

Biologist Report: Lake Champlain Walleye Stocking
 Prepared May 14, 2009

Walleye are a recreationally important sport fish for Vermont’s anglers and one that is highly regarded as a food fish species. Although natural reproduction occurs in several of Lake Champlain’s tributaries such as the Missisquoi, Winooski, Lamoille, and Poultney Rivers, walleye stocking is an important tool used by the Vermont Fish and Wildlife Department (VFWD) to enhance the walleye fishery. Department biologists collect adult walleyes by electrofishing during the spawning runs on the Missisquoi, Winooski, and Poultney Rivers on a rotational basis (Table 1). Eggs and sperm are taken from these walleyes, and their offspring are raised to the fry (3 days old), advanced fry (10 days old) or fingerling (50 days old) stage before being stocked back into Lake Champlain. In cooperation with the Department, the Lake Champlain Walleye Association plays a crucial role in the walleye management program including the production of walleye fingerlings through the management of several fingerling production ponds. Fry and fingerling walleye are always stocked into the river or in the lake at or near the mouth of the river, from which the eggs were collected.



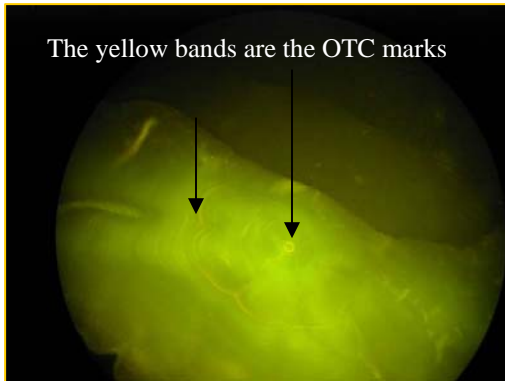
Table 1. Recent walleye stocking history for Lake Champlain. The location is the area where the adult fish were collected.

Year	# Eggs Collected	Location	# Fry Stocked	# Fingerlings
2008	3,182,400	Poultney	62,000	130,145
2007	5,375,500	Missisquoi	2,523,000	171,500
2006	13,896,800	Winooski	8,297,100	110,270
2005	6,434,000	Poultney	4,111,400	85,525
	6,610,800	Missisquoi	3,973,200	96,050
2004	11,328,730	Winooski	8,614,110	136,400
2003	5,117,588	Poultney	2,861,000	144,520
	6,959,511	Winooski	4,885,000	0
2002	9,191,057	Missisquoi	6,381,705	86,000

Department fisheries biologists evaluate the walleye stocking program to ensure that we are effectively enhancing the fishery. Before the walleyes are stocked, they are held in a bath that contains a solution of oxytetracycline (OTC), which is taken up by the fish and stored in their bones. The OTC acts as a dye, and when specific walleye bones are viewed under ultraviolet light, the dye glows, giving biologists a way to determine whether a fish



came from natural reproduction or the hatchery. The best bones to use are called otoliths, or ear stones, and are located in the head of the fish. Every year, fisheries biologists sacrifice a small number of young walleyes and remove the otoliths to determine whether these fish came from natural reproduction or stocking.



Results of OTC mark analysis conducted each year demonstrate that the walleye stocking program has been adding significantly to the Lake Champlain walleye fishery. For example, the percentage of three year old walleyes in the Missisquoi and Winooski Rivers bearing an OTC mark, which indicates that the fish was stocked, has ranged from 24% to 73% (Figures 1 and 2).

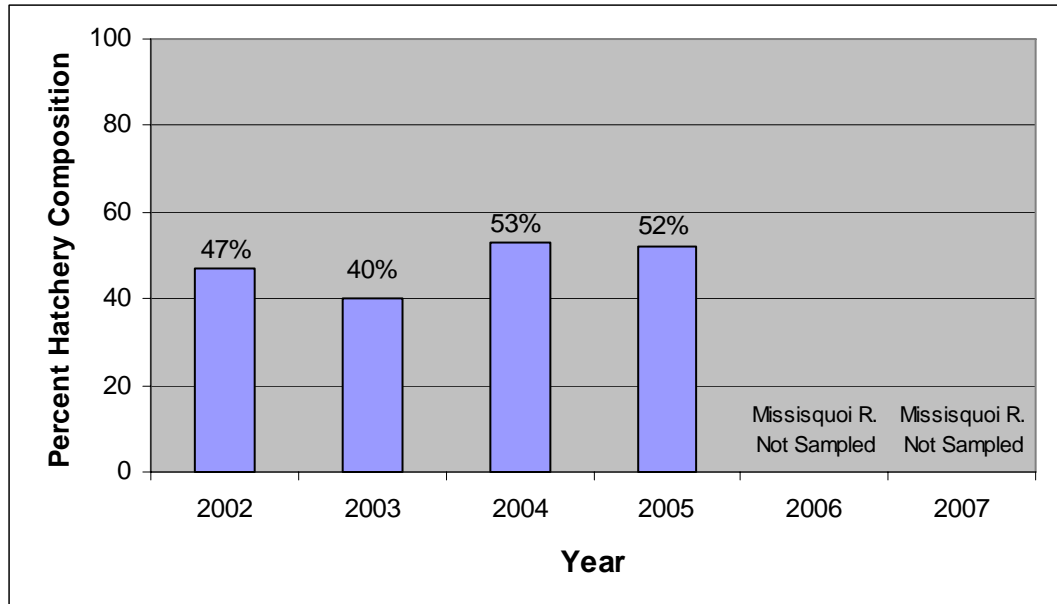


Figure 1. Percentage of three year old walleyes of hatchery origin in the Missisquoi River.

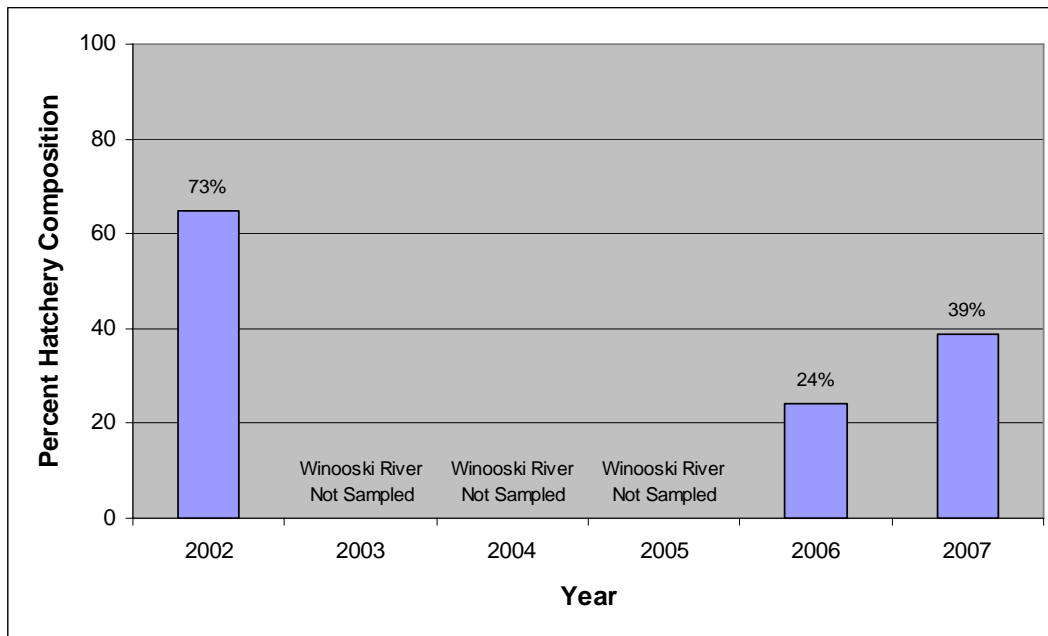


Figure 2. Percentage of three year old walleyes of hatchery origin in the Winooski River.

Fingerling stocking is generally more effective than fry stocking. Fingerlings are larger (1.8 inches) than fry (0.3 inches) or advanced fry (0.6 inches), and as a result, they tend to survive better than fry after stocking, since they are better able to feed and avoid being eaten themselves. However, raising walleyes to the fingerling stage is much more difficult and time consuming than raising them to the fry stage. The Fish & Wildlife Department continues to stock both fry and fingerlings and analyze the relative contribution to the population of the two stocking stages.

Department fisheries biologists with the VFWD also collect dorsal fin spines from adult walleyes to determine their age. When the spines are sliced and viewed under a microscope, the age of the walleye can be estimated by counting growth rings, sort of like counting tree rings. Ages of walleyes collected in the spawning runs typically range from 2 to 20 years, with males usually being younger than females, on average. In 2007, biologists found that four and eight year old walleyes comprised a relatively large proportion of the spawning run in the Winooski, Lamoille, and Missisquoi Rivers (Figure 3).



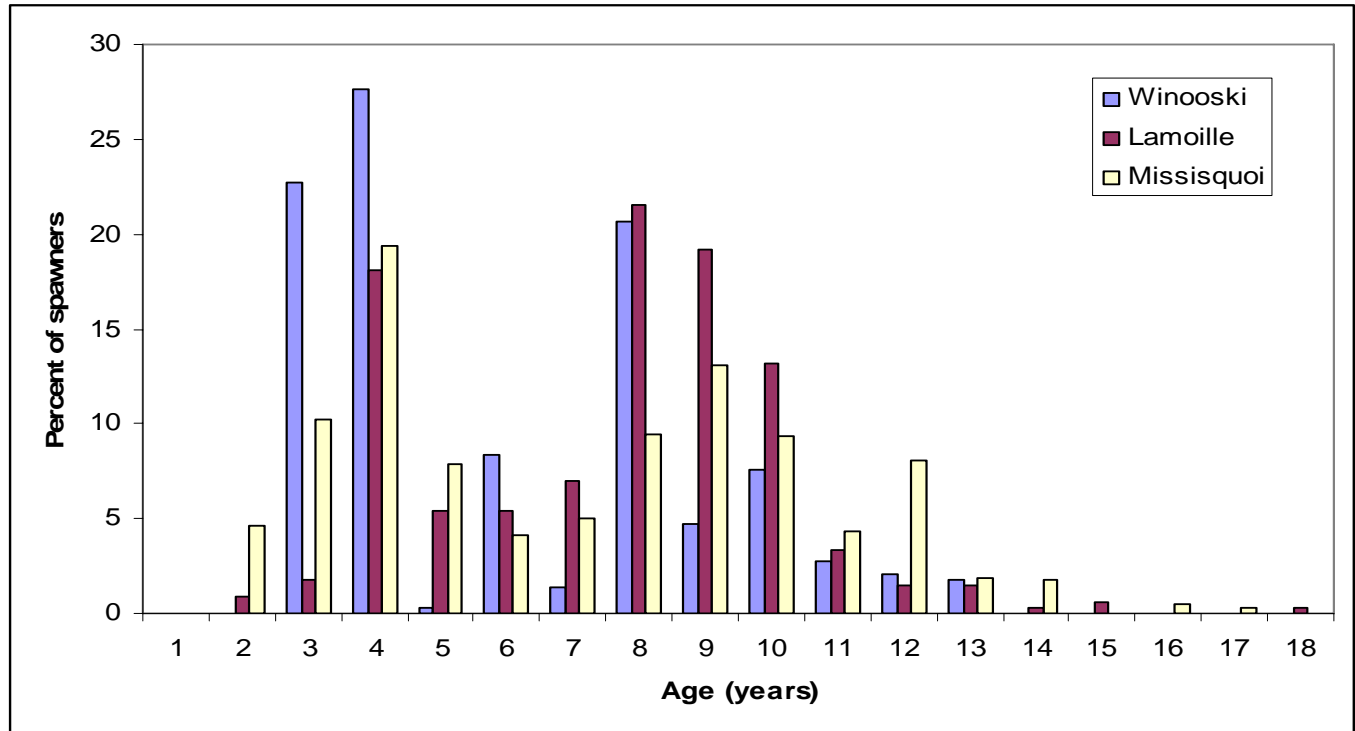


Figure 3. Age distribution of walleyes sampled in the Winooski, Lamoille, and Missisquoi Rivers in 2007.

Stocking is an important tool for managing the Lake Champlain walleye fishery. Other tools in the tool box include fishing regulations and habitat protection or improvement. For example, the spawning habitat for walleye, sturgeon and other fishes in the Lamoille and Missisquoi Rivers is limited by the presence of dams. Removal of these dams would increase the available spawning habitat. The Vermont Fish and Wildlife Department will continue to use these tools, when appropriate, to protect and enhance the walleye fishery in Lake Champlain and its tributaries.



For more information about Lake Champlain walleye management, contact Chet MacKenzie (southern Lake Champlain) at 802-786-3864, chet.mackenzie@state.vt.us, or Bernie Pientka (northern Lake Champlain) at 802- 879-5698, bernie.pientka@state.vt.us.

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