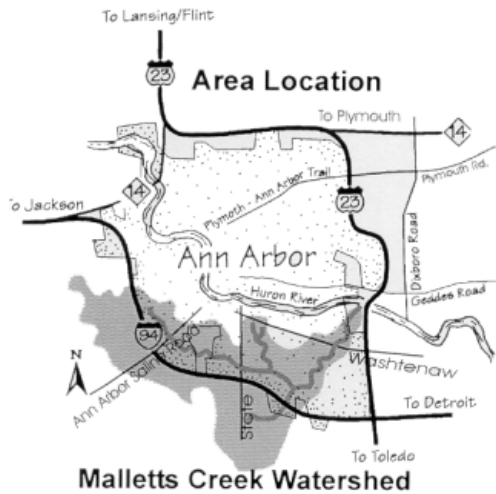
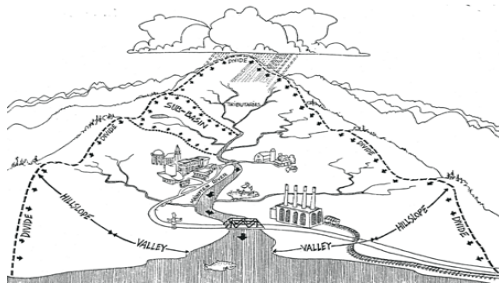


# CREEK FACTS



The County **Drain Commissioner's** main duties are to manage storm water and prevent flooding. This focus evolved from the desire of early settlers to farm swampy land. Washtenaw County's Janis Bobrin initiates projects to improve the quality of the creek, as well as maintain the flow.



A **watershed** (or basin) is the area of surrounding land that drains into a creek. For instance, rainwater carries dirt and debris downhill into Malletts Creek from pavement on I-94, Washtenaw Avenue, and Briarwood Mall.



**Stormwater ponds** hold stormwater, slowing the flow, reducing the surges, and allowing suspended materials to settle out before the stormwater enters the creek.

## Where is Malletts Creek?

In eastern Washtenaw County - primarily in the City of Ann Arbor, but also in Ann Arbor and Pittsfield Townships.

## Who has jurisdiction over land that affects the creek?

Pittsfield and Ann Arbor Townships and the City of Ann Arbor. In addition, the Washtenaw County **Drain Commissioner** is responsible for maintaining flow in the creek. (Words in bold are discussed in the side bars.)

## How large is the watershed? How steeply does it flow?

The creek's 11- square-mile (7,000 acre) drainage area is relatively small, but heavily developed compared to other tributaries of the Huron River. Its average slope of 15.3 feet per mile is typical of streams in the Huron River system.

## How are people using the land that drains into Malletts Creek?

Most of the land is cleared and covered by buildings, pavement, and mowed lawns. There are seven parks, some of which are undeveloped. The remaining portion of the basin continues to be developed.

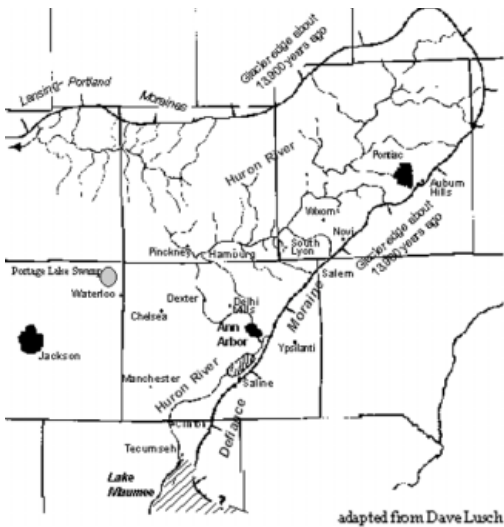
## Are there any lakes on the creek?

The creek lacks any natural lakes. However, there are many **storm water ponds** in the watershed, such as Lans-Basin, a series at Briarwood, a large pond in Brown Park, and South Pond.

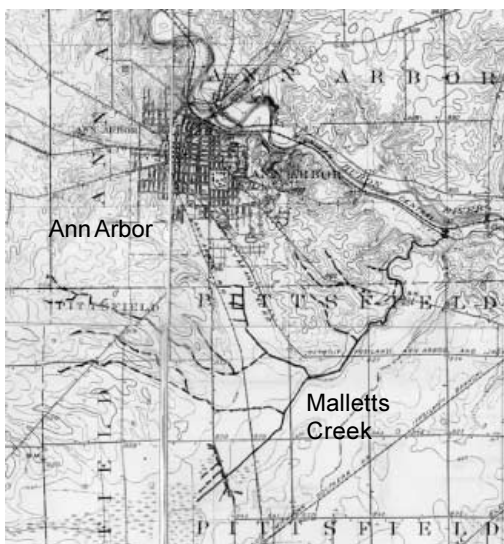
## What is unusual about Malletts Creek?

The Creek is buried in pipes in some stretches, but still retains several areas of beautiful, natural surroundings. These opportunities to enjoy nature in the center of the city, combined with the large number of homes and schools within the creekshed, provide a great potential for community involvement in creek issues. Since 1995, citizens in the Malletts Creek Association have been working to prevent further deterioration of the creek. In 1999, Ann Arbor, Pittsfield Township, and the Drain Commissioner began a year-long study to create a creek restoration strategy.

# HISTORY



When the **glaciers** moved across Michigan, they shaped the land in large part by depositing rocks and other earth materials. When the glacier halted along the Defiance Moraine (approximately 13,900 years ago), the Huron River flowed south through Ann Arbor and continued south past Saline and Tecumseh into Lake Maumee, which no longer exists



In 1901, Malletts Creek was still outside of Ann Arbor, and much of it had already been straightened.

Malletts Creek flows north through a channel that was cut by the **glacier** 14,000 years ago. The entire Huron River originally flowed south through this channel, before changing to its current course. If you want to see a cross section of that ancient channel, look from Arborland Mall west, along Washtenaw Road to the County Farm Park on the far hill.

In 1839, the Gazetteer of Michigan described "Mullet's creek, an insignificant stream, running . . . three miles below the village of Ann Arbor." It also mentioned a post office on the creek in Pitt Township, receiving mail twice a week. The name "Malletts Creek" appears on a map that predates the founding of Ann Arbor in 1824, but we do not know the source of the name. Until recently, Malletts Creek was "out in the country", flowing through various farms and fields as well as the former City of East Ann Arbor.

In the 1920s, Drain Commissioners began the process of straightening and channelizing the creek for owners who wanted their land drained to allow farming and other developments. While this reconstruction to move water rapidly off the land was considered progress, it has contributed to the surging flows that cause many of the creek's problems today.

In the last 40 years, the watershed has been subject to extensive development, including two large shopping malls. Arborland was built in the 1960s, Briarwood in the mid-70s, and many new subdivisions and apartment complexes during the 1980s. Commercial and industrial development took place during that entire time. In the decade between 1980 and 1990, an additional 25% of the watershed was built up, mostly with homes, but also with parking lots, businesses, stores, churches, and industrial buildings.

Storm water ponds have been constructed on new subdivisions since the mid 1970s. Flow force and water quality would be improved if all major developments had storm water ponds of the quality required today, although it would be very expensive to add and upgrade them now.

# CURRENT CONDITIONS

Malletts is one of the most **impervious** watersheds in the Huron River system. Much of the land is covered by streets, parking lots, businesses, and homes, making over 34% of the land surface impervious, or not able to absorb water. Studies show that a creek is badly degraded once the land in its watershed is covered by more than 25% impervious surface. Indeed, Malletts suffers from surging flows and suffocating sediment, as well as frequent basement flooding and sewer backups along parts of the creek west of Main Street.

The condition of the creek impacts South Pond, in which Malletts slows down just before flowing into the Huron. Large amounts of algae and other plants grow in the pond every year in late summer, probably because of **nutrients** entering from the creek and surrounding homes. The algae and plants foul the water as they decay.

South Pond is diminishing in depth and area as the **sediment** carried by the creek is deposited in its quiet waters. While South Pond's sedimentation is seen as a great problem by the immediate neighborhood, the pond is performing a vital service to the Huron system by partially cleansing the creek water before it reaches the river.

Some parts of the creek have been placed in pipes underground, but most of it remains free flowing, and there are parts that are quite wild. Many people enjoy the creek and the wildlife associated with it. In one commercial location, over 60 species of birds have visited the creek since 1992, including three kinds of herons, many warblers, and even a pine siskin. Scheffler Park is a popular spot for crayfish hunting.



*Impervious surfaces prevent water from soaking into the ground. When it rains in a forest, most of the water filters into the ground. But in a city, much of the rain runs into a drain that carries it directly to the creek, causing destructive surges of powerful flow.*

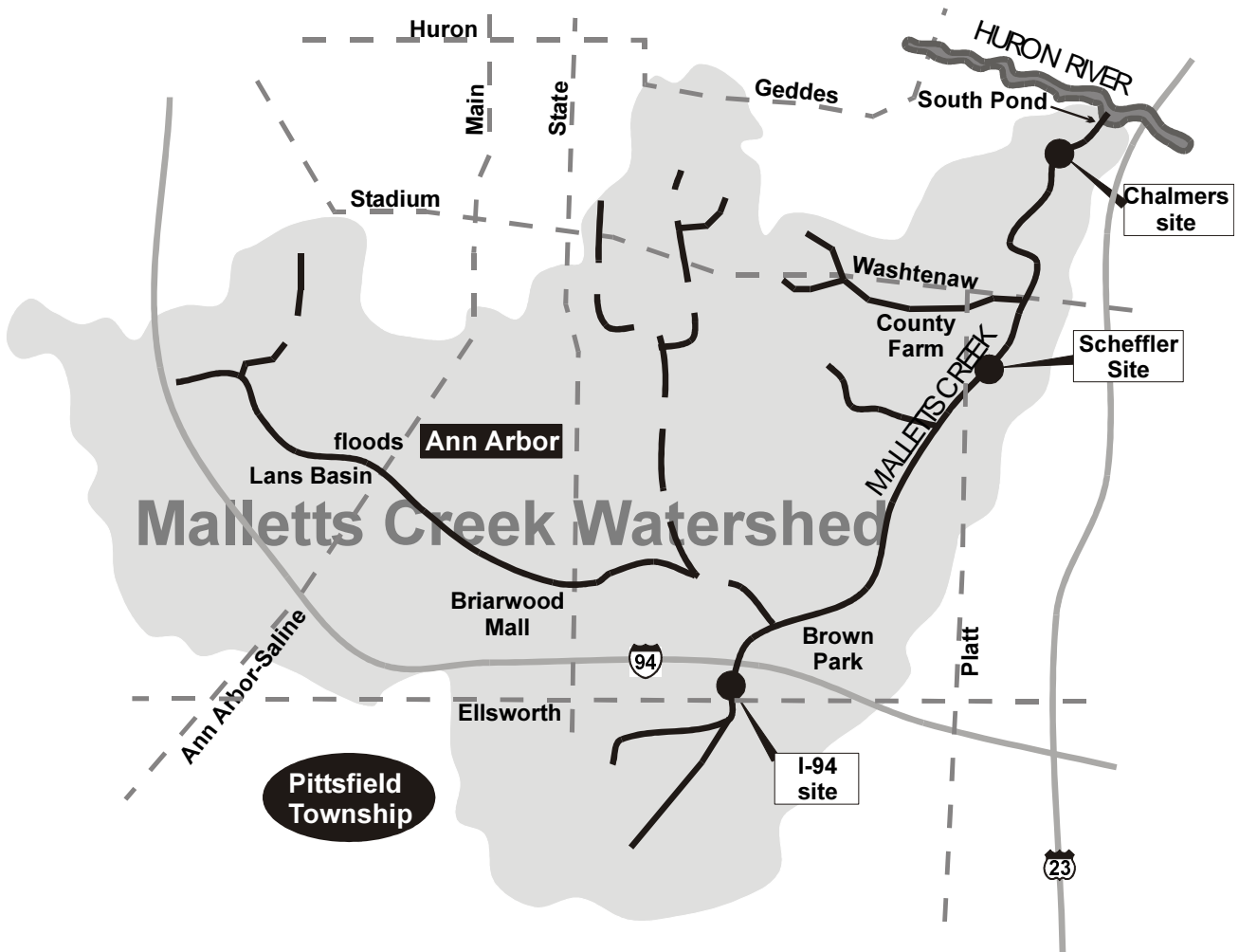


*In water quality, too much **nutrient**, such as nitrogen and phosphorus, can enter water from land and road runoff, or loose soil. In still waters, nutrients encourage growth of algae and other plants, which decay, using up the oxygen in the water and threatening the lives of other aquatic organisms. The decay process releases smells that annoy humans living near the creek. Many communities are working to reduce the amount of nutrients entering the Huron River.*



***Sediment** is soil or other matter that is carried and deposited by flowing water.*

# MALLETT'S CREEK WATERSHED MAP



## RECENT STUDIES

People in the **Adopt-A-Stream** Program have been studying three sites on Malletts Creek since 1992. The purpose and the methods of the study are described on Page 8. The smallest site is just downstream of I-94 and includes stormwater drained from southwest parts of Ann Arbor.

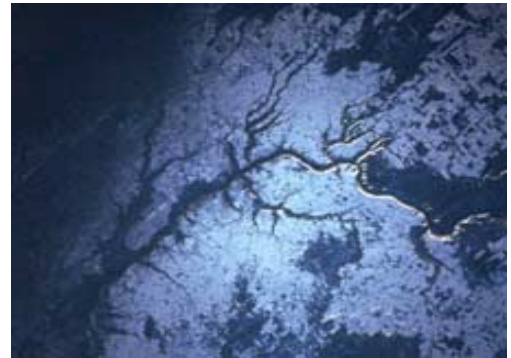
The next site downstream is in Scheffler Park, which includes flow from a large **tributary** carrying runoff across much of south Ann Arbor and also from storm sewers in south central Ann Arbor. The western tributary has a steeper flow and a more stable stream bed than the more southern branch.

Farther downstream lies the third site at Chalmers Road, which occurs nearly at the **mouth** of the creek where it empties into South Pond. At this site, the creek is affected by water and materials from all parts of the creekshed.

Each site reflects what is happening in the creek and in the watershed above the site.



*The HRWC **Adopt-A-Stream** Program trains people to study sites within the Huron River watershed. Council biologists analyze the data, which has been recognized as the best data set on any river in Michigan.*



*A **tributary** is a branch of a stream or river that flows into another, larger, branch.*



*A **stream's mouth** is the spot where it empties into a larger body of water, such as a river, lake, or ocean. Many stream mouths feature a species-rich floodplain along the fringes. Malletts' floodplain has disappeared under South Pond.*

# THE PHYSICAL STREAM

The flow of water in a stream is called **flashy** when the water level rises rapidly after a storm. Flow extremes can result in flooding, erosion, habitat loss, and creature mortality.



## STREAM FLOW: USUALLY GENTLE, SUDDENLY POWERFUL

Malletts Creek suffers from extreme variations in flow that can be characterized as **flashy**. After storms, the water rises so quickly that the creek has carried huge objects like automobile engine blocks, while during dry periods the creek is so shallow that children can walk in it. For instance, on June 12, 1999, the creek went from a quiet flow of 1.5 cubic feet per second to 500 cfs in 1½ hours! The flow instability has worsened in the last five years.



The severe **erosion** seen on this bank of Malletts Creek exposes bare dirt that will be cut into the creek by future storm flows.

These powerful storm flows make it difficult for fish and small creatures to live in the stream. Until recently, Malletts Creek had fairly good in-stream structure, providing places for creatures to live, hide and feed, including riffles, pools, and sandbars. In 1993, there were good spaces between the rocks in the riffles, where aquatic insects and fish could live, but when measured at Scheffler and Chalmers in 1998, most of these spaces were choked with fine sediment.

## EROSION AND THE BANKS

Surging flows create extensive bank damage and **erosion** and cause frequent flooding in some reaches. Near Chalmers Road, one of the banks is over 14 feet high and has slumped twice in the past 10 years. In some areas, the erosion problem has been dealt with by strengthening the banks with boulders or concrete, called “rip-rap”, which reduces the habitat and natural beauty of the creek.



Prairie plants have deep **roots**, stabilizing the soil and enabling them to access subsurface water in times of drought. (Illustration courtesy of Conservation Research Institute.)

The creek benefits from plants that are allowed to grow alongside it. Lush vegetation with **roots** of varying depths protects the soil from erosion and shades the stream. Plants that are particularly beneficial in binding the soil include shrubs, trees, and prairie plants. Native species are highly preferable since they are adapted to this area and require little maintenance.

# THE PHYSICAL STREAM, CONTINUED

## THE FLOODPLAIN

The creek includes much more than the area where water normally flows. In addition to the channel and the banks, there is the **floodplain**. The channel cut by a river or creek is not large enough for its entire flow. Frequently the creek will spill over the banks and flow on the land adjacent to the banks. A healthy floodplain is rich with unusual plants and animals, and it reduces the surging power of the storm flow. Unfortunately, much of the Malletts floodplain has been developed for other uses. An especially valuable floodplain lies at the mouth of a creek, as you can see in Parker Mill at the mouth of Fleming Creek where rare plants like the green dragon abound. This is a location where the creek and river mix, and species from the river can migrate into the creek. Unfortunately this unique area on Malletts Creek has been submerged by South Pond.

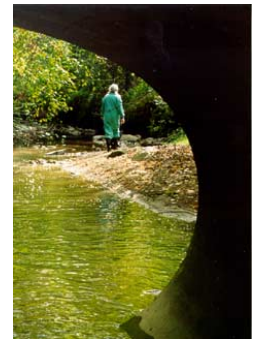
## WATER QUALITY

Altered by its trip through the city, Malletts runs **warmer** than its rural neighbor, Fleming Creek, and has unusually high **conductivity**. It is evidently polluted, since it is among the few Huron River tributaries that have no winter stoneflies. Stoneflies require good creek conditions and the “winter stoneflies” avoid the challenges of warm water and runoff pollution by being active only in the winter. Creeks that do not support them probably suffer from contamination that is toxic to aquatic insects.



*The **floodplain** is the fertile area alongside the channel that retains water and provides space for floodwater to deposit sediment and to nourish life forms that are uniquely adapted to flooding cycles. It may extend a considerable distance beyond the creek channel and should be protected from development or other uses that impair its functions. Mink live in the floodplain of nearby Fleming Creek. (Illustration courtesy of Matt Heumann.)*

*Pavement runoff brings debris, pollutants, and **warmer** temperatures in summer. Because warm water holds less oxygen than cool, fewer of the creatures that need higher oxygen levels can survive.*



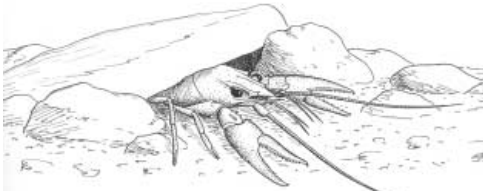
*Water **conductivity** increases with the amount of dissolved charged materials, such as salts and metals. Because conductivity is increased by many pollutants, it can indicate a possible problem with water quality.*

# EVALUATING CREEK QUALITY

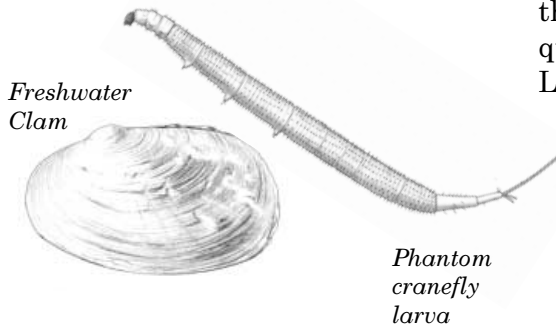
The **Huron River Watershed Council** is a nonprofit coalition of the communities and people in the basin, whose mission is to protect the entire watershed.



**Riffles** are “wanna-be rapids” — where the water flows swiftly and ripples over a shallow, rocky or sandy bed.



**Silt** is an important factor when considering a creek’s quality. Silt in the riffles can limit the number of creatures living in a creek because it fills the spaces between rocks and reduces oxygen in the sediment and interstitial space.



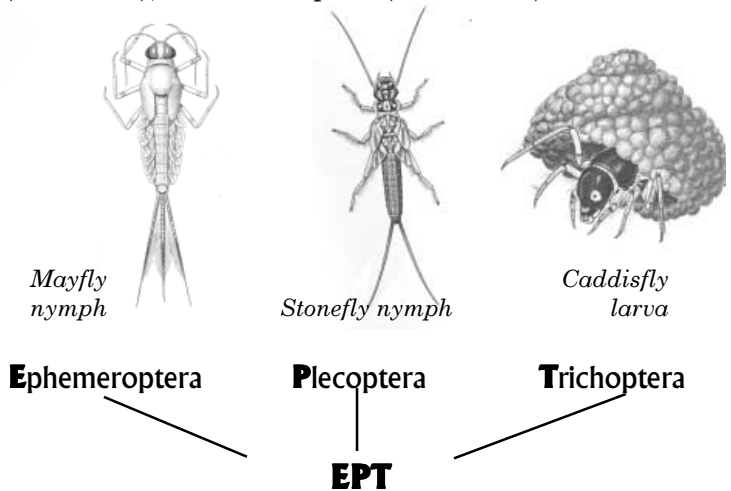
The creatures living on the bottom of a river make up the **benthic population**. We study populations of the invertebrates, creatures that have no backbone, such as clams, immature insects, worms, and crayfish.

In order to evaluate the current state of the river and its streams, the **Huron River Watershed Council** (HRWC) has been working with local residents and aquatic biologists on a major study of the Huron River system since 1992. The study characterizes the physical state of the waterways and the **benthic populations** living in them. Since the benthic population depends entirely on the quality of the stream, its composition reveals a great deal about the state of both the water quality and the physical health of the stream.

The quality is evaluated relative to other sites in the Huron system. Since larger streams have a more diverse population, each study site is adjusted for size to allow comparison. The population in each stream site is sampled in April and September. All sites in this study have been sampled more than three times, most at least five, to reliably assess the population.

Some indicators of a high quality stream are stable banks with a broad corridor of trees and shrubs, **riffles** free of **silt** deposition, fairly stable temperatures, and a benthic population that includes several groups that are sensitive to organic pollution. The population in a degraded creek will be restricted to those few types of creatures hardy enough to survive.

When the stream is healthy, a great diversity of creatures live there, including several that are sensitive to pollution. Since many mayflies, stoneflies, and caddisflies are sensitive to the quality of a site, we note the variety of them as an additional indicator of good quality. This indicator is labeled the “EPT” because the Latin names are Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies).

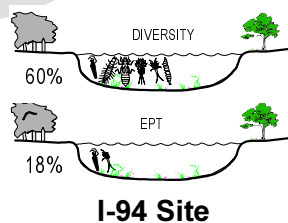
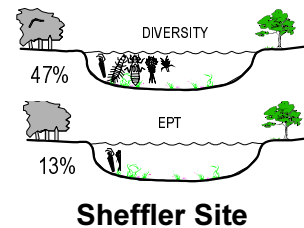
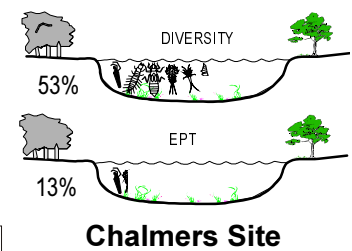
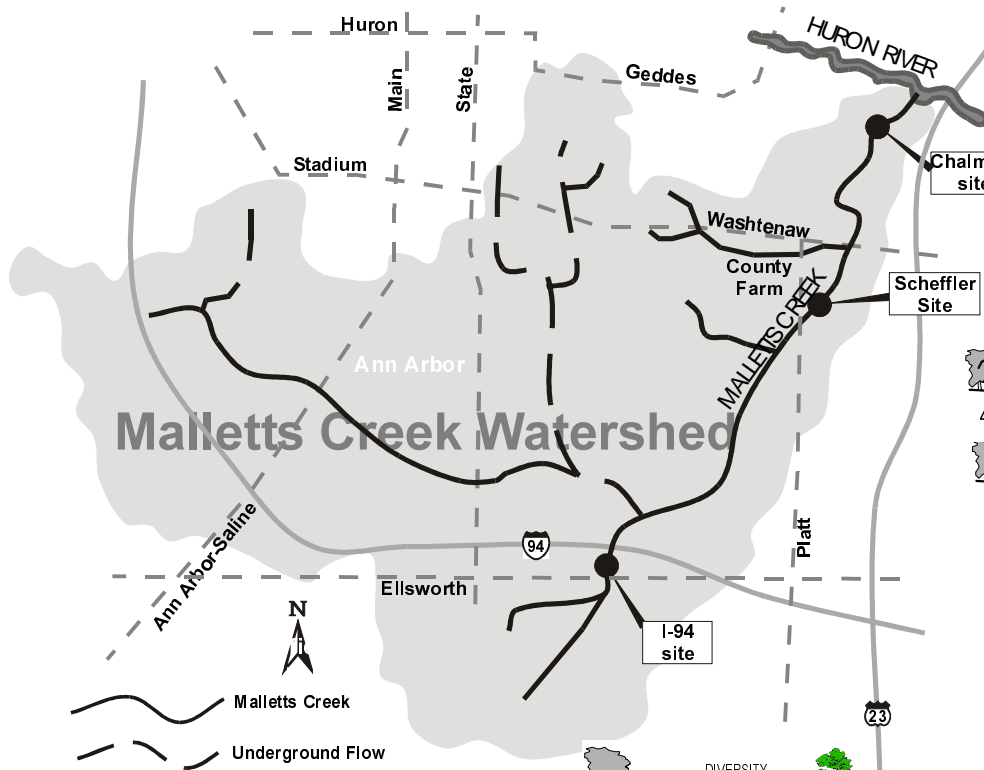




# POPULATION DIVERSITY

While wildlife, such as birds and crayfish, abound in the wilder parts of Malletts Creek, the actual creek conditions make it difficult to live *in* the creek. The creek does still support life, but only hardy creatures, and its condition is the worst of all the creeks studied in the Huron River System. The two downstream sampling sites have the lowest scores in diversity, while all three sites are much lower in EPT than any of the other 30 sites studied. (A table showing the relative condition of all the study sites in the Huron is available upon request.)

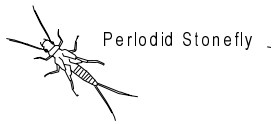
*Diversity in the population indicates good creek quality. Greater diversity at a site means that the conditions are good for a variety of kinds of creatures. The % shows how this site compares to the best site in the Huron River system. For example, a site with 50% diversity has only one-half the variety of creatures found at the most diverse site studied. Creeks that are average for the Huron have 71% maximum diversity.*



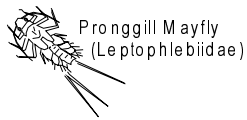
**EPT:** Many, but not all, of the EPT families require a high quality creek. “E” are mayflies (Ephemeroptera), “P” are stoneflies (Plecoptera), and “T” are caddisflies (Trichoptera). If many kinds of EPT are present, the site probably has high quality. The % shows how the EPT indicators of the site compare to the best site in the Huron River system. For example, a site with 25% EPT has only one-fourth the variety of EPT families found at the site with the most variety in EPT. Creeks that are average for the Huron have 48% of the maximum EPT. All sites in Malletts score the lowest in the Huron.

# THE CREATURES SPEAK

Sixteen of the 77 benthic families living in the Huron system are highly **sensitive** to organic pollution. The presence of these sensitive families at a site indicates that the site (and upstream of it) has high quality.



Perlodid Stonefly

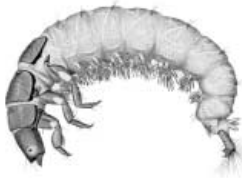


Prongbill Mayfly (Leptophlebiidae)



Watersnipe Fly (Athericidae)

Some of the sensitive families found in other parts of the Huron.



**Hydropsychidae**, the “common net-spinner caddisfly”, is a hardy family that is able to live in a great variety of

conditions, included degraded ones. Caddisflies, which are found in every site on the Huron, are a close relative of moths, whom they resemble as adults. Hydropsychid larvae spin a net of silk in which they catch their food.

The creatures tell us about the conditions of the creek. Populations living in the stream show that Malletts Creek has the worst conditions of the Huron River system thus far studied. No **sensitive** families, including winter stoneflies, have been found in the creek since this study began in 1992. The only EPT families found here are a single family of caddisfly (**Hydropsychidae**) and mayfly (Baetidae), families that can tolerate poor conditions.

The poor quality of Malletts Creek seems to result from many factors. Surging flows, containing the debris and contaminants washed off of city streets, lawns, and other surfaces, are a major problem. The water is contaminated by a variety of sources including people’s lawns, streets, parking lots, and construction sites. Much sediment flows in the creek carrying pollutants and clogging living spaces. The flows result in flooding, destroy habitat, and damage the stream banks, causing erosion.

In addition, the floodplain is no longer available for capturing sediment, slowing storm flows, and providing habitat. There are many areas where the banks are bereft of trees and other vegetation that are needed to provide food, to moderate temperatures, and to stabilize the soil.

A healthy creek of this size has 40 different families; however, Malletts has fewer than 30.

Site	Total # Families	# Sensitive Families	# Mayfly Families	# Stonefly Families	# Caddisfly Families
I-94	25	None	1	0	1
Scheffler	21	None	1	0	1
Chalmers	27	None	1	0	1

# CONCLUSION

## THE PROBLEM

All of us are responsible for the sorry state of Malletts Creek. Homeowners, businesses, churches, the City, and the University all do things without realizing how they will hurt the creek, such as fertilizing lawns, building parking lots, applying pesticides, filling wet areas, and mowing stream banks. As we build more homes, businesses, and roads, we increase the amount of rainwater that washes debris into the creek.

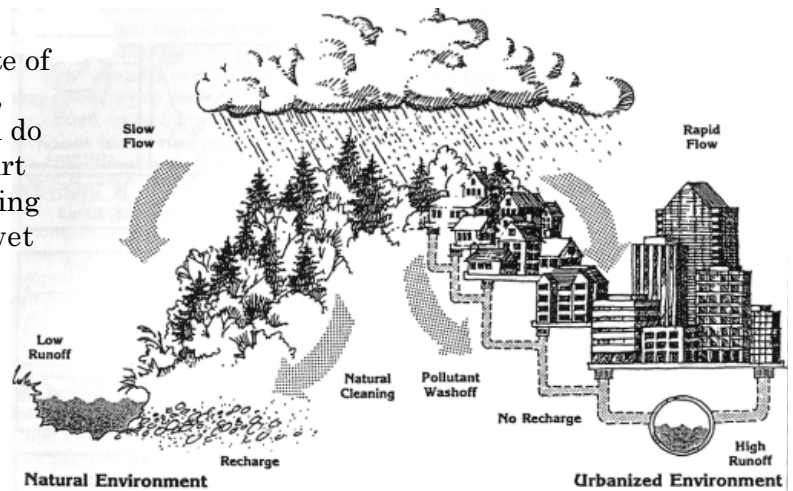
In undeveloped areas with trees and shrubs, much of this stormwater would be absorbed into the earth and become cool, cleansed groundwater, or would be taken up by vegetation to evaporate into the atmosphere. The increased amount that flows directly into the creek after a storm erodes streambanks, increases flooding, and carries trash and chemicals from yards and streets into the creek. Fine silt fills the spaces on the bottom needed by fish and other creatures, and few plants or animals can survive the rushing storm flows.

## WHAT YOU CAN DO TO HELP

*"Malletts Creek is our neighborhood stream."*

We can restore Malletts if we have a commitment and a vision for the creek in our community. What do we want from the creek? We don't need it to drain farmland, turn a mill, or dilute community wastewater. We love the serenity of a brook, the playfulness that happens in flowing water, and the beauty of a healthy, natural world.

Although Malletts Creek is in poor condition, we can improve its quality and return it to a more natural state. By restoring the creek, landowners reduce erosion, increase water quality, enhance the natural habitat, and increase the value of their property. Everyone can help by making small changes in their daily lives (see the last page) and by letting the agencies and the City know that they want the creek improved and protected. For more information, call the Malletts Creek Association (971-9018).



*We find respite from life's problems surrounded by the beautiful environment near a lovely stream.*

### USEFUL NUMBERS:

The area code is (734) unless indicated otherwise.

Malletts Creek Association: 971-9018

HRWC: 769-5123

MSU County Extension Agent: 971-0079

Drain Commissioner: 994-2525

Soil Erosion: 994-2711

Adopt-A-Stream Program: 769-5971

Report dumping or spills, call: 911

Ann Arbor City Hall: 994-2700

Ann Arbor Township: 663-3418

Pittsfield Township: 996-3011

Wild Ones (Native Landscaping): 663-4047

# WHO PROTECTS MALLETT'S CREEK?

Taking time from his grandfather duties, Jesse Gordon monitors the Chalmers site in his backyard. Jesse has been leading the MCA's efforts to construct a long-term management plan for the creek and to assist the Planning Commission in improving plans for developments that impact the creek.



*Jesse Gordon*



*Lisa Utz*

Lisa has created time to design and edit these creek reports as well as to participate in monitoring events. Between family activities and an extremely busy work schedule as a technical writer, she has managed life without a car and still made time to protect Malletts Creek.

Ron has monitored Malletts and other creeks in the Huron system for many years. This year he replaced his lawn with prairie plants to help the creek and the butterflies. "It's much more interesting than a lawn!" He said. "The neighbors love it. They walk by daily to see what is blooming."



*Ron Emaus with Jan Sovak*



*Jeannine Palms*

Malletts Creek is a central focus for the Blossom Preschool taught by Jeannine Palms. The 3 to 5-year-old children study the creek, write and speak to neighbors and to the City about their concerns, and create innovative solutions to reduce the sources of pollution and storm flow. In 1998 they, with help from the community, created the Children's Wet Meadow to hold stormwater in a city park. Jeannine has helped the children and their families to monitor the Scheffler Park site.

Scott is active in the MCA in spite of being extremely busy as a geographer and planner at Limno-Tech, Inc. When he learned about Malletts Creek, he didn't realize how close he lived to it. Malletts reminded him of Boneyard Creek, an abused urban creek in Champagne, IL, and he resolved to do what he could to help. In addition to monitoring the creek, he has involved his company to support creek improvement in the Huron system.

*All photos courtesy of Al Wooll.*



*Scott Wade*