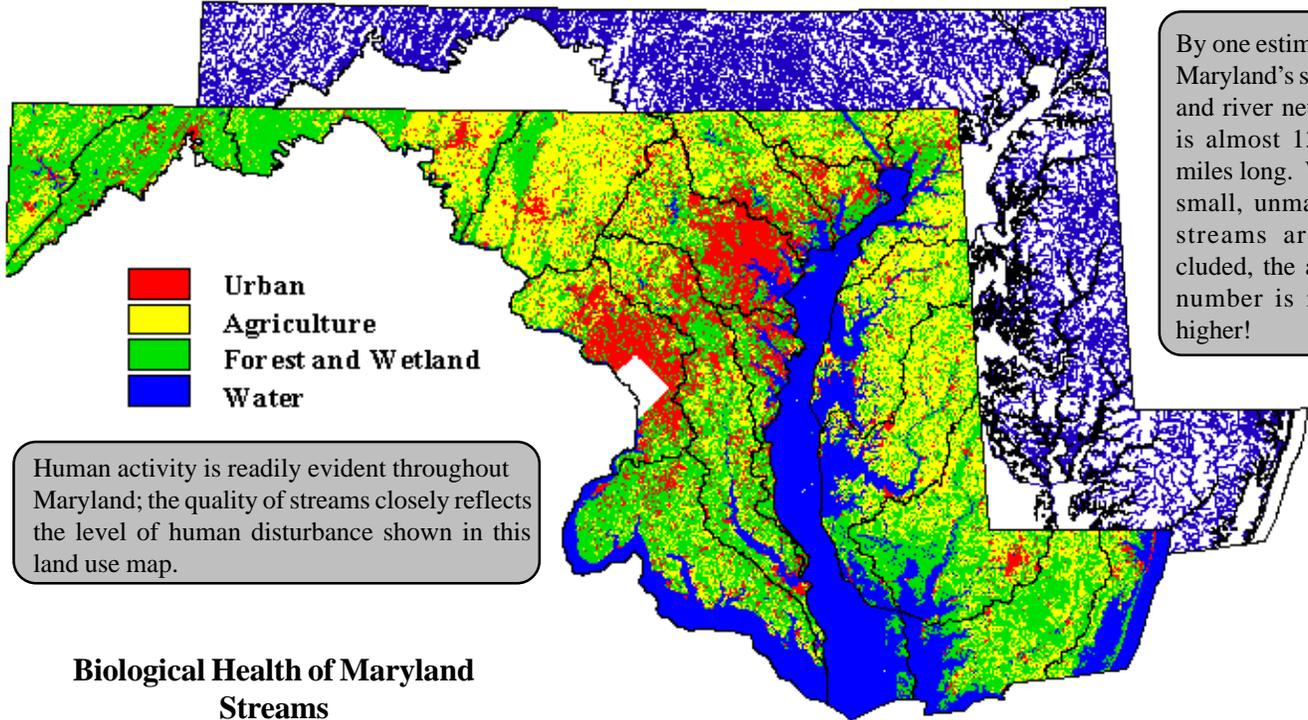




Maryland Waters: An Evaluation of Stream Health

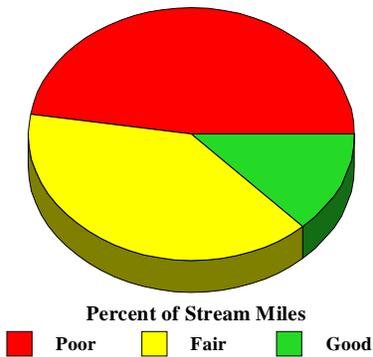
Freshwater streams are a valuable resource to us all. They are the lifeblood of the land around us. They connect our backyards, shopping malls, and farming fields to Chesapeake Bay, the Atlantic Ocean, and the Gulf of Mexico. Our streams provide us with drinking water, places to swim, fish, canoe, or simply places to escape from the bustle of daily life. It is important for us to understand how human activities affect natural processes; for it is how we live our lives that determines the health of our streams. The information in this factsheet is based on the results of the 1995-97 Maryland Biological Stream Survey.



By one estimate, Maryland's stream and river network is almost 13,000 miles long. When small, unmapped streams are included, the actual number is much higher!

Human activity is readily evident throughout Maryland; the quality of streams closely reflects the level of human disturbance shown in this land use map.

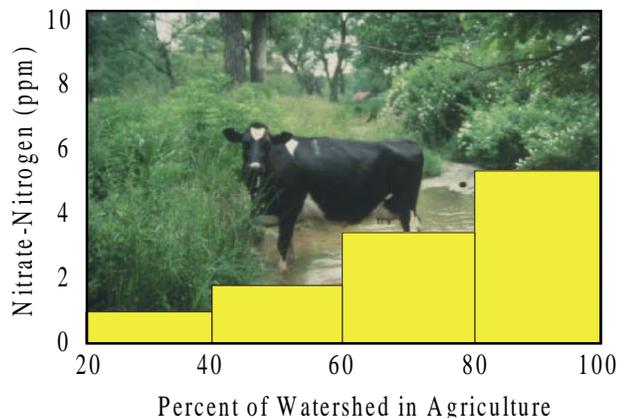
Biological Health of Maryland Streams



Although individual aspects of stream health are evaluated by Maryland DNR, it is useful to combine several indicators of stream health (in this case fish and stream invertebrate communities) to get a snapshot of overall stream condition. The Combined Biotic Index (CBI) rates almost half (46%) of all Maryland freshwater stream miles as poor, 42% fair, and only 12% good. These findings are consistent with the level of human disturbance in Maryland - even our forested watersheds are impacted by stresses like acid rain and logging.

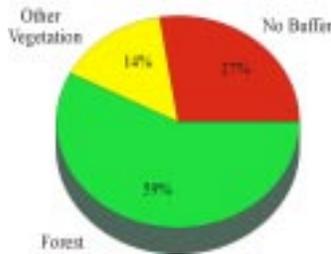
Nitrate and Agriculture: Are They Related?

The primary and most widespread source of nutrients in Maryland streams is excess fertilizer from farm fields. Failing septic systems also contribute to the problem, as well as smoke stack emissions, auto exhaust, lawn mowers and animal manure. Statewide, 57% of all freshwater stream miles have unnaturally elevated nitrate levels (greater than 1 part per million) and about 2% have nitrate levels greater than 10 (a level at which human health can be affected). In the Chesapeake Bay, algal blooms caused by these elevated nitrate levels consume the oxygen that fish and other aquatic organisms need to survive.



Forest Buffers

The riparian zone is the area along the bank of a stream, river, or other water body. Vegetated riparian zones act as a buffer against pollution and are therefore very important in reducing the impacts of human activities. Forested riparian buffers provide the best stream protection. They provide shade, stabilize stream banks, and supply food and shelter for aquatic as well as land animals.

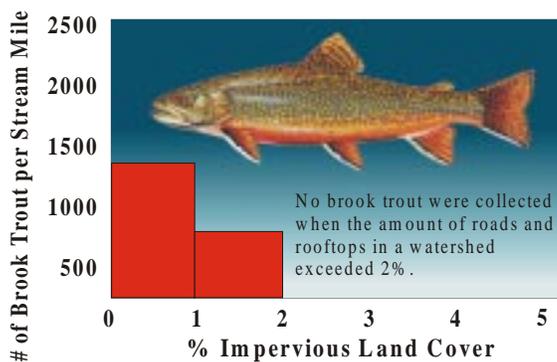


More than 1/4 of Maryland's streams do not have a buffer to protect against storm runoff.

At present, Maryland and its citizens have embarked on an ambitious program to restore 600 miles of forest stream buffer in our state by the year 2010. Groups across the state are coming together to plan and then plant trees on public as well as private land. This program is called *Stream Releaf*.

Marylanders in Trouble

Fifteen fish species were discovered to be rare during the stream survey, but only six of these are currently included on the Maryland State Heritage List. Although not currently rare, even historically abundant species such as brook trout and American eel are at risk. Prior to completion of the Conowingo Dam in 1928, the annual harvest of eels in the Susquehanna River was nearly 1 million pounds. Since then, the annual harvest has been zero - eels have all but disappeared above the dam. Conowingo Dam and more than 1,000 other migration barriers continue to limit eel abundance in Maryland.



Once more than 3 million, there are now only about 300,000 brook trout living in Maryland streams. One important factor in the decline may be water temperature. As trees were cleared for agriculture and housing, previously forested streams were exposed to direct sunlight and hot water runoff from impervious surfaces like roads and rooftops. Other threats to brook trout include silt from construction and agriculture, competition from non-native brown trout, and acid rain.

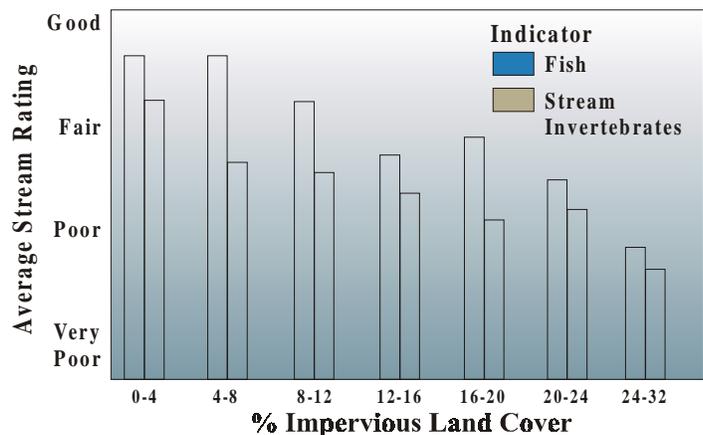
Did You Know?



- Most Marylanders live within a 15 minute walk of a stream.
- There are only about 80 acres of old growth (never been logged) forest left in Maryland.
- The most commonly encountered amphibian in Maryland streams is the northern two-lined salamander.
- There are about 12 times as many stream-dwelling fish in Maryland as there are people. However, people outnumber brook trout by more than 15 to 1.
- Over 350 types of stream invertebrates occur in Maryland streams, and about half of these species are rare.

Growing Smarter

One of the important findings of the stream survey is that stream inhabitants are quite sensitive to the amount of hard, impervious surfaces in the watershed (such as rooftops and parking lots). During storms, water rapidly enters our streams and can create very high flows. During dry periods, not enough water filters through the soil to feed our streams. This double dose of habitat loss is one of the harshest impacts to Maryland streams.



Because current patterns of urbanization of our farms and forests is a major threat to stream quality, we need to become much more savvy about how and where we encourage development in Maryland.

What Can You Do to Help?

To find out more about Maryland streams and their problems, check out our website at www.dnr.state.md.us. If you are interested in getting involved with stream conservation, preservation, and restoration projects, contact any of the following groups:

Alliance for the
Chesapeake Bay
Contact: Ryan Davis
(410)377-6270

Maryland DNR
Contact: Rita Bruckler
(410)260-8696

Chesapeake Bay Foundation
Contact: Sue Brown
(410)268-8833



For more information call Ann Smith at (410) 260-8610(email:asmith@dnr.state.md.us) for copies of Maryland Biological Stream Survey reports or to add your name to the mailing list for our news letter, *An Eye on Maryland Streams*.