

**Water Quality in the
Whiteshell Provincial Park**

Star Lake



**Lakes and Rivers
Water Quality Management**

Manitoba
Environment



General Information

Star Lake is located in the southern portion of Whiteshell Provincial Park just west of West Hawk Lake and north of the Trans-Canada Highway near the Manitoba / Ontario border. The lake is a secluded but popular recreational area. There are 128 cottages located on Star Lake as well as a large sandy beach, a public boat launch site, and a picnic area. The sport fishery at the lake includes walleye, northern pike, small-mouth bass, black crappie, and yellow perch. Some of Manitoba's earliest gold claims were staked near Star Lake at the turn of the century.

Physical Characteristics

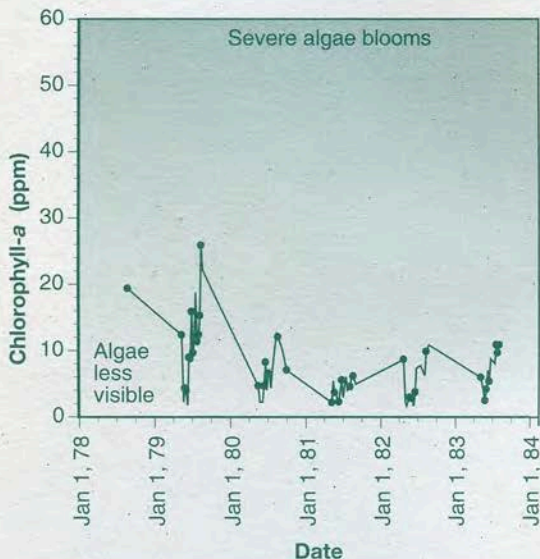
Star Lake, with a surface area of 150 hectares, is one of the smaller developed lakes in the Whiteshell Provincial Park. The lake is approximately 2.1 kilometres long by 1.5 kilometres wide and has a maximum depth of 6 metres. Star Lake receives inflows from two minor bog areas, as well as direct runoff from surrounding rock outcrops. Water leaving the lake flows through a short stream into West Hawk Lake. The drainage area of the lake is about 15 square kilometres. Star Lake is located within the Precambrian Boreal Forest natural region of Manitoba. Lake levels are maintained naturally.

Water Quality Monitoring

Although some monitoring by private citizens and government agencies occurred previously, cottage owners became directly involved in 1992 when volunteers joined the Manitoba Environment Volunteer Water Sampling Program. Volunteers collect biweekly samples that are analyzed for nutrients and chlorophyll. Manitoba Environment and Manitoba Natural Resources began a cooperative water quality study of Star Lake in 1993. Water samples for detailed chemical analysis were collected monthly over a one year period. The water quality information from both these programs will be used to guide future management decisions about activities within the Star Lake drainage basin.

Water Quality

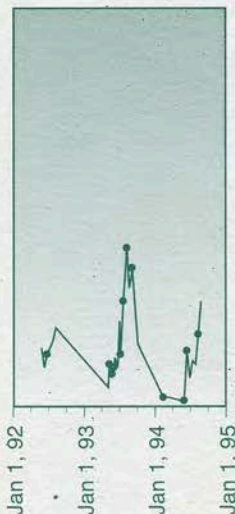
Nutrients in Star Lake, especially phosphorus concentrations, are high enough to cause algae blooms. The severity of blooms varies throughout the open water season and from year to year. This variability is related to fluctuations in temperature, the amount of sunlight, wind intensity, and the supply of nutrients. Algae require light for growth and blooms become a nuisance most commonly during periods of calm, sunny weather. In Star Lake, populations of algae are usually lowest during the winter and early spring, increasing during the early summer, and can bloom several times during the late summer.



The amount of chlorophyll-a found in Star Lake from 1978 to 1994.

Lake managers and volunteer samplers routinely measure the amount of chlorophyll-a in water samples. Chlorophyll-a is a pigment found in algae and its measurement indicates the relative abundance of algae in water. Algae and other suspended material will reduce clarity of the lake. Over the past decade, Star Lake has been quite clear as the average depth at which a 20 centimetre diameter black and white Secchi disc could be seen was 2.2 metres.

Although it is clear, the water of Star Lake is brown in colour. This is not an indication of pollution or contamination. The brown colour is from tannin, a pigment that is released by partially decayed plants. Part of the Star Lake drainage area consists of bog and surface water from this type of habitat is rich in organic material from partially decayed plants. When plants decay, nutrients as well as brown coloured acids and tannin are released into the water. Drainage from bogs which flow into Star Lake is therefore rich in nutrients and brown in colour.



In general, the water quality of Star Lake is excellent and meets all Manitoba Environment objectives for both recreational use and aquatic life. The lake is slightly alkaline with a pH of approximately 7.1 units. Fecal coliform bacteria are detected only very rarely in water samples from the lake.

Is the water safe to drink?

Many people ask "Is the water from my lake safe to drink?". Unfortunately, there is no guarantee that untreated surface water taken from any lake or stream is free from potentially harmful bacteria or other disease-causing organisms. These organisms, when ingested, can cause a variety of gastrointestinal upsets to some people. Other people may not be affected at all. This difference in the reaction of people who have ingested disease-causing organisms varies due to age, general health, and the abundance and type of disease-causing organism. The source of these organisms is usually human or animal feces which have been introduced into the lake. Without proper disinfection, it is impossible to guarantee that any surface water is free from harmful bacteria or other disease-causing organisms.

Health Canada recommends that all raw surface water be disinfected before consumption. The minimal amount of treatment

recommended is chlorination. Chlorine, even at small concentrations, will kill bacteria and most other disease-causing organisms.

How can I help?

Cottage owners, campers, and day-users can help to maintain and enhance the water quality of Star Lake. Since phosphorus-based soaps and detergents will contribute to the total amount of nutrients found in our lakes, you can ensure that grey-water discharge from your cottage does not flow directly into the lake. Similarly, you can ensure that your septic system is working properly and that sewage holding tanks are not leaking. Avoid washing with soap and shampoo directly in the lake. Choose environmentally friendly, low phosphate, and non-toxic products for use at your cottage or campsite.

Soil conditions around Star Lake vary from sandy clay to barren rock out-crops. These soils have a limited ability to hold nutrients. The addition of fertilizers to cottage lawns and gardens will contribute nutrients to the lake because the underlying bedrock is close to the surface. As a result, much of the fertilizer which is added to lawns and gardens will eventually end up in the lake. Retaining the natural trees, shrubs and ground vegetation surrounding your cottage helps to maintain stable soil conditions, reduces the amount of nutrients reaching the lake, and provides wildlife habitat.

For more information

Further information can be obtained from:

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