



MEMORANDUM

To: Shad File

From: Gerald Kauffman

Date: Apr 18, 2015

Re: Shad in White Clay Creek on April 18, 2015

With the onset of sunny 81 deg F weather, on Saturday April 18, 2015 we observed schools of American shad and hickory shad (Figure 1) and other smaller anadromous fish that appeared to be river herring in the White Clay Creek National Wild and Scenic River (Figure 2). Stream flow at the White Clay Creek near Newark USGS gage was less than half of normal at 85 cfs or 25th percentile for the date (Figure 3). Water temperature at the Christina River at Newport USGS gage was 19 deg C (66 deg F) up sharply from 13 deg C five days before (Figure 4). At 4:00 pm on April 18 the Christina River at Newport gage was ebbing toward the low tide scheduled for around 7:00 pm that evening (Figure 5). Horticultural folklore presumes that the shad will run when the serviceberry bush blooms and the shadbush was indeed in full flower this weekend in front of the UD rain garden (Figure 6).

With NOAA and American Rivers funding, the contractor removed the middle, deteriorated 45 feet of the historic 100 feet long White Clay Creek (Byrnes) Dam No. 1 (Figure 7) during the first week of December 2014 (Figure 8). This dam removal reopened the White Clay Creek for passage of anadromous and domestic fish for the first time in over two centuries since the Byrnes mill dam was built at 4.3 miles above the mouth during the 1770s (Figure 9). The creek is now open for fish passage for an additional 3.6 miles to Red Mill Dam No. 2 at river mile 7.6.

We observed schools of anadromous fish at the following locations along White Clay Creek on the afternoon of Saturday April 18, 2015 (Figure 10).

Hale Byrnes House (RM 1.9)

At 3:00 pm on April 18, 2015, the tide was receding and we observed no fish.

Confluence with Red Clay Creek (RM 2.6)

At 3:20 pm observed a school of over 50 hickory shad in a pool just upstream from the confluence with Red Clay Creek opposite the school bus yard (Figure 11). This reach is freshwater just above the head of tide.

Old Route 7 Bridge (RM 2.8)

At 3:30 pm observed a school of 25 American shad just above the old Route 7 Bridge in a scour hole at the mouth of Mill Creek (Figure 11).

Byrnes Mill Dam No. 1 (RM 4.3)

Did not visit.

White Clay Creek near Newark USGS Gage (RM 5.0)

Observed schools of over 100 American shad, hickory shad, and river herring just below the Delaware Park Bridge near the club house and opposite White Clay Creek near Newark USGS Stream Gage 014790000 (Figure 12). See photographs, based on the shadows, the sun was shining over our shoulders from due west (Photos 1-5).

Sycamore Gardens Park (RM 6.0)

Observed school of 20 American shad in deep pool upstream from rock ledge in New Castle County Park on Darwin Drive several thousand yards downstream from Red Mill Road (Figure 13).

Red Mill Dam No. 2 (RM 7.6)

Observed school of shad in scour hole massing at foot of Red Mill Dam No. 2 which is a three feet high rock fill structure (Figure 13).

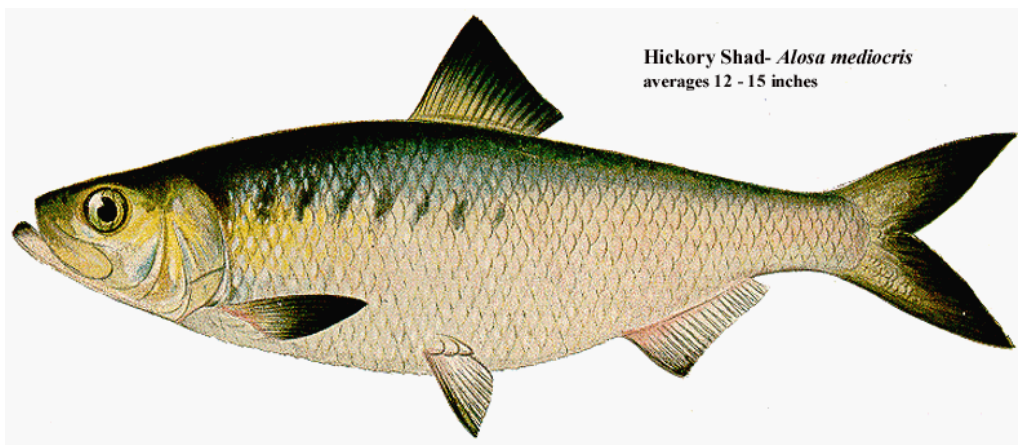


Figure 1. American shad and hickory shad

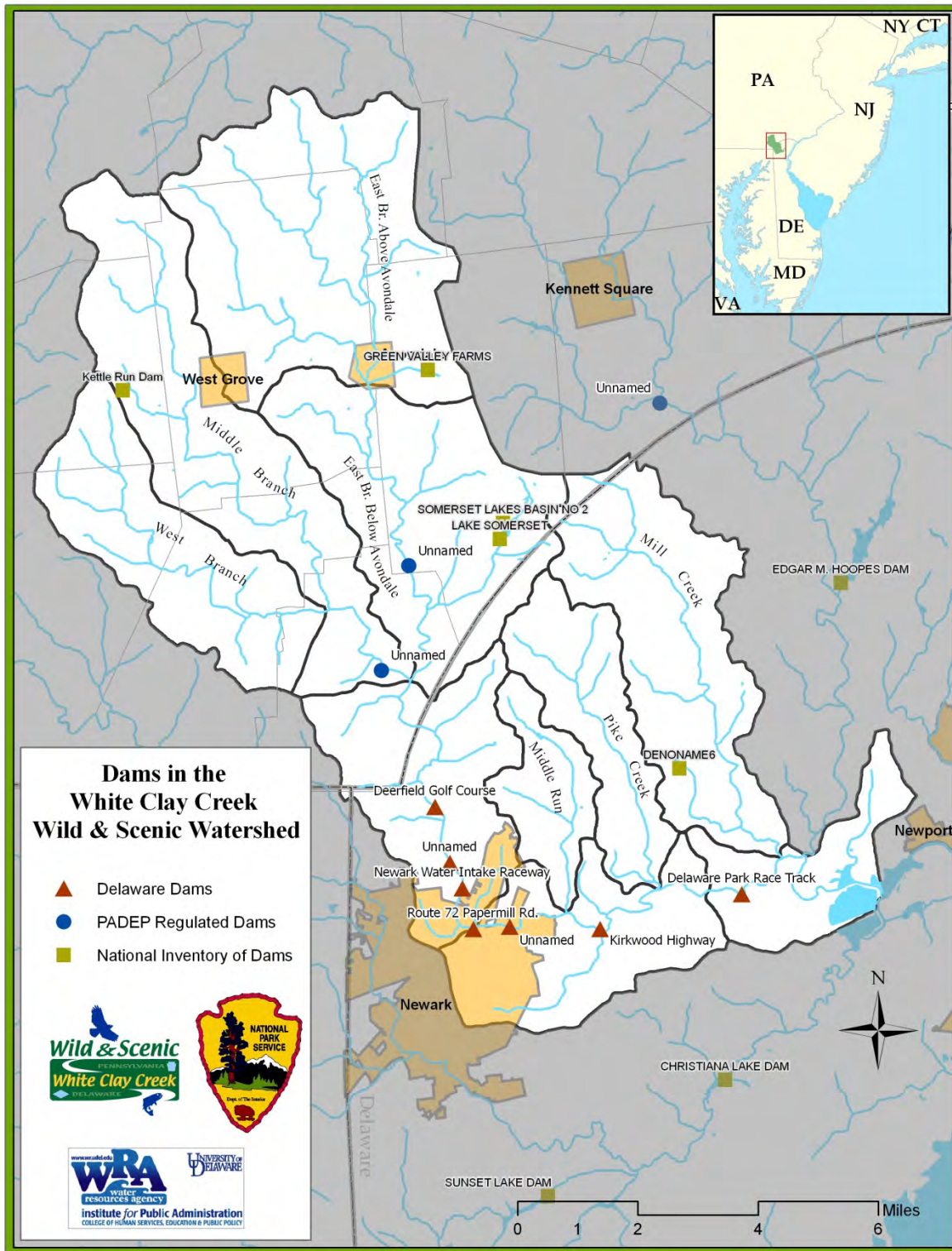


Figure 2. Dams in the White Clay Creek National Wild and Scenic River watershed

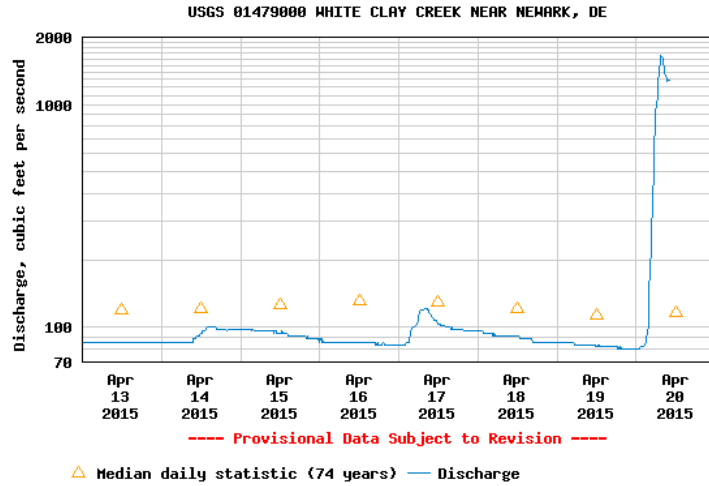


Figure 3. White Clay Creek near Newark stream gage, discharge

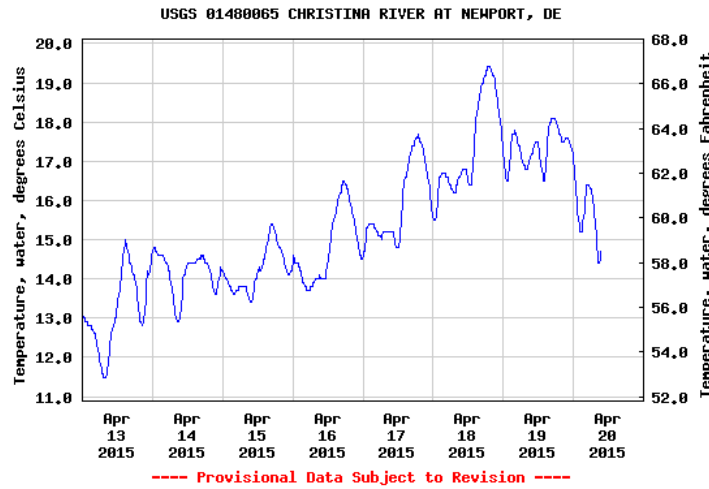


Figure 4. Christina River at Newport stream gage, temperature

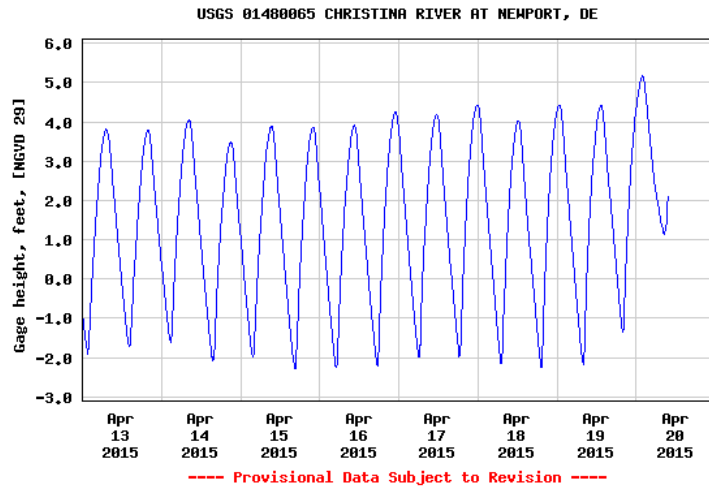


Figure 5. Christina River at Newport stream gage, gage height



Figure 6. Serviceberry (shadbush) in bloom at UD rain garden, April 20, 2015



Figure 7. White Clay Creek Dam No. 1 in April 2014



Figure 8. Removal of White Clay Creek Dam No. 1 in December 2015



Figure 9. Archeological survey of White Clay Creek Dam No. 1 removal in December 2015

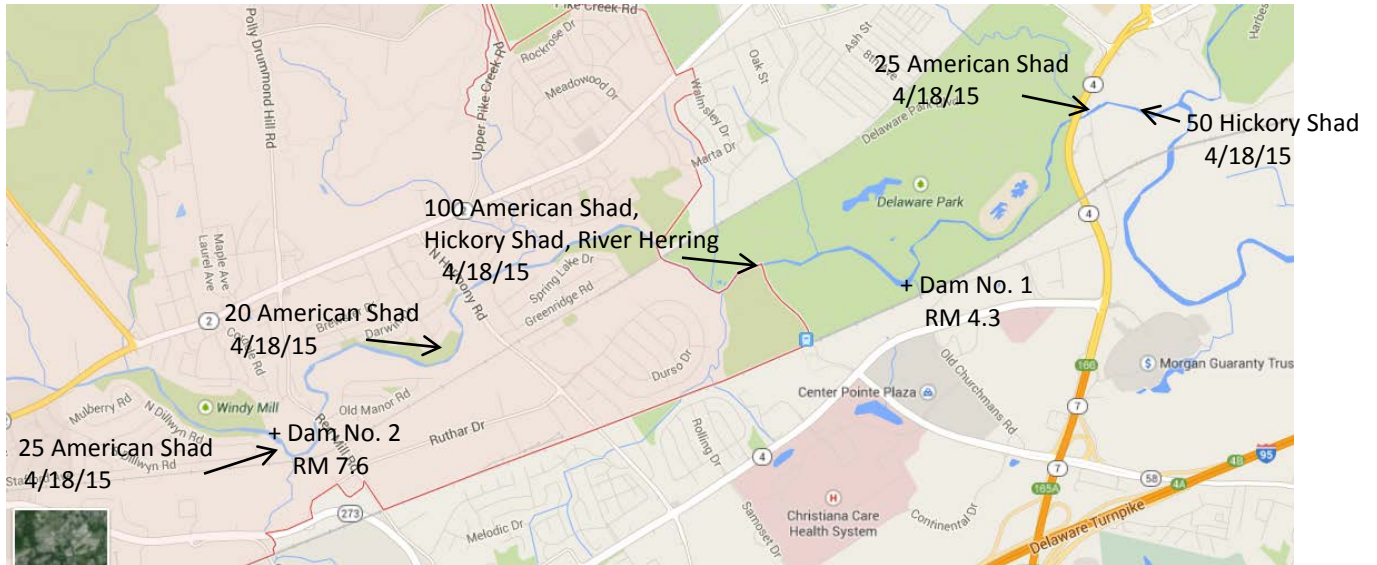


Figure 10. Shad along White Clay Creek on April 18, 2015



Figure 11. Shad along White Clay Creek on April 18, 2015

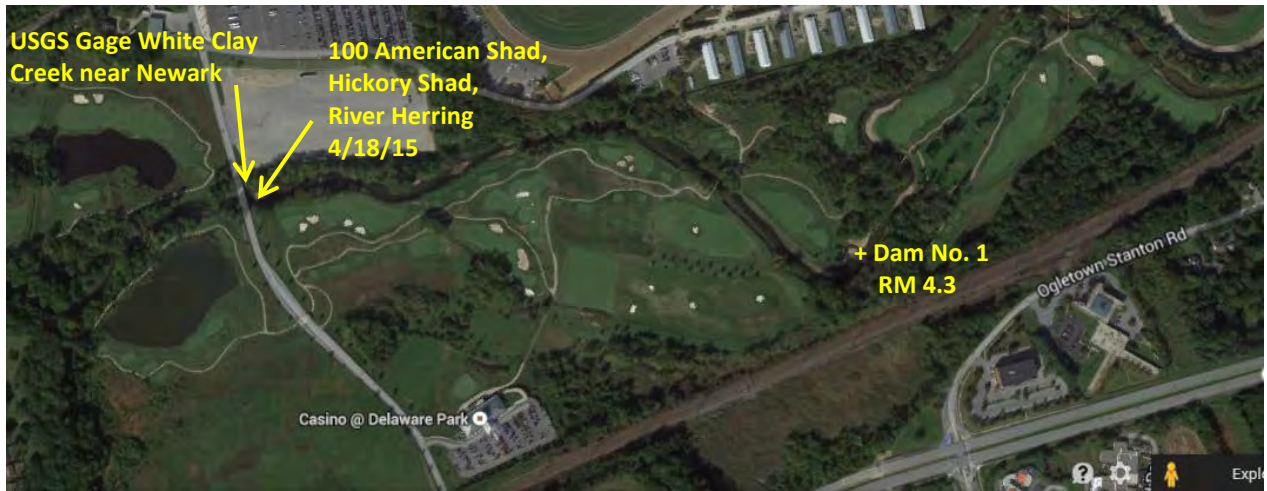


Figure 12. Shad along White Clay Creek on April 18, 2015



Figure 13. Shad along White Clay Creek on April 18, 2015



Photo 1. School of American shad/hickory shad at White Clay Creek near Newark USGS Gage at 4:17 pm on April 18, 2015



Photo 2. School of American shad/hickory shad at White Clay Creek near Newark USGS Gage at 4:17 pm on April 18, 2015



Photo 3. School of American shad/hickory shad at White Clay Creek near Newark USGS Gage at 4:17 pm on April 18, 2015



Photo 4. School of American shad/hickory shad at White Clay Creek near Newark USGS Gage at 4:17 pm on April 18, 2015



Photo 5. School of American shad/hickory shad at White Clay Creek near Newark USGS Gage at 4:17 pm on April 18, 2015