Biologist Report: Northeast Kingdom Brook Trout Ponds

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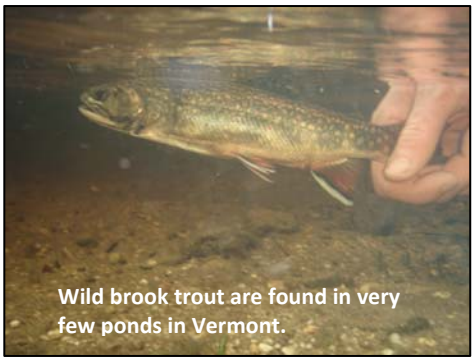
Wild brook trout are found in very few ponds in Vermont.

The brook trout is one of the most important sportfish species in Vermont. The 1991, 2000, and 2010 Vermont Angler Surveys revealed that brook trout were the most preferred species for resident anglers during the open water season. Additionally, 67% of resident anglers and 35% of non-resident anglers that responded to the 2010 survey indicated that they had fished for brook trout in Vermont in the past three years.

Most of Vermont's brook trout pond fisheries are supported entirely by stocking of cultured brook trout. The 2011 Management Request for Cultured Fish called for the stocking of over 88,000 brook trout into 58 ponds. Most of the ponds are stocked on a "put-and-take" basis. The purpose of put-and-take stocking is to provide fish that are large enough to be caught and harvested by anglers immediately. This type of stocking occurs at ponds where multiple year survival of brook trout is not expected due to high water temperatures, low dissolved oxygen, or the presence of other fish species that compete with brook trout for food. Some ponds are stocked on a "maintenance" basis. Multiple year survival of brook trout is expected at these ponds, which have suitable temperature and oxygen conditions and simple fish communities. Some ponds that are stocked on a maintenance basis also have wild brook trout, and a few ponds are not stocked at all because they have abundant wild brook trout populations.

This biologist report summarizes recent fisheries sampling data from some of the Northeast Kingdom's brook trout ponds. Boat electrofishing in October or November was the preferred technique for sampling brook trout ponds, but it could only be used on ponds with adequate boat launch facilities. Gill nets were used to sample brook trout in the more remote ponds. In some instances, stocked brook trout were marked by removing the adipose fin and/or a pelvic fin before stocking to help distinguish stocked fish from any wild fish that might be present in the pond. In some cases, fin-clipped fish

had not been stocked, but stocked fish were easily identified by deformed fins or gill plates, body shape, coloration, and size.

The electrofishing boat livewell filled with Job's Pond brook trout.

The tables below summarize the sampling data. A total of 16 Northeast Kingdom brook trout ponds have been sampled with electrofishing or gill nets since 2003. Some ponds have been sampled multiple times. Wild brook trout occurred in significant numbers at several of the ponds. Noyes and Cow Mountain Ponds, which have not been stocked by VTFW in over a decade, have abundant wild brook trout. Stocking was ended at Unknown Pond (Avery's Gore) in 2010 when it was determined that an abundant population of wild brook trout was present. All three of these ponds have very simple fish communities, including no fish species that compete strongly with brook trout for food. Job's and Martin's Ponds also support significant wild brook trout populations and may be good candidates for wild trout management.

A large Job's Pond brook trout.

Large brook trout were captured at several of the ponds. The largest brook trout sampled was caught at Job's Pond and was just over 18". Several other fish over 15" were also collected at Job's Pond. Long, Martin's, Notch, and Stannard have also produced 15" brook trout, but the numbers of brook trout at Stannard Pond are very low.

A wide range of catch rates were observed. Noyes and Job's Ponds had the highest electrofishing catch rates, and the two Unknown Ponds (Avery's Gore and Ferdinand) had the highest gill net catch rates. These high catch rates suggest relatively high densities of brook trout in these ponds. No brook trout were collected at Lewis (2010 and 2011), May, and Beaver Ponds, and catch rates were near zero at Stannard Pond. Catch rates were also very low at Bald Hill, Long, and Pigeon Ponds. Brook trout compete very poorly with other fish species in a pond environment, and all of the ponds that had low catch rates of brook trout had high catch rates of fish species that compete

with brook trout for food. Competitor species living in these ponds include white sucker, pumpkinseed sunfish, brown bullhead, and various minnow species. Smallmouth bass, which can compete with brook trout and also prey upon them, have recently become established in Lewis Pond.

Ponds that have species that compete with or prey upon brook trout can be good candidates for put-and-take stocking. Low catch rates of brook trout during summer and fall sampling are not surprising at put-and-take ponds where brook trout are not expected to survive through the summer. Fishing can still be quite good at these ponds following spring stockings while water temperatures are still suitably cool.

Ponds that have just brook trout and northern redbelly dace support more brook trout than ponds with more complex fish communities.

This report demonstrates how important it is to prevent the introduction of new fish species to brook trout ponds. Ponds with competitive fish species, like white suckers, brown bulhead, pumpkinseed sunfish, and bass have lower abundances of brook trout and may only be suitable for put-and-take stocking. The best ponds have the fewest fish species, usually just brook trout and one species of minnow. At most of the brook trout ponds that still have simple fish communities, it is illegal to use fish as bait. The purpose of this law is to prevent the establishment of new species that could escape or be released from a bait bucket. Statewide, it is illegal to move live fish from one waterbody to another. You can help protect brook trout ponds by obeying the law and telling others how important it is to keep new fish species out of Vermont's brook trout ponds.

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Table 1. Summary of Northeast Kingdom brook trout pond electrofishing since 2003, including the number of brook trout captured (# BKT), catch rate (BKT/hr), percent wild brook trout (% Wild), average length, and maximum length.

						Length (in)	
Pond	Year	Month	# BKT	BKT/hr	% Wild	Ave.	Max.
Bald Hill	2008	October	6	6	66%	8.4	11.3
Bald Hill	2009	October	4	3.3	50%	8.9	10.7
Job's	2006	October	96	91.4	98%	7.2	18.1
Job's[a]	2007	October	131	161.3	93%	9.3	17.8
Job's[a]	2008	Oct/Nov	113	51.9	99%	9.1	16.3
Job's[a]	2009	October	241	235.9	100%	6.2	15.9
Job's[a]	2011	October	84	66.1	99%	7.8	15.0
Lewis[a]	2008	October	9	11.5	66%	9.5	11.3
Lewis[a]	2009	October	13	16.9	64%	10.8	17.9
Lewis[a]	2010	October	0	0			
Lewis[a]	2011	October	0	0			
Long (Westmore)	2007	November	5	2.9	60%	9.2	17.6
Martin's[a]	2004	October	33	19.8	52%	10.9	16.7
Martin's[a]	2009	October	66	44	85%	7.8	15.1
Martin's[a]	2011	October	33	24.7	100%	10.9	15.4
May	2009	October	0	0			
Noyes[b]	2003	Oct/Nov	1224	140	100%	7.1	14.3
Pigeon	2008	October	3	3.7	100%	9.5	13.1

[a]Use of fish (live or dead) as bait is prohibited

[b]Access controlled by VT Department of Forest, Parks, and Recreation. See law digest for full regulations.

Table 2. Summary of Northeast Kingdom brook trout pond gill netting since 2003, including the number of brook trout captured (# BKT), catch rate (BKT/net-hr), percent wild brook trout (% Wild), average length, and maximum length. The use of fish (live or dead) as bait is prohibited at all of these ponds.

						Length (in)	
Pond	Year	Month	# BKT	BKT/net-hr	% Wild	Ave.	Max.
Beaver (Holland)	2007	October	0	0			
Cow Mountain	2011	June	18	0.84	100%	9.3	13.3
Levi	2003	August	21	0.88	10%	9.2	12.5
Notch	2011	June	17	0.84	6%	11.3	15.0
South America	2009	June	8	0.42	0%	9.8	11.3
South America	2010	June	9	0.75	0%	7.8	10.9
Stannard	2007	June	1	0.02		17.0	17.0
Stannard	2011	October	1	0.01	100%	9.9	9.9
Unknown (Avery's Gore)	2010	October	20	2	95%	8.5	10.7
Unknown (Ferdinand)	2010	June	23	2.9	19%	9.7	13.7