



PARKER POND ASSOCIATION NEWSLETTER

VOLUME 14

MAY, 1997

President's Corner

Hello everyone;

It was January 28th and we were having our first substantial snow storm, with several inches of new fallen powder. This was deep winter and with it came time for reflection.

As I walked in the woods and skied the lake, one thought recurred in my mind and soul, and that was, how very fortunate we are to be on this beautiful, peaceful pond.

This will be my last 6 months as president of PPA, with a new president to be elected in July. Much of my efforts during this tenure have been concentrated on learning about lake ecology, water quality testing and solutions for



preservation. Joined by the other officers and members of the association, we have come to new understandings about what actions need to be taken and about those which must not occur in order to preserve the existing quality of this lake and the surrounding watershed. There are a group of us members who are committed to continuing the work of water quality issues and developing concrete strategies to avert non-point source pollution, increase public awareness and

help shorefront owners, new and old, do the right thing. Anyone wanting to join us' we could sure use the help!! I want to thank everyone of the members who played a part, large or small in the preservation of the quality of Parker Pond. I would encourage more folks to become involved. To this end we have formed a new ongoing committee, devoted to water quality, which I will chair. If interested, please call or write:

Deb Loftus Cayer
RR#2 Box 1805 Sandy River Rd
Farmington, ME 04938
207-293-2782

MINUTES OF THE 1996 JULY ANNUAL MEETING

Just a brief overview of the 1996 annual meeting

- 1) Water quality testing was discussed. The lake was tested by us this year. We are using Fayette's dissolved oxygen meter and grab sampler and we have made a core sampler. Ray Anderson has continued with the Secchi disk clarity readings. These actions have reduced testing costs. Included in this newsletter is an edited water quality report. Roy Bouchard of the DEP has analyzed the data and formulated results.
- 2) A plant grant program was discussed. The idea being that the association would chip in time, education and perhaps matching monies if needed to help plant buffer zones around the pond where most needed. A vote was taken with

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75% yes and 1 no. We talked about this once more at the winter meeting and it was decided to use the watershed survey done a few years ago to scope out problem areas along the shorefront and to approach landowners with options for remedies. We have called upon other water districts who have done similar programs and we will call upon our conservation district for help.

3) In regard to the old Dolloff property at the south end of the lake and the dry hydrant that was installed. Discussion was around if it was done properly and a buffer was planted. At our winter meeting Verne Shaw one of our trustees noted that everything* was in compliance. The town required a hydrant, a buffer was spared and things look better there now. This will be one of the areas that the water quality committee will check this spring.

4) Brent noted that he is accepting memorial pieces to include in future newsletters. This pertains to folks who were active members of the association who have now passed on.

5) Marty made some suggestions on how to improve fishing on Parker. An expanded stocking program perhaps financed by a fund raiser. A habitat restoration project for cranberry stream (king brook), working with fish and wildlife to improve this smelt spawning ground.

6) We decided to have a PPA regalia in order to disseminate educational material and increase our visibility. This was held on August 17th with a sparse turnout. We met at loon island on a very windy day. We had refreshments and then boated or was blown to shorefront docks. There were some welcome receptions and some not so welcome. Its a good idea, perhaps another try next August??

7) The treasurers report was done by Marty since Waine was away. That report is included in this newsletter.

8) Election of officers. Slate accepted

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|---------------------|----------------|
| PRESIDENT | Deb Loftus |
| VICE PRESIDENT | Jeane StClair |
| SECRETARY | Norm Meldrum |
| TREASURER | Waine Whittier |
| ASSISTANT SECRETARY | Morgan Henika |
| TRUSTEE | Marty Arnold |

(Trustes left in office: Jere Hughes 2 years and Verne Shaw 1 year)

ADDED NOTES

We now have two tapes available in our library which may be borrowed and copied. We hope to have copies available at our next annual meeting. Please contact Deb if you would like to see these tapes before then, or if you need assistance with planting this spring.

The tapes are: EVERY TIME IT RAINS and VEGETATED SHORELINE BUFFERS

There has been a great deal of interest in involving the younger generations in water quality issues and the pond association. Suggestion was made to have a group of Parker Pond kids go out on a testing day with hands on secchi disk demonstration and then perhaps showing them examples of good and bad shoreline management practices. Elizabeth Beal has volunteered her church youth group to go out and help plant buffers for those shorefront owners who need that type of help. Those interested should get in touch with Deb at the *previous address. If there is enough interest we can set these programs up for early this season.

NOMINATIONS BEING TAKEN FOR OFFICER POSITIONS

All nominations should be sent directly to Deb and will be included in the next newsletter before the annual meeting.

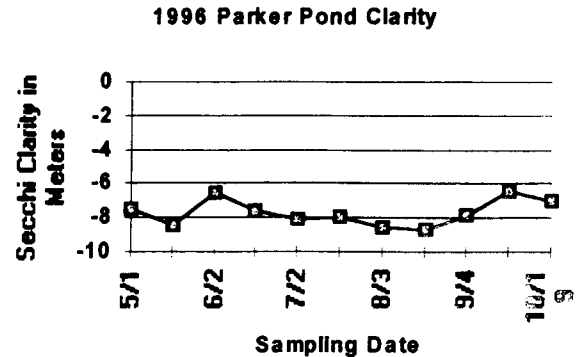
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Parker Pond Water Quality 1996

Parker Pond water quality was monitored by two volunteers in 1996, one of whom did secchi clarity readings a total of 11 times from May to October. Another monitor submitted three oxygen-temperature profiles for June, August and September. In addition, some phosphorous samples were taken along with other basic chemistry data in August. The following was compiled by DEP in cooperation with the Parker Pond Association and the Maine Volunteer Lake Monitoring Program.

Water Clarity:

Lake clarity has been the primary measure of water quality for lakes over the last 25 years, not only in Maine but much of North America and Europe. The state average water clarity is around 5.5 meters (18 feet). Having volunteer data from 6 months gives a valuable record of the conditions and whether they change through the season. The graph below illustrates that the clarity stayed above state average this season, with a minimum readings coming in early June and October, when the normal spring peak in algae growth and the fall overturn (mixing) probably occurred. The lake is relatively unproductive, with a season average of 7.7 meters, or 25 feet. Unlike many lakes in the central Maine region, Parker Pond actually was clearest in August, which generally indicates that nutrients available to algae during spring turnover settle deeper into the lake as the summer progresses. Parker Pond is deep enough that much of that phosphorus is not made available until fall turnover.

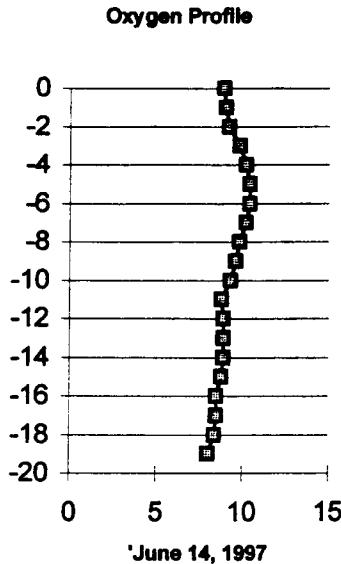


Dissolved Oxygen and Temperature:

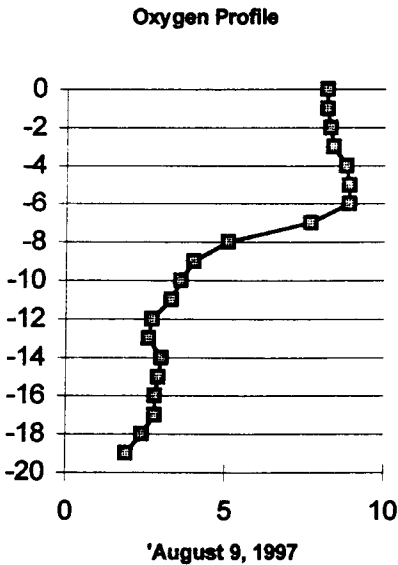
One primary indicator of lake condition is the response of dissolved oxygen to the timing and degree of thermal stratification. This year, we have valuable additional data taken at the beginning of the season and late in the year when the conditions are expected to reach their most stressed. The three profiles below, taken in June, August and September, illustrate a pattern seen in previous years of sampling (e.g. 1988, '94 and others). By mid-June, the pond had "set up" (thermally stratified) with 19 degree water at 3 meters overlying a broad band in which the temperature dropped to 14 degrees at 7 meters. This is relatively strong thermal layering and effectively separated the surface water from that below. The oxygen had not had time enough to be depleted and a relatively uniform 8-10 ppm concentration was retained after spring turnover. By early August, the top 10 meters of water had warmed up considerably and the lower thermal boundary had moved down somewhat (from 7 m to 9 meters). Over the intervening 8 weeks the oxygen levels had dropped with a rapid transition zone between 6 and 12 meters. Everything below 8 meters was significantly depleted and was under 5 ppm (parts per million), a level below which cold water fish begin to be stressed). This represented about 28% of the lake volume which was below optimum for salmon/trout, leaving only a narrow band around 7-8 meters of suitable colder water.

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and adequate oxygen. However, very little of



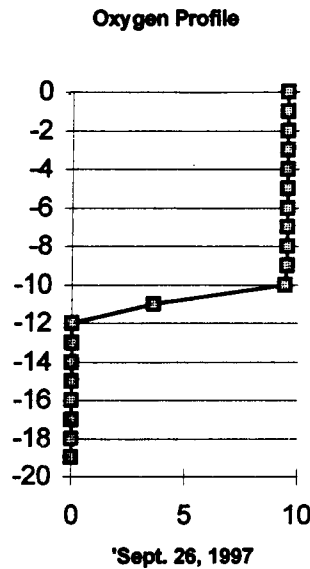
the lake sediment surface was exposed to water below 1 ppm, an oxygen level at which significant phosphorus release might occur. This pattern is typical of many Maine lakes in the 30-80 foot depth range.



By late September, the strong thermal layering isolating deep water from the surface had resulted in rapidly advancing oxygen depletion, with everything below 12 meters (12 % lake volume) completely without oxygen. Fortunately, this is

also the time of year when surface water cools down in advance of fall overturn. Temperatures optimal for salmon/trout (<18 degrees C) returned to the surface zone, and the oxygen stress was probably much reduced as the fish were able to escape the poor oxygen conditions in the deep water.

These conditions meet DEP's current definition



of impaired water quality due to oxygen depletion. However, some of this depletion is probably natural due to the lake's shape. The relatively low algae growth (which produces much of the "fuel" driving oxygen depletion as dead algal cells settle out) has so far limited the extent and duration of oxygen loss. However, the very shape of Parker Pond which promotes natural oxygen loss means that it is particularly susceptible to a worsened condition if water clarity deteriorates. Because of this, higher frequency oxygen measurements, particularly late June through early August, are strongly recommended for at least 1997 and '98. Also strongly recommended is taking several profiles during the summer in the southern basin (between Birch Is. and the outlet), as we have relatively little information on this area.

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Phosphorus and Other Measures:

Over the last 1976-94 period, phosphorus in the surface water has been measured eight times, usually in late summer, and has averaged 7 ppb (parts per billion). This is relatively low for a lake in central Maine but comparable to several lakes of its size. This low-moderate level limits the extent of algae growth. August-Sept. samples taken near the bottom have been slightly higher (7-21 ppb), but not significantly so considering the substantial late summer oxygen loss occurring since at least the early 80's. Some phosphorus data are available for 1996. A deep sample in June read 10 ppb, with surface sample in August at 11 ppb. Surface sampling in September was 10 ppb a deeper sample (at 12 meters) was 18. While slightly higher than expected, a few high samples do not suggest a real shift in the lakes status. Certainly a phosphorus level below 10 ppb is desirable to maintain in Parker Pond. Sampling phosphorus should be continued next year to get a better "snapshot" of the lake in early June, early August and mid- September, at least. The early August chlorophyll sample (algae mass measured by photosynthetic pigment) was a low 3.4 ppb, as expected for a lake at 8.6 meters clarity. Natural water color measured very low 5 units, as opposed to the four previous readings' average of 14 units. This difference is not significant, as variations for single readings from low color lakes often happen. The significance of low color is that natural organic compounds washing in from the watershed are not interfering with the lake's clarity and also are probably not contributing much to the internal oxygen loss. The pH (acidity) was near neutral at 6.7 as in the six other years it has been measured. The acid neutralizing capacity (alkalinity) was very low (4 mg/l), although the historic data suggest it should be around 7.8 mg/l. As in the case of color, this single low reading does not mean the lake has changed. The readings should be repeated next year a few

times, as single samples at this low level often yield quite a bit of variation. Parker Pond is low in alkalinity and thus, compared to midwestern lakes, is susceptible to acid input. However, the likelihood of a significant acidification is low due in part to the size of the lake and its watershed and the reductions in acid deposition over the last two decades resulting from clean air initiatives.

Conclusions:

Parker Pond currently exhibits some of the best clarity of lakes in central Maine. Its DEP water quality rating is "Good" and it generally does not have elevated phosphorus levels. However, the persistent oxygen depletion needs to be tracked and additional phosphorus sampling is highly recommended for 1997. This is not just to gather data, but to better track the development of low oxygen conditions (lake stress indicator) and to see if the lake is developing sufficient phosphorus concentrations and mass in late summer to affect fall productivity when the lake turns over. If this is occurring, spring productivity and eventually summer levels can be affected.

Although Parker Pond currently enjoys clear water, we cannot take the condition for granted. It would take about 67 pounds of additional phosphorus from the watershed annually to raise Parker Pond's level by 1 ppb. One part per billion may not seem like much, but it represents an increase of 15 %. This could be provided by less than 100 new houses and their roads/driveways, not to mention all the other types of land use changes we can expect over a few decades in a 6.3 square mile watershed. Research suggests that a change of this size for Parker Pond is likely to have a real effect on algae growth potential. While the most likely scenario is a small, perhaps barely noticeable, reduction in water clarity, the added algae load from this additional development could substantially increase oxygen loss and perhaps

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phosphorus generated internally by the lake. At least some local protection is needed to keep seemingly slow, but potentially large, cumulative effects of development from tipping the balance, increasing both the phosphorus level and the oxygen depletion that will result.

TREASURER'S REPORT

Treasurer's Report for the Period July 15, 1995
to July 19, 1996

Balance on Hand July 15, 1995

Receipts

| | |
|----------------------------|------------|
| Dues | 2,260.00 |
| Tee Shirt Sales and Raffle | 708.00 |
| Interest on Savings | 183.33 |
| Total Receipts | \$3,151.33 |

Expenditures

| | |
|--|--------|
| Meeting Expenses | 5.01 |
| 1994 Hall Rental | 25.00 |
| Tee Shirt Expenses | 631.08 |
| Annual Corporation Report | 20.00 |
| Safe Deposit Box | 25.00 |
| Insurance | 301.00 |
| Lake(e & Watershed Resource Management Associates | 425.00 |
| Property Tax (Town of Fayette) | 63.00 |
| Seagull Control | 25.00 |
| Newsletters | 256.58 |
| Brochures & Address Stamp | 108.04 |
| Core Sampler | 27.14 |
| Natural Resource Institute Scholarship | 125.00 |

| | |
|--------------------|------------|
| COLA Membership | 80.00 |
| Total Expenditures | \$2,116.85 |

| | |
|--|------------|
| Balance on Hand July 19, 1996 - Savings Account | \$7,761.52 |
| Net Gain | \$1034.48 |
| Net Profit on Tee Shirt Sales | \$76.92 |

Respectfully Submitted

Waine P. Whittier, Treasurer

\$6,727.04

FISHING NEWS

A recent conversation with Bill Woodard, biologist with IF@WL, brought me some good news about our hurting smelt population. Seems Dennis McNeish, Regional Biologist, and others have examined the outlet of King Brook (AKA Cranberry Pond Stream), and the other streams emptying into Parker, for smelt eggs. This annual practice has been an important indicator in studying the decline of smelts in the pond.

Well, it appears that this year's egg laying should produce a bumper crop of the stuff salmon love above all else. We all understand that smelts are the prime food stuff for the salmon and hence, our keen interest in these small, silvery fish.

Previous issues of the newsletter spoke of the problems we are having with the salmon fishery and listed a few possible solutions. One mentioned (it may take more than one solution to make it work) is to improve the food supply. Assuming we get a healthy conversion of eggs-to-fish, the above news may be the start of the salmon comeback we've been waiting for. If we can keep from cleaning out the salmon before they mature, Parker Pond may become that "Trophy Lake" we all desire.

Marty Arnold