Friends of the Oxbows
NEWSLETTER
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Water Quality Update
By Rick McKelvey

Friends of the Oxbows have been measuring water quality parameters on the Penticton oxbows and adjacent waters since 2015. We reported on those trends in 2017, and are in the process of completing another report that will summarize data from our complete data base. The 2017 report is available on our website, and the 2018 report will be posted there shortly.

New for the 2018 report is the fact that we had to replace our test meter in May. For some reason our old meter decided it no longer liked the work we were giving it. Since so much of what our society produces today is not cost-effective to repair (despite the un-costed impact on our environment of the throw-away economy!), we replaced it with a slightly more sophisticated device. As with the old meter we can still measure temperature, pH, and conductivity, and now we can also measure salinity and total dissolved solids. These are all simple parameters to measure and together they give us a reasonable idea of how healthy our local waters are, in relation to maintaining biodiversity. With a separate device we continued also to measure turbidity.

From our analysis of the data we conclude that our local waters are in reasonable health, with two exceptions - temperature and turbidity. Conductivity, pH, salinity and total dissolved solids all appear to be within the range of healthy aquatic environments. They fluctuate somewhat but none are indicative of a polluted environment. Temperature, however, fluctuates widely throughout the annual cycle, as might be expected in our usually warm summer environment. At times temperature may become higher than most aquatic organisms can tolerate. Given that we are only able to measure temperature near the surface, those high temperatures may not be as serious as they first might seem. Deeper waters are likely somewhat cooler, so organisms that find the surface too hot presumably can retreat to the depths. Measuring stratification is much more difficult than simple surface temperature measurements, but here is a good project for an enterprising university student!

Turbidity also fluctuates a lot, and at times is higher than desirable to maintain aquatic plant productivity. As our oxbows have very fine sediments on their bottoms, with no annual flushing, wind and the activities of species like carp can cause those fine sediments to be stirred up and spread throughout the water column. More turbid water absorbs more light, so less light is available for photosynthesis. Less photosynthesis means less overall productivity up the food chain. There are at least three things that could be done to remedy this situation, but they will take resources to effect. One is to ensure the banks of the oxbows are well-vegetated, as riparian areas should be, so that the effect of the wind is reduced - wind breaks, as it where, besides wildlife habitat! The second is the periodic removal of the fine sediments, resetting the oxbow system in a fashion analogous to what would have happened in periodic freshet flooding. The third thing is to find a way to control the number of non-native carp residing in the oxbows. Maybe the recently sighted otter family in one of the oxbows will be able to help out here!

For more details on the trends we have seen in water quality look for our report on our website.
http://pentictonoxbows.ca

Bird Survey Update

By Rick McKelvey

Friends of the Oxbows have been monitoring use of the oxbows by migratory birds in cooperation with the South Okanagan Naturalists Club since 2015. We have summarized the results of those counts periodically and posted them to our website. In keeping with that reporting schedule we have completed a summary showing the results of last year's count with those of previous years, also posted to our website.

Last summer was an interesting one from the point of view of the weather! We started off with a cool spring, as in 2017, but then the weather turned very hot. Smoke during most of the summer was also extensive from fires in many different locations near the Okanagan. The fall started off on the cool side, with the promise of perhaps a harder winter than in previous years, but then it warmed up. Bird migration, in terms of when we saw numbers of birds, was a bit more spread out than in previous years, particularly in the fall, with open water remaining longer than in the past. However, over the course of time, birds and other organisms have evolved adaptations to protect them from short term variations in weather, and migration occurred more or less at it has in the past, time-wise.

Briefly, we recorded slightly more species than in previous years, the number of birds seen per survey was lower than in previous years (perhaps because of the smoke?), but rates of use of the oxbows appeared to higher in 2018. This latter point could be a result of us being able to do more surveys this year as a result of the warm fall, so caution is warranted at this point in attaching any significance to that result. More years of data will be required to smooth out sources of error inherent in surveys like ours.

Turtle counts were quite variable and were generally lower than in previous years, except for some oxbows such as Brandon Avenue. Numbers seen in that oxbow were much higher than those seen in the past, most likely because of the recent removal of sediment making for much improved visibility. As with the bird counts, it will take several more years of surveys to account for variation in turtle counts due to things like turtle visibility and behaviour.

For more details on our bird survey results see our report on the website.

http://pentictonoxbows.ca

A recent visitor to the Brandon Ave. Oxbow, a River Otter

The Story of the Salmon

By Randy Manuel

This Story is a long and complicated one. I would like to acknowledge one of the main sources of information in this short essay as coming from Fisheries and Oceans Canada, Okanagan Nation Alliance, B.C. Ministry of Water Lands and Air Protection research publication "***The State of Fish and Fish Habitat in the Okanagan and Similkameen Basin"*** published 2005. Also from the diary of Lt. Charles Wilson of the British Boundary Commission of 1860 as well as anecdotal information.

Since the time that indigenous people started living in the region fishing has been a principle food source. Okanagan Falls was the main fishing camp where Sockeye, Chinook and Steelhead were caught. There were, of course, other locations, such as Coyote Falls on the Similkameen (blocked by the Enloe Dam in 1920) and at Osoyoos.

Lieut. Charles William Wilson, R.E. while secretary of the British Boundary Commission wrote; ***"August 12th 1860, The Indians at Okanagan have a very clever way of catching the salmon running at this time in great numbers; they make an artificial leap of wicker work right across the river over which the fish only jump to tumble into a basket or cradle ready for them on the other side".***

Wilson, was on his second of three trips along the boundary checking the survey teams work. He was at Osoyoos when he wrote this passage.

"The Fur companies (the North West and the Hudsons' Bay) paid their men in salmon which had been acquired by barter with the native people of the region. Thus the salmon was an important food source as well as an economic one for the Sylix, the name the people of the Okanagan call themselves.

Well before Europeans had arrived, the salmon fishery at Okanagan Falls was also an opportunity for social and trading among the aboriginal people for hundreds of miles around.

Before settlement and our manipulation of the land, creeks and rivers, there were about twenty four species of fish which may have included the White Sturgeon. Since then some fourteen non- native fish including goldfish, have been introduced into the Okanagan watershed. These of course have affected the ability of native species to exist or flourish. Yellow Lake has a significant population of gold fish thanks to ignorant people who have no concern for the environment.

But, there is good news on the horizon. Various agencies have been focused on restoring the salmon habitat for the last two decades. There have been changes made into the downstream dams that now allow the fish to travel as far as the dam at Okanagan Lake. The fish ladder that was built into the Okanagan Lake dam in 1953, was never activated. It is now under consideration to be made operational at some point in the future. New spawning beds have been built into the channel between the old CPR bridge and Coyote Cruises launching steps, a fish hatchery has been built on Shingle creek just west of the En'owkin Centre, and in December 2018, a rebuild of the Ellis Creek sediment catchment basin has been completed.

This will allow salmon access to over two kilometres of Ellis (Nanisheen) creek for spawners. This old remnant of the original river has been, for years a point where all of the sand and gravel that pours down in spring freshet settles. Excavators then had to get into the creek to haul the sediment away. Now, a tunnel has been built that allows the fish to bypass the shot rock riffles at the west end of the catchment. Concrete chambers that catch most of the silt can be accessed without getting machines into the creek and new plantings will be put in place starting in the spring, to enhance the riparian region of the creek. All in all this is a wonderful operation that along with the other work done will only improve the salmon rearing capability of the Okanagan River system. Look Out Adams River!

Before settlement there was an ample natural wetland that supplied food and rearing nursery for salmon. These wet lands also have native mussels turtles and crayfish.

With the need for introduced intensive agriculture dams were put on various creeks and upland lakes. By 1913, the start of larger scale fruit growing between Penticton and Vernon, there were 13 dams. By 1998 most of the major creeks and upland lakes had 147 dams. Seventy five percent of the water held back is for agricultural use, the side benefit being flood control. It was estimated in this 2005 report that by 2020...not that far people, that we will have reached the top limit of water availability in the valley. The glass of wine sipped at a luncheon in a local golf course lounge all comes at a price.

Now, only some 15% of wetlands survive. When the Okanagan River was channelized and dyked in 1953 along with new dams at the outlet of

Okanagan Lake, Skaha and McIntyre, the death knell for any productive salmon fishery was just about complete. Salmon could still make it up and into Osoyoos lake passing through the Zozel Dam at Oroville to spawn in the only remnant piece of original river between McIntyre Creek and about one mile below the highway 97 bridge.

Editor's Note:

In Randy's article he mentioned, "But there was good news on the horizon". The leading agency he was referring to is the Okanagan Nation Alliance (ONA) who are working in collaboration with provincial and federal agencies to restore fish habitat within the Okanagan Basin, under the Okanagan River Restoration Initiative (ORRI). The overall goal of ORRI is to regain some of the river habitat quality and quantity that has been lost since the 1950s; returning channelized river portions back to more natural conditions. ORRI's long term purpose is to improve water quality; create self-sustainable, complex and diverse habitat for fish and wildlife; and to enhance human relation with the river ecosystem. What follows is an excerpt of a progress report that the ORRI have given permission to include in this edition of the Friends of the Oxbow Newsletter. We extend our thanks to the ORRI for this permission.

For more information contact Lee McFadyen, ORRI Public Relations: Phone: 250-499-5404 Email: mariposaorgf@hotmail.com . Bob Anderson, Editor.

The Turtles have returned to the Brandon Ave. Oxbow after dredging

"Brandon Bruin"
A recent guest to the Penticton Oxbows

ORRI – SPAWNING BEDS IN THE PENTICTON CHANNEL

Project background:

- According to Traditional Ecological Knowledge, "the river channel (in Penticton), used to be rich in fish; Steelhead, Coho, Sockeye and King (Chinook) Salmon" (Ernst, 2000).
- Salmon spawning habitat is currently extremely limited in the Penticton Channel, mainly due to river channelization which created very flat channel grade, low water velocities, inadequate substrate material, Froude number out of the preferred range and low egg-fry survival.
- As permanent fish passage was at Skaha Lake Control Dam in 2014, gravel augmentation in the Penticton Channel has been identified as one of the highest river habitat priority.

Renaturalization goals and benefits:

- Creating spawning areas (raised spawning beds) with optimized gravel size, bed slope and hydraulics for Sockeye, Kokanee and Chinook.
- Enhancing rearing habitat for juvenile salmonids and Burbot with boulder clusters.

Design elements:

- The raised beds are immersed at all flows and are created placing spawning gravel directly over the existing river bed substrate.
    - Bed No.1: 173m long X 20m wide raised gravel bed designed for Sockeye and Chinook.
    - Bed No.2: 163m long X 20m wide raised gravel bed designed for Sockeye.
    - Bed No.3: 270m long X 20m wide raised gravel bed designed for Sockeye and Kokanee.
    - Bed No.4: 500m long X 20m wide raised gravel bed designed for Sockeye and Kokanee.
    - 1986 Kokanee Bed: 180m long X 20m wide raised gravel bed designed for Kokanee.
- The clusters are configured to optimize the hydraulics behind the boulders for rearing and feeding (development of invertebrates).

Timeline:

- **On-going**: Guidance from the ORRI Steering Committee and outreach activities.
- **2012-2013**: Conceptual designs for 4 beds/gravel bars in the upper reach of the Penticton Channel.
- **2013-2014**: Funding research, designs, permits and construction works for Beds No. 1 & No.2.
- **2015**: Funding research, designs, permits and construction works for Bed No.3.
- **2016-2020**: Funding research, designs, permits and planned construction for Bed No.4 & Kokanee Bed.
- **2014-2018**: Effectiveness monitoring and adaptive management.

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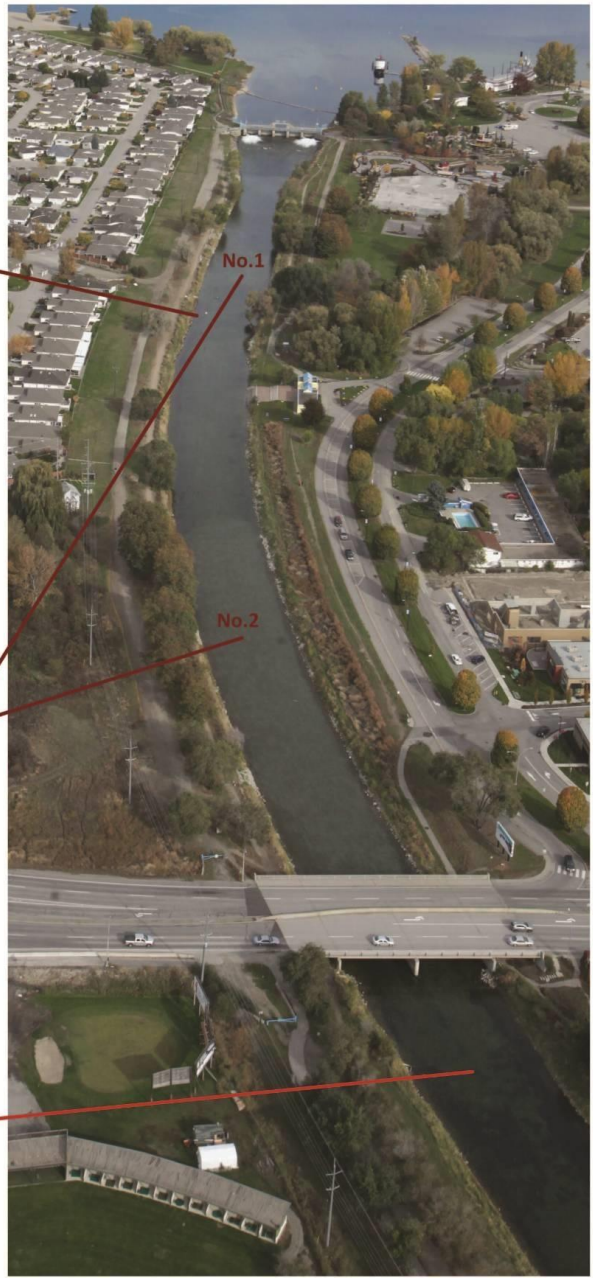
***AFTER*: BOULDER CLUSTERS**
ENHANCED REARING CONDITIONS
FOR BURBOT & JUVENILE TROUT

***AFTER*: RESTORED PLATFORMS No.1 & No.2**
OPTIMIZED SPAWNING CONDITIONS
FOR SALMON & TROUT

***BEFORE*: DUE TO RIVER CHANNELIZATION**
EXISTING UNSUITABLE SPAWNING CONDITIONS
(hydraulics, substrate, macrophytes, etc.)



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