Going, going, gone...Wildlife Refuge inventories lake loss

by Ed Berg

In my travels around the Kenai Peninsula, I am seeing many falling pond and lake levels. Docks of some lakes no longer reach the waterline. Exposed shore aprons of shallow lakes are beginning to revegetate with alders and cottonwood seedlings. Drops of 1 to 4 feet are not uncommon on central Peninsula lakes.

It appears that we are drying out!

Total precipitation (rain plus snowfall) varies a lot from year to year but doesn't show any long-term trend, at least to my eye. Temperatures however show a "jerky" upward trend since the 1940's, remarkably like the stock market.

Despite some cool periods, Kenai shows about a 3° F rise in mean annual temperature and Homer shows a 4° F over the last 50 years. This means more water is being evaporated from the landscape and that the trees are breathing out more water, i.e., evapotranspiration is increasing.

Lake level drop is most noticeable on "closed basin" lakes, i.e., lakes with no stream outfall.

These watersheds lose water only through evapotranspiration and underground flow. An "open basin" lake, on the other hand, is like an overflowing bathtub; the inflow may increase or decrease, but the water level can stay the same because of the overflow through a stream outfall.

With enough drying, an open basin lake can turn into a closed basin lake with no overflow. This has happened with Upper Jean Lake (near the mountains, just north of the Sterling Highway). Upper Jean Lake used to supply a stream which fed two unnamed smaller intermediate lakes and then Jean Lake itself. This stream no longer flows, and the level of Jean Lake lies 2 feet below the outfall. The level of one of the intermediate lakes is 4 feet below its old outfall. This is radical drying out.

We are also losing a lot of ponds. There are (or were) many small kettle ponds in the rolling moraines running northeast from Kasilof through the Funny River Horse Trail, Sterling, and the Swanson River - Swan lake Road areas. These moraines were formed about 13,000 years ago by ice lobes coming from the west side of Cook Inlet during the last glacial period. As the glaciers melted and pulled back to the west, they left huge blocks of ice half-buried in the outwash deposits of sand and gravel. When the ice blocks melted, they left "kettle" ponds.

On the 1950 topographic maps and aerial photos these ponds appeared in blue (water-filled), but many are gone from the current (1984) topographic maps. They are now grassy pans, with varying degrees of spruce and hardwood invasion. Kettle ponds are important wood frog breeding habitat,; so it seems that wood frogs are the first victims of the "Kenai drought."

To assess lake level changes, I am inviting Kenai Peninsula lake residents and lake users to contact me about on their local lakes. I have prepared a three page field guide explaining the basic ideas and a data sheet for observations.

The field guide describes how to visually estimate lake level drop and to describe live or dead vegetation on the exposed lakeshore. I am also seeking information about changes in fish and wildlife, aquatic vegetation, water quality, and human usage. This information will provide a baseline of data for our ongoing water quality program.

New vegetation on exposed lakeshores can provide a good clue as to how long the lake level has been down, If for example woody seedlings or saplings have established, these can be aged by counting the growth rings or terminal bud scars. If only annual weeds are growing, the water level probably dropped in the last year or two.

I am especially interested in observations of long-term lakeshore residents and lake users because they can best judge the long-term trends: has the lake been changing (falling, rising) steadily for a period of years, or does it go up and down with some sort of cycle?

More recent observers, of course, can report the present lake conditions, and this too is valuable, especially when the inventory is repeated in future years.

The Kenai National Wildlife Refuge doesn't have a big budget for this inventory, so we are depending on local folks to help us with information. Give me a call at 260-2812 and I'll mail you a field guide and data sheet, which you can fill out at your leisure. I can schedule some time during the week to come by and discuss your lake personally with you, or we could

meet at the Refuge headquarters on Ski Hill Road. I am also available to talk to community groups. If you are interested in more information about climate change on the Kenai, check the website for my memo "Climate Change on the Kenai Peninsula," or call me for a printed copy.

Ed Berg has been the ecologist at the Kenai National Wildlife Refuge since 1993. He also teaches geology at the Homer and Soldotna branches of the Kenai Peninsula College, and serves on the Kenai Peninsula Borough Trails Commission.