WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2025 Summer Flathead Catfish Survey Report
Petenwell Flowage
Wisconsin River

Prepared by Jake Thompson– Fisheries Biologist

Introduction And Objectives

Petenwell Lake is the second largest lake in Wisconsin (23,173 acres) and is home to multiple different gamefish species including flathead catfish. Flathead catfish are known to be in the Wisconsin River from below Nekoosa Dam to the confluence with the Mississippi River. Annual surveys targeting flathead catfish began in 2014 using low pulse electrofishing. Occasionally hoop-nets have been used, yet require more effort and in our experience they were less effective than electrofishing. Sampling occurs in late June/early July, in an attempt to contact these fish as they migrate from the lake into the river portion of Petenwell to spawn. River flows, water temperature and photoperiod all play a key role in flathead spawning and our ability to effectively sample them. The timing of our survey and favorable river conditions are key to ensuring our efforts align with their migration; a day or two could mean hitting it just right or missing it.

The objective of these annual low pulse electrofishing surveys is to assess the flathead catfish population's abundance, their growth potential and size structure to determine if changes in management are warranted.

DNR Contacts

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Current Regulations

No minimum length limit, daily bag limit of 10 catfish in aggregate

SURVEY INFORMATION					
Survey Date	**River flows (cfs)**	**Temperature (°F)**	**Gear**	**Sample Distance (miles)**	**Dippers**
6/23/2025	5,400	77.5 F	Maxiboom shocker	4	2 plus chase boat
6/24/2025	6,500	76.0 F	Maxiboom shocker	4	2 plus chase boat

Flathead Catfish Life History

Flathead catfish are a long-lived, large-bodied predatory species native to the Mississippi River drainage. Spawning occurs in late spring to early summer, usually from late May through July when water temperatures reach 70–80°F. Flathead catfish use cavities such as undercut banks, hollow logs or man-made structures to lay their eggs. Males guard the nest and tend to the eggs until they hatch. This nesting behavior ensures high survival rates of young in stable conditions.

Flathead catfish are primarily piscivorous (fish-eating), especially as adults. Common prey includes sunfish, bullheads, suckers and channel catfish. Their diet and behavior shift seasonally; during warmer months, they actively hunt in shallower waters and near structures, while in the winter, they reduce activity and seek deeper, slower-moving water where they can remain relatively dormant. Seasonal movements often include upstream travel in spring to access spawning areas, followed by dispersal into deeper pools or log jams in late summer and fall. These patterns help them avoid temperature extremes and find suitable food and cover throughout the year.

Metric Descriptions and Survey Methods

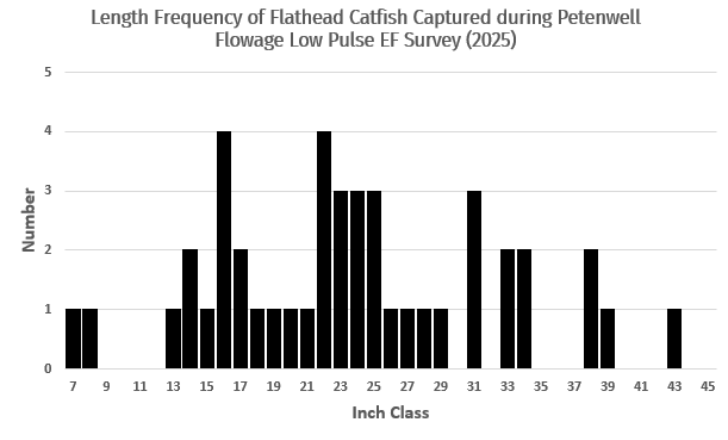
- Annual trend sites, each one mile long, are electrofished using pulsed current. All Flathead catfish collected are measured, weighed and checked for a Passive Integrated Transponder (PIT) tag. A fish is tagged with a PIT if one is not found. Fish are assigned a sex if possible.
- **Catch per unit of effort (CPUE)** is quantifying the relative abundance of a fish population. For these flathead catfish surveys, we typically quantify CPUE as the number of fish captured per mile of electrofished. These relative abundance estimates can then be used to compare across different years and waterbodies.
- **Population Estimate** is the estimated number of fish in a population using mark-recapture data and appropriate mark-recapture model.
- **Key terms:**
  Passive Intergraded Transponder (PIT) tag– 12mm microchip with unique ID code that is implanted in long lived fish species to help identify future recaptures of each fish; assisting with estimate growth parameters, population estimates and general movements.
  Mark—new mark– captured flathead with no PIT tag, one is given.
  Recapture—old mark– captured flathead with a PIT tag that was given during a previous survey.
  L infinity (Linf)- the average maximum length that flathead catfish in the population can obtain

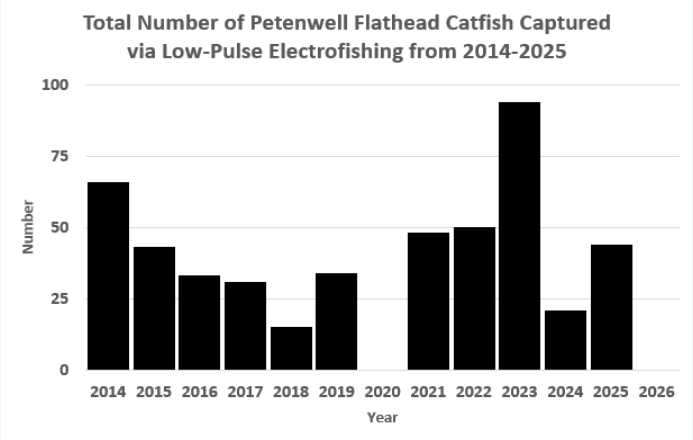
FLATHEAD CATFISH CATCH, SIZE AND ABUNDANCE (CPUE) METRICS							
Survey Date	# New Marks	Average Length (inches)	Max Length (inches)	CPUE (#/mile)	# Old Marks	# >30 inches	# >40 inches
6/23/2025	16	22.2	38.0	5.5	6	4	0
6/24/2025	20	26.1	43.8	5.5	2	7	1
TOTAL (2025)	36	24.1		5.5	8 (18%)	11 (25%)	1 (2%)
GRAND TOTAL (ALL YEARS)	416	27.3	44.7	4.7	63 (15%)	139 (29%)	28 (6%)

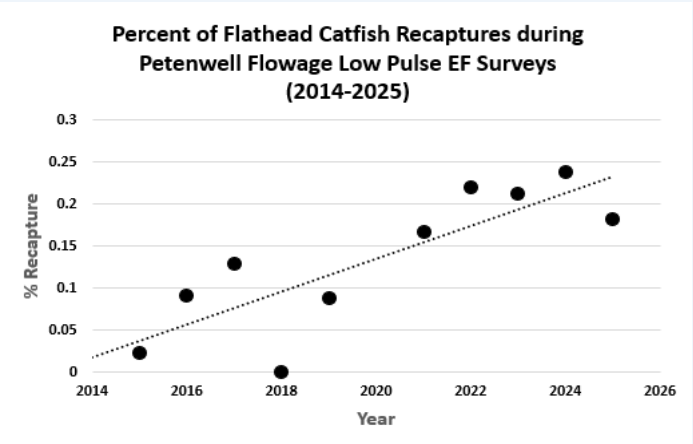
2025 Catch Summary

A total of 44 flatheads (13 females, 27 males, 4 unknown) were captured over two days, shocking a total of eight miles (5.5 fish per mile). Eight of the fish were recaptures from previous surveys; two from 2024, three from 2023, two from 2022 and one from 2017. Fish ranged in length from 7.2 to 43.8 inches with an average length of 24.1 inches. Average weight was 11.2 pounds with a maximum weight of 55.0 pounds.

Compared to past survey efforts, the Petenwell flathead catfish population continues to show consistent natural reproduction, good size structure, opportunities for trophy size fish and the percent of recaptured fish continues to rise indicating good survival.





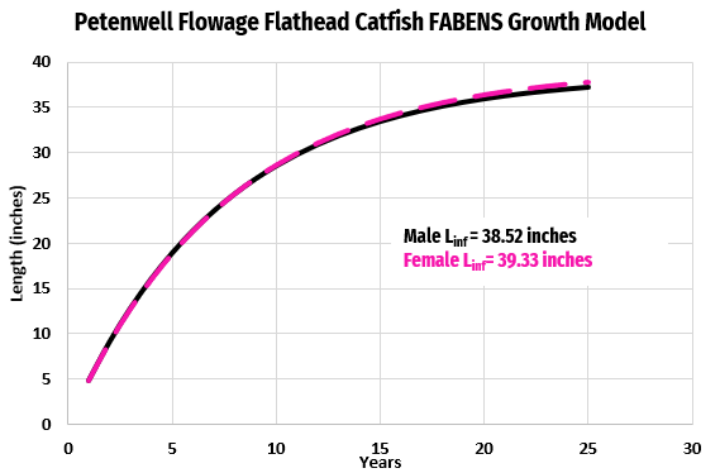


Petenwell Flathead Growth Potential and Abundance

PIT tagged fish that are recaptured at a later time provide important data that allows for more in-depth analysis of growth, survival and overall population size (abundance). This data is important for fisheries managers because it helps assess the health of a fish population, set sustainable harvest levels and make informed decisions about management strategies. The two models described below, Fabens growth model and POPAN model, are used on Wisconsin River flowages to assess growth and abundance estimates for flathead catfish and other long-lived fish species— lake sturgeon and muskellunge.

Growth Potential

In fisheries, the most common way to look at the growth of fish population is to use structures (scales, spines and otolith) to assign ages. For species that have structures that are hard to assign ages accurately, or if no age data is available, recapture data can be used by looking at the difference in length at time of capture and the length at recapture. Since flathead pectoral spines have been found under estimate the age of older/larger fish, we are able to use recapture data with a Fabens growth model to calculate growth parameters for Petenwell flatheads for both males and females. The Fabens model requires three data points for each individual: length at tagging, length at recapture and time at large. As with all scientific models, as more data is collected, the more accurate the estimates become. The Fabens growth model produces an average maximum length (L_{inf}) of 38.52 inches for males and 39.33 inches for females.



Abundance

In fisheries, abundance can be described as relative or absolute. Relative abundance is the measure of the population size relative to a specific standard (ie. Catch per mile or net-night (CPUE)). Absolute or estimated abundance is an estimate of the total number of individuals in a population. PIT tagged flatheads provide individual mark and recapture data that can be used in a variation of the Jolly-Seber model called the POPAN model. The POPAN model estimates four parameters, including population size for the flowage (super population) and for the sample area, using the capture histories from all tagged fish from year to year. The POPAN model becomes more accurate and precise over time as more captures and recaptures of individuals allows the model to more accurately distinguish population trends (survival, recruitment, probability of capture). Estimates of the super population in 2025 increased to 1,637 adults (0.07 per acre) with a population within the survey area of 62.4 per mile during the time of the survey. The estimates for the super population are expected to continue to increase over time as more surveys are conducted.