



Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Jeannie Haddaway-Riccio, Secretary
Charles Glass, Deputy Secretary

2019 Musky Volunteer Angler Survey Summary:

The Maryland Department of Natural Resources Freshwater Fisheries Program would like to thank each of you for providing data that is necessary for the management of Maryland muskies.

Angling has proven to be a much more efficient means of obtaining data from Potomac River muskies. The department's annual electrofishing catch rates average 29 muskie per year; whereas, the average angling catch = 166 fish/year. The program uses volunteer angler survey data to calculate catch rates (catch per hour or hours per fish), size distribution, and mortality estimates on an annual basis. Angler catch data have also provided much larger samples of tagged recaptures to determine movement, growth and an overall recapture rate (39 percent).

A summary of volunteer angler survey data is provided in Figure 1.

Prior to 2019, angler participation in the creel diary program was well below the observed number of anglers targeting muskies on the river. To encourage participation the development of an electronic reporting application was created. Anglers can now save this app to any smartphone or personal computer and enter catch information electronically.

Additionally, the following incentives exist for each participant:

- 1) Entry into a prize lottery,
- 2) A custom Maryland Muskie hat,
- 3) An annual summary report that includes the most recent updates on muskie management, and
- 4) The opportunity to be actively involved in the management/data collection of Potomac River muskies.

To fully participate, all trips must be entered including days where zero fish were caught

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
# Musky Caught	94	205	226	168	212	180	119	110	141	128
Angler Hours	545	1413	2988	2633	2839	1771	1480	1546.5	1104.5	1425
Total Catch/Hr	0.17	0.15	0.08	0.06	0.07	0.10	0.08	0.07	0.13	0.09
# of Trips	67	172	295	321	378	332	286	183	132	192
Hours/Fish	5.9	6.7	12.5	15.7	13.5	9.8	12.4	14.1	7.8	11.5
Participant #	5	10	15	16	15	13	12	12	11	25
Recaptures	14	19	15	12	20	14	6	14	18	15
percent Recaptures	14.9	9.3	6.6	7.1	9.4	7.8	5	12.7	12.8	11.7
Mean Length	36.4	35.4	36	36.8	36	36.1	37.1	36.5	35.2	37.2

Figure 1. Summary of volunteer angler survey data (2010-2019)

The size distribution from the 2019 catch data is one that should be very attractive to anglers (Figure 2). The percentage of larger fish (38-42" and 42-50") is above the long term average (2000-2019).

Additionally, the proportion of 20-30" fish collected in 2018 signifies good reproduction in 2016 and 2017, which is good news for the future of muskies in the Potomac. The contribution of 20-30" fish has proven to be a useful method in determining year-class strength 1-2 year prior since younger muskies (< 25" or ≤ 2 years old) are not recruited to the larger gear (tackle) typically used to target muskie.

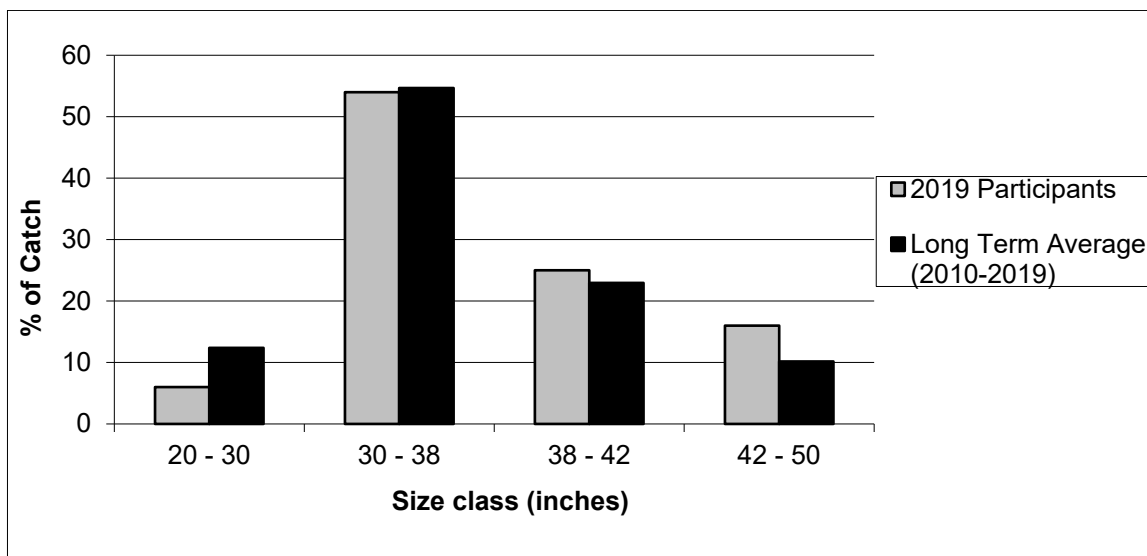


Figure 2. Incremental length-frequency distribution of angled muskies from the volunteer angler diary program 2019 compared to the long term average (2000-2019)

Current data indicates that this fishery has a high voluntary catch & release rate (> 99 percent), among devoted muskie anglers, but does not take into account delayed mortality associated with angling.

Greater catch and release mortality is suspected during summer months when water temperatures approach/exceed 80°F and fishing success and/or effort is highest (Figure 3)

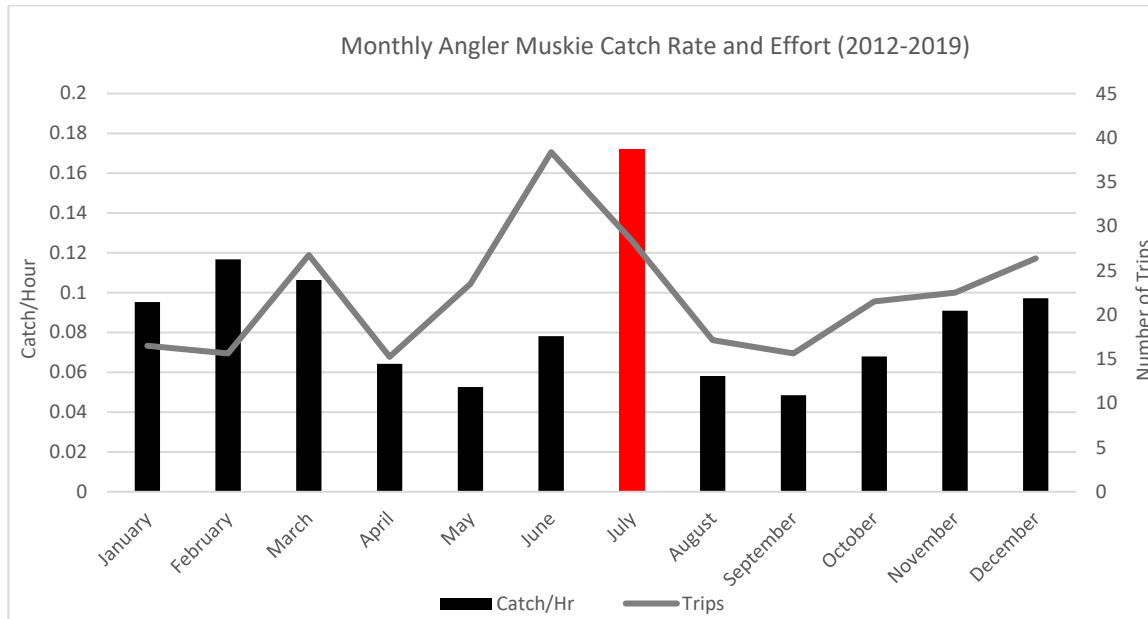


Figure 3. Monthly angler catch rate and effort reported from volunteer angler survey for 2012-2019.

2019 Management Updates:

The Potomac River muskellunge fishery is undoubtedly growing in popularity. In order to ensure the success of this fishery the department wants to protect critical habitat and minimize delayed mortality of adult fish.

In early March of 2017 and 2018, a sample of muskies from the upper Potomac River were surgically implanted with radio telemetry transmitters (Image 1).

Fish were individually marked with two yellow anchor tags that appear on the leading edge of the dorsal fin (Image 2).

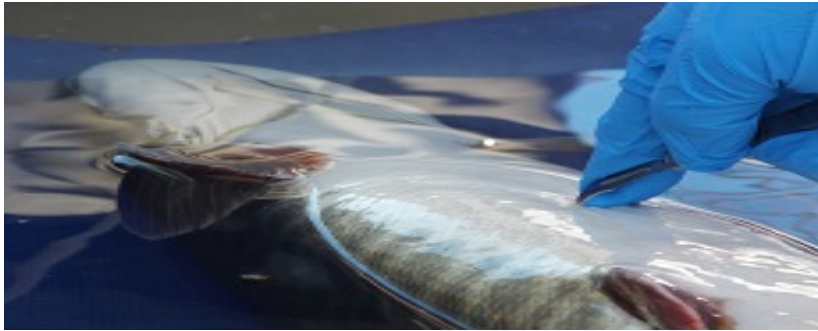


Image 1. Photos of muskellunge radio telemetry transmitter surgery.



Image 2. Two yellow anchor tags were used to identify transmitter tagged muskellunge in the upper Potomac

Results thus far have determined seasonal movements and habitat preferences (Figure 4), as well as important biological information for muskie populations existing in the southern part of their range (i.e. the importance of thermal refuge during summer months). We learned that summer time movements and refuge occupancy is temperature dependent.

During the summer of 2018, with record rainfall and river flows, we observed increased movements outside of refuge areas when compared with more typical summer months (2017 & 2019) (Figure 5). To date, 50 percent of the telemetry muskellunge have been caught and released by experienced anglers during the winter, spring, and fall. No direct angling related mortality was associated with these fish as they demonstrated continuous movement for at least one month post capture.

Alternatively, we have documented 41 percent mortality over two years of this study (2018 & 2019). The section of river where we believe to have significant angling pressure demonstrated 55 percent mortality compared to 27 percent for other sections with moderate pressure (Personal observations).

Future efforts will aim to obtain a population estimate on Potomac River muskies and determine how angling impacts the population.

Angler participation is a necessary component of this project. Reporting tagged fish will enable us to best estimate the proportion of fish caught from the population; additionally, we will apply angling related mortality estimates to our population estimates to better understand how angling is affecting the fishery at the population level.

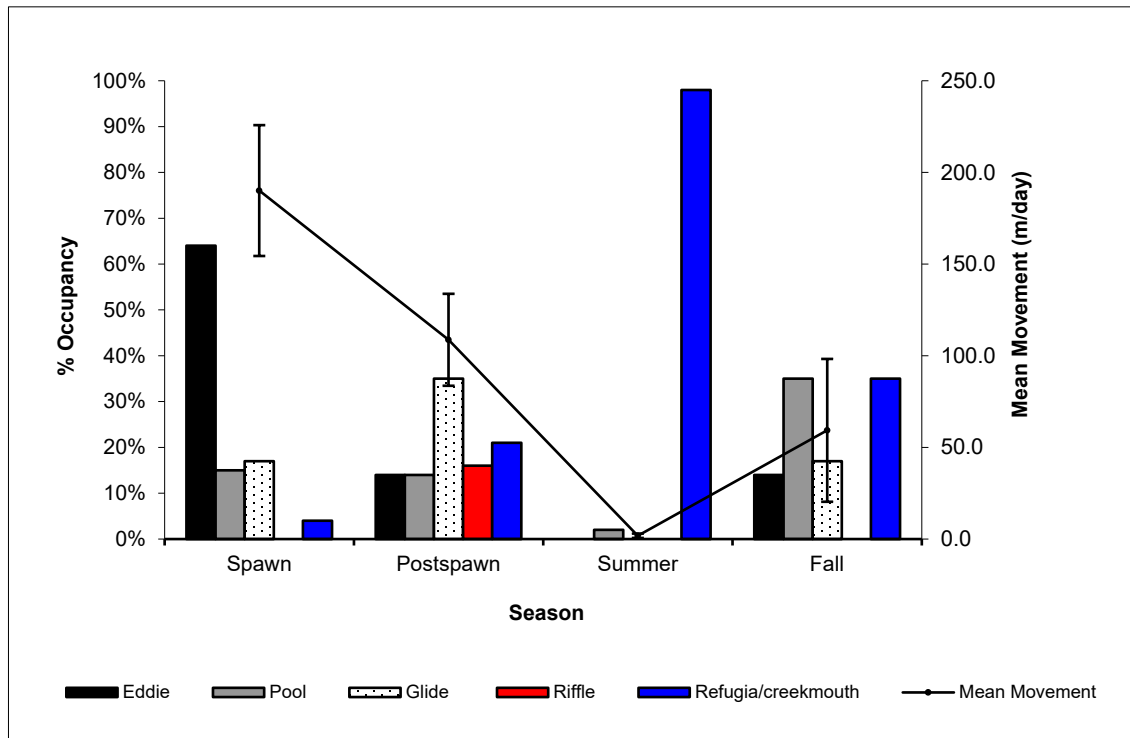


Figure 4. Seasonal movements and habitat preferences for Potomac River muskies.

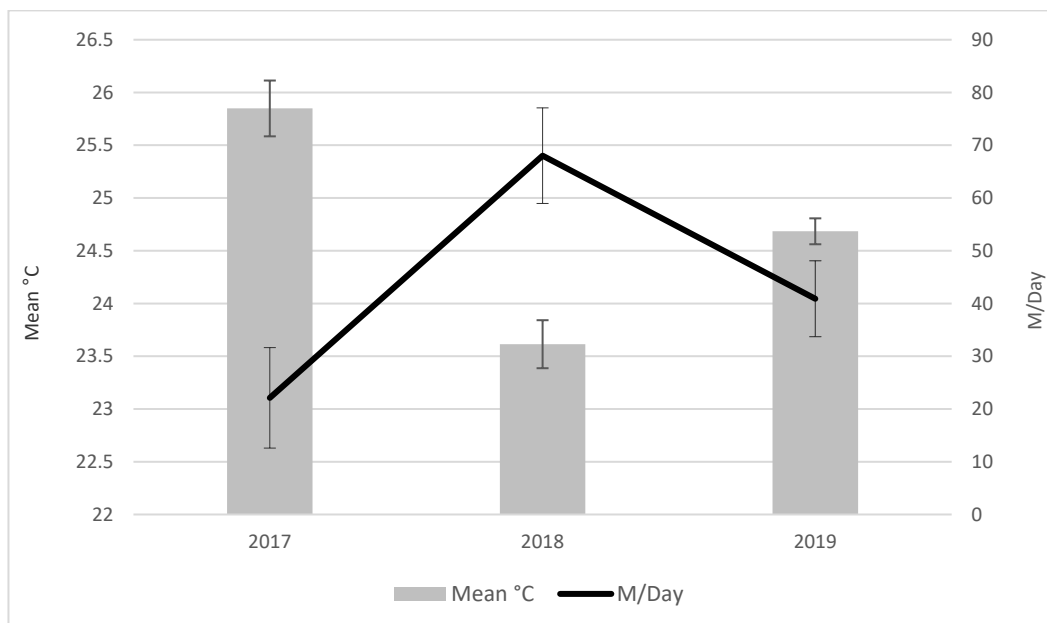


Figure 5. Summer time movement of Potomac River muskies and mean water temperatures (2017-2019)

New for 2020 is the opportunity to win a \$100 Visa Check Card (Figure 6)!

To be eligible anglers must participate in one of the following:

- 1) Postcard Survey – Throughout 2020, pre-paid postcard surveys will be handed out to Potomac River anglers.

Fisherman who fully completes and submits this survey will be entered into a randomized drawing.

One entry per person.

- 2) Muskie Tag Return – Anglers who catch and return a tag (with required information) from a tagged Potomac River muskie by December 31, 2020 will be entered into a randomized drawing.

To validate the catch, we are requiring anglers to physically remove the yellow tag so that the four digit numbers are legible and provide the anglers name and contact information (phone number or email), the general location of capture, and the length of the fish.

The fish does not have to be harvested to remove the tag.

- 3) Information should be mailed to:
10932 Putman Road
Thurmont, MD 21788

A total of 10, \$100 Visa Check Cards will be awarded. For additional information please visit the [Maryland Muskie Program website](https://dnr.maryland.gov/fisheries/Pages/recreational/Muskie.aspx): <https://dnr.maryland.gov/fisheries/Pages/recreational/Muskie.aspx>

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