Smallmouth Bass Restoration in Dunkard Creek

Fishery Background:
Prior to the September 2009 fish kill, smallmouth bass were plentiful and popular among Dunkard Creek anglers.

Goal:
To restore this once popular fishery and recreational opportunities for smallmouth bass for anglers.

Strategies:
- Population assessments to determine if forage base is adequate to support smallmouth bass fishery
- Brood stock health assessment
- Stock a maximum of 5,000 fingerlings for 3 consecutive years (timing depends on forage base)
- Evaluate smallmouth bass populations for 2 years following last year of stocking
- Propose a Catch-and-Release regulation be implemented in 2013 and continue for 5 years.

Timeline:
- 2011: forage fish assessment
- 2011: brood stock health assessment
- 2011 – 2013: brood stock collection
- 2012 – 2014: fingerling stockings
- 2015 – 2016: stocking evalutions

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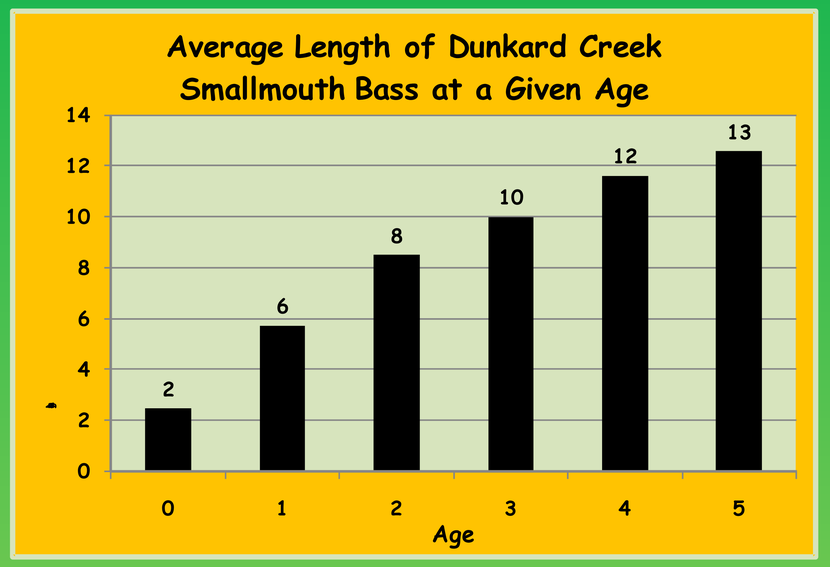
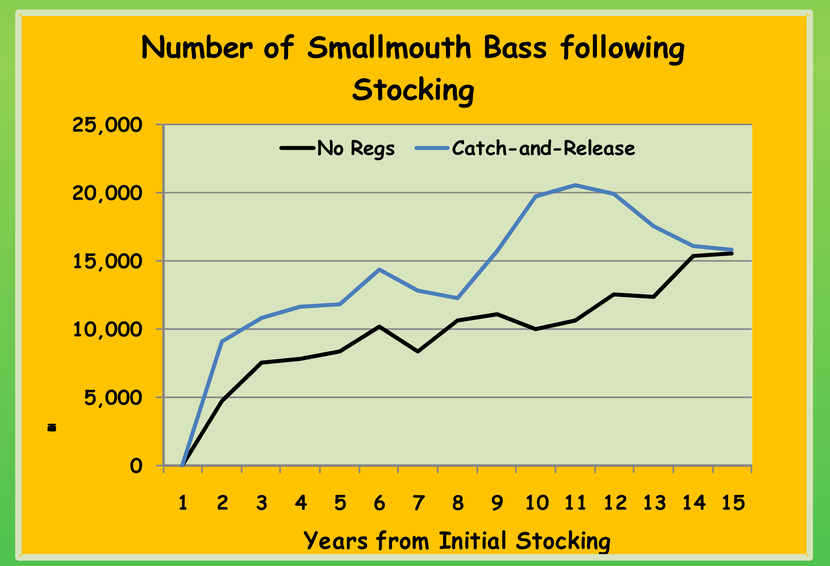
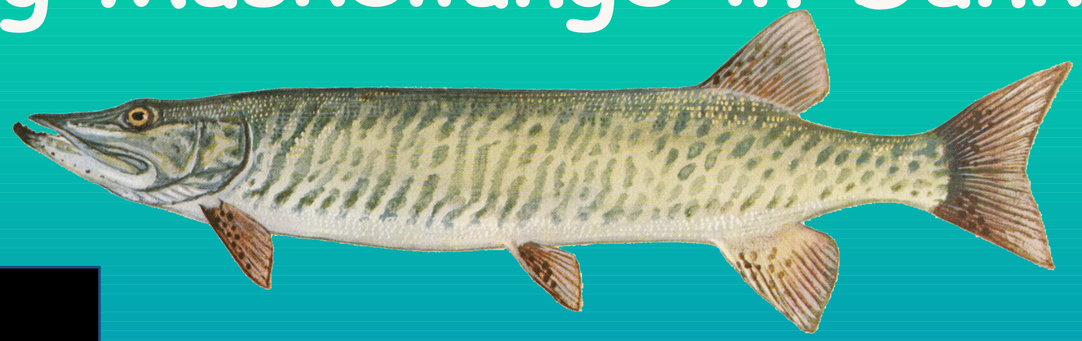


How long does it take a smallmouth bass in Dunkard Creek to reach 12-inches? According to WVDNR age and growth data, on average, it will take 4 years.



This model estimates the number of smallmouth bass within Dunkard Creek following an *initial stocking* of 5,000 fingerlings. The model is based on number of fish stocked, fish mortality, and regulations. A catch-and-release regulation will protect the initial stockings and establish a reproducing population more quickly.

Restoring Muskellunge in Dunkard Creek



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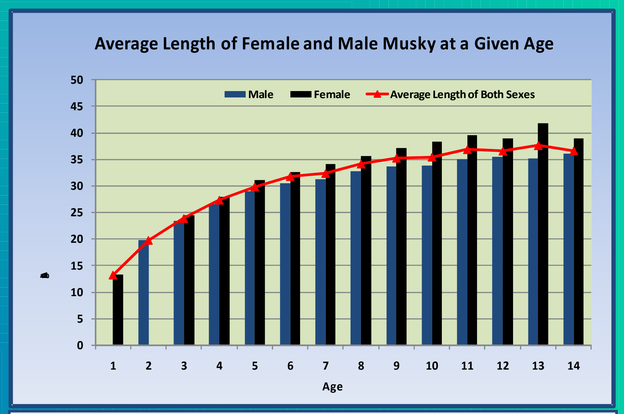
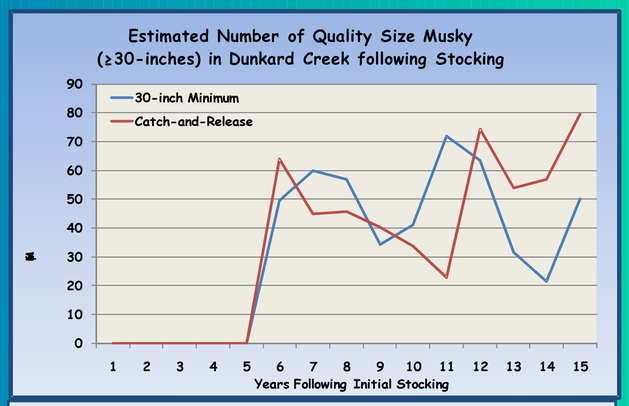
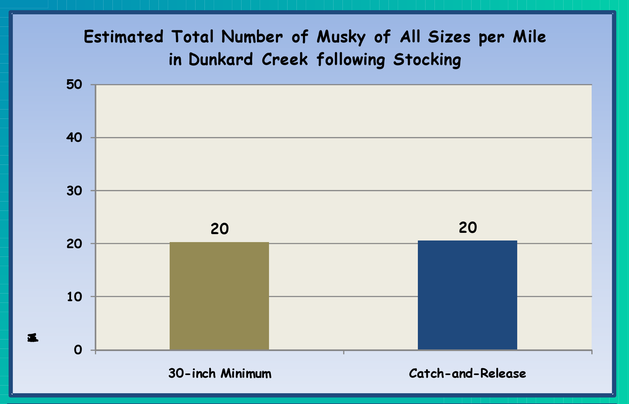


On average, it takes about 5 to 6 years for a musky to exceed the state-wide 30-inch minimum length in streams such as Dunkard Creek.



This model represents the estimated number of quality size (≥ 30-inches) musky within Dunkard Creek over the next 15 years following the initial stocking of 400 advanced fingerling musky (~10-inches). Note that it will take an estimated 6 years following stocking for anglers to start catching quality size musky. The model is based on number of fish stocked, mortality, and regulations.



Following initial stocking, this model represents the average number of all sizes of musky per mile in any given year in Dunkard Creek under both regulations of 30-inch minimum length and catch-and-release. This model produced no differences between the current 30 inch minimum length limit and a catch and release regulation.

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A History of Dunkard Creek's Fish Community

Historic Fish Data

- 18 WVDNR fish surveys from 1959 - 2009
- 44 fish species
- 13 species of game fish

Fish species include the following:

Darters:
banded darter
blackside darter
fantail darter
greenside darter
johnny darter

Minnows:
bluntnose minnow
central stoneroller
common carp
creek chub
emerald shiner
ghost shiner
golden shiner
mimic shiner
rosyface shiner
sand shiner
spotfin shiner
striped shiner

Game Fish:
bluegill
flathead catfish
freshwater drum
green sunfish
largemouth bass
longear sunfish
muskellunge
pumpkinseed
rock bass
sauger
smallmouth bass
spotted bass
sunfish hybrid
yellow bullhead

Suckers:
black redhorse
golden redhorse
northern hogsucker
quillback
silver redhorse
white sucker

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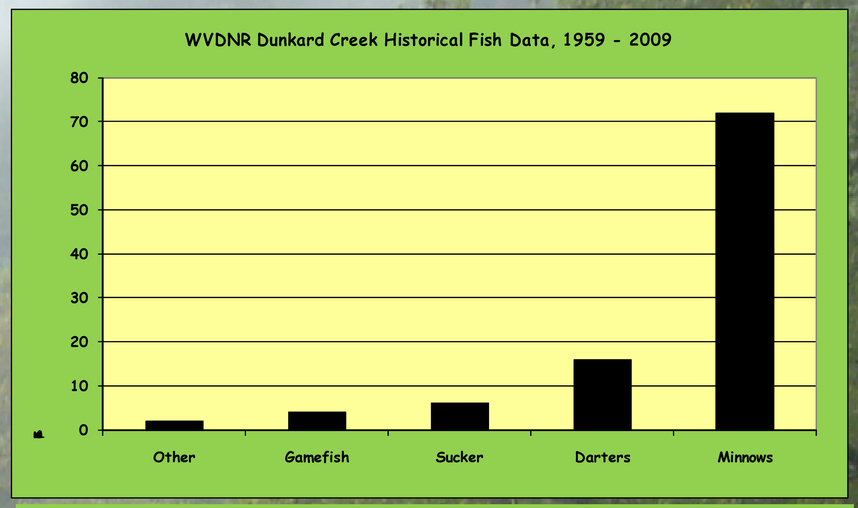
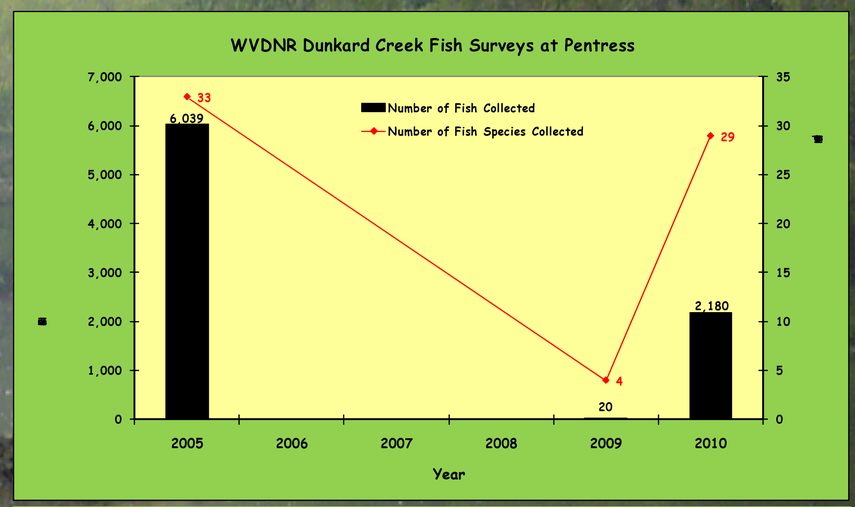
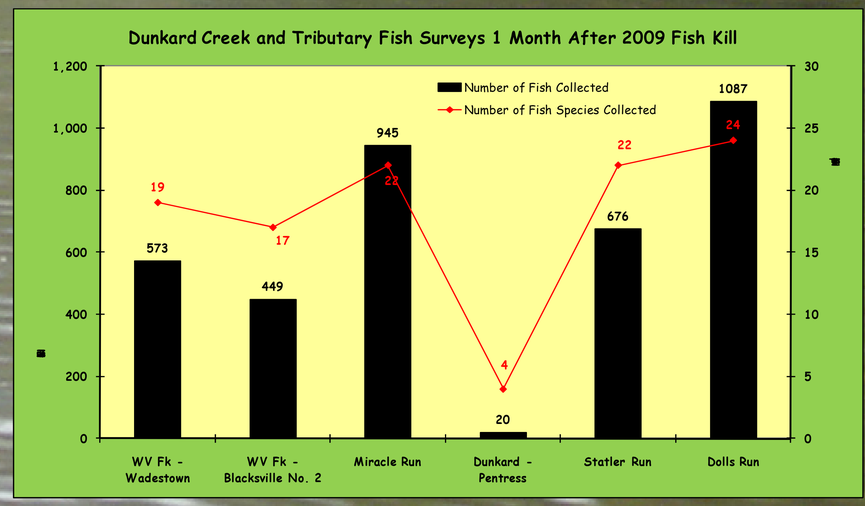


WVDNR has conducted 18 fish surveys on Dunkard Creek from 1959 through 2009. Minnows by far were the most common fish group collected with over 70% abundance. Gamefish were far less comprising only about 5% of the total abundance. Having an abundant forage base comprised of minnows, darters, and suckers is essential to a healthy game fish population



WVDNR has conducted several fish surveys at Pentress. The last 3 surveys are of special importance. In 2005, prior to the fish kill, 33 fish species and over 6,000 fish were collected. One month after the fish kill, this stream reach was practically devoid of fish. In July, 2010, remarkably 29 fish species were collected, but only at about 1/3 the abundance as before the kill.



So where did all the fish come from in the 2010 WVDNR Dunkard Creek fish surveys? Smaller tributaries played a very important role in the 2009 fish kill by providing refuge for fish, especially small minnows, to avoid the golden algae toxins. Tributaries such as Dolls Run provided a natural re-stocking of forage fish to Dunkard Creek, which will eventually support viable smallmouth and musky fisheries once again.

Life History of the Muskellunge

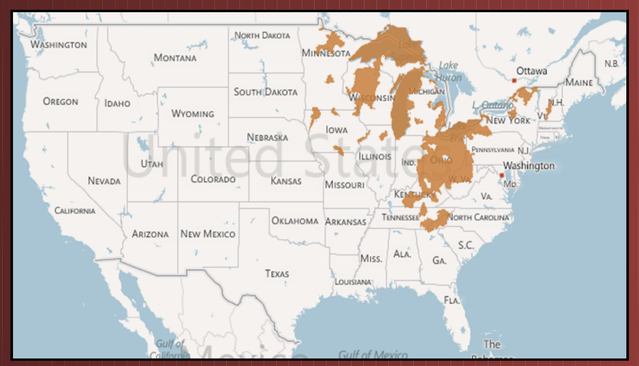
The musky is one of the largest predatory fish species found in West Virginia's waters. In fact, it takes only 5 to 6 years for muskies to reach the minimum length requirement of 30 inches. Muskies have been documented to live for 25 years.

Esox masquinongy

Native Range:

The muskellunge, also known as the musky, is found only in North America, and is native to the Great Lakes and upper Mississippi River drainages. Within West Virginia, muskies are native to the Greater Ohio River Drainage. As of 2010, 110 West Virginia state waters, including 30 lakes, 70 rivers/streams and 10 reservoirs, contained muskie populations. Strictly native populations have been found in 41 West Virginia streams.

Muskies spawn in temperatures between 49 and 59 degrees Fahrenheit. Prime spawning conditions are prevalent in April as water temperatures begin to rise. On average, a "ripe" female musky will produce up to 300,000 eggs per season. It will take 17 to 30 days from fertilization of an egg to the presence of fry. Limited natural reproduction does occur in Dunkard Creek.

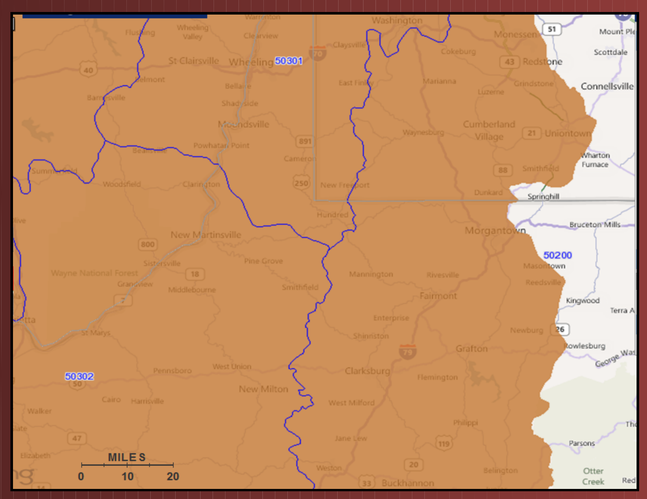


According to the US Geological Survey, the native distribution of the musky ranges from Iowa to the west, New Hampshire to the east, Lake Superior to the north, and Georgia to the south.

Habitat:

In West Virginia, muskies are typically present within low gradient areas. Most of these areas are characterized by clear pools with sandy bottoms and sufficient vegetative cover. According to a Virginia study conducted in New River, summer water temperatures of 68 to 86 degrees Fahrenheit are optimal for a successful musky fishery.

The overall success of the musky fishery, especially during spawning season, can be impacted significantly by high flows.



Muskies are native to the state of West Virginia. According to Fishes of West Virginia (1908), muskies were collected in Deckers Creek, a Monongahela River tributary in close proximity to Dunkard Creek, in 1898. The US Geological Survey also recognizes the musky as a native fish to West Virginia's waters west of the Allegheny mountains.

Predatory Habits:

Muskies, like largemouth bass, occupy predatory niches, such as brush piles and vegetative beds. According to a Virginia study, small and medium-sized muskies preyed on shiners and sunfish. Larger muskies fed primarily on suckers, yellow perch and gizzard shad. Smallmouth bass made up a minimal proportion of the musky diet. In fact, smallmouth bass were only found in approximately 5% of 200 sampled musky stomachs.

The musky, because of its overall growth rate, size potential, aggressiveness, and difficulty to catch, makes it a very popular sport fish in West Virginia's waters.

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Note: All pictured muskies were caught in Dunkard Creek prior to the fish kill.

Dunkard Creek Fish Kill Values

Fish Name	Number Dead	Monetary Value*
Minnows	7,998	879
Suckers	6,398	27,621
Smallmouth bass	1,932	10,840
Darters	1,766	1,975
Sunfish	1,535	3,130
Carp	698	865
Drum	536	2,744
Musky	218	28,915
Channel/Flathead catfish	96	727
Largemouth	84	522
Sauger	52	1,163
Walleye	30	620
Bullhead	18	101
Total Fish Estimates	**21,361**	**$80,102**
WVDNR Investigative Cost	**--**	**$30,990**
Total Cost		**$111,092**

* 2002 American Fisheries Society Fish Kill Guidelines

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