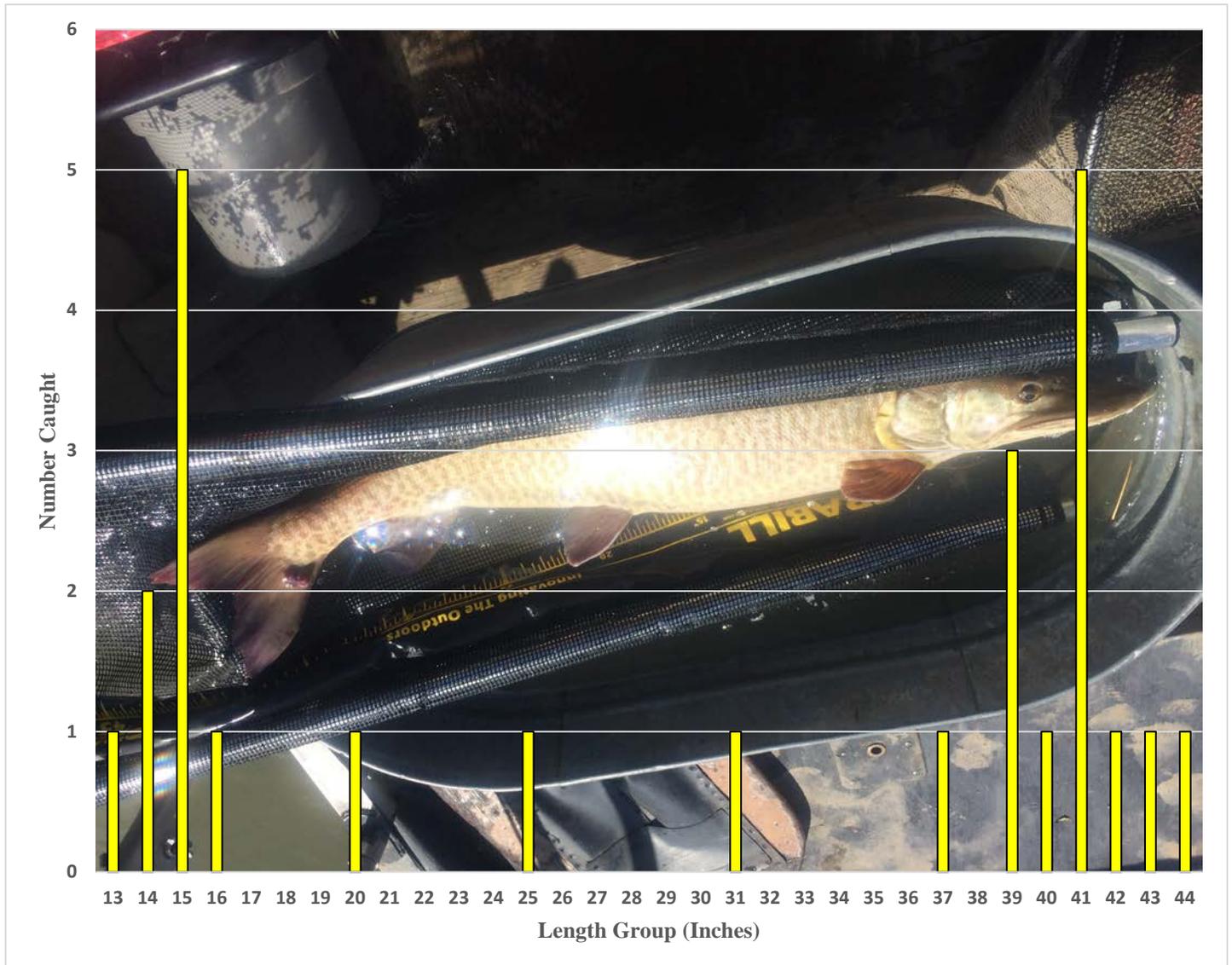


North Branch Susquehanna River 2017 Muskellunge Population Monitoring

The Pennsylvania Fish and Boat Commission stopped stocking Muskellunge in the North Branch Susquehanna River in 2016. Stocking was terminated in favor of management through natural reproduction. Management through natural reproduction includes annual monitoring of adult and young-of-the-year (YOY) fish. Adult monitoring occurs in early spring and YOY monitoring occurs in late summer. The purpose of adult monitoring is to ensure the fishery remains stable without stocking. Stocking may be resumed if the adult Muskellunge population declines. The purpose of YOY monitoring is to relate Muskellunge reproduction to environmental factors such as river discharge and water temperature.

In 2017 the Area 4 Fisheries Management Office sampled adult Muskellunge at 24 sites between Oakland (Susquehanna County) and Union (Luzerne County). The effort produced 25 Muskellunge ranging from 13.0 to 44.9 inches long (Figure 1). The heaviest fish weighed 31.42 pounds.

Figure 1. Length-frequency distribution of 25 adult Muskellunge captured in the North Branch Susquehanna River in April 2017.



Mean catch per unit effort (CPUE) of adult Muskellunge was 2.35/hour. This was a comparatively high CPUE and indicated that the North Branch Susquehanna River supported a very good Muskellunge population. Mean CPUE in 2017 was substantially higher than the 2016 value of 1.56/hour. However, in 2016 we missed a much higher percentage of the fish we shocked because we were still perfecting our electrofishing techniques. If we included fish missed as well as fish captured, CPUE values between the two years became much closer: 2.92/hour in 2017 versus 2.66/hour in 2016. Thus, we concluded that the adult Muskellunge population in the North Branch Susquehanna River did not change in the first year following stocking termination.

Figure 2. Fisheries Biologist Aaron Frey with a nice Muskellunge captured at Union on April 20, 2017



We kept track of the habitats where we caught adult Muskellunge in 2017. Anglers trying to catch Muskellunge might be interested in that information. Twelve Muskellunge came from main river pools, seven came from backwaters, four came from side channels, one was at a tributary mouth, and one was at the downstream tip of an island (Figure 2).

Comparatively YOY sampling wasn't nearly as successful as adult sampling. In 2017 we sampled YOY Muskellunge at 21 sites between Oakland (Susquehanna County) and Northumberland (Northumberland County). We didn't capture a single YOY. The North Branch Susquehanna River was consistently high and cold between March and August 2017. Previous research has shown that Smallmouth Bass and Walleye do not reproduce well under these conditions and the same may be true for Muskellunge. Regardless of the reason, year class failure is common in Muskellunge populations managed through natural reproduction. For example, Eslinger et al. (2010) failed to document successful Muskellunge reproduction at Escanaba Lake, Wisconsin, in two of twenty years.

While electrofishing for YOY Muskellunge in 2017 we collected four Oriental Weatherfish. This was the first record of Oriental Weatherfish in Pennsylvania waters, but their presence wasn't surprising (Figure 3). Oriental Weatherfish established viable populations in the New York portion of the Susquehanna River basin several years ago (Wells 2014). The original source of these fish was the aquarium trade. Scientists don't know what effects Oriental Weatherfish will have on other species in the river or its tributaries.

Figure 3. Oriental Weatherfish captured in the North Branch Susquehanna River in August 2017.



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