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Channel Catfish Management



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State of Connecticut
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Bureau of Natural Resources
Inland Fisheries Division



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Cover photo: A large Channel Catfish from Lower Bolton Lake. Photo by Eric Lindquist.

Summary

Stocking of 16,999 Channel Catfish was successfully completed at 24 Catfish Management Lakes (CMLs) across Connecticut on May 27, 2014. Five of these CMLs were newly established Community Fishing Waters being stocked for the first time. Two CMLs were not stocked: Lower Bolton Lake, at the request of the Town of Bolton, and Uncas Pond at the request of a local watershed group. Angler surveys conducted at six CMLs in 2014 demonstrated that Channel Catfish have become a significant component of the open water fishery at some lakes.

Background

Channel Catfish are popular among anglers across the U.S. as both sport and food fish (Hubert 1999). Since the late-1970s, the Connecticut River has supported a large fishable population of catfish (Jacobs et al. 2004). Although widely stocked throughout Connecticut in private waters, Channel Catfish were only sporadically reported from public lakes and ponds. Stocking Channel Catfish can provide quality fisheries, especially in urban settings where the establishment of other fisheries can be difficult (Stuewe 1999). Based on this potential, the Department of Energy and Environmental Protection, Inland Fisheries Division (IFD) decided that a catfish stocking program in selected lakes and ponds was desirable to diversify angling opportunities for Connecticut anglers. The program began in 2007 at 12 lakes, and has since expanded to now include 24 Catfish Management Lakes (CMLs; see Fig. 1, Appendix 1).

Approach

Stocking

Twelve of the CMLs are stocked with large (14-24 inch) adult catfish to produce put-and-take fisheries as part of Connecticut's "Community Fishing Waters" Program (Appendix 1). Channel Catfish are stocked in Community Fishing Waters (CFWs) to provide fishing through the summer months in areas near population centers. Stocking adult catfish into these lakes gives anglers the opportunity to catch and harvest catfish immediately after stocking. The other 14 CMLs are stocked with smaller yearling 9-12 inch catfish and are managed as "put-and-grow" fisheries (Appendix 1). Yearling catfish stocked in these lakes are expected to grow to catchable size

within 1-2 years after stocking. Two lakes, Wintergreen and Lakewood, are stocked with both yearling and adult fish.

Channel Catfish are purchased from a commercial supplier in Arkansas and delivered in late May via a fish-hauling, tractor-trailer truck. This truck is met by IFD personnel whereupon some fish are stocked directly from the hatchery truck while others are off-loaded to state hatchery trucks. Target stocking rates are 25-50 adult fish/acre and up to 15 yearling fish/acre. In 2014, we stocked five new CFWs. This required a reduction in the number of yearling catfish purchased (from 15,000 to 10,000 fish) and an increase in the number of adult catfish purchased (from 5,000 to 5,800 fish). This resulted in reduced yearling stocking rates at most put-and-grow CMLs (Appendix 1).

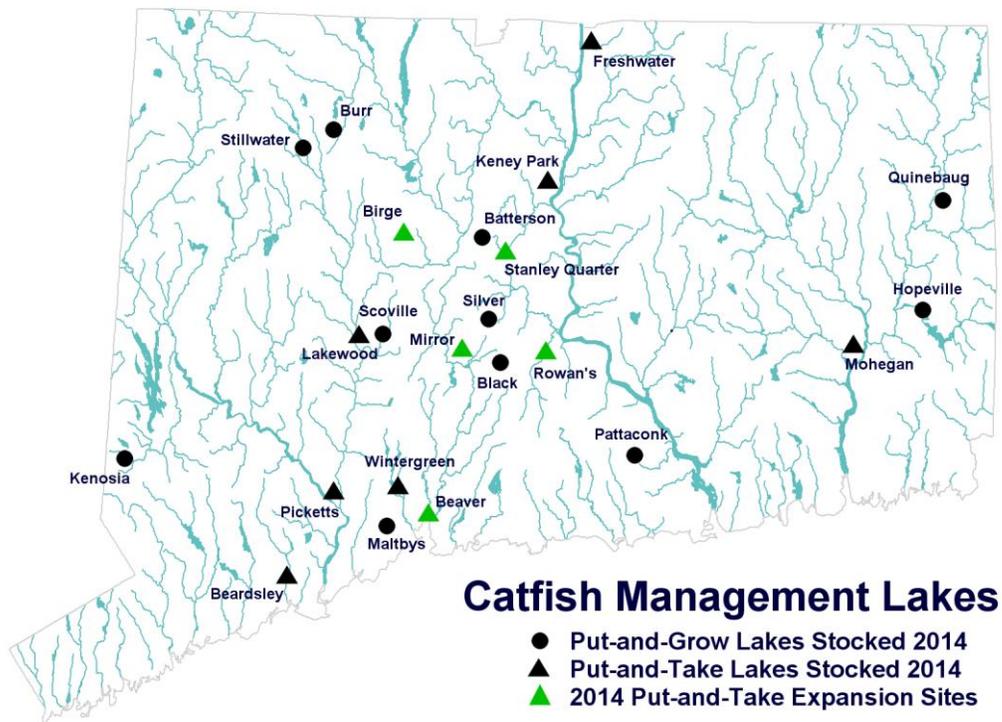


Figure 2. Locations of Connecticut catfish management lakes stocked in 2014. Black circles are put-and-grow lakes stocked with yearling fish. Triangles are Community Fishing Waters stocked with large adult fish. Green triangles are sites first stocked in 2014.

Assessment

Angler use of CMLs is evaluated using roving angler surveys (Malvestuto et al. 1978) that are conducted periodically as resources permit. Survey agents visit lakes according to a randomized schedule. During these visits, agents count all anglers present and then interview them to obtain information on numbers of all fish species caught and harvested, and their opinions of

the catfish stocking program (see “Lake and Large River Angler Surveys” Study 2, Job 2 for detailed methods).

In selected CMLs, fish populations are sampled via night boat electrofishing prior to and several years after the introduction of catfish to identify possible effects on resident fish communities (see “Monitoring Warmwater Fish Populations in Lakes and Large Rivers” Study 2, Job 1 for detailed methods). IFD has also periodically sampled catfish from selected CMLs using nets and traps when resources permit (Hagstrom et al. 2011; Hagstrom et al. 2014).

All Channel Catfish collected during sampling efforts are counted, measured and marked if a mark-recapture population estimate is being conducted. Population estimates are calculated using the Schnabel Method (Ricker 1975). A sub-sample of catfish is occasionally euthanized for age and growth analyses. Pectoral fin spines and otoliths (ear stones) are dissected from these fish and aged according to the methods of Buckmeier et al. (2002). These bony structures lay down annual rings similar to those found on scales of other fish species (catfish have no scales). Analyses of the relative effectiveness of pectoral spines vs.



Catfish otolith sectioned for aging. Note annual growth rings highlighted by the red box. Photo by Justin Davis.

otoliths for estimating catfish ages are ongoing. If pectoral spines prove to be an adequate method of aging catfish, lethal sampling will no longer be required as pectoral spines can be removed from catfish non-lethally (Michaletz 2005).

Key Findings

Stocking

A total of 16,999 catfish were stocked into 24 CMLs on May 27, 2014 (Appendix 1, Figure 1). Stocking took approximately 12 hours using the commercial tractor-trailer truck, five state hatchery trucks, and four state pickup trucks with tanks. Five new CFWs were stocked in 2014 (Beaver Park Lagoon, New Haven; Birge Pond, Bristol; Mirror Lake a.k.a. Hubbard Park Pond, Meriden; Rowan’s Pond a.k.a. Butternut Park Pond, Middletown; and Stanley Quarter Pond, New Britain) as part of an initiative to expand the CFW Program and make catfish fishing available to more anglers statewide. As in 2013, stocking was

temporarily discontinued at Lower Bolton Lake to aid the town in dealing with an unrelated water quality issue. Stocking was also discontinued at Uncas Lake at the request of a local watershed group. Due to the stocking of additional CFWs in 2014, stocking rates at the established put-and-grow CMLs were roughly 25% lower compared to 2013 (average 12.9/acre in 2013 vs 9.9/acre in 2014). The five new CFWs were stocked at 46.6-68.3 fish/acre (avg. 51.2/acre, Appendix 1).

Electrofishing

Fish population sampling by night boat electrofishing was conducted at seven CMLs in 2014 (see “Monitoring Warmwater Fish Populations in Lakes and Large Rivers” Study 2 Job 1 for more detail). Catch rates (fish/hr) for Channel Catfish ranged from 1.0 to 13.6 among the lakes sampled (Table 1; Note: the number of catfish caught at each lake is approximately the same as the catch/hr because we typically electrofish for close to one hour per sample).

Table 1. Electrofishing catch rates (fish/hr) of Channel Catfish at Catfish Management Lakes sampled in 2014.		
Lake Name	Date Sampled	Fish/hr
Batterson Pond	4/3	1.5
Black Pond	10/13	2.6
Lakewood Lake	10/16	7.4
Lower Bolton Lake	10/30	6.8
Pattaconk Lake	10/9	1.0
Silver Lake	10/30	7.0
Wintergreen Lake	10/2	13.6
Average		5.7

Angler Surveys

Angler surveys were conducted at six CMLs during the 2014 open water fishing season: three of the original put-and-grow lakes (Black Pond, Lower Bolton Lake, Pattaconk Lake), two of the original CFWs (Lakewood Lake, Lake Wintergreen), and one of the put-and-grow lakes added in 2013 (Batterson Park Pond). IFD had previously conducted angler surveys at Black Pond and Lower Bolton Lake in 2010 and at Lake Wintergreen in 2008.

At the original CMLs stocked in 2007, a majority of anglers ($\geq 55\%$) in 2014 were aware of the catfish stocking program, and most (approx. 70-80%) were in favor of it with very few ($\leq 4\%$) opposed (Appendix 2). Channel Catfish have become a substantial component of the open water fishery at Lower Bolton Lake, Lake Wintergreen, and Lakewood Lake among which directed effort for catfish ranged from 14 to 19% of total angler effort (Appendix 3). Average catch rates of catfish by anglers targeting them ranged from 0.09 to 0.22 fish per hour, and total annual angler catch ranged from 369 to 842 fish. Conversely, at Pattaconk Lake and Black Pond, directed catfish effort was only 4 to 5% of overall effort, and total annual catches were low (Black: 147 fish; Pattaconk: 31 fish). However, the targeted catch rate at Black Pond (0.21

fish per hour) indicates that the small number of anglers targeting catfish were relatively successful. The relatively low directed effort (4%), total catch (65 fish), and targeted catch rate (0) at Batterson Park Pond likely reflects the fact that this fishery was still in the early stages of development.

Participation in Channel Catfish fisheries has increased in recent years at Lower Bolton Lake and remained stable at Black Pond and Lake Wintergreen. Directed effort for catfish at Lower Bolton Lake increased from 12% of total effort in 2010 to 19% in 2014, and total catch increased from 529 to 842 fish (Appendix 3). Conversely, directed effort and total catch were similar between 2010 and 2014 at Black Pond and 2008 and 2014 at Lake Wintergreen. Directed catch rates were roughly equivalent between the two survey years at Lower Bolton and Lake



A father and daughter enjoying catfishing at Stanley Quarter Pond.

Wintergreen, but increased from 0.11 fish per hour at Black Pond in 2010 to 0.21 fish per hour in 2014.

Anglers harvested 11-31% of the Channel Catfish they caught at put-and-grow lakes surveyed in 2014 (see Appendix 3; although the harvest rate at Pattaconk Lake was 68%, only an estimated 31 catfish total were caught). Catfish harvest rates were higher – 56-67% – at the CFWs (Appendix 3). Harvest rates for most sportfish species at Connecticut lakes surveyed in recent years have been $\leq 5\%$ (see Lake and Large River Angler Survey Report for more details). The relatively high harvest rates for Channel Catfish in CMLs, coupled with the fact that 28-49% of anglers interviewed at CMLs in 2014 stated that they were interested in at least occasionally harvesting Channel Catfish (Appendix 2), demonstrates that at least some Connecticut anglers consider Channel Catfish a desirable food fish. Despite relatively high harvest rates, the estimated annual harvests (numbers of fish) from CFWs appear to be substantially less than the numbers of adult fish stocked annually. For example, both Lakewood Lake and Lake Wintergreen are currently stocked with 800 adult catfish annually (Appendix 1), but total harvest was only approximately 250 fish at each site in 2014 (Appendix 3). Conversely, at Lower Bolton Lake, annual harvest may be significant relative to catfish population size. In 2013, IFD estimated that there were approximately 428 Channel Catfish (95% confidence interval = 269-713 fish) in Lower Bolton Lake (Hagstrom et al. 2014). Although this was a conservative population size estimate, the estimated 262 Channel Catfish harvested from Lower Bolton Lake in 2014 nonetheless represents a substantial removal of fish from the population.

Discussion

Biological and angler survey data reported here and in previous reports (Hagstrom et al. 2012; Hagstrom et al. 2014) demonstrate that the Channel Catfish stocking program has successfully created popular fisheries in most CFWs and some put-and-grow lakes. In put-and-grow lakes that have not yet generated a substantial fishery (e.g. Black Pond, Pattaconk Lake), it is unclear whether stockings have failed to produce a fishable population, or whether the angling clientele at these lakes is uninterested or unmotivated to fish for catfish. In particular, the relative lack of fishing activity at Pattaconk Lake (only 2,600 angler-hrs total during the entire open water season; see Appendix 3), coupled with the apparent absence of a directed catfish fishery eight years after the inception of the stocking program, suggests that further catfish stockings at this site are an inefficient use of IFD resources. Further investigations into the factors that contribute to the relative success of put-and-grow management lakes are warranted. Further, given the variation in success of put-and-grow stockings, it is advisable to sample additional lakes (biological sampling, angler surveys, or both) in the future as resources permit to determine the relative success of the stocking program at these lakes. Such sampling may also provide insight into the effects of reductions in stocking rates necessitated by the recent expansion of the stocking program.

Angler survey data demonstrates that Connecticut anglers consider Channel Catfish a desirable food fish and harvest them at relatively high rates. However, despite high harvest rates, the actual numbers of catfish being removed annually from some CFWs, which are primarily managed as put-and-take fisheries, is low relative to the number of fish being stocked annually. It may therefore be possible to reduce stocking rates at some CFWs without compromising harvest opportunities for anglers. This could in turn reduce the overall cost of the stocking program, or allow for distribution of catfish to additional waterbodies without increasing current costs. However, consideration should also be given to the potential negative impact of lower stocking rates on angler catch rates and satisfaction.

Survey work conducted to-date suggests that Lower Bolton Lake is by far the biggest success amongst the established put-and-grow lakes. This lake has not been stocked for two years at the request of the Town of Bolton. The angler survey conducted at this lake in 2014 indicates that the fishery is still robust; however, it is unclear how long it will remain that way if stocking is not resumed – especially given the magnitude of the estimated harvest in 2014 relative to catfish population size. Strong consideration should be given to resumption of stocking at this location.

Recommendations

- Discontinue stocking of Pattaconk Lake
- Resume stocking of Lower Bolton Lake

Expenditures

Total Cost:	\$121,154
Federal Share:	\$90,866
State Share:	\$30,289

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Appendices

Appendix 1. Numbers, weights and stocking rates of yearling and adult catfish stocked into Catfish Management Lakes in May of 2014 by the Connecticut Inland Fisheries Division. In 2014 adult fish ranged between 14 and 20 inches while yearlings ranged between 9 and 12 inches. Lakes in red were stocked for the first time in 2014. Note: Lower Bolton Lake and Uncas Lake, put-and-grow sites, are omitted from this table because they were not stocked in 2014.

Site	Year first stocked	Yearlings		Adults		Stocking Rates (#/acre)	
		Number	Weight(Kg)	Number	Weight(Kg)	Yearling	Adult
Put-and-Grow							
Batterson Park Pond	2013	285	29	-	-	2	-
Black Pond	2007	725	74	-	-	9.5	-
Burr Pond	2013	825	84	-	-	9.7	-
Hopeville Pond	2012	1,285	131	-	-	9.4	-
Lake Kenosia	2012	695	71	-	-	11.6	-
Maltby Pond #2	2007	215	22	-	-	9.3	-
Maltby Pond #3	2007	235	24	-	-	9.4	-
Pattaconk Lake	2007	720	73	-	-	12.5	-
Quinebaug Lake	2012	1,290	131	-	-	14.7	-
Scoville Reservoir	2013	1,147	117	-	-	9.5	-
Silver Lake	2007	1,500	153	-	-	10.3	-
Stillwater Pond	2012	930	95	-	-	9.3	-
		Yearlings		Adults		Stocking Rates (#/acre)	
Put-and-Take Community Ponds		Number	Weight(Kg)	Number	Weight(Kg)	Yearling	Adult
Beardsley Park Pond	2007	-	-	750	508	-	17.9
Beaver Park Lagoon	2014	-	-	400	271	-	47.1
Birge Pond	2014	-	-	550	372	-	46.6
Freshwater Pond	2012	-	-	400	271	-	26.7
Keney Park Pond	2007	-	-	300	203	-	150
Lakewood Lake	2008	627	67	800	542	9.1	15.7
Mirror Lake	2014	-	-	350	237	-	47.3
Mohegan Park Pond	2007	-	-	550	372	-	39.3
Pickett's Pond	2012	-	-	400	271	-	44.4
Rowan's Pond	2014	-	-	200	135	-	68.3
Stanley Quarter Pond	2014	-	-	300	203	-	46.9
Wintergreen Lake	2007	720	73	800	541	12.4	13.8

Appendix 2. Summary of responses to opinion questions asked during angler surveys conducted at Catfish Management Lakes during the 2014 open water fishing season (4/19-10/31). Responses to identical questions from previous survey years are shown for Black Pond and Lower Bolton Lake for comparison (questions asked during 2014 survey at Lake Wintergreen were not asked during the 2008 survey at this lake).

“Are you aware that Channel Catfish have been stocked in this lake?”

Lake	“Yes” (%)	“No” (%)
Black	62	38
Black - 2010	59	41
Lower Bolton	61	39
Lower Bolton - 2010	65	35
Pattaconk	55	45
Batterson	45	55
Wintergreen	68	32
Lakewood	59	41

“Have you ever caught a Channel Catfish in this lake?”

Lake	“Yes” (%)	“No” (%)
Black	23	77
Black - 2010	14	86
Lower Bolton	42	58
Lower Bolton - 2010	32	68
Pattaconk	25	75
Batterson	16	84
Wintergreen	38	62
Lakewood	42	58

“What’s your opinion of the Channel Catfish program in this lake?”

Lake	In Favor (%)	No Opinion (%)	Opposed (%)
Black	72	27	1
Black - 2010	66	32	2
Lower Bolton	70	27	3
Lower Bolton - 2010	70	27	3
Pattaconk	69	31	0
Batterson	68	28	4
Wintergreen	82	16	2
Lakewood	79	17	4

Appendix 2 (continued)

“How often are you likely to keep Channel Catfish that you catch in this lake?”

Lake	“Always” or “Most of the Time” (%)	“Occasionally” (%)	“Rarely” or “Never” (%)
Black	19	17	64
Black - 2010	24	17	59
Lower Bolton	21	12	67
Lower Bolton - 2010	16	12	72
Pattaconk	20	24	56
Batterson	12	16	72
Wintergreen	27	22	51
Lakewood	22	21	57

Appendix 3. Angler survey statistics for Catfish Management Lakes surveyed during the 2014 open water fishing season (4/19-10/31). Statistics from previous survey years are shown for Black Pond, Lower Bolton Lake, and Lake Wintergreen for comparison. Lakes designated as “PG” in the “Lake Type” column are lakes stocked with fingerling catfish to create put-and-grow fisheries; lakes designated as “CFW” are Community Fishing Waters stocked with adult catfish and fingerling catfish. Note that night surveys were not conducted at Wintergreen Lake and Lakewood Lake; estimates of angler effort, catch, and harvest may therefore be conservative relative to the other lakes shown here.

Lake	Lake Type	First Stocked	Survey Year	Total Effort (hrs)	Directed Effort (hrs)	Directed Effort (%)	Total Catch	Total Harvest	Harvest Rate (%)	Catch Rate - All Anglers	Catch Rate - Directed
Black	PG	2007	2010	20,710	1,307	6	179	51	28	0.01	0.11
			2014	15,384	794	5	147	16	11	0.02	0.21
Lower Bolton	PG	2007	2010	8,986	1,099	12	529	67	13	0.06	0.23
			2014	12,096	2,321	19	842	262	31	0.07	0.22
Pattaconk	PG	2007	2014	2,601	116	4	31	21	68	0.01	0
Batterson	PG	2013	2014	10,061	397	4	65	8	12	0.01	0
Wintergreen	CFW	2007	2008	7,374	1,372	19	522	206	39	0.07	0.18
			2014	8,074	1,321	16	369	247	67	0.04	0.18
Lakewood	CFW	2008	2014	8,697	1,232	14	439	248	56	0.04	0.09