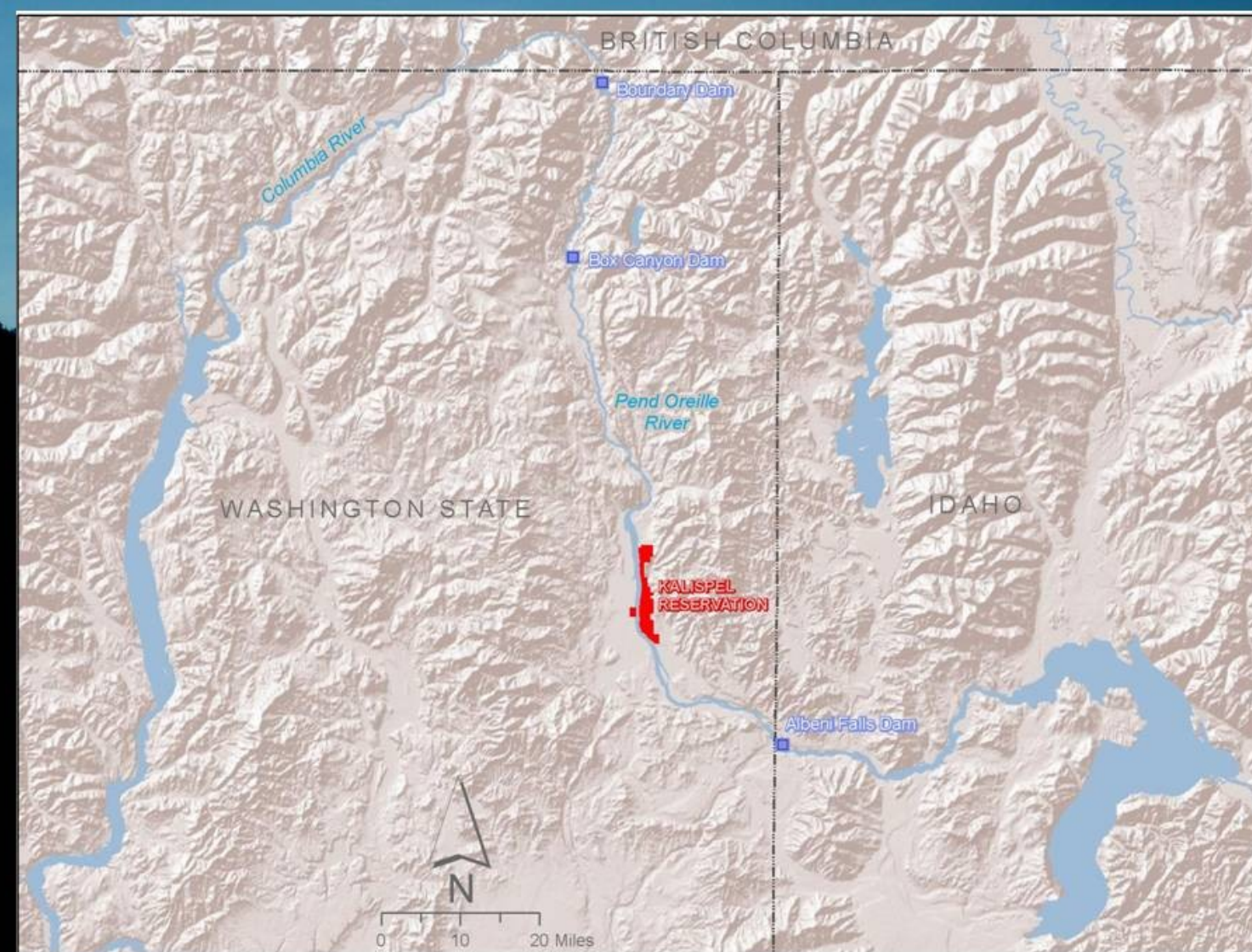


Box Canyon Reservoir Creel Survey 2010

By
Jason M Connor
Kalispel Tribe of Indians
January, 2012

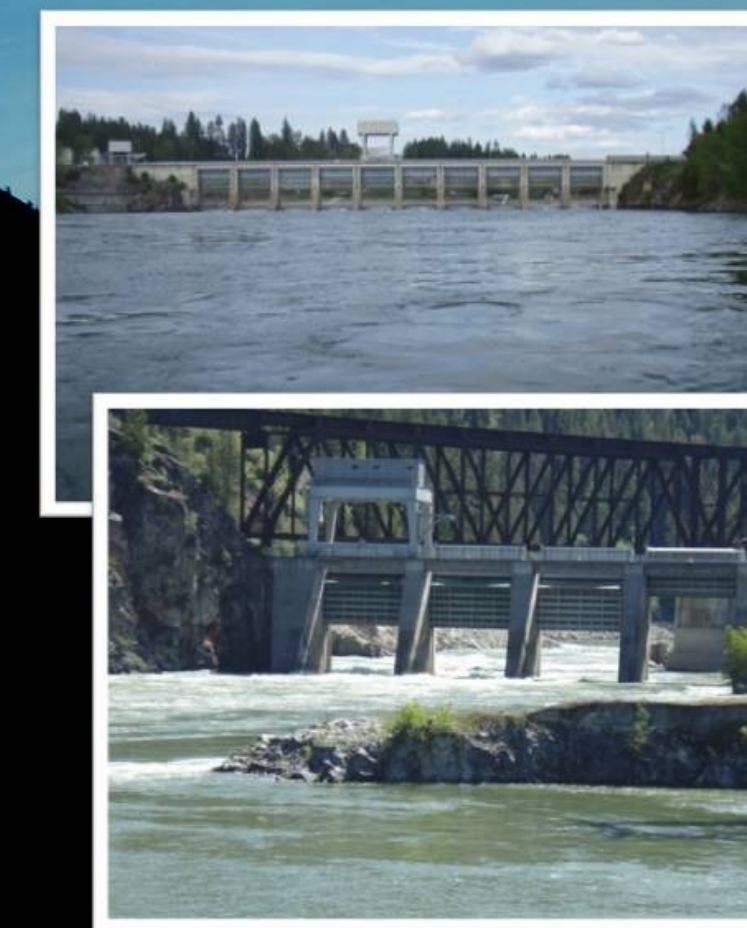


Historical Fisheries of the Pend Oreille



- Resident native assemblage of minnow, sucker, whitefish, and trout species
- Wide-scale introductions of non-native species: largemouth bass, brook, brown and rainbow trout, tench, pumpkinseed, black crappie, and yellow perch

Hydroelectric Development



1950's-1990's

- Shift from salmonids to warmwater species
- Trout stocking largely discontinued
- 1980's, LMB had become the principle sport fish
- Ashe and Scholz 1992, Bennett and Litter 1991
- LMB enhancement
 - hatchery
 - Artificial structure



Why Conduct a Creel Survey?

- Last creel survey in 1988-1989 (EWU)
- Northern pike established
- Smallmouth bass established
- NP clubs and tournaments forming
- Shifts in angler opinions, preferences, rumors



Sampling Design

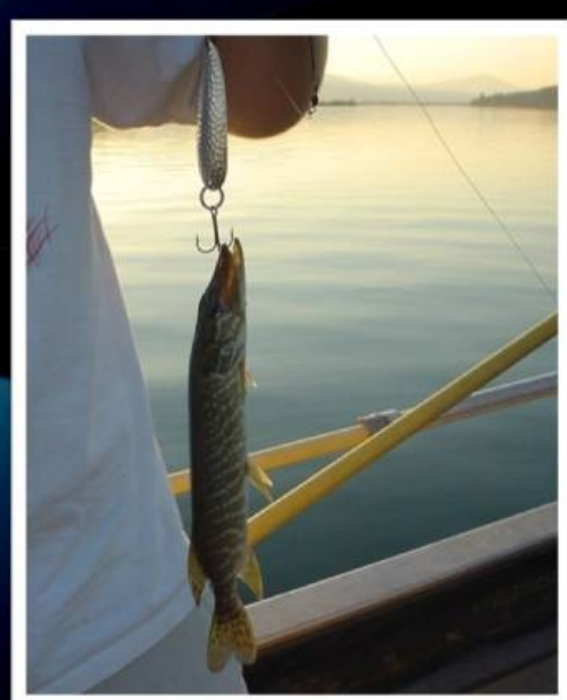
- Stratified two-stage non-uniform probability sampling strategy (Hahn et al. 2003, Malvestuto et al. 1978)
- Roving survey
- Primary strata week/weekend (12 days/month)
 - 8 weekdays and 4 weekends per month
 - March-November
- Secondary sampling units
 - AM/PM
 - 3 Reservoir sections

Data Collection

- Pressure estimates
 - Instantaneous counts of boat trailers, boats on water and shore anglers
- Angler interviews
 - Angler type, number in party, time of interview, start time, trip completion, launch used, residence, tribal affiliation, angler satisfaction
 - Target species, harvest data (SPP, TL, W, tag #), number of released fish
- Monitor bass and northern pike tournaments

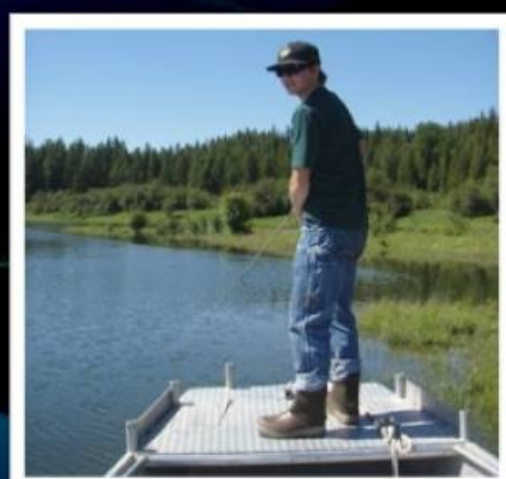
Results

- March-November
 - 103 days surveyed
 - 1172 parties counted
 - 598 parties interviewed
 - 1088 individuals
 - 1073 fish caught/released
 - 471 fish harvested



Total Effort

- 70,879 Total angler hours
 - 39,130 boat
 - 31,749 shore
- 26,817 Total trips
 - 10,156 boat
 - 16,661 shore
- Effort low and variable in Mar, Apr, Oct, Nov.
- 15,000-17,000 hrs expended monthly in Jul, Aug.



Target Species

- Target Species vs Angler Preference

| | 2010 | 1988-1989* |
|---------------|------|------------|
| NP | 57% | 0% |
| Bass* | 33% | --- |
| LMB | 26% | 25% |
| SMB | 29% | 0% |
| Salmonids | 20% | 25% |
| Spiny rays | 6% | 6% |
| No preference | 26% | 44% |
| Other species | 3% | 1% |

Total Catch and Harvest

- Anglers harvested 12,144 fish representing 12 species
 - 6,078 by boat anglers
 - 6,066 by shore anglers
- Anglers caught and released 34,036 fish representing 16 species
 - 18,854 by boat anglers
 - 15,181 by shore anglers
- Catch and harvest peaked in Aug

Catch and Harvest of Selected Species

- Four species accounted for 90% of the harvest and 95% of the total catch

| | Total Harvest | | | | Total Catch and Release | | | |
|-----------|---------------|------|------|------|-------------------------|-------|------|------|
| | LMB | SMB | NP | YP | LMB | SMB | NP | YP |
| March | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 |
| April | 0 | 70 | 84 | 0 | 0 | 0 | 29 | 29 |
| May | 21 | 471 | 1481 | 0 | 905 | 356 | 1123 | 139 |
| June | 16 | 180 | 469 | 0 | 352 | 921 | 1044 | 121 |
| July | 99 | 541 | 654 | 177 | 771 | 2929 | 724 | 1609 |
| August | 428 | 2305 | 1078 | 536 | 1332 | 6599 | 4050 | 5621 |
| September | 64 | 341 | 607 | 599 | 335 | 628 | 825 | 1002 |
| October | 0 | 31 | 495 | 23 | 54 | 259 | 373 | 0 |
| November | 0 | 0 | 143 | 0 | 0 | 45 | 0 | 0 |
| Total | 629 | 3939 | 5010 | 1336 | 3749 | 11738 | 8203 | 8522 |

Northern Pike Exploitation

- Catch and harvest of 288 tagged northern pike
 - 2.1% (n=6) harvested in first two weeks
- May
 - 8.6% (n=21) caught
 - 6.1% (n=15) harvested
- June
 - 6.6% (n=15) caught
 - 4.8% (n=11) harvested
- July
 - 1.4% (n=3) caught
 - 1.4% (n=3) harvested
- August
 - 4.7% (n=10) caught
 - 4.2% (n=9) harvested
- September
 - 1.0% (n=2) caught
 - 0.5% (n=1) harvested
- October
 - 1.5% (n=3) caught
 - 0.5% (n=1) harvested
- Conservative exploitation rate of 20%.

Tournament Effort and Catch

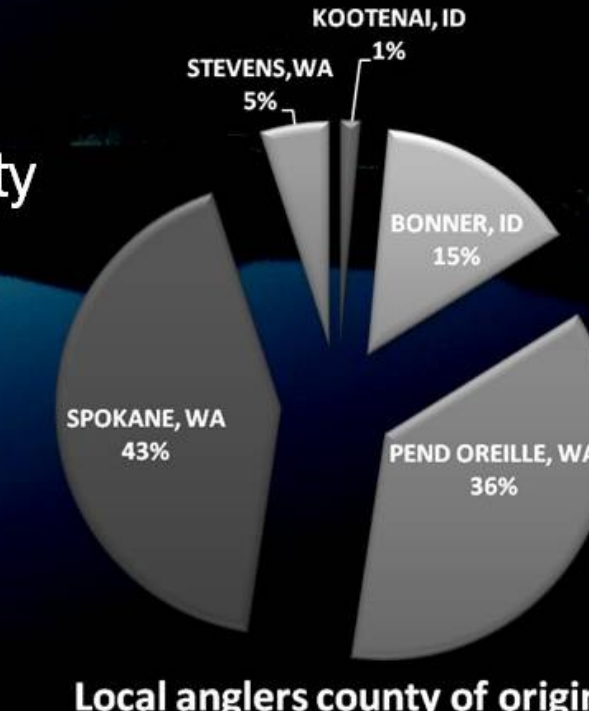
- 6 tournaments
- 207 anglers
- 3182 hours
- 1438 fish caught



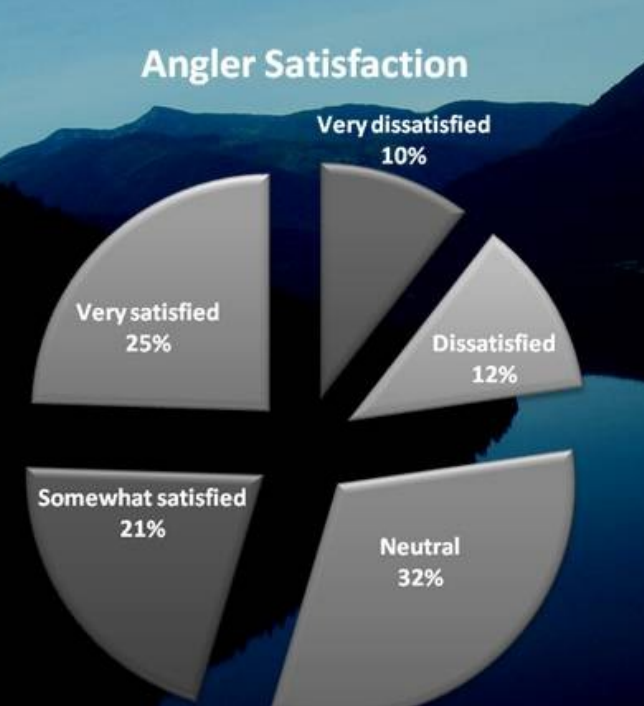
| Organization | Date | Anglers - hours | CPUE - Total Catch | | |
|-----------------------------------|--------------|-----------------|--------------------|----------|-----------|
| | | | LMB | SMB | NP |
| Clearwater Bass Anglers (bass) | 5/15/2010 | 20 - 200 | .18 - 35 | | .31 - 61 |
| IEBC (2 Days) (bass) | 5/23-24/2010 | 54 - 918 | .29 - 265 | .08 - 70 | .08 - 70 |
| IEBC (2 Days) (bass) | 6/5-6/2010 | 86 - 1462 | .42 - 613 | .05 - 71 | .09 - 128 |
| NIPA (2 Days) (northern pike) | 6/5-6/2010 | 22 - 352 | | | .18 - 63 |
| Muskies Inc Ch 60 (northern pike) | 6/12/2010 | 12 - 120 | | | .15 - 19 |
| Muskies Inc Ch 60 (northern pike) | 10/23/2010 | 13 - 130 | .05 - 6 | .02 - 2 | .26 - 35 |

Origins of BCR Anglers

- Anglers from 9 western states and Canada
 - 14 WA and ID counties
 - 95% local
- Kalispel Tribal Community
 - 2.9%
 - 750 trips
 - 2000 hours
 - 73% shore anglers



Angler Satisfaction



Economic Impact

- USFWS (2006), ASA (2008) mean daily expenditures for freshwater anglers.
 - \$86-90 per day
 - Modified estimate for BCR
 - \$74.40 per day
- \$2.15 million direct economic value
- \$3.27 million total economic effect to local economies



Questions?

