



Something Most Fowl: Geese and Water Quality in a Recreational Pond

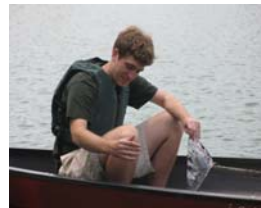
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Methods



Surface water samples were collected each month and measured for dissolved oxygen, temperature, salinity, and Secchi depth at the site. Samples were then taken to the lab where phosphorus, ammonium, nitrate, and fecal coliform bacteria counts could be made.

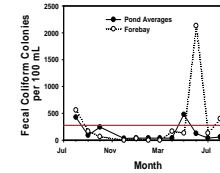


Sediment samples were taken from points across the pond and sent to a contractor to be analyzed for pesticides, herbicides, and heavy metals. No elevated levels of these contaminants were found.

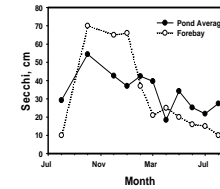


Animal counts provided the most striking feature of the pond. Month after month, over 100 geese were found around the pond. Several nests were also found.

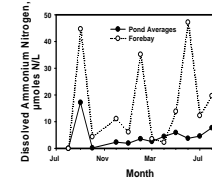
Results



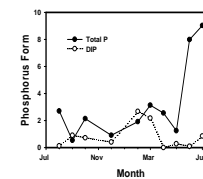
Fecal coliform bacteria colonies became dangerously high at various points during the sampling period. The red line marks the "safe" threshold of 265 bacteria colonies per 100 mL. When the count exceeds that threshold, even catch-and-release fishing is prohibited.



Secchi readings, which measure water clarity, steadily decreased throughout the sampling period. This indicates that the pond is becoming more and more murky over time.



Levels of dissolved ammonium fluctuated wildly in the forebay, which served as a buffer zone. However, in the pond the ammonium level rose steadily thru the study.



Over the course of the study, the ratio of particulate phosphorus to dissolved inorganic phosphorus rose steadily.

Conclusions and Recommendations



High fecal coliform counts, decreasing water clarity, high ammonium levels and high inorganic phosphorus readings are all indicators of declining pond health. The large numbers of geese suggest that waterfowl are the main culprits for this problem. Therefore, we suggest several measures to discourage the presence of geese and thus improve water quality:

- Plant tall shrubs and other vegetation along the margins of the pond. This will discourage goose access to the pond.
- Grade the shoreline along the pond's island. This will discourage geese presence and help bring in other wildlife.
- Manage the pond and plant aquatic vascular plants to improve its function as a buffer zone for the pond.



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Abstract

Parker Pond is a small stormwater retention pond at the Defense Supply Center in Richmond (DSCR). It is also used for recreational purposes such as catch-and-release fishing. We were hired for a 15-month study of the health of the pond and to provide recommendations for improving the site. At the conclusion of the study, we found that although there were few traces of heavy metals, herbicides, or pesticides, the geese at the pond had an increasingly negative effect on the pond. Particulate phosphorus as well as ammonium steadily increased over the time interval, while the clarity of the pond decreased. Fecal coliform bacteria also at times reached levels unsafe for any kind of fishing. Our major recommendation was to take measures to dramatically decrease the presence of geese at Parker Pond.

