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WEST BRANCH DELAWARE RIVER PIT TAG PLAN 2018-2020

Prepared for Fisheries Investigation Plan for the Delaware Tailwaters

February 28, 2018

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Problem Statement

The West Branch Delaware River (WBDR) trout movement and tributary use information available to New York State Department of Environmental Conservation (NYSDEC) and Pennsylvania Fish and Boat Commission (PAFBC) biologists is outdated. It predates significant changes to flow management from Cannonsville Reservoir (RM 18). The existing information is inadequate to support a scientific evaluation of whether changes in trout movement and tributary use have occurred and whether changes in management objectives and strategies are warranted. Additionally, 2017 survey data shows a lack of two-year old trout in the WBDR and tributaries. There is uncertainty as to whether yearling trout are persisting and recruiting into two-year old's in the WBDR and tributaries.

Need Statement

Documenting trout movements in the WBDR, into tributaries, yearling trout movement and recruitment to two-year old's is needed to better understand and manage the fishery. As a component of a comprehensive fisheries investigation plan (PFBC & NYSDEC, 2017), this information was identified as necessary to develop a new fisheries management plan for the tailwaters system.

Research Objective

Within the Fisheries Investigation Plan (FIP) for the Delaware Tailwaters Objective 1 for fisheries independent data:

1. Assess the timing, relative abundance, direction and water depths associated with trout movements, habitat usage and connectivity between WBDR and its tributaries.
2. Assess seasonal trout movements within the WBDR.

Plan Strategy/Approach

1. Setup/Deployment
   a. PIT tag (23mm HDX+) a mixture of brown trout (BT) and rainbow trout (RT) 12 inches in length or larger totaling approximately 1,000 fish annually during monthly electrofishing surveys conducted during April -October at four WBDR adult trout electrofishing sampling sites (Figure 1) in 2018, 2019 and 2020. The ratio* of the two species tagged will be determined by the ratio sampled.

      *Recent data shows we should expect to collect >750 taggable sized trout per year, ratio approximately 13.5:1, BT: RT.
   b. PIT tag (12mm HDX+) a mixture of brown and rainbow yearling trout totaling approximately 1,000 fish annually at the four WBDR monthly adult sites April-October and the following tributaries: Shehawken Creek, Sands Creek, Balls Creek, Roods Creek, Sherman Creek and

Cold Spring Creek (July-October) (Figure 1) in 2018, 2019 and 2020. The ratio of the two species tagged will be determined by the ratio sampled.

*Recent data shows we should expect to collect >750 taggable yearling trout, ratio approximately 13.5:1, BT: RT at all sites except 6:1, BT: RT in Sands Creek.

c. Deploy small-scale PIT tag arrays (12" diameter antenna) in Cold Spring Creek, Sherman Creek, Roods Creek, Balls Creek, Sands Creek and Shehawken Creek (Figure 1) within proximity to the mouth, to compare timing of PIT tagged spawning trout entering tributaries, to changes in tributary flows, water depth and reservoir releases.
    i) Small-scale arrays constructed before the fall spawning season begins and placed in the six tributaries (Figure 1) mentioned above, no later than the last week in September and retrieved no earlier than the first week of December.
    ii) Hobo Onset water level loggers deployed at the same time, within the same tributaries, at the same sites.

2. Monitoring
    a. Use a handheld proximity PIT tag reader to scan fish for PIT tags.
        i) Collected fish during the four monthly WBDR adult trout sites.
        ii) Collected fish during the fifteen monthly young-of-the-year trout sites (Fisheries-independent Monitoring for the Delaware tailwaters, 2018-2020 plan).
        iii) Some local guides have/will purchase readers to scan fish captured during their fishing trips; Ben Rinker of East Branch Outfitters will be responsible for acquiring and providing data to NYSDEC.
        iv) Creel agents will scan creeled fish during the creel census.
    b. Use small-scale PIT tag arrays to scan for PIT tagged fish in the tributaries.
3. Evaluate/Inform
    a. Results evaluation
        i) Compare WBDR flows to changes in tributary depth at array sites to timing and abundance of fish movement.
        ii) Compute relative utility of tributaries by comparing array readings of unique fish.
        iii) Create maps for individual fish movement of fish that are recaptured and determine distance traveled between recapture.
        iv) Determine growth rates through fish recaptured during electrofishing surveys.
    b. Results will inform a new fisheries management plan and other associated stakeholders.
        i) Future sampling priorities and potential regulation changes.
        ii) Recommend priority projects to NYSDEC BOH, TU and anglers for road crossings/culverts, habitat protection and enhancement.

LITERATURE CITED

Fisheries Investigation Plan for the Delaware Tailwaters 2018-2020, New York State Department of Environmental Conservation and Pennsylvania Fish and Boat Commission, 2017

McBride, N.D. 2002. Radiotelemetry study of trout movements in the Delaware Tailwaters and the Beaver Kill: 1995-1997. New York State Department of Environmental Conservation, Region 4 Fisheries Office, Stamford: 177pp.

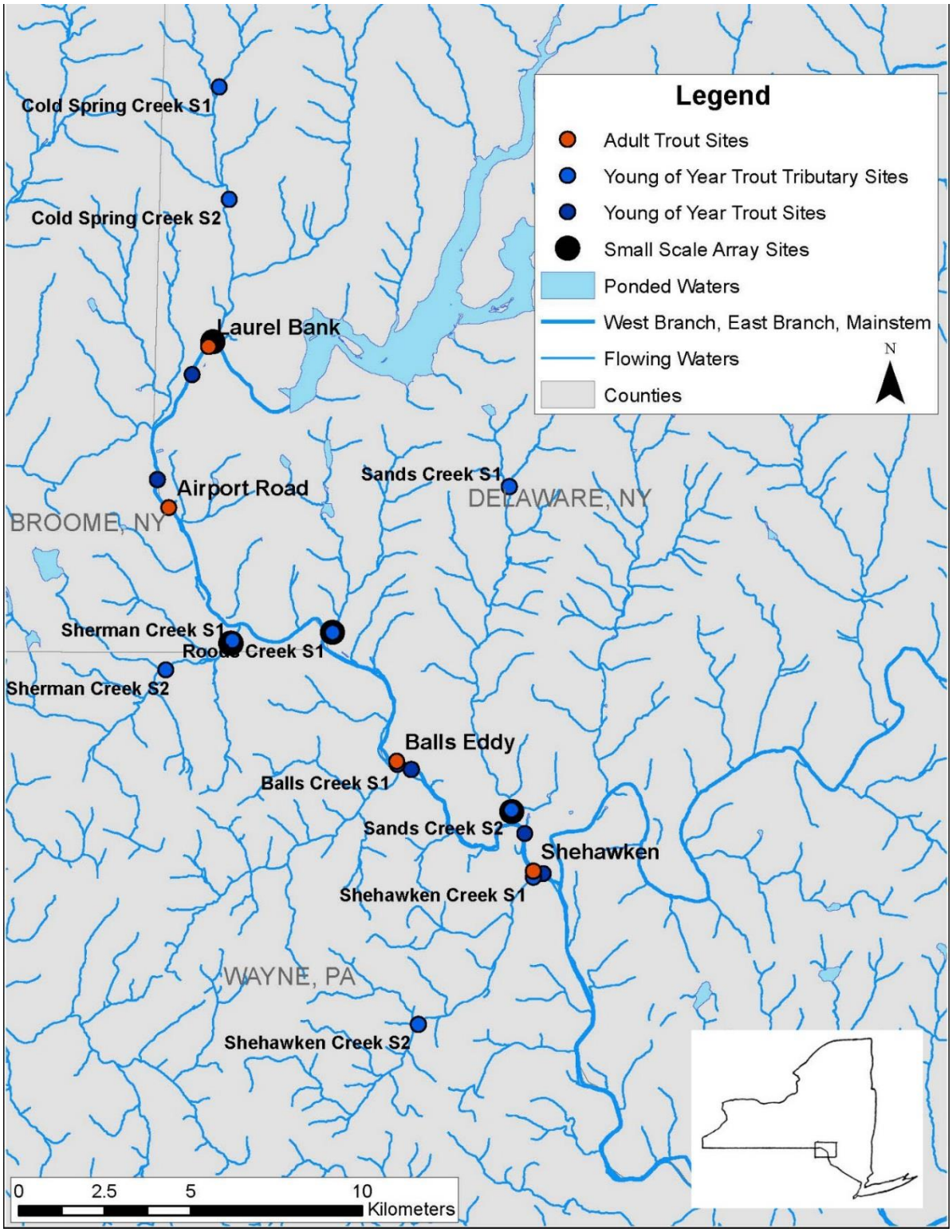

Figure 1. Map illustrating trout sampling and PIT tag array sites.

TABLE 1. Timeframe of proposed plan.

YEAR/TASK	LOCATION	J	F	M	A	M	J	J	A	S	O	N	D
2018													
PIT Tag >12" Trout	Four West Branch Delaware River adult trout sites				✔	✔	✔	✔	✔	✔	✔		
PIT Tag Yearlings	Four West Branch Delaware River adult trout sites and 15 yearling trout sites				✔	✔	✔	✔	✔	✔	✔		
Arrays Deployed	Shehawken Creek, Sands Creek, Balls Creek, Roods Creek, Sherman Creek and Cold Spring Creek									✔	✔	✔	✔
Water Loggers Deployed	Shehawken Creek, Sands Creek, Balls Creek, Roods Creek, Sherman Creek and Cold Spring Creek									✔	✔	✔	✔
Data Analysis	As part of Fisheries Investigation Plan	✔	✔	✔									
2019													
PIT Tag >12" Trout	Four West Branch Delaware River adult trout sites				✔	✔	✔	✔	✔	✔	✔		
PIT Tag Yearlings	Four West Branch Delaware River adult trout sites and 15 yearling trout sites				✔	✔	✔	✔	✔	✔	✔		
Arrays Deployed	Shehawken Creek, Sands Creek, Balls Creek, Roods Creek, Sherman Creek and Cold Spring Creek									✔	✔	✔	✔
Water Loggers Deployed	Shehawken Creek, Sands Creek, Balls Creek, Roods Creek, Sherman Creek and Cold Spring Creek									✔	✔	✔	✔
Data Analysis	As part of Fisheries Investigation Plan	✔	✔	✔									
2020													
PIT Tag >12" Trout	Four West Branch Delaware River adult trout sites				✔	✔	✔	✔	✔	✔	✔		
PIT Tag Yearlings	Four West Branch Delaware River adult trout sites and 15 yearling trout sites				✔	✔	✔	✔	✔	✔	✔		
Arrays Deployed	Shehawken Creek, Sands Creek, Balls Creek, Roods Creek, Sherman Creek and Cold Spring Creek									✔	✔	✔	✔
Water Loggers Deployed	Shehawken Creek, Sands Creek, Balls Creek, Roods Creek, Sherman Creek and Cold Spring Creek									✔	✔	✔	✔
Data Analysis	As part of Fisheries Investigation Plan	✔	✔	✔									
2021													
Data Analysis	As part of Fisheries Investigation Plan	✔	✔	✔									