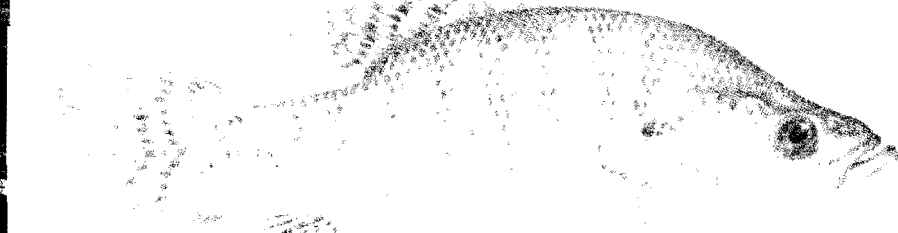




Fisheries Management Plan

2007 - 2012

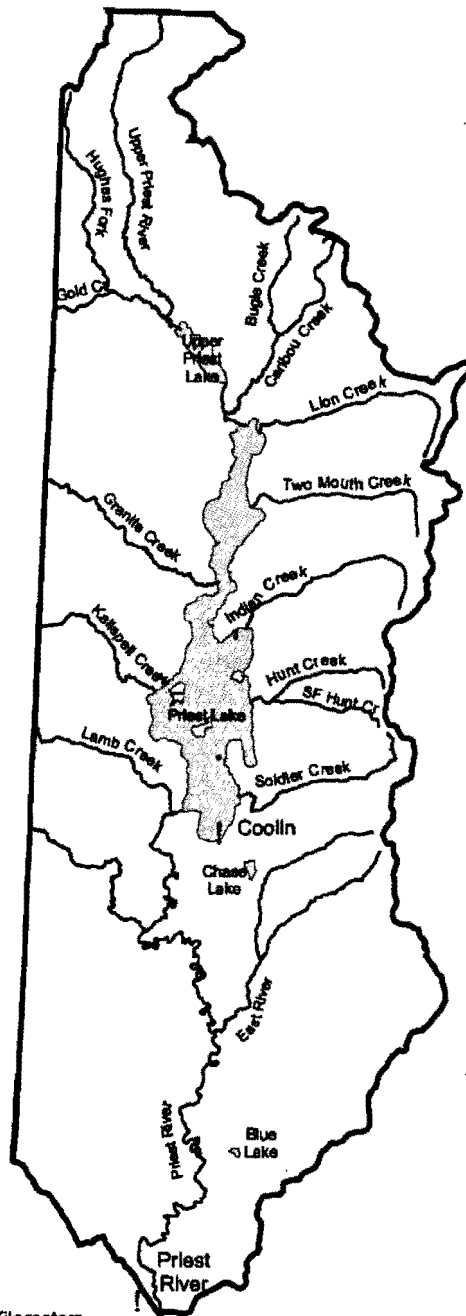
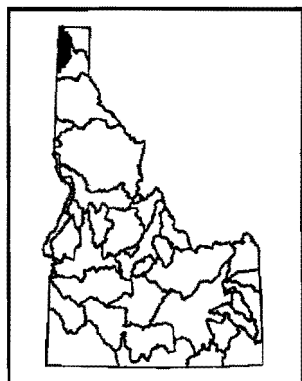


IDAHO DEPARTMENT OF FISH AND GAME



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Priest River Drainage



3. PRIEST RIVER DRAINAGE

A. Overview

Priest Lake and Upper Priest Lake are glacial lakes located in the northwest corner of the Idaho Panhandle approximately 13 mi south of the Idaho-British Columbia border and 55 mi north of the city of Coeur d'Alene, Idaho. Upper Priest and Priest lakes are situated in the Selkirk Mountains amid a coniferous forest watershed of 600 mi².

Priest Lake has about 62 miles of shoreline, a surface area of about 23,360 acres and a maximum depth of 369 ft. Upper Priest Lake has about 8 miles of shoreline, a surface area of about 1,400 acres and a maximum depth of 103 ft. Upper Priest Lake is bathtub-shaped, being long and narrow with steep walls and a flat bottom where Priest Lake is more irregular in shape. The elevation of both lakes is maintained at 2,438 ft in elevation from the end of spring runoff until mid October by a small dam at the outlet of Priest Lake. Summer surface temperatures of Upper Priest Lake are consistently lower than Priest Lake, with maximum temperatures of 70°F and 75°F, respectively.

Upper Priest Lake is connected to Priest Lake by a river channel known as the Thorofare. The Thorofare is about 2 miles long, about 230 ft wide and generally 5-10 ft deep. At its outlet into Priest Lake, the Thorofare is about 3 ft deep at summer pool level. When the lake levels reach low pool level, depth of the Thorofare at its outlet is <6 inches deep, impeding nearly all boat traffic. During summer months, the Thorofare receives heavy boat traffic.

Historically, Priest and Upper Priest lakes contained three main sport fishes, westslope cutthroat, bull trout and mountain whitefish, with cutthroat being the most sought after species. The westslope cutthroat trout fishery was very popular and twenty fish limits of 15 to 20 inch cutthroat were common. Most cutthroat trout in Upper Priest Lake and Priest Lake were adfluvial and matured at age-5. Spawning begins in April and generally ends by mid-June. Most juvenile cutthroat trout in the Priest drainage remain in the streams two or three years before migrating to a lake.

Anglers reported that cutthroat fishing began to deteriorate as early as the 1930s or 1940s when access to the lake was still poor. In 1956, harvest dropped to about 5,000 fish from Priest and Upper Priest lakes, and by 1983 just over 100 cutthroat trout were caught. Mean size of cutthroat in the catch had declined from 13-15 inch adults to mostly immature fish averaging 11 inches. Factors contributing to the decline included excessive harvest by anglers, mining of adult spawners for hatchery take, competition with introduced exotics such as kokanee and brook trout and degradation of spawning habitat. By the 1980s, lake trout predation was believed to be the major factor suppressing the cutthroat trout fishery. Even with hatchery supplementation and restrictive bag limits the cutthroat population never recovered. Cutthroat fishing on both lakes has been restricted to catch-and-release since 1992.

Priest Lake bull trout are adfluvial, with most fish maturing at age-5 or age-6, and entering spawning tributaries as early as May to spawn in September. Bull trout generally live in tributary streams for two or three years before migrating to lakes, and have a life expectancy of 10 or more years. During August and September, when surface temperatures reach 68°F, bull trout in Upper Priest Lake and Priest Lake occupy depths of >50 ft where temperatures range from 45-55°F. When surface temperatures are below or near 55°F in the spring and fall, bull trout can be found closer to the surface.

Historically, bull trout were common in the Priest Lake basin and most of the major tributaries supported spawning runs of over 100 adults with some exceeding 20 lbs in weight. Annual harvest of adult bull trout from streams exceeded 600 fish during the 1950s. In the lakes, annual harvests between 1,000 and 2,000 bull trout were the norm during the 1950s, 1960s and 1970s, and in 1978, the harvest of bull trout in Priest Lake peaked at over 2,300 fish. After 1978, harvest of bull trout dropped significantly and by 1983 less than 100 fish were harvested. Bull trout harvest was closed in 1984. By 1985, adfluvial bull trout runs into tributaries of Priest Lake were essentially gone, and the only strong number of bull trout occurred in the Upper Priest Lake basin. However, by the mid 1990s the spawning run of bull trout in the Upper Priest Lake basin was a fraction of what it was in the 1985 and in 2006 bull trout spawning escapement was estimated at 87 fish. The loss of bull trout in Priest Lake was initially blamed on over-fishing, but the population did not rebound after the fishery was closed, so something else likely limited the population. Continued research indicates that an expanding lake trout population in both Priest Lake and Upper Priest Lake contributed to the decline of bull trout through predation or competition for space and food.

Kokanee were introduced in the 1930s and 1940s and quickly became the most abundant game fish, replacing cutthroat and providing a new yield fishery. The ability of kokanee to efficiently utilize zooplankton may have significantly lowered the carrying capacity of cutthroat trout in both lakes. The presence of kokanee provided an abundant food source for bull trout, lake trout and fishermen. Through 1971, fishermen harvested on average 64,000 kokanee a year at an average rate of 1.2 fish per hour. During this period, kokanee supported most of the 15,000 angler days that occurred on both lakes.

Mysis shrimp were introduced into Priest Lake in 1965 to provide a supplemental food item for kokanee. A few kokanee fed on Mysis shrimp and reached trophy size, as evidenced by the State record fish (6 lb 9.5 oz) caught in 1975. However, Mysis shrimp negatively impacted kokanee in a more inconspicuous manner. Mysis shrimp provided an ideal food source for juvenile lake trout, thereby enhancing the rapidly expanding lake trout population. With more and more lake trout feeding on kokanee, and survival of young kokanee declining, the kokanee population collapsed, and in 1978, only 4,500 kokanee were harvested. In an effort to restore kokanee, 1-3 million kokanee fry were stocked annually into Priest Lake and several tributary streams between 1982 and 1989. Despite this stocking, few kokanee survived to adulthood. Angling effort in this system declined from 15,000 angler days to around 10,000 angler days after the collapse of kokanee (30% drop in fishing pressure).

Lake trout were introduced in 1925 by the U.S. Fish Commission as one of many early introductions of non-native species into western waters. Lake trout catch remained relatively low through the early 1970s with annual harvest being around 200 fish. The lightly harvested population resulted in lake trout averaging about 20 lbs in weight in the early 1970s and the 57½ lb. state-record lake trout was caught in 1971. By 1978, harvest increased to around 5,700 lake trout annually. Average size in 1983 declined to 22 in and 4 lbs due to the increased number of juvenile lake trout, loss of kokanee forage and increased fishing pressure on larger lake trout. Annual harvest increased to 14,000 lake trout by 1994 and 30,000 lake trout by 2003. The mean length and weight of angler-caught lake trout in 2003-2004 was 22 in and 2.1 lbs.

Lake trout were not known to be present in Upper Priest Lake until the mid-1980s. The high density population in Priest Lake resulted in colonization of Upper Priest Lake through the Thorofare. In 1998, the lake trout population in Upper Priest Lake was estimated at 859 fish.

As lake trout grew dominant in Priest and Upper Priest lakes, the fishery changed. Fishing effort declined 30-50% on Priest Lake as lake trout increased in abundance, despite a nearly tripling in the area's human population during the same period. Many anglers dropped out of the fishery because they considered lake trout difficult to catch, poorer eating than kokanee, or not sporting to catch. In 2003, 99% of fishing effort was for lake trout, but total effort was only about 48,000 hours, compared to 96,000 hours in 1956. A 6-fish limit with no size restrictions was placed on lake trout in Priest and Upper Priest Lake in 2002 (changed from a 2-fish limit in Priest Lake and catch-and-release in Upper Priest Lake) to determine if angler harvest could suppress the lake trout population. More and smaller lake trout were harvested in 2003, but exploitation remained too low (~8%) to reduce the lake trout population. A sustained exploitation rate of 30-40% was necessary to significantly reduce the lake trout population through over-harvest. Angling effort on Priest and Upper Priest Lake is currently too low to overexploit the lake trout population and thereby facilitate the kokanee and cutthroat fisheries to rebound.

Angler opinions about management direction for Priest Lake have been polarized since the collapse of kokanee in the late 1970s and domination of the fishery by lake trout. Many anglers would like to see restoration of a native cutthroat trout and bull trout fishery and a kokanee sport fishery. Other anglers prefer managing the fishery for lake trout. The most recent angler opinion survey conducted in 2006 on management direction for the Priest Lake fishery continues to show a divided public. When asked about potential management options for the Priest Lake system, 56% of the 385 anglers responding from the Panhandle Region strongly or somewhat agreed to "manage Upper Priest Lake for native cutthroat and bull trout, and manage Priest Lake for a lake trout fishery", while 48% strongly or somewhat agreed to "attempt to restore native cutthroat and bull trout and a kokanee fishery by aggressively suppressing lake trout in both lakes". Biological constraints, rather than social desires, will likely be more important in determining future management direction for the Priest Lake basin.

With the current high abundance of lake trout in Priest Lake and a growing population in Upper Priest Lake, we believe that native species such as cutthroat

trout and bull trout cannot be maintained at levels that will provide for a fishery. Rather, bull trout will likely disappear from these lakes if lake trout numbers are not substantially reduced. Harvest of lake trout will need to be substantially increased to a level where bull trout and cutthroat trout populations could expand and begin to provide a fishery again. This could include activities such as extensive gill netting, trap netting, or an angler incentive program to harvest lake trout similar to Lake Pend Oreille. Such activities could cost upwards of \$300,000 per year and would not guarantee success. Lake trout were illegally introduced into Yellowstone Lake and removal efforts since 1994 cost about \$300,000 each year. In the past 12 years, over 136,000 lake trout have been removed from Yellowstone Lake, yet the cutthroat trout population declined by 60% and continued to decline. Establishment of a commercial fishery for lake trout could offset suppression costs, but a market for lake trout does not exist and conflicts with the sport fishery could emerge. Unfortunately, mitigation funding is not available for Priest Lake like for Lake Pend Oreille.

Habitat loss and competition from brook trout in tributary streams pose additional obstacles to cutthroat and bull trout recovery in the Priest system. Long reaches of stream have been channelized on the west side of Priest Lake, including Granite Creek, which was historically one of the top spawning tributaries for cutthroat trout and bull trout. Historic logging activity reduced quantities of large woody debris and increased fine sediment, although logging practices have improved dramatically over the years. Brook trout, which are known to out-compete cutthroat trout and bull trout in lower gradient streams, or streams with high quantities of fine sediment, occur throughout the Priest Lake and Upper Priest Lake basins. Based on surveys of all major streams in the Priest Lake and Upper Priest Lake basins during 2003 and 2004, brook trout comprise 62% (by number) of all fish surveyed in tributaries on the west side of Priest Lake, 35% in tributaries on the east side of Priest Lake and 13% in tributaries in the Upper Priest Lake basin. Brook trout will likely reduce the carrying capacity for cutthroat trout and bull trout.

Smallmouth bass colonized Priest Lake in about 2003. Although their numbers were relatively low in 2006, smallmouth bass will likely expand their distribution and become numerous as in Hayden, Coeur d'Alene and Pend Oreille lakes. Smallmouth bass will likely be an additional predator on juvenile adfluvial westslope cutthroat and bull trout complicating recovery efforts.

The high cost of removing lake trout from Priest Lake, the lack of an identified funding source for that effort, the uncertainty of success, coupled with the reduced productive capacity of tributary streams for adfluvial fish production make native fish restoration problematic. However, a lake trout fishery will not likely attract as many anglers as kokanee, cutthroat trout, or bull trout fisheries. However, if we manage the lake trout fishery with limits that would attract harvest-oriented fishermen, but with potential to catch a trophy-sized fish (>15 lbs), we may be able to increase angler interest. Managing Priest Lake for lake trout would also give anglers from Lake Pend Oreille, where we are currently attempting to suppress lake trout, an alternative fishery where they could fish for lake trout.

With the changes that have taken place to the Priest Lake ecosystem, any fish species other than lake trout is unlikely to provide the same yield (pounds of fish harvested/acre). Cutthroat trout are not likely to ever provide a harvest fishery of any significance, even if lake trout were suppressed. Cutthroat trout have been providing a limited catch-and-release fishery in the presence of an abundant lake trout population.

A limited kokanee fishery may be possible, while managing for lake trout. Kokanee were making a small comeback in the presence of intense lake trout predation and without supplemental stocking by 2006. Shoreline spawner counts increased from 1,765 fish in 2001 to 6,117 fish in 2004. Counts dropped slightly in 2005 to 4,961 spawners. A fishery closure in 2002 and changes in lake level management appeared to be maintaining a remnant population. In 2001, the Idaho Water Resources Board and IDFG proposed several amendments to the 1996 State Water Plan to lower lake levels starting October 1 to reach the 0.0 feet goal at the outlet gauge by November 1. This drawdown strategy was implemented in 2002 and better ensured a higher spawning success rate for shallow spawning kokanee, because the water level would be at its lowest point before any eggs were laid. Kokanee spawning activity in Priest Lake peaks in mid-November. If the kokanee population continued to increase, a limited harvest fishery (1 or 2 fish) on kokanee may be possible while also managing for lake trout. However, to reestablish a yield fishery for kokanee (limit of 15 or more) would require a substantial reduction in lake trout population.

The Upper Priest Lake basin provides our last best chance to save native fish, although lake trout still pose the greatest risk to success. Lake trout removal efforts (gillnetting) have been ongoing in Upper Priest Lake since 1998. Through 2006, 6,000 lake trout have been removed by gillnetting from Upper Priest Lake. Despite these efforts, lake trout numbers continued to increase to the point they outnumbered bull trout 50 to 1 by 2006 and bull trout had disappeared from many spawning tributaries in Upper Priest Lake. Significant numbers of bull trout now spawn only in Upper Priest River, although they are a fraction of their historic numbers. Efforts to quantify cutthroat trout abundance in Upper Priest Lake have not occurred, although we also believe their numbers are seriously depressed. Lake trout migration into Upper Priest Lake through the Thorofare, and reproduction, was replacing lake trout as fast as they could be removed. For this reason, gillnet efforts in Upper Priest Lake have only held numbers of lake trout steady over the last few years. For gill netting efforts to be successful in Upper Priest Lake, lake trout migration through the Thorofare must be blocked.

Several alternatives to blocking lake trout migration through the Thorofare have been investigated, including, electric and floating weirs, strobe lights and large pound nets. However, heavy boat traffic during some times of year will not allow some structures to be considered for fish barriers. An evaluation of fish movement in the Thorofare indicated that lake trout did not migrate when temperatures exceeded 59°F, with radio-tagged fish moving primarily during spring and fall. In 2003, IDFG conducted a study using underwater strobe lights as a technique to minimize migration of lake trout from Priest Lake into Upper Priest Lake through the Thorofare. Our results showed that lake trout were repelled by strobe lights and appeared to be 75% effective in stopping the upstream movements of lake trout in the Thorofare. Estimated installation cost

for a strobe light weir would be around \$150,000, with \$5,000 annual operating costs. We are also in the process of evaluating the use of pound nets set at the outlet of Upper Priest Lake to catch lake trout migrating into the lake. The structure to hold these nets would be set up permanently, and the nets would be set when most lake trout migrate through the Thorofare (spring and fall). Pound net installation cost would be about \$50,000 with operating costs of around \$10,000-\$20,000 annually.

Tributaries in the Upper Priest Lake basin have the greatest potential to support large numbers of cutthroat trout and bull trout because they support the most miles of good stream habitat with the fewest number of brook trout. Due to the smaller size and shallower depths of Upper Priest Lake, lake trout removal efforts would cost significantly less than in Priest Lake and would have a greater chance of success if strategies are developed and implemented to block lake trout migration through the Thorofare. For this reason, we plan to continue removing lake trout in Upper Priest Lake through the end of this management period (2012). If, by this time, lake trout control efforts are not resulting in significant improvements in the number of juvenile bull trout and westslope cutthroat trout are not seen in the lake, we will recommend alternative management in Upper Priest Lake. If we are successful in removing lake trout, we would propose managing this lake for native fish only. Currently, no lowland lakes in the Panhandle Region are managed for only native species. We would not encourage the introduction or expansion of kokanee in this lake because kokanee can compete with cutthroat trout, especially in infertile lakes like Upper Priest Lake.

Objectives and Programs

1. Objective: Restore native fish populations in Upper Priest Lake

Program: Continue yearly removal of lake trout with gill nets and other means to reduce lake trout numbers.

Program: Conduct annual population estimates on lake trout and bull trout in Upper Priest Lake to quantify how much of the population we are exploiting with gill net efforts and the benefit it is providing to bull trout and westslope cutthroat trout.

Program: Monitor bull trout population status by conducting redd counts in Upper Priest Lake tributary streams.

Program: Determine the effectiveness of trap nets and/or pound nets as a means of capturing and removing lake trout.

Program: Evaluate the most efficient and cost effective method of blocking lake trout movement through the Thorofare. Seek funding for permanent installation of whichever technique is most efficient and cost effective.

Program: Maintain catch-and-release fishing throughout the Upper Priest Lake basin to protect cutthroat trout and bull trout populations.

Program: Implement annual cutthroat trout monitoring in Upper Priest.

Program: Investigate implementation of a harvest fishery on kokanee to reduce competition with cutthroat trout.

2. Objective: Shift management emphasis in Priest Lake to lake trout, to provide both a yield and trophy fishery.

Program: Maintain liberal harvest limits for smaller lake trout and seek public input on techniques to develop a trophy fishery (i.e. slot limit).

Program: Conduct creel survey in this planning period (2007-2012) to evaluate effectiveness of the regulation changes.

3. Objective: Protect the cutthroat trout and bull trout fishery in Priest Lake.

Program: Preserve genetic integrity of wild, native cutthroat trout and bull trout by maintaining catch-and-release fisheries in the lake and limited harvest in the tributaries.

Program: Work with the Forest Service and Idaho Department of Lands to improve habitat conditions in tributary streams.

4. Objective: Provide a limited consumptive harvest of kokanee in Priest Lake.

Program: Continue monitoring historical kokanee spawning transects

Program: If spawning surveys indicate a kokanee fishery is possible, implement regulations that will allow limited harvest of kokanee.

5. Objective: Provide information and education of fisheries management objectives in the Priest River watershed.

Program: Continue to develop and distribute fisheries information and regulation signs to increase compliance and support.

Program: Work with county planners and Idaho Department of Lands to make protection of fish habitat and water quality a primary concern in land use decisions minimizing impacts to lake fisheries due to lakeshore encroachment, pollution and nutrient loading.

6. Objective: Reduce impacts of smallmouth bass on more desired game fishes.

Program: Determine habitat use, movements and feeding habits of smallmouth bass to assess impacts on other fish species.

Program: If smallmouth bass are found to be impacting other desired game fish, solicit input from the public to determine which game species they have a preference for.

Program: Develop fishing regulations specific to smallmouth bass to reduce impacts on other game fishes.

DRAINAGE: Priest River					
Water	Miles/acres	Type	Fishery	Management	Management direction
			Species present		
Priest Lake and tributaries	100/23,360	Coldwater	Cutthroat trout	Conservation	<p>Manage Priest Lake and tributaries with catch-and-release regulations to preserve remaining populations of adfluvial cutthroat trout and bull trout.</p> <p>Conserve remnant kokanee population with harvest restrictions to provide stocks for rebuilding a kokanee fishery. If numbers increase, allow limited harvest. Continue to support Idaho Water Resources Board and IDFG proposed amendments to the 1996 State Water Plan to improve kokanee spawning success by lowering the lake level starting October 1 in order to reach the 0.0 feet goal at the outlet gauge by November 1.</p> <p>Change regulations to allow for liberal harvest of smaller lake trout, but will still allow for the development of a trophy fishery (lake trout > 15 lbs).</p> <p>Maintain consumptive fishery in tributaries to reduce brook trout abundance and offset harvest restrictions on adfluvial cutthroat trout in streams.</p> <p>Increase harvest opportunity on smallmouth bass to offset predation losses on cutthroat trout, bull trout and kokanee.</p>
			Bull trout		
			Kokanee	Conservation	
			Lake trout	Quality	
			Brook trout	General	
Smallmouth bass	General				
Upper Priest Lake and tributaries	50/1,400	Coldwater	Cutthroat trout	Conservation	<p>Manage Upper Priest Lake and tributaries with catch-and-release regulations to preserve remaining populations of adfluvial cutthroat trout and bull trout.</p> <p>Allow liberal harvest of lake trout, brook trout and kokanee. Prevent lake trout from entering Upper Priest Lake by blocking their migration through the Thorofare. Suppress lake trout with periodic intensive gill netting if successful in blocking lake trout migration through the Thorofare. Remove brook trout from tributary streams where feasible.</p>
			Bull trout		
			Lake trout Brook trout Kokanee	General	

Priest River and tributaries	120/	Coldwater	Cutthroat trout	Conservation	Provide harvest protection to cutthroat trout with a slot limit regulation and encourage appropriate agencies to evaluate changes in water level management of Priest Lake to enhance fishery flows in Priest River.
			Bull trout	Conservation	Maintain harvest closure in river and tributary streams. Determine critical habitat.
			Brook trout Brown trout Mountain whitefish	General	Direct anglers to Priest River tributaries to provide consumptive fishing opportunities for brook trout.
Freeman Lake	/30	Mixed	Rainbow trout	Put-and-take	Stock put-and-take rainbow trout to provide a spring, fall and winter trout fishery.
			Tiger muskie	Trophy	Maintain tiger muskie stocking to provide a specialized trophy fishery.
			Largemouth bass Black crappie Yellow perch Pumpkinseed Bullhead Channel catfish	General	Enhance the diversity of the warmwater fishery with maintenance stocking of channel catfish.
Blue Lake	/120	Warmwater	Tiger muskie	Trophy	Maintain tiger muskie stocking to provide a specialized trophy fishery.
			Largemouth bass Northern pike Black crappie Yellow perch Pumpkinseed Bullhead Channel catfish	General	Work with private landowners to ensure continued public access. Channel catfish will no longer be stocked due to limited public access and poor returns.
Alpine Lakes (5 stocked in the Priest River drainage)	/41	Coldwater	Cutthroat trout Rainbow trout Brook trout Golden trout Grayling	General	Provide fisheries that are consistent with lake productivity and angler pressure. Use westslope cutthroat trout for cutthroat trout stocking and sterile disease-free rainbow trout. Reserve some lakes for specialty fish (golden trout and grayling) only. Do not stock lakes that are currently fishless in order to maintain some natural alpine lakes.

