

Planning for Growth and What It Means to Fish

How does development impact fish?



Planning for growth is very important for Maryland's fish and fisheries because development affects water quality and quantity. Problems from development flow from streams to the waters of Maryland's Chesapeake and coastal bays. Natural land allows rain and melted snow into the ground because it is porous and this water slowly discharges through the ground into streams. Swamps and marshes store surface runoff water temporarily and allow it to slowly flow back into streams. When open land

becomes developed, paved surfaces, buildings, and compacted soils that surface water cannot penetrate increase. These hard or impervious surfaces increase runoff and decrease water that soaks into the ground. The amount of a watershed in impervious surface influences quantity and quality of water for fish during construction and afterwards.

More impervious surface means fewer fish...

Impervious surface increases runoff, high and low extremes of flow, erosion, and sediment that ruin places where fish live and spawn. As trees are lost, runoff becomes too warm for trout.

Nutrients from developed lands can be as high as from agriculture and cause algae blooms that deplete oxygen fish need to breathe. More roads need more salt in winter that pollutes streams and can kill freshwater organisms, including fish. In addition to water that runs off the land, more people in a watershed need more water for drinking, washing, and treating and carrying away waste. Eventually, fish have to live in treated wastewater rather than natural water. Toxic metals such as lead and organic pollutants like oil, grease, pesticides, and pharmaceuticals are in both urban runoff and wastewater. Not all of these compounds can be removed from wastewater by sewage treatment. These compounds may affect the success of fish spawning and make fish less safe to eat. Fewer species and amounts of fish live in polluted waters that develop with high amounts of impervious surface.



Brook trout can only be found in cold, clean freshwater streams and are very sensitive to development impacts.

How much impervious surface is too much?

Rural areas of Maryland mostly consist of forests, working farms, and wetlands. Impervious surfaces make up about 5% or less of a rural watershed's area. These rural areas support our productive fish spawning habitats, and fisheries. While impervious surface levels as low as 2%



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may eliminate sensitive species such as brook trout, all but the most pollution tolerant fish increasingly diminish as suburban lands create more than 10% impervious surface in a watershed.

Cities consist of about 25% or more impervious surface and most aquatic life cannot tolerate habitat conditions at that level of development. However, concentrating growth into already developed areas saves rural lands that create the best conditions for fish. Well-planned cities lessen the need for cars and roads, and saves open lands needed to support healthy watersheds and waterways.



Yellow Perch, an important species for tidal fisheries, does not spawn successfully in urbanized Bay tributaries.

The future for fish...

Maryland's fisheries biologists realize that the future of many fish and fishing is linked to conserving forests, wetlands, and working farms. We have seen fish populations and fishing opportunities already deteriorate or disappear in some developed areas and are concerned



about how poorly planned growth could degrade opportunities for future generations to enjoy fish and fishing. These losses have been somewhat limited up until now, but there is great potential for treasured resources such as brook trout, largemouth and smallmouth bass, striped bass, herring, shad, and yellow perch to diminish in the near future. Important spawning areas and habitats for these species are located in regions of Maryland that may undergo too much growth without proper planning. These losses

will not just affect fishermen and people that eat local seafood, but will impact animals that use fish for food or share their need for good water supply and quality. Planning for growth should conserve forests, wetlands, and working farms that are necessary for healthy water for fish. We realize that growth will happen, but too much impervious surface from poorly planned growth will mean fewer fish for future generations.