

Kibby Pond General Biological Survey (#519085)
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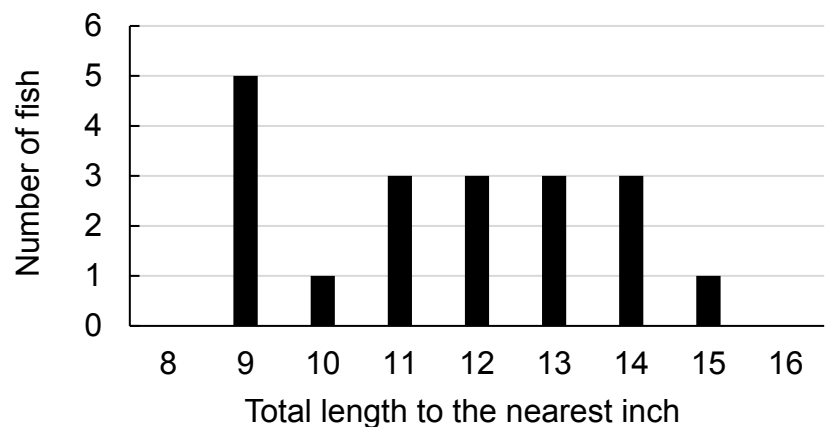
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Kibby Pond is a 41.0-acre pond within the Wilcox Lake Wild Forest, town of Johnsbury, Warren County. The pond can be reached from the Route 8 trailhead to the West via a 1.5-mile hike on the Kibby Pond Trail. The pond is managed as a brook trout fishery and is air-stocked annually with 1,200 Temiscamie x Domestic hybrid strain fall fingerlings. The last two fisheries surveys conducted on Kibby Pond in 2005 and 1993, yielded brook trout, creek chub, banded killifish and brown bullhead. A 2005 water quality sample on the pond indicated suitable dissolved oxygen levels and temperatures for brook trout. The intent of the 2019 survey was to investigate the status of the pond’s fish community to inform future brook trout management.

Three Swedish-experimental gillnets (six - 25’ panels w/ variable mesh), one single-panel gillnet (30’x 5’, 0.75” mesh), and a minnow trap (0.25” mesh) were set for approximately 24 hours starting around noon on September 12th, 2019. Nineteen brook trout ranging from 8.8 -15.0” were captured in the gillnets (Figure 1.). The remainder of the catch consisted of 78 brown bullhead (2.7-11.1”), 13 banded killifish (3.3-3.9”) and 41 creek chub (3.5-8.6”).

2019 water quality samples indicated temperature and oxygen profiles conducive to brook trout survival. The temperature was 57.7 °F with a dissolved oxygen level of 4.0 mg/L at a depth of 16’ on September 12th. A low dissolved oxygen zone was found to be present below a depth of 18’. It is not atypical to find an anoxic zone in the bottom waters of many Adirondack brook trout ponds, particularly in late summer and early fall.

Figure 1. Brook trout length frequency



Brook trout scales were retained and used to determine age. Average length and weight for each age class was calculated (Table 1.).

Table 1. Brook trout average size at age.

| Age | Average Length (inches) | Average Weight (pounds) | Sample Size |
|-----|-------------------------|-------------------------|-------------|
| 1 | 9.3 | 0.52 | 6 |
| 2 | 12.3 | 0.69 | 10 |
| 3 | 14.2 | 0.80 | 3 |



Additional water samples were drawn from Kibby Pond by the Adirondack Lakes Survey Corporation (ALSC) in September of 2019 to investigate water chemistry metrics. Dissolved silica (SiO₂) and sodium (Na) ion levels were of particular interest as these are thought to be indicators of groundwater inputs and have been found to have a significant positive relationship with naturally occurring brook trout spawning in Adirondack ponds (Schofield, 1993). Brook trout are known to select areas on or adjacent to groundwater upwellings as spawning sites (Webster & Eriksdottir, 1976). Silica and sodium levels in Kibby Pond were 2.43mg/L and 0.711mg/L, respectively. These values suggest that there is likely groundwater input into Kibby Pond and natural spawning of brook trout could be occurring. Future surveys designed to detect the presence/absence of naturally reproduced trout could prove useful, as they may alleviate the need to stock this waterbody, ultimately saving time and resources.

The brook trout in Kibby Pond are demonstrating multi-year survival to at least age 3 and are growing to sizes (12-14") that are considered desirable to many anglers. The presence of known competitors, brown bullhead and creek chub, is likely preventing the brook trout from growing at the rates often observed in ponds containing trout monocultures. Removal of these competitor species via a pond reclamation would likely result in improved trout growth rates; however, successful eradication of brown bullhead is very difficult given the current restrictions on the allowable concentration of rotenone to be used in these types of projects. Consequently, reclamation via piscicide will not be used at this time. If the regulations regarding rotenone use are to change in the future, Kibby Pond should be revisited as a potential reclamation candidate. In the meantime, annual stocking of 1,200 Temiscamie x Domestic hybrid strain fall fingerling brook trout should continue to maintain a population at Kibby Pond.

Schofield, C. L. 1993. Habitat suitability for brook trout (*Salvelinus fontinalis*) reproduction in Adirondack Lakes. Water Resources Research., 29, 4 pp.

Webster, D.A. and G. Eriksdottir 1976. Upwelling water as a factor in the choice of spawning sites by Brook trout (*Salvelinus fontinalis*) Trans. Am. Fish. Soc., 105(3), 5 pp.