pistol Mainstem has about ten miles of large wood production potential, ten miles on the South Fork, seven miles on Sunrise Creek, and 2 miles on the North Fork. The highest potential increases in shade are on the North Fork Mainstem (5 miles at 19%), Crook Creek in 1st, 2nd, and 4th order reaches (12-16%), and the South Fork 4th and 5th order reaches (11-15%).

Water use is not a large issue in the Pistol River. Nearly all of the out-of-stream rights are junior to the large in-stream right which is usually not met.

Pistol River is on the 303(d) list as impaired for temperature from mouth to headwaters and is being investigated for flow modification and sediment concerns. Deep Creek is also being investigated for sedimentation. Temperatures (7-day maximums) are in the mid 70's, with the South Fork as the warmest tributary and Deep Creek as the coolest. Biological oxygen demand is the highest of any South Coast stream, but it has the second best water quality of South Coast streams. All the wetlands in the Pistol watershed are in the Lower Mainstem. Approximately 177 acres are identified with a wide range of alteration, restoration potential and surrounding land use.

Limiting factors to fish production and water quality in the Pistol watershed appear to be: sediment sources and transport, especially in Deep Creek and the South Fork Pistol, the lack of large wood to moderate sediment movement, and simplified and reduced estuary/wetland habitat in the lower end.

SUBWATERSHED SUMMARIES

Lower Pistol Mainstem

The Lower Pistol Mainstem is made up of four ecoregions: mostly Coastal Uplands with low gradients, Southern Oregon Coastal Mountains with high gradients and erosion rates, Coastal Uplands and Coastal Siskiyous. Land use is 65 percent forestry and 34 percent range/agriculture. The lower end of the mainstem has been straightened. construction of Highway 101 has stopped natural channel migration across the lower floodplain. The estuary becomes bar-bound at certain times of the year.

Channel habitat types are mixed between hillslope-confined reaches (mostly tributaries) and highly responsive/sensitive reaches. Two barriers are recorded in this subwatershed, and are both on tributaries. Chinook, coho and steelhead use the mainstem and Crook Creek. Habitat surveys in 1991 recorded high bank erosion, good pool area and frequency, good to moderate riffle habitat, and poor levels of large wood.

The entire Mainstem Pistol is listed as temperature limited and is being investigated for flow modifications and sediment concerns. Temperatures are in the mid 70's. Water quality is rated as moderately impaired for phosphate and fecal coliform bacteria, as measured at Pistol River Loop Road.

Riparian vegetation provides good cover in stream orders 1-4, with an 11 percent potential increase in shade on the mainstem. Most of the riparian areas for the entire watershed are dominated by alder stands (approx. 25 miles), though 15 percent of the watershed has high reproduction and mature conifer forest within the riparian area. All 177 acres of wetlands identified in the Pistol watershed are located in this subwatershed, and have a wide mix of conditions and buffers.

Hydrologic assessment rated the Lower Mainstem as low risk for peak flow enhancement (increased stream power) due to timber harvest, forest roads, and rural roads. Risk is rated as moderate to low for agricultural use.

All water rights allocated in the Pistol River are junior to the 1964 in-stream right. Water use is not a large concern here, as total withdrawals are minor.

Sediment assessment ranked the Lower Mainstem as low density for roads on steep slopes and moderate to high density for stream crossings, when compared to all South Coast subwatersheds.

Glade and Deep Area

The Glade and Deep Area subwatershed is mostly contained within the Southern Oregon Coastal Mountains ecoregion (59 percent) with Coastal Siskiyous making up the remaining 41 percent. Ninety-nine percent of land use is forestry, and nearly all of the subwatershed is in private ownership.

Channel habitat types show a majority of hillslope confined reaches (16 miles), 1.5 miles of highly responsive/sensitive reaches, and 4 miles of low gradient confined reaches. Fish habitat data from 1991 reports high levels of shade, low bank erosion, moderate to good pool habitat, moderate to good riffle habitat and poor levels of large wood. Coho, chinook and steelhead use the Mainstem Pistol and Deep Creek. One barrier is identified on a north tributary.

Deep Creek has high potential increases in shade on 5th order reaches (14%). The Mainstem Pistol shows an eleven percent potential increase in shade. Deep Creek has very little conifer shade.

The Glade and Deep Area is rated as low risk for peak flow enhancement (increased stream power) due to timber harvest and forest roads. Estimated risk is moderate for agricultural use (very small area), and high for rural roads.

Crossings are more concentrated within the Deep Creek subwatershed, and past logging practices produced large volumes of sediment. Analysis of roads rated the Glade and Deep Area as low to moderate density for roads on steep slopes and moderate to high density for stream crossings, when compared to all South Coast subwatersheds.

The Sunrise Area

The Sunrise Area subwatershed is contained mostly within the Coastal Siskiyou ecoregion, with less than 20 percent in the Southern Oregon Coastal Mountains. The US Forest Service manages the upper portion of the sub-watershed. All land use is forestry.

Channel habitat types are less than favorable with 22 miles confined by hillslopes (natural), less than a quarter mile in highly responsive/sensitive reaches, and more than four miles in low gradient confined reaches. More information is needed to assess the type and level of confinement. A 1995 survey of the lower 1700 meters of Sunrise Creek

reported high shade, a lack of riparian conifers, moderate pool and riffle habitat quality, and low levels of wood. A large source of wood (52% high/mature forest) is available in upper Sunrise Creek, but is prevented from coming into the mainstem Pistol by a natural feature. Sunrise Creek shows a ten percent potential increase in shade on its mainstem reaches.

This section of the mainstem Pistol gains 2-4 degrees in temperature from top to bottom. Mainstem temperatures range from high 60's to low 70's.

Assessment of hydrology rates the Sunrise Area low risk for peak flow enhancement (increased stream power) due to timber harvest and forest roads. Agricultural use and rural roads are not an issue here.

The Sunrise Area ranked low density for roads on steep slopes, when compared to all South Coast subwatersheds, and moderate density for stream crossings. Sediment sources in Sunrise are a concern, as are channel responses to sediment on the mainstem above the South Fork.

South Fork Pistol

The South Fork Pistol is contained almost entirely within the Coastal Siskiyous, with only three percent of its area in the Southern Oregon Coastal Mountain ecoregion. Land use is almost entirely (97%) forestry. A quarter of the subwatershed is in public ownership.

Channel habitat types show a large number of hillslope confined miles, approximately 5 miles of highly responsive/sensitive reaches, and 3 miles low gradient confined. Habitat surveys in 1991 reported good shade, moderate pool habitat, mixed ratings for riffles, and poor wood levels.

Chinook and coho use the lower end of the South Fork, and steelhead use most of the length of the South Fork. No barriers are recorded.

The South Fork is the hottest tributary to the Pistol River, with temperatures in the low 70's. Surveys of stream shade show high potential increases in 4^{th} and 5^{th} order reaches. Seventeen percent of stream miles are bordered with high reproduction and/or mature conifer forests.

The South Fork is rated as low risk for peak flow enhancement (increased stream power)s due to timber harvest, forest roads and rural roads. Risk is moderate for agricultural use, though only a very small area (3.5%) is represented.

Movement of sediment is a concern in the South Fork, with several tributaries adding significant amounts. The South Fork ranked low density for roads on steep slopes when compared to all South Coast subwatersheds, and moderate density for stream crossings.

North Fork Pistol
The North Fork Pistol is nearly all contained within the Coastal Siskiyous, with only 5 percent in the Southern Oregon Coastal Mountains. All land use is forestry. The US Forest Service manages the majority of the subwatershed.

Channel habitat typing is only done on non-USFS lands and is very limited for the North Fork. Of the miles assessed, 2 miles are confined by hillslopes, 1.3 miles are highly responsive/sensitive reaches, and 0.2 miles are low gradient confined.

Chinook and coho use only the lowest portion of the North Fork, with steelhead extending into approximately a third of the North Fork mainstem. Temperatures at the mouth are in the high 60's. Riparian shade shows high percentages of potential increases on the Mainstem North Fork (19%), and on 3rd order streams (10%).

This subwatershed is rated as low risk for timber harvest and forest roads. It is not rated for agricultural use or rural roads. Some high runoff serpentine soil types are present in the upper portions of the west side. The small area of private land in the North Fork assessed for sediment ranked moderate density for roads on steep slopes and moderate density for crossings when compared to all South Coast subwatersheds.

East Fork and Upper Pistol
The East Fork ands Upper Pistol subwatersheds are contained within the Coastal Siskiyous ecoregion with four percent of Serpentine Siskiyous in the East Fork. Both sub-watersheds have forestry land use are in the National Forest.

No barriers are identified and anadromous fish use is only steelhead in the lower portions of the subwatersheds. Temperatures range from mid to upper 60's.

These two sub-watersheds have an unknown risk of peak flow enhancement (PFE) due to timber harvest in relation to rain on snow events. They both have considerable areas at high elevation, but more information is needed for adequate assessment. Forest roads pose low risk to PFE and rural roads were not an issue.

Action Items

This list is a product of a synthesis process by natural resource specialists with extensive experience on the South Coast, who reviewed and discussed the watershed assessment for Pistol River. Input from watershed councils is also incorporated. Actions are focused on addressing limiting factors and are listed in order of relative importance, based on the impressions of the resource specialists. For a more complete list of restoration, protection, outreach and assessment activities, refer to the Curry Action Plan. All action items are voluntary, with complete respect for private property rights.

1. **Restore/explore wetlands connections (Crook Creek, oxbows).**
   Field check all wetlands listed in the Wetland Assessment and assess for functionality.

   Where possible, protect intact wetlands.

   Where possible, restore function, connection to a water body and potential vegetation in less than intact wetlands.

2. **Determine impact of sediment on potential planting projects (South Fork and Mainstem).**
   Identify sediment transport and storage reaches on the South Fork and Mainstem Pistol.

   Determine channel stability relative to potential planting projects.

3. **Riparian silviculture for shade and large wood recruitment**
   Plant riparian vegetation for shade and large wood values, where appropriate and with proper protection.

   Encourage natural conifer regeneration where possible

   Convert alder dominated stands to conifer, where appropriate

4. **Large wood for sediment moderation**
   Identify reaches where wood is critical to stabilizing sediment, especially in tributaries and the upper South Fork.

5. **Propose an interpretive site at Pistol River School for education/outreach.**

6. **Water quality monitoring**
   Institute water quality measurements in addition to temperature, to identify limiting factors and provide feedback on restoration efforts.

7. **Explore road abandonment in the North Fork Pistol (access easements with Forest Service)**

8. **Road surveys in the South Fork**

Assess South Fork subwatershed roads and crossings for suitability, design, and probability and consequences of failure.

9. **Conservation easements**
   Obtain riparian conservation easements where available.

10. **Re-examine current water quality data, including other sources if available.**

11. **Encourage off-stream watering for livestock wherever possible.**