WATERSHED WRAP

Quarterly Newsletter from the Coeur d'Alene Tribe's Fish & Wildlife Programs describing watershed management efforts. Offering readers food for conversation and paper for wrapping!

Fall Equinox 2007 (Vol. 11 No. 3)

This publication is intended to provide all people interested in fish and wildlife of the Coeur d'Alene Reservation information about program work efforts and to solicit your support as well as constructive criticism.
Thank you for your interest.

Tribal Osprey Management
By Nathan Albrecht, Wildlife Program

The southern portion of Lake Coeur d'Alene is the home to one of the densest populations of osprey in the country. This is evident when one takes a boat from Conklin Bay, under the bridge and up the St. Joe River. Many of the pilings and other structures contain active osprey nests that produce fledglings every year. The osprey population in this area has been used in the past as a source for osprey relocations in other parts of the country. In order to assure that this population remains strong, the Tribal Wildlife Program has begun to take an active role in osprey monitoring and management.

Osprey are migratory raptors that spend their winter in Central and South America, before migrating north to lakes, rivers, and reservoirs to breed. Adult ospreys form breeding pairs that nest at the same location for life. Ospreys select nest sites that provide maximum visibility of the surrounding terrain. On Lake Coeur d'Alene, many of these nest sites are on pilings and cottonwood trees. Ospreys establish their nests in late April and early May, and lay the eggs shortly thereafter. Successful osprey nests generally fledge from 1 to 4 young per year, usually in late July.

In order to manage the osprey population on Lake Coeur d'Alene, the Wildlife Program has been working with Idaho Fish and Game, as well as some local residents in establishing a monitoring protocol. This protocol consists of 4 main components: 1) Identify, map active and occupied nests, 2) Calculate nest success, 3) Band all fledglings, and 4) Estimate annual production.

An "active" nest is considered to be a nest that is occupied by an osprey pair that has already laid its eggs. Observing the female on the nest can identify this. If she has laid her eggs, she will be in an incubating position. This is a specific posture that the female will be in when she is on eggs. An "occupied" nest is simply a nest that is associated with an osprey pair, but does not yet have eggs. Starting this season, Wildlife staff observed ospreys in May to determine which nests are active, occupied, or vacant. All of these locations were then mapped with a GPS and put into a database.

The next step is to calculate nest success. All nests are re-visited in July to determine if there are fledgling ospreys present. Wildlife staff uses a boat with a ladder to climb up to the nests and count the young. A nest that was previously identified as active or occupied that fledges young is considered to be a success. Factors that could cause a nest to be unsuccessful include such things as predation by other birds or mammals, death of a parent, poor nutrition, nest disturbance, and a variety of other environmental variables.

A new nesting platform is attached to a piling.

While wildlife staff is on the ladders at the nest sites, they also will assist with banding of all of the young. This process has been done for decades by IDFG and University of Idaho staff, and Tribal staff will be assisting them with this in the future. Birds are fitted with a small ID tag on their leg. If this bird is ever handled again, this ID number is recorded. Researchers use this system to monitor migration patterns and potential causes of mortality. Many birds that were banded as fledglings on Lake Coeur d'Alene have returned to establish their own nest as adults.

Osprey production is generally defined as the number of fledglings per active nests. This gives an overall index for population health. If there are negative factors affecting a population, it will often result in low production. The goal in osprey monitoring is to identify negative trends in the population status so that measures can be taken to correct them. Hopefully with the protocols outlined here, we will be able to identify these trends in time.

Over the past 2 years, wildlife staff has been working to assure that quality potential nesting structures are maintained on the lake. Old piling removal and a deteriorating cottonwood population has threatened to reduce potential nest sites. In order to compensate for this, additional platforms have been built on remaining pilings, and nesting platforms that have deteriorated have been repaired. With proper management, the osprey population should remain strong well into the future.♦

Ron Torpey III, Mike Allen Sr., Glen Lambert, Jr. shocking with large woody debris in the foreground

Large Wood Recruitment Study

By Stephanie Hallock, Habitat Biologist

The Tribal Fisheries Program is due to complete an inventory and assessment of instream wood loads and riparian large woody debris recruitment potential for approximately 55 miles of streams in four watersheds on the Reservation, including Alder, Benewah, Evans and Lake creeks. Large woody debris recruitment is the process in which trees in a riparian area fall and enter a stream to become large woody debris (LWD). LWD plays an important role in maintaining a healthy stream ecosystem by helping create pools, providing cover, and storing spawning gravels. Increasing the amount of LWD in stream channels to meet fisheries habitat needs is an increasingly common goal for many stream restoration projects being completed in the western United States.

LWD recruitment potential is a combination of different factors including tree species, height, distance from the stream, ground topography, wind direction, and stream discharge. A combination of computer models is typically used to predict long-term LWD recruitment using data that is collected from riparian forests. A model that simulates riparian forest growth over a period of time is first developed. This provides information on tree characteristics at a site projected into the future - 10, 20, 50 or more years. This data is then input into a LWD recruitment model that determines how many of the existing trees in the stand could potentially become LWD. By using these models, we can examine how different management activities, such as thinning, will impact LWD recruitment to streams. It will also give us a reasonable idea of how long it will take for trees that are planted this year to mature and become potential sources of LWD.

The creeks targeted for this survey include the most important habitats for spawning and rearing of westslope cutthroat trout. Staff is contacting land-owners in our study area to help us identify locations for our field surveys and possible future restoration work. Field surveys will occur at approximately 70-80 randomly selected sites between September-October 2007. At each site we will measure riparian stand conditions. Stream conditions including shade, LWD frequency, and pool characteristics will also be measured.

This study will provide important information on existing and potential long-term conditions for Reservation streams. The objectives of this study are to: 1) measure the LWD recruitment capacity of riparian forests; 2) measure existing instream wood loads and stream conditions to better understand fisheries production potential as it relates to riparian stand condition and LWD recruitment potential; and 3) draft a planning document to identify priorities for restoration/enhancement treatments based on the study results. The Tribe will use the study as the basis for developing cooperative projects with landowners interested in meeting the identified habitat needs. We anticipate directing a considerable amount of our

Program funding, up to $90,000 annually, to meet these priorities over the next 10 years.

Anyone interested in this study should feel free to contact Angelo Vitale at (208) 686-6903. ♦

Mike Allen, Sr. & Glen Lambert, Jr. enroute to Alder Creek

ATV Adventure to the Mouth of Alder Creek: Fish Population Sampling

By Daniel Jolibois, Fisheries Technician

On an annual basis the fisheries crews do late summer trout population work at more than 100 sites in four different watersheds. This work is used to monitor the populations of trout not migrating to the lake. Several different methods are used to access these sites, including vehicles, boats, ATV's and foot. No matter what method is used to access the sites all gear must be packed in.

On August 21, four fish and wildlife crewmembers (Glen Lambert, Mike Allen and Dan Jolibois from fisheries and Ron Torpey from wildlife) pulled off this year's trip to the five fish population shock sites on lower Alder Creek. In years past many different individuals have made the long and dusty, but fun, ATV journey to the mouth of Alder Creek.

The trip usually begins by watching the weather and trying to time the trip after some rain to lessen the dust. This year worked out perfectly. Glen headed up the trip by getting ATV's and persons lined up, with most gear prep done and ready to go the night before. The trip usually starts at first light, leaving Plummer with a couple trucks and four ATVs. By the time we pull into Alder Cr. Loop Rd. and unload the gear at the trailhead the sun will just be starting to raise. All gear is loaded onto the ATV's and off we go into a maze of logging roads, old railroad grades and off-road trails. After navigating the route, about 9 miles, we arrive at the first of the five research sites. Now the fisheries work begins.

First we locate the 200' site to be shocked and put in block seines (nets used to temporarily block up or downstream movement of fish) on the upper and lower ends of the reach. Then, one individual dons the backpack shocker, while the others carry dip nets and buckets and the sampling begins. Starting at the lower end of the site and working upstream the team will use the shocking device to briefly stun the fish, then quickly dip them out of the stream and place them into buckets of water. This will be done three or more times, hopefully catching all the trout in the site. Between each of the passes through the site the fish are processed. Information collected during processing includes lengths, weights and a scale sample used to determine the age of the fish. The fish are then released below the lower block seine or into a pool out of the 200' site.

Glen Lambert, Jr., Mike Allen, Sr., & Ron Torpey III backpack shocking

By the time the process is completed at all five of the lower Alder Creek sites the day is getting late. We are usually near the mouth of the creek, which flows into the St. Maries River. This is one of the most picturesque areas we visit during the year. Sometimes if all goes well we have enough time to relax a bit with BBQ lunch. Then the long trip out begins, hopefully getting back to the vehicles before darkness is upon us. The crew looks forward to the use of ATVs on a trip to the scenic Alder Creek valley each year. So until next year it is back to the norm of the other many sites. ♦

hnt'k'wipn update

By Gerald I. Green, Wildlife Biologist

On 2003, we determined a priority area for restoration and protection in Hangman Creek by overlapping the available data on soil, the potential for soil erosion, stream temperatures, riparian habitats and redband trout distribution. We used the available Coeur d'Alene Tribal GIS to map the distribution of these characteristics and those areas with the greatest overlap between all the data sets were

identified as priority habitats. Once the priority areas were identified we began looking at ownerships and sifting through the available tools to find a means to match the tools with the desires of the landowners to affect habitat change that will improve conditions for native fish and wildlife species. We had available a habitat acquisition tool through mitigation for wildlife losses due to the construction and inundation of Albeni Falls Dam. We then identified a group of adjacent properties that were available for purchase and we were able to secure title to these properties in 2005. Now we have approximately 1,200 acres in one block where we can begin restoration of Hangman Creek and its floodplain habitats. The property is well situated and offers a real opportunity to expand the habitats for the remnant, isolated native trout populations in the upper Hangman. It also offers real opportunities to regain native wildlife habitats that are rich in edible and medicinal plants.

After developing that first prioritization plan, there remained several questions regarding the priority of habitats and the potential of Hangman Creek. Water is a key resource in this region. As in other regions of the arid western United States, the availability of water, or better yet, the lack of water, limits the distribution of life forms and concentrates all manner of species around the relatively few locations were they can access water during the dry season. We needed to reexamine the landscape from a hydrologic perspective and ask the question, "What are the areas that play the most important roles in determining the distribution of wetlands and subsequently the flows in Hangman Creek through the dry season?" One important point to consider when examining this question is the fact that the waters of Hangman Creek within the Coeur d'Alene Reservation are perched well above any aquifer. Any water within the Hangman Creek comes from the surrounding surface level landscape and not from any source deep within the earth. Wetlands in Hangman act as a "sponge," absorbing moisture in the wet season and slowly releasing it to the streams during the dry season.

To identify priority areas within the Hangman Watershed from a hydrologic perspective we found ourselves involved in a hydrologic modeling process guided by an academic oriented research endeavor that spoke a language that was completely new to us. We found ourselves pondering the definitions of terms such as topographic indices, saturated areas, catchments, terrain analysis, representative elementary areas and others that are gibberish to a would be biologist. But one simple little concept has surfaced that could completely change our notion of what is the best approach to the restoration of Hangman Creek. It seems the single most important factor in determining whether or not a site is a wetland is what lies *downstream* of that sight. The results of hydrologic modeling are consistent with what we have been learning about the function of beaver dams in streams such as Hangman. Hangman, being a perched system, functions much as a kitchen sink, pull the plug and the water is gone. Removing the beaver dams, straightening the stream channels and digging extensive drainage networks amounted to pulling the plug and now Hangman Creek generally does not flow during the dry months. The Hangman Creek that we experience today is far removed from its potential because the water has been shunted to the drainage system instead of being held by wetlands to feed the streams during the dry season.

The simple finding of the complicated hydrologic modeling process changes our approach to the restoration of Hangman dramatically. Conventional wisdom states that watershed restoration should be implemented from the top down, reducing the destructive nature of a flashy system at its beginning and slowly working toward areas where flooding is intense has been the strategy to date. We have been hoping the restoration of *hnt'k'wi̱pn* would extend native fish habitats farther into lower elevations and serve to connect those isolated populations. However, the result of the modeling effort indicates there is no reason to adopt a top-down strategy, from a hydrologic perspective. It also indicates that the watershed potential cannot be reached until the lowest reaches of the effected streams and wetlands function under natural conditions. Working low in the watershed means we will have to cope with the destructive energies of the frequent floods and learn to reduce the detrimental effects of those forces by working right where they are the strongest. It also means that *hnt'k'wi̱pn*, being upstream of the major alterations in Hangman Creek, cannot realize its full potential to support native fish and wildlife habitats until reaches downstream are improved.

If you would like to discuss the management plan being developed for *hnt'k'wi̱pn* (the Hangman Mitigation Properties) please feel free to call Gerald Green at 208-686-0312 or Cameron Heusser at 208-686-5521 to discuss these or other Hangman related issues. ♦

Redband Trout in Hangman Creek

By Bruce Kinkead Fisheries Biologist

Historically, Redband trout occurred throughout the Columbia River basin east of the Cascade Mountains up to barrier falls created 10-15,000 years ago on the Kootenay, Pend Orielle, Spokane and Snake Rivers; the upper Fraser River above Hell's Gate; and Athabasca headwaters of the

MacKenzie River system. Cutthroat trout (*Oncorhynchus clarki lewisii*), on the other hand, were found above these barrier falls in the tributaries of the Columbia River. Since Hangman Creek is below the barrier falls on the Spokane River, the redband trout are the native to the watershed whereas all tributaries flowing into Lake Coeur d' Alene above the barrier falls contain only cutthroat and bull trout. Historical salmonid distribution has been altered from extensive stocking by state fish and game agencies, as well as private citizens. Cross-breeding of native Redband with hatchery Rainbows and with Westslope Cutthroats has left few genetically pure populations within the Columbia Basin. Genetic studies in the Spokane River watershed show that there are isolated populations in Hangman Creek and Little Spokane River and their tributaries. The closer the distance the populations are to each other the more closely they are genetically related. The genetics study completed on Hangman Creek also indicates that there is no hybridization with hatchery stocks and very little hybridization with a small population of cutthroat trout that were transplanted from Benewah Creek in the 1980's.

Rainbow trout in general reach sexual maturity at 2-3 years and females typically deposit 1,000 eggs per pound of body weight. Spawning occurs March – June with a high mortality of female spawners. The eggs hatch in 4-7 weeks depending on temperature. Because of high temperatures in Hangman Creek, we would expect early spawning and emergence of fry to be closer to 4 weeks in the drainage.

A great deal of the research completed on Redband trout has been done on the desert varieties from the Great Basin, most recently it has been focused on the population in the Upper Columbia. Researcher Clint Mulfield from the University of Idaho investigated summer habitat requirements in the Kootenay River drainage. His results demonstrate that historically a creek like Hangman could have been IDEAL Redband trout habitat. He describes low gradient, medium elevation reaches similar to those found in Hangman Creek flowing through alluvial valleys with a well-defined floodplain, along with an abundance of complex pools as ideal habitat. Age-0, juvenile, and adults strongly selected pool habitats and avoided riffles. He found that as gradient reaches 4 percent, fish densities decreased and were not present at gradients over 10 percent. Many of the tributaries of Hangman Creek fall below 4% gradient. As temperatures drop in the fall and early winter, adult Redband trout find suitable over-wintering habitat in deep pools with extensive amounts of cover. Spawning occurs, in 3rd-order streams (such as Indian Creek and other *tributaries of Hangman Creek)* in the Kootenay River drainage, as flow decreases after peak runoff in the spring and mean daily temperatures start to exceeded 43 °F and as maximum daily temperature exceeded 45°F. Eighty percent of the spawning redds are found in pool tailouts *(shallow, downstream end of a pool)* that contain substrate sizes from 2-6mm *(pea sized)* and water velocities of 16-28 inches/second.

Data collected in Hangman Creek indicates that as long as temperature was not limiting little or no flow during certain times of he year will not exclude trout from populating certain stream sections. During June and July fish were primarily found in small cool tributaries no more than 4 feet across and a few inches deep. However these locations were heavily vegetated with a dominant overstory of conifers. We use the running seven-day average maximum as the measuring unit for temperature. If temperatures exceed a max of 68 degrees for 7 days, fish were not present during the early summer. Fish data collection in the main stem of Hangman Creek is problematic during late spring as the water is not clear enough to sample fish. But we know that adult fish are present in the mainstem of Hangman from our migratory traps that are set from February till May. These fish are small in comparison to spawning cutthroat trout as evidenced by scale analysis showing a 3- year old fish averages just 8-10 inches long. We hope that by continuing this research and restoration will once again be able to match the bountiful harvests of the past.♦

Josh Sanchez, Lovinia Johnson, & Mark Stanger, Plot survey crew

2007 Summer Intern Projects

By Mark Stanger & Glen Lambert, Jr., Fisheries Program

Natural Resource Department programs hosted five summer youth interns. Fisheries interns were: Jordan Justice, Lovinia Johnson, Josh Sanchez and Lyle Meshell, Jr.; Wildlife intern Kris Arthur; and Lake Management intern Shelby Chapman.

Lovinia worked hard on a survey of viable harvesting of camas fields in Benewah Creek. The

objective of this project was to analyze the current camas crop to determine if harvest numbers were at the historic 1900 levels. The areas surveyed were spotty. It was determined that we would have to plant more camas to replenish the past harvest rate. It was determined that if fields were left at the current rate of growth they would die out. To accelerate regeneration of the camas crops we need to plant additional plants in areas where density is sparse.

Interns Lovinia Johnson and Josh Sanchez took a month to complete the second project. This project was a survey of the woody species in the Benewah Creek area. The objective of this survey was to measure and record the survival, growth of reintroduction of plants at restored/plant sites. There were two different types of survey plots: Greenline Transect plot and Fixed Plot Transect. The interns learned how to count and record the classes of woody vegetation by species, age, and density of ground cover. Interns learned to map and quantify the total plant coverage of an area to determine adequate growth. This will be a seasonal survey to track the success of habitat restoration efforts. The interns completed all paper work and photographed plants for future projects and site recordings.

The third project was assisting Fisheries technicians led by Dan Jolibois. The crew planted trees, shrubs, and grass plugs in new restoration sites. Everyone took turns with the fisheries shocking crew and learned the procedures getting a fish population estimate in the stream. The interns spent time learning how to measure the length and depth of pools and riffles, as well as how to identify Shiners, Westslope cutthroat, eastern brook trout, and Sculpin. In addition they learned names of various frog types.

Rosgen channel typing survey with Bruce Kinkead's crew in the Hangman creek area was the final project of the summer. They learned methods used to identify and classify streams. Streams get a rating from A to G and that is used to determine the best restoration method for the stream section surveyed.

A short phone survey was conducted with the interns to see how they liked the job experience during the summer. They were asked: *How would you describe your intern experience? How would you rate your experience? What are your plans for next year?*

Some interns' thought all Fisheries, Wildlife & Lake Management staff did all day was to go swimming and fishing. After a few days of working 8-hour days, it changed their idea of what project work is happening. They learned that there is much paper work that is needed for documenting progress to completion of a project. They learned to make maps, work in the outdoors, and work as a member of a crew. They especially liked making their own money and working with other youth.

The average results on a scale of 1 to 10 rating the experience were 6. Many did not like working in the hot weather but many enjoyed early start times as it gave them the afternoon with friends or family. The consensus for next years plan is to get another job and make money. ♦

Water Quality Benefits from Habitat Restoration

By Dale W. Chess Ph.D., Fisheries Biologist

In the summer edition Watershed Wrap article (http://www.cdatribe.com/docs/fish/2007-vol11no2summer.pdf), a stream restoration strategy described reconnecting Benewah Creek to it's floodplain/riparian zone, thus allowing natural processes to occur which creates high quality habitat for westslope cutthroat trout. This article will describe an additional benefit of stream restoration that has positive influences well beyond the site of restoration. In the previous article I described how current restoration efforts in Benewah Creek is reducing the amount of stream bank erosion by reconnecting the stream to the floodplain. In addition to maintaining a productive floodplain/riparian zone, the restoration also reduces stream erosion rates to natural background levels. By reducing erosion rates in Benewah Creek, our restoration efforts also decrease the amount of phosphorus that enters Coeur d'Alene Lake. Phosphorus is bound to the soil particles in stream banks. When excessive erosion of stream banks transports sediments downstream and eventually into Coeur d'Alene Lake, the bound phosphorus is also transported to the lake. Decreasing phosphorus transport into Coeur d'Alene Lake is especially important because phosphorus is a key nutrient that drives algae growth in the lake. When excess phosphorus enters a lake, algae production increases, and eventually leads to water quality problems. Specifically, decomposition of the excess algae production on the lake bottom reduces the amount of dissolved oxygen in the lake. The decrease in dissolved oxygen affects chemical and biological processes in the lake, eventually leading to poor water quality and reduced habitat for fish and other animals. Thus, to maintain and improve water quality in Coeur d'Alene Lake it is important to reduce the amount of phosphorus from streams that flow into Coeur d'Alene Lake to background, natural levels. This will be accomplished with restoration projects like the ongoing one in Benewah Creek. ♦

University of Idaho Extension

FALL SPEAKER EVENTS

MARK YOUR CALENDARS
DATES, TIMES, TOPICS, & LOCATIONS

OCTOBER

October 17th, Wednesday, 6:00-8:00 p.m. "Leave No Trace," Cd'A Tribe Fish & Wildlife Conference Room, 401 Anne Antelope Rd., Plummer ID. Refreshments provided.

NOVEMBER

November 14th, Wednesday, 6:00-8:00 p.m. "Talking Turkey," Rose Creek Longhouse, Worley, ID. Refreshments provided.

DECEMBER

December 13th, Thursday, 6:00-8:00 p.m. "Coeur d'Alene Storytelling," at North Idaho College, Molstead Hall Library, Room 264, Coeur d'Alene ID. Refreshments provided.

QUESTIONS?

Contact CdA Reservation Extension Educator at 208.686.1716

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What's in a name?

By: Bruce Kinkead, Fisheries Biologist

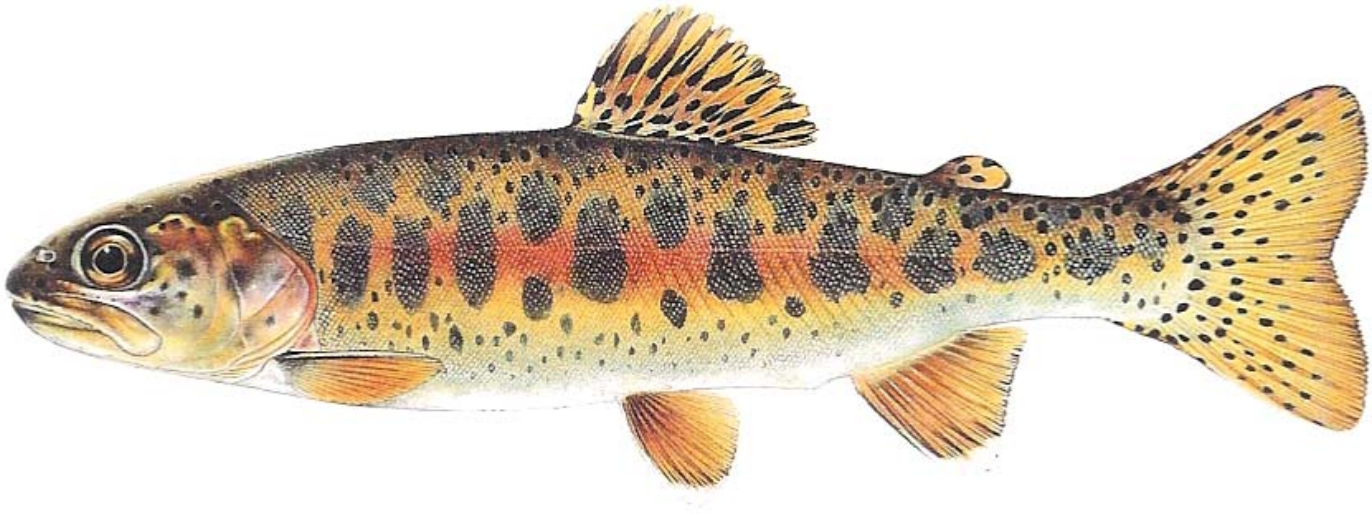
The Hangman Creek Fisheries Restoration Project is focused to restore habitat for populations of native fish such as the redband trout (*Oncorhynchus mykiss garideini*). Long time residents in the Hangman watershed were interviewed and Fisheries staff came to realize many people were calling the redband (rainbow) trout a cutthroat trout due to the redband's bright colors when compared to hatchery trout normally caught in stocked waters. To confirm this pictures were shown of local redband trout and residents concurred that that it is what was caught in Hangman Creek.

The question is common, what are redband trout? And are they different than the rainbow trout that state fish and game agencies stock in local streams and lakes?

From biology courses taken in college it is known fish evolve into different forms when isolated over thousands of years. Biologists classify fish based on its characteristics: 1) visual (size, color); 2) meristic (such as the number of fin rays); 3) behavioral (such as fall or spring spawners); and 4) genetic. Biologists use scientific names to group similar species like a family tree. The scientific name tells much of the fish's lineage. Salmon and trout are placed in the family Salmonidae and then are grouped into many genera (genus in singular). From there each genus is subdivided into species, and each species may be subdivided into subspecies. This system allows for separation in classification of the smallest character trait.

Pacific salmon and trout are grouped by the genus *Oncorhynchus*, whereas the Atlantic salmon are from the genus *Salmo*, and char, such as the lake, brook and bull trout, are put into the genus *Salvelinus*. The species name (*mykiss)* further distinguishes the rainbow and steelhead trout from other Pacific trout and salmon. 1) The redband trout of the Columbia River basin, both east of the Cascades and in the Upper Fraser River basin are named *(Onchorhychus mykiss gairdneri)* or (*O. m. gairdneri)* for short)*;* 2) the redband trout group of the Sacramento River basin, which are subdivided into two Kern River drainage subspecies are named *O.m. aquabonito* and *O.m. gilberti*, and the McCloud River subspecies are called (denoted by O.m. stonei); and 3) the coastal rainbow and it's sea-run version, the steelhead trout *(Onchorhynchus mykiss iredeus)*.

The Redband Trout can look very much like a Westslope cutthroat to the untrained eye. But the characteristic red cut or "slash" mark is missing. However, bright parr marks on the sides and a pink belly are similar to the Westslope cutthroat. The Redband also has a white fringe on their anal and pelvic fin similar to what a Brook trout shows on their fins. ♦



Redband trout (Oncorhynchus mykiss garideini)

ATTENTION:

Nature Enthusiasts meet Wednesday, September 26th at 6:00-8:00 p.m. at a presentation on "Hangman Creek's Native Flora and Fauna" held at the Federal Building, 222 S. 7th Street, St. Maries, ID. Presenters: Gerry Green, Wildlife and Bruce Kinkead, Fisheries biologists

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