Panhandle Region
Annual Fisheries Report
2011 Activities and Accomplishments

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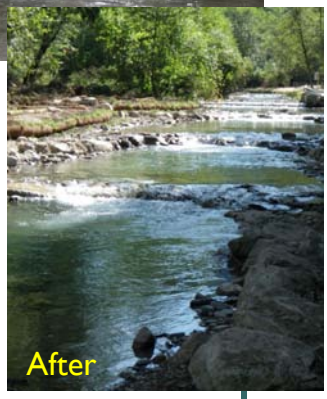
Please take a few minutes to review our research and management activities in 2011. We've had a busy year, and not all that we accomplished is reflected in these pages, but this newsletter describes some of the most noteworthy projects and surveys in the Panhandle Region.

If you find it interesting, tell your friends and fishing partners and pass it along. This newsletter is posted on the IDFG website http://fishandgame.idaho.gov/public/about/offices. If you have questions or want to share your thoughts, please give us a call. If you'd like to be included on an e-mail distribution list for periodic summaries and information, send a request to jim.fredericks@idfg.idaho.gov and we'll add you to the list.

Inside this Issue...

Over 100,000 kokanee Spawners Return to New and Improved Granite Creek



Granite Creek and it's tributary—Sullivan Springs—are tremendously important streams for the Pend Oreille kokanee population. Each year, around six million kokanee fry from Cabinet Gorge Hatchery are released in Sullivan Springs. Ideally, around 100 thousand of these fish return as adults to be collected and spawned at the fish trap. About 10% of the fish are passed upstream into the Sullivan Springs channel to spawn naturally. Several bull trout also use Sullivan Springs for spawning and juvenile rearing.

Between Sullivan Springs and the mouth of Granite Creek, a series of log structures built years ago created pool habitat for the thousands of kokanee migrating upstream. In recent years, numerous flood events had started to undermine these structures, threatening the stability of lower Granite Creek. Ultimately, this could limit available spawning habitat and compromise upsteam fish passage

With funding from the US. Fish and Wildlife Service, Avista, and IDFG, a major 2-part project was completed in August. The first component of the project was replacing the log structures in Granite Creek with rock "cross-vane" structures (photos at right). The rock structures are far more durable than the wooden structures, but they still create the important series of pools.

The second part of the project involved two improvements to Sullivan Springs. The thin berm separating Sullivan Springs from Granite Creek, which was being eroded, was reinforced. Next, the weir and kokanee collection facility was upgraded to make trapping, sorting, and handling fish more efficient (photo at left).

The work was completed just prior to the return of over 100,000 spawning kokanee. The egg-take facility was put to the test, with the Cabinet Gorge Hatchery crew taking 10 million kokanee eggs! This is extremely exciting news, considering that three years ago, the total return yielded less than a half million.

In 2012, we hope to complete additional improvements to the spawning channel upstream of the egg-take facility so that it can accommodate even more naturally spawning kokanee and bull trout. — Rob R.

Pend Oreille Fishery Recovery Effort Update

We got a lot done and continued to see promising results on Lake Pend Oreille in 2011. Predator removal efforts caused a further decline in the lake trout population and adult lake trout remained at low abundance. Even more encouraging was a substantial decline in the netting catch rate for juvenile lake trout, which was the first indication that we are overharvesting these smaller fish. Less predation pressure led to continued improvement for the kokanee population. In 2011, kokanee spawner abundance increased for the fourth consecutive year and younger age classes (fry, age-1) were also encouraging. Rainbow trout removal through the Angler Incentive Program (AIP) was continued in 2011 and about 8,700 fish were harvested. However, the rainbow population appeared to remain fairly stable with a harvest rate (19%) below the level necessary to effectively reduce the population. Although predation from rainbows has not been reduced to the extent desired and likely has slowed kokanee recovery, the consolation is that many anglers enjoyed good fishing for rainbows in 2011. This should only improve once kokanee rebuild enough to allow a return to trophy management for rainbows. We will be taking a serious look at the future for both kokanee and rainbow trout management during the coming year. We are increasingly optimistic that re-opening a limited harvest kokanee fishery and returning to trophy rainbow management will be possible in the near future – maybe even in 2013. Cross your fingers that we have enough success in 2012 to make it happen!

Table 1. The number of lake trout removed from Lake Pend Oreille by netting and by angling (turned in to the Angler Incentive Program) since the fishery recovery effort began in 2006.

	2006	2007	2008	2009	2010	2011	TOTAL
Angling	11,041	17,665	13,020	7,366	8,740	7,032	64,864
Netting	4,274	5,836	11,761	17,231	17,846	10,850	68,021
Total	**15,315**	**23,501**	**24,781**	**24,597**	**26,586**	**17,822**	**132,885**

Lake Trout Control


Though a few large lake trout are still handled, we've seen a marked reduction in catch rates of mature fish.

As in past years, we removed lake trout using both commercial netting equipment and the AIP. Netting was conducted from January 17 through April 29 and again from September 6 through December 16. We've further refined netting dates to maximize lake trout catch and minimize bull trout bycatch. During the winter and spring months we almost exclusively targeted juvenile lake trout on the north end of the lake. Adult lake trout were targeted at three spawning sites during September and October before transitioning back to netting juvenile lake trout in November and December.

Overall, netting effort in 2011 was greater than in any previous year. In fact, if all the nets set during the year were strung together they would be almost 400 miles long!

Lake trout removal showed continued success in 2011. Netting removed 11,785 lake trout and anglers removed another 7,324 fish, which were both declines from previous years (Table 1). Since starting the program in 2006, the grand total of lake trout removed is 134,112. We were excited to see about a 60% reduction in the catch rate for juvenile lake trout compared to the past two years. This was the first indication we've had that netting effort is high enough to overharvest juvenile lake trout. Adult lake trout have already been dramatically reduced, so also seeing a decline in juvenile lake trout catch rates is very encouraging. Adult catch rates at spawning sites and in trap nets were low again in 2011 and anglers also had more difficulty catching these bigger lake trout.

We began a tagging study in the fall that will allow us to estimate how many lake trout remain in the lake. Every few years we tag and release a group of lake trout. A random netting survey will be conducted later this winter and the number of recaptured lake trout carrying tags will be used to estimate the size of the lake trout population. This will provide valuable information for gauging our progress towards reducing the lake trout population.

We're optimistic that a limited harvest kokanee fishery and a return to trophy rainbow management will be possible in the near future

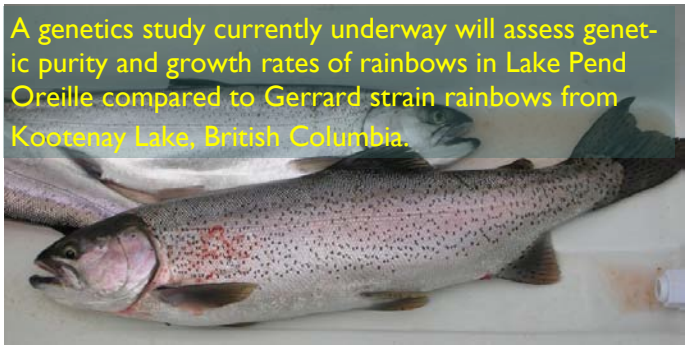
Rainbow Trout

Anglers experienced good catch rates for rainbows and this was reflected by totals from the AIP. In 2011, anglers removed 8,697 rainbows. This was the highest annual total since the program started in 2006. That brings the total rainbow harvest to 41,651 over the past six years. Fewer trophy-sized fish were reported than in 2010, although a few fish over 20lbs were caught.

Rainbows have been more difficult to control than lake trout. The AIP was instituted for rainbows in 2006 with the goal of reducing the population temporarily to allow kokanee to recover more quickly. However, the rainbow population has been difficult for anglers to overharvest and netting cannot be used because rainbows primarily are found offshore where netting is ineffective. A tagging study started in 2010 and completed in 2011 showed that only 19% of the population was harvested. To substantially overharvest the population we anticipated harvest rates would likely need to exceed 50%. Additionally, a population estimate indicated a fairly stable number of rainbows, increasing slightly from 2009. Fewer big fish appear to be

present, but even smaller rainbows are major predation threat to kokanee.

The AIP has not affected the rainbow population to the extent desired, but we plan to continue the effort through 2012. We hope continued harvest will provide some benefit to kokanee and we'll have one more year to evaluate the program's effectiveness. Later in the year we will decide whether to continue the AIP into the future. While kokanee recovery has been slowed because of continued predation from rainbows, the consolation is that rainbows have remained abundant and provided fishing opportunity for anglers at a time when kokanee fishing is closed and lake trout fishing is poor.


A genetics study currently underway will assess genetic purity and growth rates of rainbows in Lake Pend Oreille compared to Gerrard strain rainbows from Kootenay Lake, British Columbia.

Once kokanee rebound sufficiently to support predation pressure from rainbows, trophy rainbow trout management will resume. More abundant kokanee and rainbow harvest restrictions should allow a trophy fishery to rebuild relatively quickly. In anticipation of a possible return to trophy rainbow management, we started a genetics study in 2011 to evaluate the genetic purity and growth rates of rainbows in Lake Pend Oreille compared to pure Gerrard strain rainbows from Kootenay Lake, British Columbia. With the help of anglers, samples are being collected from both lakes and will be analyzed in 2012. If we determine that the genetic makeup of rainbows in Lake Pend Oreille is contributing to smaller fish size then we will arrange to stock pure Gerrard rainbows from Kootenay Lake into Lake Pend Oreille once we return to trophy rainbow management. This is an exciting study that undoubtedly will improve our understanding of the rainbow trout population in Lake Pend Oreille.

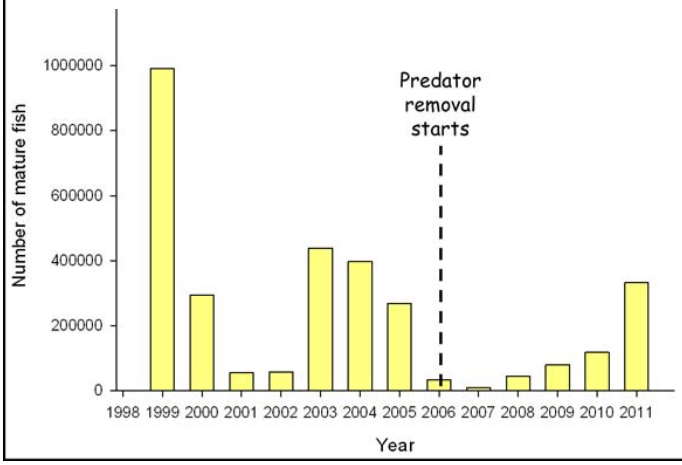
Kokanee

We conducted our annual kokanee monitoring in 2011, which allows us to assess the status of the population and how it is responding to predator removal, lake levels, and other recovery efforts. A variety of surveys are conducted, but the most important are trawling and hydroacoustic surveys that are completed in August and September. Results from these surveys tell us a variety of things, including how many kokanee are going to spawn and what the survival rates were over the past year. This information is compared to results from previous years to determine whether the population status has improved. Recovering the kokanee population depends on both wild and hatchery origin fish. For both groups combined, we estimated 332,000 late-run kokanee spawned in 2011. This was the highest estimate since 2004 and marks the fourth consecutive year that kokanee spawners have increased since reaching a record low in 2007 (see figure above). Improved spawner abundance in recent years is resulting in more kokanee offspring. We saw substantial increases in the number of kokanee fry (nearly 12 million) and age-1 (2.3 million) kokanee in 2011. These fish should provide opportunity for even bigger increases in the adult population in coming years.

Unfortunately, survival from fry to age-1 (22%) and age-1 to age-2 (23%) was much lower than we would like to see. We are unsure why this is the case given that predator removal efforts are working well. However, a possibility is that we lost a fair number of these fish downstream during high spring runoff. A big concern early in 2011 was the heavy snowpack and potential for high runoff conditions. These conditions can cause kokanee to follow currents downstream and pass over Albeni Falls Dam. Fortunately, we had cool weather through June and runoff was more controlled than anticipated. While it did not appear that we had a major loss of fish, it is possible that enough fish were lost to reduce survival from what we otherwise would have expected. Survival rates for older kokanee age classes were much higher and in the range we like to see.

This year about 10 million eggs were taken from spawners returning to the fish trap in Sullivan Springs, which will allow for a strong fry release in June. Even more eggs would have been collected if the weather would not have been so dry in December. Dry weather resulted in very low stream flows near the end of the spawning run that caused some fish to leave Sullivan Springs before being spawned. Most kokanee in Lake Pend Oreille are late-run spawners, meaning they spawn in November and December. In recent years, we've also had an increasing number of early-run kokanee that spawn in streams in September. We cannot fully count the number of early-run spawners each year, but stream surveys suggested that these fish increased in abundance again in 2011. The increasing trend for all groups of kokanee spawners indicates that survival has improved in response to reduce predation.

Estimates of wild and hatchery kokanee spawners in Lake Pend Oreille.



Two new kokanee research projects were started in 2011, both with the help of graduate students and faculty from the University of Idaho. One project is designed to tell us more about the habitat conditions that kokanee need to spawn successfully. A major component of this study will evaluate egg survival in various habitat conditions, allowing us to better assess the influence of lake level management on kokanee reproduction. Another research project will examine *Mysis* shrimp and zooplankton and their effects on kokanee survival. We anticipate this study will provide information that allows us to refine the timing and location of stocking for hatchery raised kokanee to improve their survival.—Andy Dux and Nick Wahl

Record Number of Kokanee in Spirit Lake

The exciting news for Spirit Lake is that the most abundant year class of kokanee ever documented for this lake will be entering the fishery this winter. IDFG personnel conducted mid-water trawling and hydroacoustic surveys this past August to monitor the kokanee population. The strong year class of one year old kokanee last year is now a record high year class of two year old kokanee. How many fish are in this year class? Our best estimate is that there are over 382,000 kokanee averaging about 8.25 inches that will be available at the start of the ice fishing season. This converts to about 260 catchable-sized fish for each acre of water, or about four times as many kokanee as last year! So if there is good ice cover and if the fish cooperate, Spirit Lake could have one of its best winters ever. But do not wait because the following year's year class is expected to be back to more normal levels of abundance. — Melo M.

Kokanee and Chinook Populations up in Coeur d'Alene

The kokanee populations in Coeur d'Alene Lake continued its increasing trend in 2011. Kokanee abundance reached a low point of only 1.2 adult kokanee per acre in 2008. Since then kokanee have steadily increased, and now the density averages 34 adult kokanee per acre for the entire lake. The densities are approaching the levels of the 1980's and 1990's, until the floods of 1996 and 1997 put a hole in the kokanee population that has taken years to repair.

High kokanee numbers are very good news for Chinook anglers. More kokanee mean bigger, faster growing Chinook. Because of the abundant kokanee, no effort was made this year to limit the number of Chinook spawning in the Coeur d'Alene River. This past year, we counted 91 redds (spawning nests) in main Coeur d'Alene River below the Little North Fork. At some point the number of spawning Chinook may need to be limited, but for now the kokanee population appears able to withstand more predation.

We also stocked 20,000 hatchery raised Chinook in Wolf Lodge Bay in 2009, 2010, and 2011. The fish were stocked in two separate batches, one in the spring and one in the fall, to see which strategy works best. All of the hatchery fish were marked with an adipose fin clip, and anglers are asked to please bring the heads of any Chinook salmon that have an adipose fin clip to the Fish and Game Office. By examining a small tag in the fish's snout we can determine when it was stocked and improve our stocking program in the future.—Melo M.

As part of a stocking strategy evaluation, anglers are asked to provide the head of any adipose fin-clipped Chinook from Coeur d'Alene to IDFG.

Hatchery Trout Evaluation

As part of an on-going study, we evaluated harvest (return-to-creel) rates and time until harvest for catchable rainbow trout in five Panhandle Region lakes. Hatchery trout were tagged with orange T-bar anchor tags by inserting the tag just below the dorsal fin. The tags were numbered and labeled with a toll-free IDFG "tagging hotline" telephone number. We then released 200 catchable-size fish into Robinson, Smith, Jewel, Freeman, and Bull Moose Lakes during April and May 2011.

As of December 31, 2011, angler harvest rates for the stocked trout was estimated to range from 17% in Freeman Lake to 71% for Jewel Lake. We have evaluated our hatchery rainbow trout program in 11 lakes since 2009 and found angler exploitation to range between 2-79% with a regional average of 35% (see table). Considering that it costs over a dollar on average to raise and plant a rainbow trout, we want to see at least 1/3 of the planted fish harvested in the first year. Anything less than that is an inefficient use of an expensive resource.

Based on the evaluation to date, we will re-evaluate hatchery stocking in Hauser, Lower Twin, and Freeman lakes. We will continue to systematically evaluate the contribution catchable trout make to fisheries around the region.—Mark L.

Estimates of angler exploitation, % resident anglers, and days-at-large for hatchery rainbow trout at various Panhandle Region lakes sampled in 2009-2011.

Lake	Year of Study	Number of different anglers	Harvest Rate	% Idaho Resident	Mean Days at Large *
Round	2009	34	36%	91	103
Kelso	2009	58	79%	86	50
Hauser	2010	3	2%	100	8.3
Fernan	2010	31	39%	100	90
LTwin	2010	13	20%	85	52
Stoneridge	2010	22	33%	77	49
Freeman	2011	14	17%	87	32
Jewel	2011	47	71%	93	36
Robinson	2011	26	32%	97	33
Smith	2011	28	32%	90	45
Bull Moose	2011	13	31%	46	32

*mean days @ large as of 12/31

Construction and Restoration Projects

Morton Slough Access gets a Facelift

Thanks in part to a $5,000 contribution from the Pend Oreille Bass Club, the Morton Slough boating access area was upgraded this past summer. The site is owned by the US. Army Corps of Engineers, but managed by the IDFG. In recent years, the access road and parking area were marred by potholes and poor drainage, and the boat ramp was in need of repair. The Pend Oreille Bass Club contacted IDFG to find out if they could do anything to help move the project along.

Cooperative projects like Morton Slough go a long way toward stretching IDFG dollars

Using the bass club's contribution to jumpstart the project, David Ross, IDFG's Access Maintenance Foreman oversaw a project to expand and pave the parking lot, upgrade and pave the access road, and install a new restroom. This spring he will finish the project with some additional docks to provide more tie-up space for boats. The additional docks will facilitate loading and unloading and also alleviate some of the problems associated with swimmers around the boat ramp.

The project is a fine example of how a sporting group can play an important role in helping to maintain or improve public resources. Not only will members of the bass club benefit, but so will all other anglers, waterfowl hunters, and the many others who use the facility. With funding limitations faced by IDFG and government agencies, contributions and cooperative projects like the Morton Slough Access are key to stretching available resources.—Jim F.

Brown Creek Fish Passage

Raising the pool with a series of rock weir "steps" (below) helps fish pass through the culvert and migrate upstream to spawning habitat in Brown and Twentymile creeks.

Biologists have long suspected one factor limiting the number of trout in the Kootenai River is the number of juveniles produced each year. Adult rainbow trout from the Kootenai River need access to the small, cool tributary streams for spawning. Juvenile trout also need to be able to travel throughout these streams to find cool water when water temperatures rise in midsummer.

Unfortunately, many of these potential nursery streams have barriers. IDFG, with assistance from the Natural Resource Conservation Service, worked on a barrier on Brown Creek this past summer. Brown Creek is a tributary to Deep Creek, which then flows into the Kootenai River. Two rock weir structures were built in the creek to raise the stream's surface height. By raising the stream about one foot, trout now have easy access into a culvert. — Melo M.

Antelope Lake Privy

Visitors to Antelope Lake, near the town of Clark Fork, can take a little comfort in the new restroom facilities. The lake, accessible by a 4WD road, is a popular fishery and camping area. Not surprisingly, a byproduct of the increase in use and lack of facilities is litter—much of it in the form of toilet paper and human waste.

With funding from Avista through the Clark Fork Settlement Agreement, a vault toilet was installed in August. Though this may seem like a simple task, hauling the building up the access road on a flatbed presented a significant challenge. In the end, visitors to the lake can enjoy improved access along with the new facilities. —Rob R.

Trestle Creek Bridge Removal

Trestle Creek is one of the most important bull trout nursery streams in Idaho. Cold water temperatures, an abundance of log jams, pools, and clean gravel make it ideal for bull trout spawning and juvenile rearing. For these reasons, conservation of this important habitat has been a focus of the fisheries mitigation program funded through Avista's Clark Fork Settlement Agreement.

Recently, an old, retired railcar bridge located on a parcel owned by Avista was removed. The bridge abutments were constricting the stream, making the adjacent streambanks prone to erosion. By removing the bridge and abutments, and then grading and seeding the streambanks, the area has been stabilized and is resistant to destructive erosion. — Rob R.

Biologists Assess Pend Oreille Walleye Population

Walleye have been found sporadically by anglers in Lake Pend Oreille and the Pend Oreille River for several years. These non-native fish are believed to have come down the Clark Fork River from in Montana, where they were illegally introduced into Noxon Reservoir.

To better understand how many walleye are in the Pend Oreille system and where they are located, a monitoring survey was conducted in 2011. A good understanding of the walleye population is essential for fisheries managers to predict how this new predator may impact native fish and kokanee. The survey was completed in the northern basin of the lake, the Bayview area, and the Pend Oreille River. Standardized methods for surveying walleye developed in Canada and used throughout North America were used to complete the survey.

We found a low density walleye population in both the lake and the river. Generally, walleye were widely distributed through all sampled areas, but were most abundant in the river. The netting resulted in an average catch rate of 1.4 walleye per net per night, which is relatively low abundance. Captured walleye were largely from one age class averaging 16-18 inches with a few larger fish, up to 28 inches (9 lbs). Walleye growth rates were remarkably high. This isn't surprising, considering the low density population and the lack of competition.

Although a popular sport fish throughout the country, walleye are an uninvited guest to the Pend Oreille system. The primary concern is that walleye are one more predator with the potential to negatively impact existing fish populations. Under the existing densities and distribution walleye are likely having minimal impact on trout and kokanee populations. However, walleye densities are likely to increase in the coming years and may eventually become problematic.

Current IDFG policy stipulates that illegally introduced walleye populations will be managed with no limits or size restrictions. The policy is intended to discourage illegal introductions and hopefully to prevent impacts to popular trout fisheries throughout the state. Managing walleye with liberal harvest will ensure their densities remain low, which will benefit growth rates. Although anglers shouldn't expect to catch large numbers of walleye in the coming years, they will likely be fast-growing fish in good condition.

We will continue to monitor the walleye population by repeating the net survey every 2-3 years, evaluating how densities, distribution, growth rates, and potential impacts to other species change over time.— Rob Ryan

Stars Line up for Kokanee Harvest in Priest Lake

Kokanee were closed to harvest in Priest Lake in 2002. This followed the appearance of several hundred spawning kokanee beginning in 1999 and 2000. After a virtual disappearance of kokanee in the late 1980's, the spawner sightings raised hopes that the population might be making a comeback. In the years 2001-2010, biologists have monitored the population by counting spawners each fall in traditional spawning sites around the lake. The numbers peaked in 2004 at over 6,000 fish, and then stabilized at 1,500-2,500 in the following years. The failure of the population to continue upward suggested there was simply too much predation by lake trout to allow a long-term recovery.

Recognizing the kokanee population is controlled by factors other than angler harvest, IDFG eliminated the harvest closure in 2011. In keeping with our efforts to make simplified fishing rules the daily limit was left at the regional "default", which is 15. Our expectation was that with the relatively small population of kokanee in the lake, it would be very unlikely that anglers would be able to catch a limit of 15 fish.

Mother Nature and anglers proved us wrong. The timing of the new rules proved to be rather remarkable, as the adult kokanee population in 2011 spiked to a level not seen since the early 1980's. Anglers enjoyed some outstanding fishing on 13-20 inch kokanee, and a few anglers were able to catch limits. Fortunately, despite a significant harvest, spawner escapement was high. We saw over 20,000 kokanee in the spawner counts around the shoreline!

The kokanee fishery has biologists and anglers alike asking 1) why the population increased, and 2) how do we keep the fishery going? I wish we had good answers, but the reality is there is a lot about kokanee on Priest Lake we don't understand. The increase is likely related to exceptional zooplankton productivity and higher juvenile survival rates in recent years, but the reasons behind those changes are still a mystery.

A consistent kokanee fishery in Priest Lake isn't a realistic option unless we significantly reduce the lake trout population

We will increase our kokanee monitoring efforts in 2012 to improve our understanding of factors driving the population. In addition, to insure angling does not *become* a limiting factor, we will propose a more sustainable limit (6 fish) for the 2013-14 fishing rules.

Regardless of what caused the surge in 2011, and regardless of angler regulations, there is little reason to believe we can rebuild a consistently abundant kokanee population in Priest Lake given the complete dominance of the system by lake trout. Lake trout quickly collapsed the kokanee population in the 1980's, consistent with other western lakes. Though we may see surges in kokanee abundance, a consistent kokanee fishery is not a realistic option unless we significantly reduce the lake trout population.

The 2011 fishery demonstrated that not only is there potential for a kokanee fishery in Priest Lake, but interest in rebuilding the fishery still exists. We will take all this into consideration as we chart the course for the Priest Lake fishery in the next few months (see p. 12).—Jim F.

Understanding Channel Catfish

2011 Survey the first of its kind in the Region

Catfish get their name from the four pairs of whiskers or "barbels" around the mouth and chin. These barbels are highly sensitive olfactory organs. Catfish have very poor eyesight and their keen sense of smell helps them find food at night and in muddy waters. Catfish forage on a wide variety of food items including aquatic plants, fish, frogs, snails, clams, insects, and snakes.

Though neither is native, we have both bullhead and channel catfish in the Panhandle. Bullheads are widely distributed and reproduce prolifically on their own. Channel catfish, however, prefer warmer water, and can't spawn successfully in our lakes. This means our channel catfish fisheries are dependent entirely on stocking. We currently stock channel catfish in six Panhandle Region lakes to add diversity and opportunity to mixed-species fisheries.

Stocked channel catfish are generally 6 to 13 inches and are stocked at a density of about 8 fish per acre. This represents a substantial investment for IDFG. Last year, the cost of production and hauling was nearly $1 per channel catfish. Currently, there are no bag limits or size restrictions on channel catfish.

A hoop net of channel catfish is hauled in for sorting, measuring, and tagging.

To assess whether anglers are getting a good "bank for our buck", we began a comprehensive assessment of channel catfish populations in Panhandle lakes this past summer. We chose Fernan, Hauser, Cocolalla, and Jewel for the 2011 evaluation. The primary objective was to and evaluate key characteristics of channel catfish populations in north Idaho lakes i.e. abundance, harvest rates, how long they live, how fast they grow.

To evaluate age and growth rates, we removed the right pectoral spine. The spines were sent to the University of Idaho where a thin cross section will be sliced that can then be examined for annual growth rings, much like a tree. To evaluate the percentage of fish harvested by anglers the channel catfish were tagged with yellow "Carlin dangler tags". The tags were attached to the dorsal fin with a thin stainless steel wire. Tags were individually numbered and labeled with a toll free reporting number. A companion "creel survey" on Fernan and Hauser lakes provided information on the number of anglers targeting catfish, success rates, and the size and number of catfish harvested.

Mark Liter displays a channel catfish tagged with a Carlin dangler tag (inset) in Fernan Lake.

Because no such evaluation has thus far been completed in Idaho, another objective of this study was to develop sampling techniques. Based on research in other states, we used baited tandem hoop nets. The nets were set in a series consisting of three hoop nets linked together. Each net was baited with two bags containing 4 pounds of commercially prepared cheese logs or soybean cakes.

Channel catfish become very active when water temperatures rise above 70 degrees. For this reason, we didn't begin the netting effort until mid-July. We captured 3,802 channel catfish ranging in size from 8-22 inches. Although our results are preliminary it appears that angler exploitation (the percentage of fish harvested by anglers) in the lakes surveyed, is very low (less than 5%). We saw very few large channel catfish, but they were generally in very good condition. On average, they weighed above or near 100% of the standard weight and condition of catfish populations across the country, which indicates they are finding plenty to eat.

Of the four lakes sampled, Fernan Lake had the highest number of large fish while Cocolalla Lake had the highest density of channel catfish. Based on a mark-recapture effort, we estimated all lakes had high densities of fish. Overall, we were very pleased with the number of catfish we saw. It wasn't uncommon to have several hundred catfish in a net. In Cocolalla, one net series alone captured over 1,100 channel catfish after a 3-day set!

We found baited hoop nets to be effective and cost efficient. We saw little mortality and minimal by-catch (species other than catfish captured) allowing us to sample a large number of fish with minimal effort. When comparing bait costs we found soybean cakes to be more economical and easier to store as it requires no refrigeration, and does not have the unpleasant odor associated with cheese logs.

The survey turned out to be a huge success. The information will help us make the best use of our limited hatchery resources, while still providing unique and diverse fishing opportunities. If you haven't ever caught a channel cat, give it a try—there's a bunch of them out there! — Mark L.

Kootenai River Fisheries Research

Juvenile sturgeon sampled in Montana

Recently, biologists with Montana Fish Wildlife and Parks captured five juvenile sturgeon in the Kootenai River almost 20 miles upstream of the Idaho/ Montana border. All fish captured in Montana originated from stockings in Idaho. Although this is not the first indication that juvenile sturgeon move above Bonners Ferry, these fish are unique in how far they'd travelled, and that their growth is much better than the same ages of fish captured in Idaho.

This information brings us one step closer to understanding the combination of factors necessary for sturgeon recovery. Future studies may shed light on why these fish grow larger, whether they will stay in the upriver habitat into adulthood, and finally, whether or not they will successfully spawn there.


The Kootenai River is the only place in Idaho with burbot.

Nutrient Additions Show Positive Results

Populations of mountain whitefish began declining after the mid-1980s. The decline is attributed to the loss of nutrients created by Libby Dam, which was completed in 1974. In cooperation with the Kootenai Tribe of Idaho (KTOI), we are adding nutrients to the upper Kootenai River to boost fish production. The intent is to restore a level of nutrients that would naturally exist in the river if it weren't for Libby Dam.

The intent of the fertilization program is to restore a level of nutrients that would naturally exist in the river if it weren't for Libby Dam

In the fall of 2011, we estimated fish populations in 3 km of river of the nutrient treatment reach. Although the survey showed slight decreases of mountain whitefish and rainbow trout since the last population estimate, it is still significantly higher than estimates prior to nutrient additions (see figure at right).

In our fish monitoring sections of the river above Bonners Ferry, the average catch per unit effort for all species of fish (fish/hr) more than doubled. In addition, fish condition (a measure of fish weight and length) increased for largescale sucker, rainbow trout, and mountain whitefish following nutrient additions.

Burbot Juvenile Released

In 2005, a range of stakeholders, including local governments, resource management agencies, the Kootenai Tribe of Idaho, conservation organizations, private industry representatives, and others developed a strategy for rebuilding the international population of burbot in the Kootenai River and Kootenay Lake, B.C. As part of that strategy, use of a hatchery was identified as a potential means of bolstering the population.

Aquaculture science for burbot is rapidly advancing and hatcheries have been increasingly successful in the past few years. As a result, the University of Idaho (funded through KTOI) raised and released 50,000 larval burbot and 22,000 fingerling burbot in five locations in the Kootenai River in 2011. Most of the juvenile fish were tagged to identify them as hatchery fish and allow us to evaluate most effective hatchery release strategies. At the same time, we will continue to monitor any natural reproduction.

Although high winter flows, which are thought to be the primary obstacle to burbot spawning, have not yet changed, a segment of the population may be able to use the cooler tributaries lower in the basin, such as the Goat River in British Columbia. Some burbot may be stocked directly into these lower tributaries since physical conditions conducive to spawning may still remain. Although not a complete substitution for natural reproduction, supplemental hatchery stocking is possibly a means of sustaining the population and eventually rebuilding a recreational fishery.

Nets and traps set for burbot in the Kootenai River have already successfully captured juveniles released from the hatchery months earlier. The results thus far are encouraging and demonstrate that aquaculture may be a useful tool in restoring a once-popular and unique fishery. — Ryan H., Cathy G., and Pete R.

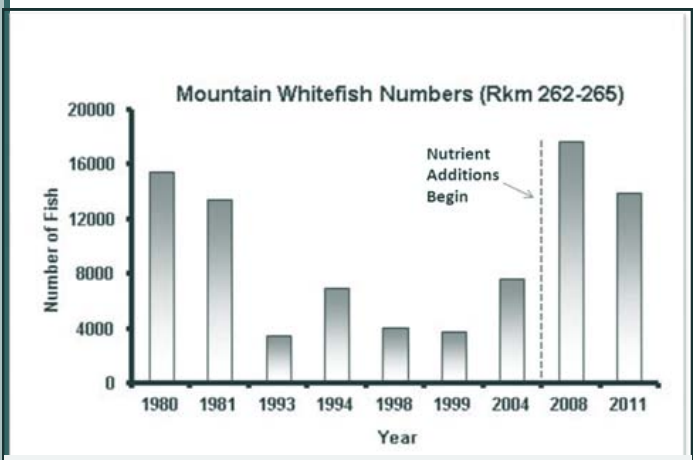


Figure 1. Mark recapture population estimates conducted on a 3 km reach of the Kootenai River from 1980-2011.

Bull Trout Spawner Surveys Help Monitor Population

Bull trout, north Idaho's only native char, continues to be closely monitored around the region due to its listing under the federal Endangered Species Act. The primary method for monitoring how many adult bull trout are present is by counting the number of spawning nests or redds left in the gravels of streams. Lake Pend Oreille is one of Idaho's important bull trout waters. Each fall redd counters walk many of the streams surrounding the lake looking for redds left behind by large adult fish that swam from the lake to spawn in these streams. The number of redds counted represents a portion of the fish in the lake and provides some indication of how adult numbers may change over time. In 2011, over 800 redds were counted from 23 of Lake Pend Oreilles's tributary streams, representing about an average count.

Although fisheries biologists understand much of how and where bull trout function in this system, there's always something new to learn. In 2011, Caribou Creek, a Pack River tributary, was surveyed for bull trout redds for the first time recorded. This pioneering survey identified over 35 redds in this small stream, a good indication bull trout are doing well in this location.—Rob R.

Juvenile Bull Trout Survival Study

Non-native lake trout are recognized as a threat to the Lake Pend Oreille bull trout population. The lake trout suppression program (angler incentive program and commercial trap and gill netting) is aimed at reducing the impacts of lake trout on bull trout, as well as other species. Bull trout response to predator suppression is largely monitored through annual spawning surveys in tributary streams. However, spawning surveys do not necessarily reflect the impacts of in-lake conditions alone, but rather reflect the cumulative impacts of stream habitat conditions where bull trout are born, annual weather events that may result in damaging stream flows, and in-lake conditions where bull trout complete for food or may be eaten by lake trout. To better assess the impact of lake trout on juvenile bull trout in Pend Oreille and how bull trout survival is affected by suppression efforts, the IDFG in collaboration with Avista Corporation initiated a long term bull trout survival study.

A biologist inserts a PIT tag into a juvenile bull trout.

Over 400 juvenile bull trout in two Lake Pend Oreille tributaries were tagged in 2011as part of the bull trout survival study. Small PIT (Passive Integrated Transponder) tags about ½ inch in length were inserted into the fish to help track their movements . Stationary antennas used to detect the PIT tags were installed in each stream. The antennas will detect the juvenile fish as they leave the stream to go to the lake and again when they return as to spawn adults. A similar study was completed prior to predator suppression programs. Results from this study suggested 10% to 15% of the bull trout that leave a stream return to spawn as adults. Lake trout reduction is expected to increase survival and the number of bull trout returning to streams to spawn. Juvenile bull trout tagged in 2011 are expected to return to spawn in three to five years.—Rob R.

Surveys find Healthy Populations of Pygmy Whitefish

Pygmy whitefish —the smallest member of the whitefish family—are a native to only 4 lakes in Idaho.

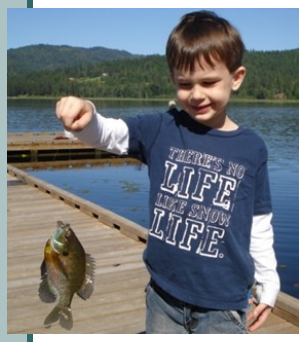
Pygmy whitefish are the smallest of three types of whitefish in Idaho, with adults generally under 6 inches in length. These unique little whitefish are only found in four lakes in Idaho; Upper Priest Lake, Priest Lake, Spirit Lake, and Lake Pend Oreille. Even though they are rarely caught by anglers, IDFG is still responsible for insuring the survival of the species.

In 2010 we completed a pilot study on Upper Priest Lake to determine whether we could capture pygmy whitefish with a bottom trawl—if they were even present. We were successful, so this year for the first time, we used the bottom trawl and hydroacoustic equipment to go a step further and try to estimate total populations.

We were pleased to find very healthy populations in Upper Priest Lake and Spirit Lake. We estimated there are approximately 150,000 pygmy whitefish in Upper Priest Lake and over 42,000 in Spirit Lake. The numbers of fish are somewhat remarkable considering the abundance of predatory lake trout in Upper Priest Lake and the many changes in fish species composition in Spirit Lake.

Priest and Pend Oreille are larger and deeper lakes, and no complete inventories have been conducted, though pygmy whitefish have been captured in trawls on both lakes, confirming their existence. An interesting finding on Lake Pend Oreille was that pygmy whitefish were netted in the middle of the lake at depths over 1,000 feet deep.

Pygmy whitefish may not be as popular as some of Idaho's larger sportfish, but they are a unique part of the native ecology of Idaho's large northern lakes. —Melo M.



Fernan and Hauser Lake Angler Surveys

If you fished Hauser or Fernan this past year, you may have been interviewed by someone from IDFG. We conducted a five month creel survey from May through September to evaluate the current status of the fisheries in each of these lakes. Creel surveys use random interviews and counts of anglers to estimate total number of angling hours, total catch, and total harvest by species. Anglers were asked details about their trip such as hours fished, equipment used, species caught, and the number of fish harvested.

Hauser and Fernan lakes are "two-story fisheries", meaning they support both warmwater (panfish) and coldwater (trout) fisheries. Warmwater species, such as bluegill, largemouth bass, black crappie, pumpkinseed, and yellow perch reproduce naturally and need no stocking. Rainbow trout on the other hand, are stocked on an annual basis, as they don't have adequate habitat to maintain a population. Additionally, channel catfish are stocked in both lakes (see p. 7 for full story), and tiger muskie have been stocked intermittently in Hauser since 1989. The Idaho state record tiger muskie was captured in Hauser Lake in 2001, weighing 39 pounds and measuring 48 inches. Fingerling kokanee and cutthroat trout have also been stocked over the years. One objective of the creel survey was to evaluate whether the various species that are stocked provide meaningful fisheries.

Because of their close proximity to Coeur d'Alene and Spokane, Hauser and Fernan lakes are heavily fished year-round and are also popular with water skiers, jet skiers, and pleasure boaters. Both lakes are managed under general fishing regulations.

Creel survey summary statistics including total effort (angler hours) and number of fish harvested in 2011 compared with past years.

Fernan Lake			
	1984	1993	2011
Effort	63,000	97,490	49,081
Idaho Residents	n/a	80%	92%
rainbow trout		10,020 (47%)	2,669 (10%)
yellow perch		4,860 (25%)	1,334 (8%)
black crappie		4,006 (10%)	800 (23%)
largemouth bass		1,329 (6%)	1,008 (15%)
bluegill		0 (0%)	3,365 (31%)
pumpkinseed		1530 (7%)	10 (5%)
channel catfish		236(1%)	1250 (5%)
smallmouth bass		-	156 (2%)
northern pike		<1%	<1%
other		691 (3%)	-
Hauser Lake			
	1984	1993	2011
Effort	49,500	60,670	37,991
Idaho Residents	n/a	82%	77%
rainbow trout		8,155 (34%)	2,182 (6%)
yellow perch		708 (38%)	206 (2%)
black crappie		9,926 (14%)	1,635 (6%)
largemouth bass		3,567 (3%)	50 (7%)
bluegill		-	13,386 (47%)
pumpkinseed		99 (6%)	428 (5%)
channel catfish		0 (0%)	10,427 (25%)
smallmouth bass		-	<1.0%
other		1,376 (5%)	-

Fernan Lake

During the six-month survey, fisheries and enforcement personnel interviewed 946 anglers from 17 states with 92% of the anglers being from Idaho. Washington had the second highest number of anglers with 3% of the total. Anglers fished an estimated 49,081 hours on Fernan Lake from May through September (see Table). Angling effort has decreased since the last creel survey from 1993 when anglers fished an estimated 97,490 hours. The creel survey showed that anglers were after several species. Rainbow trout were the most commonly sought species, though they comprised only 10% of the total catch. The most commonly caught species was bluegill at 31% of the catch. Despite stocking 5-10 thousand fingerling cutthroat each year, they were not a significant part of the fishery.

Hauser Lake

On Hauser Lake, we interviewed 911 anglers from 13 states with 77% of anglers being from Idaho. Washington had the second highest number of anglers with 20% of the total. Anglers fished an estimated 37,991 hours from May 1 through September. Angling effort has decreased since the last creel survey in 1993 when anglers fished an estimated 60,670 hours. Several notable changes have occurred in the Hauser Lake fishery. Angler harvest of warmwater species has more than doubled since 1993. The Hauser Lake fish community now contains channel catfish, as well as illegally introduced bluegill, and smallmouth bass. As with Fernan Lake, rainbow trout were the most widely targeted species, with 23% of anglers reporting they were fishing for trout. This was followed by largemouth bass (15% of anglers), channel catfish (13% of anglers) and bluegill (6.5% of anglers). Similar to Fernan Lake, although anglers targeted rainbow trout more than any other species, warmwater species provide the majority of fish caught with 47% of the total catch being bluegill, 25% channel catfish, 7% largemouth bass, 6% black crappie and only 6% rainbow trout. Tiger muskies, kokanee and cutthroat trout were a minor component of the catch.

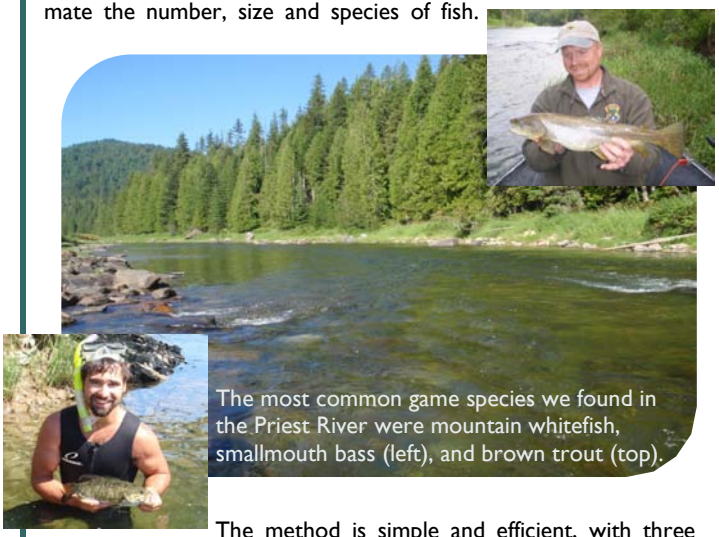
Creel surveys provide information that helps us manage area fisheries as efficiently as possible. The increase in the percentage of anglers targeting warmwater fish in Hauser and Fernan in 2011 is consistent with what we've seen elsewhere in recent years, such as Hayden Lake (as reported in the 2010 newsletter). Not only are panfish among the tastiest of fish, they provide year-round angling opportunities for naturally reproducing species, and they can be relatively easy to catch for all ages. Fortunately, warmwater fish are also very economical, given their ability to prolifically reproduce naturally. Conversely, stocking trout where very few are caught is not economical. We will use these surveys to adjust our stocking program to insure anglers get the best bang for the buck with hatchery fish. — Mark L.

Biologists Survey Region's Lesser Known Streams

Priest River: Clean, Complex, Connected, and…..Warm?

The Priest River, from the outlet dam on Priest Lake to the Pend Oreille River, is an idyllic looking trout stream. It has clear water, deep pools, log jams, and riffles. In the four "C"s of important habitat (clean, cold, connected, and complex), it has everything –except the cold. Water temperatures in midsummer can be so high that trout have to either migrate into the tributaries or seek out areas where cold water comes into the river. For this reason, the trout population is generally low compared to other panhandle streams, and it varies by season as fish move in and out of the river.

To assess the mid-summer population, five sections of the river were electrofished in July. In August twelve sections of the river, each one averaging 230 yards long, were snorkeled to estimate the number, size and species of fish.



The most common game species we found in the Priest River were mountain whitefish, smallmouth bass (left), and brown trout (top).

The method is simple and efficient, with three observers floating down the section together, while counting fish in their respective zones.

The most common fish seen were mountain whitefish at 0.49 per 100 m^2. Then, in order of decreasing abundance came largescale suckers (0.28/100 m^2), smallmouth bass (0.03/100 m^2), brown trout (0.03/100 m^2), cutthroat trout (0.02/100 m^2), rainbow trout (0.01/100 m^2), and northern pikeminnow (0.01/100 m^2).

As expected, the trout densities were low. For comparison, on the Coeur d'Alene River cutthroat trout densities in 2011 averaged just over 2 trout/100 m^2. That means the Coeur d'Alene River has about 100 times the cutthroat trout for the same amount of area. It's not surprising that brown trout were the most abundant trout species, given that brown trout are more tolerant of warm water than either cutthroat or rainbow trout.

To better understand when trout migrate and where they go, Kalispel Tribal fisheries biologists are working with IDFG to implant radio tags in cutthroat trout and track their movements throughout the year. Knowing where the important coldwater refuges are may help us to protect, enhance, and/or provide better access to them. Although we may not be able to add the missing "C" to the river, by making cold water more available in the summer, we may be able to help the trout population. In the meantime, for anglers looking for a challenge the Priest River has some beautiful water with a few quality-sized fish and not a lot of fishing pressure.—Ryan H. and Melo M.

St. Maries River

The St. Maries River seasonally supports a healthy cutthroat trout population.

The St. Maries River is the largest tributary to the St. Joe. Similar to the Priest River, the fishery fluctuates seasonally in response to temperature limitations. Previous telemetry studies have demonstrated that cutthroat trout from the St. River and Coeur d'Alene Lake utilize the St. Maries drainage for spawning and juvenile rearing. Though there are a few areas where trout find suitably cold water in mid-summer, the majority migrate back into the St. Joe River or Coeur d'Alene Lake.

Though much of it is isolated and difficult to access, the St. Maries supports a worthwhile cutthroat trout fishery. In response to public input expressing a demand for more harvest opportunity in the St. Joe drainage, IDFG recently modified the rules on the St. Maries River to allow a limited harvest of cutthroat trout. Anglers are allowed to keep two trout (including cutthroat) from Memorial Weekend through November 30th.

For a baseline to evaluate whether these rules adversely impact the population or the size structure in the future, we conducted a population survey in 2011. We established 15 snorkel survey transects throughout the river. In addition, we marked 12 cutthroat with T-bar angler-reporting tags to estimate harvest rates.

In the late July surveys, largescale suckers were the most abundant species, followed by mountain whitefish, and then cutthroat trout. Although cutthroat trout densities were many times higher than on the Priest River, they were much less than densities in the more well-known regional streams, such as the Coeur d'Alene River (see table). Only one of the fish tagged was harvested in 2011.

Snorkel survey estimates for cutthroat trout (CT) for the St. Maries and Priest rivers in comparison with the Coeur d'Alene River.

	All CT (trout/acre)	CT > 12 inches (trout/acre)
Coeur d'Alene River	81.95	12.18
St. Maries River	3.97	1.25
Priest River	0.73	0.04

We will continue to monitor the St. Maries River fishery and look for opportunities to improve habitat and insure fish have access to tributaries and other areas that provide mid-summer, cold water refuges.—Ryan H. and Jim F.

Acknowledgements:

We appreciate the partnerships and support from the many individuals, organizations and agencies that help us to achieve our mission, including:

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Avista
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Bureau of Land Management
U.S. Fish and Wildlife Service
U.S. Forest Service
Coeur d'Alene Tribe
Kootenai Tribe of Idaho
Kalispel Tribe
Rathdrum Parks and Rec.
Lake Coeur d'Alene Anglers Assn.
Lake Pend Oreille Idaho Club
Panhandle Bass Anglers
Pend Oreille Bass Club
Shoshone Co. Sportsmen Assn.
Bonner Co. Sportsmen Assn.
Kootenai Valley Sportsmen Assn.
North Idaho Flycasters
Priest Lake Sportsmen Assn.
Idaho Dept. of Lands
Idaho Dept. of Water Resources
Dept. of Environmental Quality
University of Idaho

New Rules and Fish Management Plan in the Works

As most anglers know, IDFG sets fishing rules on a 2-year cycle. This gives the public and IDFG the opportunity to modify rules within the sideboards set by the State Fisheries Management Plan. The Management Plan is the Commission-approved document that sets policy and direction for the fisheries program for a five or six year period. Although rules can be changed every two years, any changes need to be consistent with management plan direction. For example, as noted on p. 6, the current walleye rules on Pend Oreille allow unlimited harvest. Under the existing management plan, which states *"the Department will not restrict harvest or permit catch-and-release tournaments on walleye in waters where unauthorized introductions have occurred"*. In other words, for the duration of the current management plan, we do not have the latitude to restrict walleye harvest.

The spring of 2012 will be an important period for the Department and anglers alike, as we will not only be setting new rules, but we'll also be developing a new State Fisheries Management Plan. The plan will cover the period from 2013 through 2018 and the rules will cover the period 2013-2014. Developing new rules and a new management plan concurrently will give anglers the opportunity to provide input at both the "big picture" policy level, as well as the more familiar rules and regulations level. Beginning in February, we will invite public input through public meetings and/or an open house format. We plan to have both the rules and management plan completed for review and approval by the IDFG Commission by July.

New Direction for the Priest Lake Fishery??

One fishery that will likely be a main topic of discussion is Priest Lake. The current management plan states we will manage Priest Lake for a yield and trophy lake trout (mackinaw) fishery. It also states we will restore native fish populations in Upper Priest Lake by yearly removal of lake trout with nets. It has become evident over the past six years, that although we're able to effectively remove lake trout from Upper Priest Lake each spring, the lake is rapidly recolonized by fish migrating up from Priest Lake through the Thorofare. In other words, trying to manage the lakes as two independent systems is not practical nor feasible in the long-term.

Meanwhile, an increasing number of anglers is asking why, considering the progress of the Lake Pend Oreille lake trout suppression effort, IDFG doesn't embark on a similar effort in Priest Lake? After all, they point out, the fishery for cutthroat, bull trout, and kokanee from the 1950's through the 1970's was more diverse, more popular and attracted nearly twice the angling effort than what we have today. The short answer to their question is that the existing management plan does not allow a 180° change in direction. As we write a plan for the next six years, however, all the options are on the table.

As we look down the road to 2018, the question is whether we 1) manage both lakes for lake trout and abandon our efforts to maintain cutthroat and bull trout in Upper Priest Lake or 2) begin a large-scale effort to suppress lake trout and restore the native trout and kokanee fisheries.

Unfortunately, this is not an issue with a middle ground. A "happy medium compromise" really isn't an option. There are costs and benefits associated with either direction. There are not many lake trout fisheries in the area, making Priest Lake a unique draw. The lake trout fishery is inexpensive to manage and maintain, whereas a suppression effort would be an expensive, long-term commitment.

Historic catches of bull trout (above) and cutthroat (left) from Priest Lake. Could we ever see this again?

On the other hand, large-lake cutthroat/bull trout fisheries are even more unique than lake trout fisheries. Along with kokanee, a restored cutthroat/bull trout fishery would likely generate more angling effort, and ultimately be of greater economic value to the Priest Lake region. Lake trout have populated to the point where growth is limited by available forage. Lake trout reach 15 inches fairly quickly (3-4 years), on a diet of invertebrates. With very few forage fish to feed on, however, growth then comes to a screeching halt, with fish typically only growing a third to half inch/year. The lake trout fishery of the future will primarily be comprised of lots and lots of 14-20 inch. Like it or not, with such poor growth rates, there's little that can be done to manage for larger (10-20 lb.) lake trout.

If you have an interest in the rules and management direction for Priest Lake—or any other waters—I encourage you to stay tuned and participate in the discussion. As anglers, we can all be pretty passionate about the fisheries we love, so it will be important to keep emotions in check and respect other's values. That said, I look forward to hearing from you. — Jim F.