

## **DELAWARE TAILWATERS**

### **2005 Angler Diary Program**

2005 was the fourth year of a five year effort to monitor the trout fishery on the Delaware Tailwaters through an angler diary program. Diary data will be used to monitor trout catch rates, species composition, and size distribution for the West Branch, East Branch, and Delaware River on 15 river reaches (Figure 1).

During the 2005 trout season, 63 anglers volunteered to keep diaries and 47 individuals returned diaries with fishing trip information. These 47 anglers made 977 trips (includes partners) totaling 2,628.8 hours which was almost 4% higher than the 2004 effort of 2,532.6 hours. Cooperators throughout the Delaware Tailwaters caught 134 hatchery brown trout, 1,362 wild brown trout, 309 rainbow trout, 33 brook trout, and 2 tiger trout for an overall Tailwater catch rate of 0.70 trout/hour which was down from the 0.84 and 0.83 trout/hour recorded in 2003 and 2004, respectively. Notable catches include seven brown trout caught in the Stilesville reach that ranged from 24 to 28 inches. Some were probably reservoir brown trout that made it to the West Branch via spillage or through the release works. Also, two tiger trout (hybrid brown and brook trout) measuring 14 and 18 inches were caught in the No Kill and Border water reaches of the West Branch.

West Branch anglers made 537 trips totaling 1,386.8 hours (Table 1) and they caught 1,097 trout of which 726 were legal size (12 inches and larger). The riverwide catch rate averaged 0.79 trout/hour and 0.52 legal trout/hour (Table 1) which was very similar to the 0.77 trout/hour and 0.48 legal trout/hour recorded in 2004. Individual catch rates ranged from 0 to 3.81 trout/hour and 0 to 1.23 legal trout/hour. Fishing effort was highest on the Border Water (33%) reach and lowest on the No Kill (14%) reach (Table 1). The highest and lowest catch rates for all size trout were recorded on the Stilesville and No Kill reaches at 0.94 and 0.64 fish/hour, respectively (Table 1). The highest and lowest legal catch rate were recorded on the Hale Eddy and Stilesville reaches at 0.64 and 0.42 fish/hour, respectively (Table 1). West Branch anglers caught 982 wild brown trout, 104 rainbow trout, 9 brook trout and 2 tiger trout for a total of 1,097 trout (Table 2). Although no adipose fin clipped hatchery brown trout from Cannonsville Reservoir or the East Branch were caught, hatchery yearling and two year old brown trout from the Oquaga Creek stocking do move downstream into the West Branch. Approximately two thirds of the rainbow trout were caught in the Border Water reach. The two tiger trout caught were probably hatchery fish and their origin is unknown. The size distribution of trout caught by cooperators was summarized in Table 3 with trout ranging from 4 to 28 inches. Sixty six percent of the trout caught riverwide were legal size and 5.2% were 20 inches and larger. In 2004, 63% of the trout caught riverwide were legal size and 3.7% were 20 inches and larger. On the No Kill reach in 2005, 8% of the trout caught were 20 inches and larger compared to 5.8%, 5.7%, and 2.8% on the Stilesville, Hale Eddy, and Border Water reaches, respectively. The average size trout caught in the No Kill reach was 14.6 inches compared to 12.3, 14.3, and 14.2 inches on the Stilesville, Hale Eddy, and Border Water reaches, respectively.

East Branch anglers made 319 trips totaling 825.1 hours (Table 1) and they caught 523 trout of which 329 were legal size (12 inches). The riverwide catch rate averaged 0.63 trout/hour and 0.40 legal trout/hour (Table 1) which was a sharp decline from the 1.10 trout/hour and 0.70 legal

trout/hour recorded in 2004. In the upper East Branch upstream of the Beaver Kill (Downsville-Harvard reaches) which benefits from the cold water releases from Pepacton Reservoir, anglers averaged 0.69 trout/hour compared to the 0.41 trout/hour in the lower East Branch downstream of the Beaver Kill (Fishes Eddy and Peas Eddy reaches). In 2004, catch rates in the upper and lower East Branch averaged 1.16 and 0.88 trout/hour, respectively. Individual catch statistics ranged from 0 to 2.19 trout/hour and 0 to 1.13 legal trout/hour. Approximately 31% of the East Branch hourly fishing effort occurred on the Shinhopple reach; however, the highest catch rate occurred on the Harvard reach where cooperators averaged 0.91 trout/hour with the highest legal trout catch occurring on the Peas Eddy reach at 0.53 fish/hour (Table 1). East Branch anglers caught 134 hatchery brown trout, 313 wild brown trout, 55 rainbow trout, and 21 brook trout (Table 2). All but five rainbow trout were caught in the Fishes Eddy and Peas Eddy reaches. Hatchery brown trout comprised 26% of the riverwide trout catch with 37% of these fish caught in the Shinhopple reach. In 2005 on the upper East Branch, the catch rate of wild and hatchery brown was 0.49 and 0.20 fish/hour, respectively. The East Branch is the only Delaware Tailwater river stocked which accounts for the high percentage of hatchery brown trout in this river. The size distribution of trout caught by cooperators is summarized in Table 3 with trout ranging from 4 to 22 inches. Seventy-one percent of the 523 trout caught were legal size and 1.6% were 20 inches and larger. In 2004, 68% of the trout caught were legal size and 2.3% were 20 inches and larger.

Delaware River cooperators made 121 trips totaling 416.6 hours (Table 1) and they caught 220 trout of which 145 were legal size (14 inches and larger). The riverwide catch rate averaged 0.53 trout/hour and 0.35 legal trout/hour in 2005 which was very similar to the 0.55 trout/hour and 0.28 legal trout/hour recorded in 2004. Individual catch rates ranged from 0 to 1.05 trout/hour and 0 to 0.72 legal trout/hour. Approximately 43% of the riverwide fishing effort occurred on the Junction Pool reach; however, the highest catch rates were recorded on the Buckingham reach at 0.87 trout/hour and 0.70 legal trout/hour (Table 1). Cooperators on the Delaware River caught 67 wild brown trout, 150 rainbow trout, and 3 brook trout (Table 2). The size distribution of trout caught by cooperators is summarized in Table 3 with trout ranging from 7 to 23 inches. Sixty-six percent of the 220 trout caught were legal size with 3.6% measuring 20 inches and larger.

Overall angler cooperator effort on the Delaware Tailwaters increased slightly at 4% over the effort recorded in 2004. Hourly fishing effort declined 1.4% on the West Branch and increased 6% on the East Branch and 20% in the Delaware River (Table 4). The fishing effort was not evenly distributed throughout the three Tailwater rivers or the 15 study reaches. Effort on the West Branch, East Branch and Delaware River was 53%, 32%, and 16%, respectively. The reach effort ranged from 1.4% of the total effort on the Buckingham reach to 17% on the Border Water reach (Table 4). In 2005, eight reaches (4 on the West Branch, 3 on the East Branch, and 1 on the Delaware River) had the minimum 50 trips necessary to provide meaningful catch statistics compared to six reaches in 2004. This 50 trip requirement is an arbitrary number that may be subject to change upon completion of the final report.

Year to year catch rate comparison from 2002 through 2005 for each river and its study reaches are summarized in Table 5. Only the Border Water reach on the west Branch satisfied the 50 trip threshold for all four years with the threshold achieved for three years on the Stilesville, No Kill, Hale Eddy, and Shinhopple reaches. Some of the observed year to year difference in reaches with less than the 50 trip threshold may be a reflection of the relatively small sample sizes which ranged from 0 to 41 trips/acre (Table 4).

Riverwide catch rates on the West Branch and Delaware River in 2005 were very similar to those recorded in 2004. However, catch rates on the East Branch declined sharply and can probably be partly attributed to the hot, dry summer in 2005 especially on the Fishs Eddy and Peas Eddy reaches. These two lower East Branch reaches typically receive no benefits from the Pepacton Reservoir cold water releases and summer water temperatures frequently climbed into the mid 80's F. The summers of 2003 and 2004 were unusually wet and cool and elevated water temperatures were never an issue. Stocking of the Peas Eddy reach was discontinued after 2004. The declines in the upper East Branch on the Downsville, Corbett, and Shinhopple reaches can not be explained but it does not appear related to the April 2-3 floods since catch rates on the West Branch and Delaware River were largely unchanged from the previous year. On the West Branch, catch rates were down in the Stilesville reach, up in the Border Water reach, and essentially unchanged on the No Kill and Hale Eddy reaches. These upward and downward changes can not be explained at this time. Delaware River catch rates were sharply higher in the Buckingham and Hankins reaches and down in the Long Eddy reach with most of the differences between years probably due to the small sample sizes. Only in 2005 on the Junction Pool reach was the minimum 50 trips threshold met. In all other reaches and years, the number of fishing trips per reach ranged from 2 to 41 (Table 4). Because of the hot June in 2005, thermal releases to meet thermal targets on the Delaware River at Hankins were abandoned because of concerns that the 20,000 cfs Habitat Bank designed to maintain habitat flows in the West Branch, East Branch, and Neversink Rivers would be depleted long before April 30, 2006 if thermal releases were continued.

Despite the major flood event of April 2-3, 2005 and a smaller but similar major flood event in mid-September, 2004, plus the very hot, dry summer of 2005, trout fishing on the Delaware Tailwaters remained good. Catch rates on the West Branch and Delaware River were comparable to 2004 while East Branch catch rates declined. Even though the East Branch fishing was down in 2005, catch rates remain good compared to the outstanding catch rates recorded in 2003 and 2004. Hot dry summers like 2005 benefit the West Branch because of the frequent River Master directed releases. In wet summers, like 2003 and 2004, River Master directed releases are very infrequent with only minimal releases due to high natural run-off from the tributary system. 2005 was also the second year in which targeted habitat flows (225 cfs at Hale Eddy on the West Branch and 175 cfs at Harvard on the East Branch) were maintained throughout the year on both rivers. This experimental release program will remain in effect through April 30, 2007.

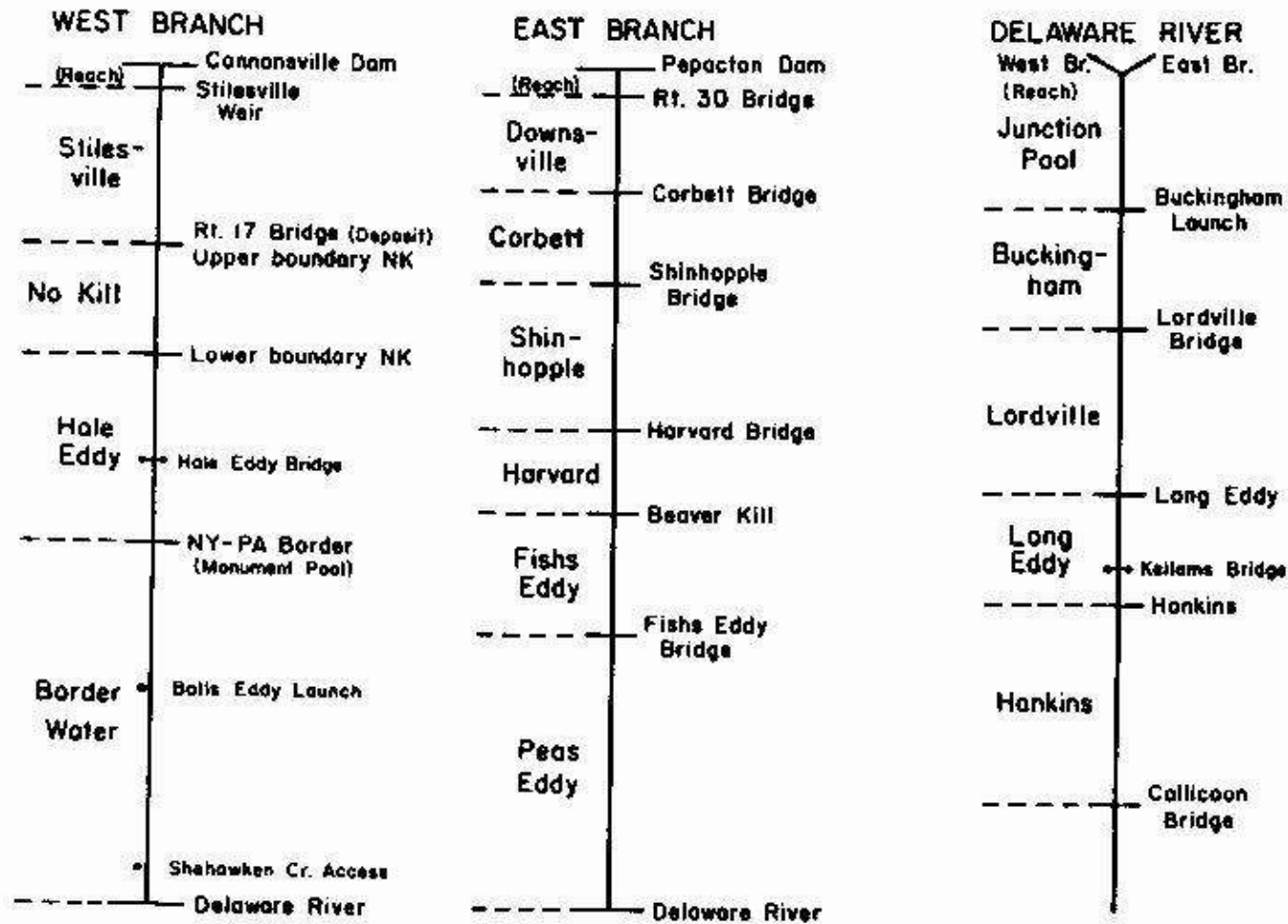


Figure 1: Map of the Delaware Tributaries showing the study reaches on the West Branch, East Branch, and Delaware River.

Table 1: Summary of angler diary catch statistics for trout by reach on the West Branch, East Branch, and Delaware River in 2005.

	<b>Angler Trips</b>	<b>Hours Fished</b>	<b>Trout Caught</b>	<b>Legal Trout Caught</b>	<b>Catch Per Hour</b>	<b>Legal Catch Per Hour</b>
<b>WEST BRANCH</b>						
Stilesville	155	407.6	382	171	0.94	0.42
No Kill	79	196.5	125	94	0.64	0.48
Hale Eddy	137	330.3	279	210	0.84	0.64
Border Water	166	452.3	311	251	0.69	0.55
<b>TOTALS</b>	<b>537</b>	<b>1,386.9</b>	<b>1,097</b>	<b>726</b>	<b>0.79</b>	<b>0.52</b>
<b>EAST BRANCH</b>						
Downsville	62	199.8	113	90	0.57	0.45
Corbett	55	136.3	85	54	0.62	0.40
Shinhopple	104	252.2	195	92	0.77	0.36
Harvard	31	65.0	59	34	0.91	0.52
Fishs Eddy	36	98.1	29	20	0.30	0.20
Peas Eddy	31	73.8	42	39	0.57	0.53
<b>TOTALS</b>	<b>319</b>	<b>825.2</b>	<b>523</b>	<b>329</b>	<b>0.63</b>	<b>0.40</b>
<b>DELAWARE RIVER</b>						
Junction Pool	52	180.5	80	46	0.44	0.25
Buckingham	10	35.8	31	25	0.87	0.70
Lordville	26	95.7	43	35	0.45	0.37
Long Eddy	15	43.4	23	14	0.53	0.32
Hankins	18	61.3	43	25	0.70	0.41
<b>TOTALS</b>	<b>121</b>	<b>416.7</b>	<b>220</b>	<b>145</b>	<b>0.53</b>	<b>0.35</b>

Table 2: Summary of the number of trout caught by angler cooperators on each reach of the West Branch, East Branch, and Delaware River in 2005.

	Hatchery Brown Trout	Wild Brown Trout	Rainbow Trout	Brook Trout	Tiger Trout	Total
<b>WEST BRANCH</b>						
Stilesville		355	21	6		382
No Kill		122	2		1	125
Hale Eddy		264	13	2		279
Border Water		241	68	1	1	311
Totals		982	104	9	2	1097
<b>EAST BRANCH</b>						
Downsville	37	72		4		113
Corbett	28	53		4		85
Shinhopple	49	135	3	8		195
Harvard	19	34	2	4		59
Fishes Eddy	1	7	21			29
Peas Eddy		12	29	1		42
Totals	134	313	55	21		523
<b>DELAWARE RIVER</b>						
Junction Pool		27	53			80
Buckingham		6	25			31
Lordville		13	30			43
Long Eddy		11	11	1		23
Hankins		10	31	2		43
Totals		67	150	3		220

Table 3: Size distribution of trout caught by diary cooperators for each reach of the West Branch, East Branch, and Delaware River in 2005.

	INCH GROUP																		
	≤6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	≥24
<b>WEST BRANCH</b>																			
Stilesville	30	14	34	38	48	47	30	22	18	14	17	21	17	10	8	4	1	2	7
No Kill	1		5	7	10	8	12	13	8	7	11	13	13	7	6	3	1		
Hale Eddy	4	3	13	10	15	24	24	26	34	27	30	21	22	10	8	3	2	2	1
Border Water	2	3	3	11	23	18	34	43	43	32	38	26	18	8	3	6			
<b>EAST BRANCH</b>																			
Downsville	5	2	5	4	3	4	17	16	12	11	15	11	3	1	3			1	
Corbett	8	1	8	3	6	5	8	13	10	4	10	4	5						
Shinhopple	29	7	14	18	15	20	17	10	17	15	10	6	4	9	2	1	1		
Harvard			2	5	10	8	9	5	4	4	3	2	3	1	2	1			
Fishes Eddy		1	1	3	3	1	2	1	3	5	2	2	3	2					
Peas Eddy					2	1	2	8	2	7	7	3	5	3	1				1
<b>DELAWARE RIVER</b>																			
Junction Pool			1	4	9	5	10	5	7	9	7	10	8	2	1	1			1
Buckingham							3	3	3	4	5	6	4	1	1				1
Lordville					1	1		6	6	4	9	6	5	3	1		1		
Long Eddy				2	2		2	3	6		2	4	2						
Hankins		1	2	2			7	6	4	4	7	6	3		1				

Table 4: Comparison of angler cooperators efforts (total trips and total hours) by reach on the West Branch, East Branch, and Delaware River from 2002 through 2005.

	<b>FISHING EFFORT</b>			
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>Trips/Hours</b>	<b>Trips/Hours</b>	<b>Trips/Hours</b>	<b>Trips/Hours</b>
<b>WEST BRANCH</b>				
Stilesville	22/64.5	73/139.7	122/273.1	155/407.6
No Kill	29/88.3	56/155.0	163/459.3	79/196.5
Hale Eddy	29/59.0	74/172.5	75/200.3	137/330.3
Border Water	139/453.6	112/314.0	134/473.8	166/452.3
TOTALS	219/665.4	315/781.2	494/1,406.5	537/1,386.9
<b>EAST BRANCH</b>				
Downsville	14/65.3	10/37.0	29/98.3	62/199.8
Corbett	16/50.3	27/89.3	64/142.9	55/136.3
Shinhopple	12/33.0	111/290.9	136/349.3	104/252.2
Harvard	0/0	8/39.3	14/23.5	31/65.0
Fishes Eddy	6/9.3	25/56.0	25/70.0	36/98.1
Peas Eddy	1/4.0	25/61.2	34/94.5	31/73.8
TOTALS	49/161.9	206/573.7	302/778.5	319/825.2
<b>DELAWARE RIVER</b>				
Junction Pool	25/75.5	18/50.3	41/144.0	52/180.5
Buckingham	2/6.0	8/57.7	20/100.8	10/35.8
Lordville	9/26.0	7/17.5	13/30.3	26/95.7
Long Eddy	36/63.0	17/29.5	19/32.8	15/43.4
Hankins	11/15.0	10/53.0	11/39.3	18/61.3
TOTALS	83/185.5	60/208.0	104/347.2	121/416.7

Table 5: Comparison of catch per hour for all size (AT) and legal trout (LT) by reach in the West Branch, East Branch, and Delaware River from 2002 through 2005.

	CATCH PER HOUR			
	2002 AT/LT	2003 AT/LT	2004 AT/LT	2005 AT/LT
<b>WEST BRANCH</b>				
Stilesville	0.51/0.09	<b><u>0.47/0.19</u></b>	<b><u>1.17/0.65</u></b>	<b><u>0.94/0.42</u></b>
No Kill	0.24/0.10	<b><u>0.59/0.24</u></b>	<b><u>0.69/0.51</u></b>	<b><u>0.64/0.48</u></b>
Hale Eddy	0.73/0.42	<b><u>0.77/0.43</u></b>	<b><u>0.88/0.63</u></b>	<b><u>0.84/0.64</u></b>
Border Water	<b><u>0.35/0.20</u></b> <sup>1</sup>	<b><u>0.70/0.43</u></b>	<b><u>0.56/0.30</u></b>	<b><u>0.69/0.55</u></b>
<b>AVERAGE</b>	0.38/0.20	0.65/0.35	0.77/0.48	0.79/0.52
<b>EAST BRANCH</b>				
Downsville	0.41/0.12	1.11/0.16	1.40/0.87	<b><u>0.57/0.45</u></b>
Corbett	0.68/0.28	1.07/0.32	<b><u>0.88/0.55</u></b>	<b><u>0.62/0.40</u></b>
Shinhopple	0.82/0.30	<b><u>1.29/0.68</u></b>	<b><u>1.22/0.74</u></b>	<b><u>0.77/0.36</u></b>
Harvard	-	1.07/0.51	0.94/0.77	0.91/0.52
Fishes Eddy	0/0	0.75/0.46	0.96/0.67	0.30/0.20
Peas Eddy	0/0	0.83/0.77	0.84/0.62	0.57/0.53
<b>AVERAGE</b>	0.54/0.20	1.13/0.57	1.10/0.70	0.63/0.40
<b>DELAWARE RIVER</b>				
Juntion Pool	0.11/0.08	0.52/0.46	0.47/0.26	<b><u>0.44/0.25</u></b>
Buckingham	0.17/0	0.90/0.52	0.64/0.20	0.87/0.70
Lordville	0.15/0.08	0.69/0.57	0.43/0.23	0.45/0.37
Long Eddy	0.54/0.44	0.54/0.54	1.22/0.85	0.53/0.32
Hankins	0/0	0.57/0.36	0.18/0.13	0.70/0.41
<b>AVERAGE</b>	0.25/0.19	0.65/0.47	0.55/0.28	0.53/0.35

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<sup>1</sup>Note that reach catch rates in bold and underlined meet the threshold minimum of 50 trips necessary to generate meaningful and representative catch statistics.