



Idaho Department of Fish and Game

# Lake Pend Oreille Quarterly Report

## January - March 2004



### Kokanee Spawning Habitat Increases

The size of the kokanee population in Lake Pend Oreille has been limited by the amount of shoreline spawning area. During the winter of 2003-2004, the lake was drawn down to its lower pool elevation of 2051' above mean sea level. Because the number of wild, spawning kokanee was so low this past winter, there was enough gravel for successful spawning at the lower lake level. At the same time, dropping the lake to this lower elevation subjected deeper areas of the shoreline to wave action, which built bars of gravel near the waterline and improved the kokanee spawning habitat (Figure 1).



Figure 1. Wind-rows of gravel deposited along an otherwise rocky shoreline at the south end of Lake Pend Oreille.

This quarter, researchers measured the quantity and the quality of the shoreline gravel between the elevations of 2050' and 2053'. Gravel below 2053' would be under at least 2 ft of wa-

ter next year, when the lake is scheduled to be held above 2055', and therefore should be suitable for ko-

(Continued, page 2.)

### Trap netting Completed for 2003-04

We have finished the first winter of the deep-water trap netting on Lake Pend Oreille and all of the nets were removed from the lake by early April. Currently the nets are scheduled to return in the fall of 2004.

A total of 1,100 lake trout were caught. Of these fish 1,020 were marked and released back into the lake, 69 were sacrificed so that they could be aged and tested for contaminants, and 11 were mortalities of the netting operation. No lake trout were killed to reduce the

population in the lake. Based on the recapture of the marked lake trout, we estimated the lake contains between 5,200 and 8,100 lake trout over 20 inches (with a point estimate of 6,400). Considering this estimate, the netting operation captured between  $\frac{1}{5}$  and  $\frac{1}{8}$  of the lake trout population over 20 inches.

We had a total of 31,025 hours of fishing effort using the large

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#### SPECIAL POINTS OF INTEREST:

- Large increases in shoreline gravel were recorded after a winter of full drawdown.
- Trapnets in Lake Pend Oreille were effective at catching 1,100 lake trout, which were mostly tagged and released.
- Lake trout utilized a mean depth of 102 ft, whereas the mean depth of bull trout was 79 ft.
- Currently, 21 trout have sonic transmitters in Lake Pend Oreille.

## Kokanee Spawning Habitat Increases, continued from page 1.

kane spawning. The entire 100+ miles of shoreline were surveyed. Potential spawning areas were measured for length and width, and samples of gravel were screened, and then weighed, to determine the percentage of gravel, fine material, and cobble.

Results were very encouraging. An estimated 271,000 square feet of gravel was found along the shoreline within this depth range (Figure 2). This is the equivalent of a strip of gravel 10' wide by 5 miles long, and should be sufficient spawning habitat for an additional half-million adult kokanee. These gravel beaches were fairly well distributed around the lake (Figure 2). This should also be a benefit since it will spread-out the kokanee fry and possibly reduce predation.

Quality of the shoreline gravel was considered to be excellent in most of these

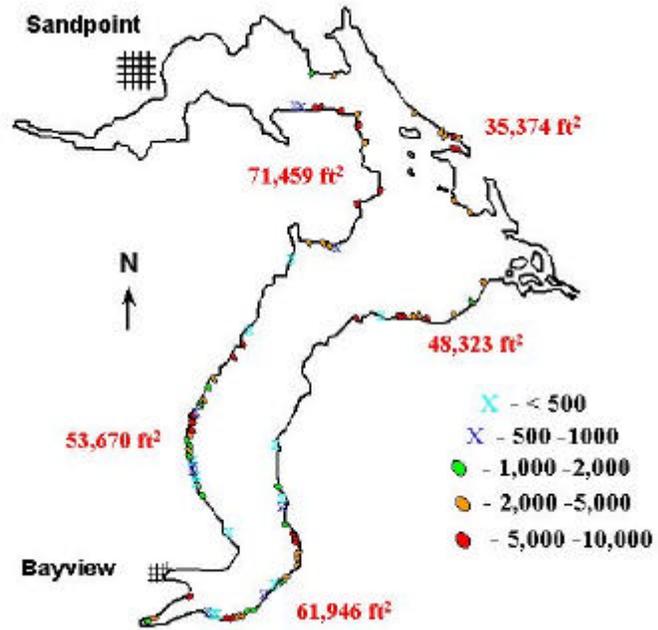


Figure 2. Map of Lake Pend Oreille showing location of gravel on the shorelines. Colored ovals and “X”s represent the sizes of the various areas in square feet.

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Figure 3. Shoreline of Lake Pend Oreille. Note build-up of gravel even on some shorelines with large bedrock boulders.

areas. Sieving the substrate through screens of different sizes showed that fine materials like sand and silt were nearly absent, so that this coming winter kokanee egg survival should be good on most of these beaches.

This fall we are expecting to see high numbers of kokanee spawners. Drawing the lake down during the 2003-04 winter still left enough gravel for the low number of wild spawners we had last winter, while substantially increasing the amount of high quality gravel available for the large numbers of wild kokanee we expect to see spawning this coming winter. With the improvement in spawning areas and a higher lake level, the stage is set to have a good year class of kokanee produced.

## Trap netting Completed for 2003-04, (continued from page 1)

trap nets. The final catch rate of lake trout averaged about one fish for every day that a net was set throughout the assessment. The highest catch rates occurred during the lake trout spawning season in October and November, and catch rates were increasing at the end of the project (Figure 5).

The other fish caught in the trap nets, and their mortality rates, are listed in the table below (Table 1). Lake whitefish were the most frequently caught fish. Numerous

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whitefish over the current 3 pound 5 ounce state record were caught and released with the largest at approximately 9 pounds. Tags have been placed in the backs of nearly 3,000 of these whitefish to determine their movements. Most of the whitefish that were caught a second time were at the same location as the initial catch, however, a couple of fish moved as much as 17 miles.

During the next quarter, we will be determining the ages of the collected lake trout. This information will help us to model the population and determine the possible effect of removing any lake trout. As a side note, the De-



Figure 4. Fishermen setting a large trap net in Lake Pend Oreille, 2003.

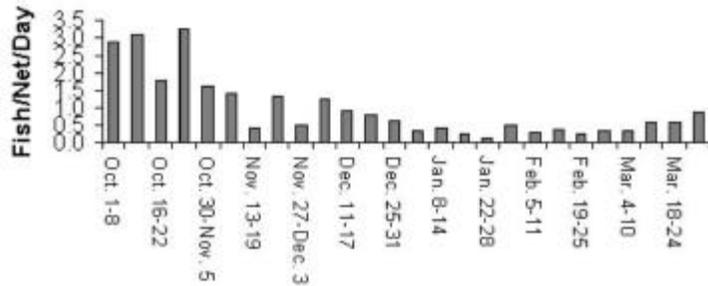


Figure 5. Catch rate of lake trout in trap nets set in Lake Pend Oreille during the winter of 2003-2004

Table 1. The numbers of fish caught in nine trap nets set in Lake Pend Oreille during the winter of 2003-2004.

Net Totals			
Species	Total Caught	Mortality Rate	# of Mortalities
Lake Trout	1,100	1%	11
Lake Whitefish	41,204	7%	3,049
Bull Trout	136	5%	7
Rainbow Trout	4	100%	4
Brown Trout	1	0%	0
Pikeminnow	107	1%	1
Suckers	93	0%	0
Peamouth	11	27%	3
Kokanee	1	0%	0
<b>Total fish caught</b>	<b>42,657</b>		

partment is asking anglers to report the tag number, length, weight, and location of any of the tagged lake trout they catch. Reported tags will be entered in a drawing for one of ten \$250 rewards (Department funded).

# Links

## To Past Reports

Are you looking for past annual reports concerning Lake Pend Oreille?

They can be found on the Idaho Fish and Game's Home Page (<http://fishandgame.idaho.gov>) under the headings of: Technical/Research, Research Reports, Fisheries, then do a word search on "Lake Pend Oreille".

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## Predator Tracking

During this past fall and winter, bull trout and lake trout were tracked to determine habitat use (Figure 6). Bull trout utilized a mean depth of 79 feet and were found in depths ranging from 25 to 205 feet. Lake trout utilized a mean depth of 102 feet and were found in depths ranging from 9 to 149 feet. Overall, lake trout occupied deeper depths than bull trout. This is a pattern that we also observed during this past summer and may be one reason why we captured many more lake trout than bull trout during trap net operations.

Both bull trout and lake trout were located throughout the lake and were often found in similar areas utilizing mostly benthic and near-shore habitats. Thus far, our data suggest that the bulk of the lake trout

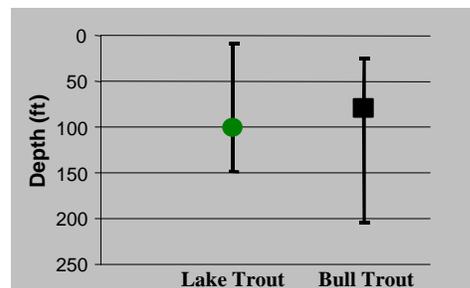


Figure 6. Depth use of lake trout and bull trout during this past fall and winter season. Middle points represent mean depth while bars above and below the mean depths represent the minimum and maximum depth ranges.

and bull trout population would be excluded from our pelagic predator population estimates that are made using hydroacoustic gear.

## Predator Sonic Tagging

During this past quarter we were successful in tagging and releasing an additional 10 new fish. Five of these fish were bull trout and were collected via the trap nets. These bull trout ranged in size between 6.75 and 11 lbs. The other five fish were rainbow trout and were collected either in the Clark Fork River or in Spring Creek near the Clark Fork Hatchery. Rainbow trout ranged in size from 4 to 12 lbs, 3 of which were females and 2 were males. We are planning to collect an additional 10 rainbows during the next month. Currently we have 9 lake trout, 7 bull trout, and 5 rainbow trout implanted with depth sensitive sonic transmitters.



### The Lake Pend Oreille Fishery Recovery Project

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