References for further reading:

Breisch, Alvin R. , James P. Gibbs, Peter K. Ducey and Glenn Johnson, The Amphibians and Reptiles of New York State , Oxford University Press, New York, 2007

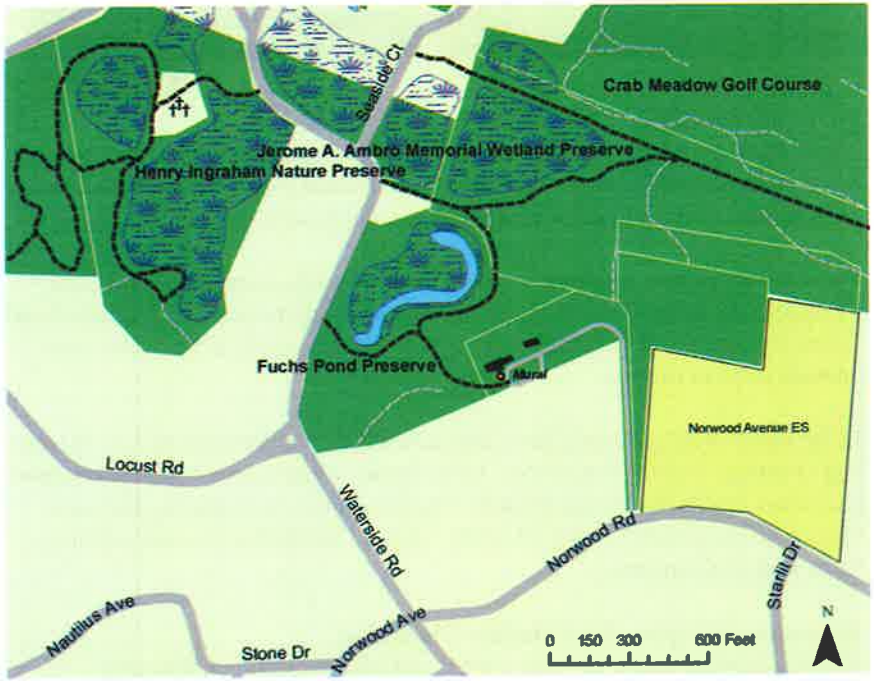
Tyning, Thomas F. , A guide to Amphibians and Reptiles (Stokes Nature Guides), Donald W. Stokes, Lillian Q. Stokes and Thomas F. Tyning, 1990

Werner, Robert .G, Freshwater Fishes of the Northeastern United States: A Field Guide, Syracuse University Press, New York, 2004

Reid, George K. , Pond Life (A guide to Common Plants and Animals of North America Ponds and Lakes), St. Martin's Press, New York, 2001

Also visit:
Cold Spring Harbor Fish Hatchery & Aquarium - 1660 Route 25A, Cold Spring Harbor, NY 11724

Key Map of Fuchs Pond Preserve



Fuchs Pond Preserve is located at 21 Norwood Rd., Northport, NY 11768. It is approximately one mile north of Rt. 25A.

This brochure was designed by Christian Granelli of the Town of Huntington Department of Planning and Environment.

Fuchs Nature Preserve Mural Guide

The mural:
The Freshwater Ecosystem Mural pays homage to Fuchs Pond in Northport and depicts the ecosystems of ponds and lakes. The two left panels illustrate an ideal and healthy underwater habitat. The far right panel portrays an aquatic ecosystem polluted by industrial waste, an algal bloom, garbage, and sewage.

Ponds, though often small, can provide the necessary resources for organisms living in and around them. They are a great place to observe and learn about the relationships between plants and animals and their environment.

The mural composition depicts a hypothetical pond or lake in which sizes and proportions of plants and animals are not realistic. Nevertheless the information included is mostly related to plants and animals found in or around ponds and lakes of the Northeastern United States.

Purpose of this guide:
This guide is intended to help teachers, parents and the public to identify the elements illustrated in the mural. It is also an invitation to further explore the scientific and ecological content of the mural. The mural illustrations and composition include a great amount of information that can be explored by students in grades 1 through 12.

Educational objectives:
To help students recognize different stages of aquatic animals; recognize and identify species of freshwater fishes; identify the components of a habitat; identify many aquatic organisms and assess the water quality based on the presence of a variety of organisms; identify fishes that migrate from seawater to fresh water or vice-versa for spawning; identify aquatic plants and their importance in aquatic habitats; identify microscopic aquatic life; describe how human activities can affect aquatic life; evaluate alternative solutions to problems of aquatic pollution; identify native and invasive species of plants and animals.

Open Water:

Bacteria

Algae

Giardiasis

Bottom:
Garbage, Flatworm, Tubifex (Sewage Worm), Leeches, Giardiasis, Asellus aquaticus, Lunged Snails, White Sucker (Mullet), Dead Fish, Blackfly Larva, Midge Fly Larva, crayfish (mud bug), and algae (periphyton) on rocks and on the surface of detritus.

Flatworm

Leeches and a Lunged Snail

White Sucker

Tubifex and Asellus

Food Relationships:
Algae is the primary food source for the herbivorous animals which are in turn food for carnivorous animals. The algae and detritus on the bottom also serve as an important food source for invertebrates, tadpoles and some fish.

But if the ecosystem is unbalanced and there is an abundance of algae (algal bloom) on the surface and in the open water, the light penetration is reduced and rooted plants are suppressed. If there is not enough oxygen in the water many animals will not survive.

In the mural there are examples of animals resistant to pollution such as the sow bug (Asellus), crayfish (mud bug), lunged snail, white sucker, Cyclops copepod, and insect larvae (midge fly, blackfly, and mosquito). In contaminated water there is an increased presence of tubifex worms, flatworms, leeches, and diseases such as Giardiasis.

Environment Topics Illustrated for Discussion:
•Housing development: Sewage system; garbage; recycling; green areas
•Burned trees: Release of carbon dioxide
•Factory smoke stacks: Air pollution, acid rain, waste, green alternatives
•Ground transportation: Use of gasoline versus alternative vehicles
•Algal blooms

Mural Panel III

Surface:

Garbage, Mosquito, Mosquito Larvae, Algal Blooms, Midge Fly, Chemical Waste, Blackfly

Mosquito and Larvae

Blackfly

Blackfly Larva (Bottom)

Midge Fly

Midge Fly Larva (Bottom)

Open water:

Fish, dead fish, Algal Blooms, Turbidity, Cyclops Copepod, Bacteria and Algae.

Dead Fish

Cyclops Copepod

Algal Blooms and Turbidity

How to read the guide:

This guide will discuss the mural as three individual panels and each panel will have the same structure: water surface, open water, bottom, food relationships, and environmental topics. The water surface includes floating animals, larvae and plants. In the open water you will find animals and plankton (zooplankton and phytoplankton). The bottom depicts animals, larvae, worms, and emergent and submerged plants.

The light-colored circles on the mural show examples of plankton (microscopic or very tiny animals, algae, bacteria), and parasites. The names of each type of plankton are written on the mural. They are: Euglena, Diaptomus copepods, Cyclops copepods, rotifers, diatoms, algae, bacteria, purple sulfur bacteria, and Giardiasis.

The mural project:

The mural project was a collaboration between the artist Lucienne Pereira and the Sea Stars Marine Camp director, Kristin Colavito from Cornell Cooperative Extension, during the summer of 2012.

During seven weeks, small groups of children had the opportunity to paint what they had learned about freshwater life at the Camp, learn new painting techniques, and learn about mural painting. There were 234 children from 6 to 12 years old and each one participated within their capability. Camp staff and community members also participated. In total 264 people participated in painting the mural.

The mural was designed by Lucienne Pereira, and implemented with the assistance of Susan Gaber and Chunxia Barrack.

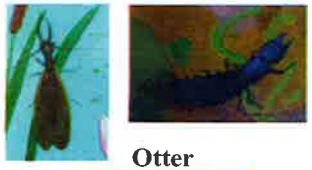
The Fuchs Mural Project was made possible by the Huntington Town Board with support from the Environmental Open Space and Park Fund Program and with funds from the JP Morgan Chase Regrant Program. In Nassau and Suffolk Counties, the JP Morgan Chase Regrant Program is administered by the Huntington Arts Council, Inc.

Mural Panel I

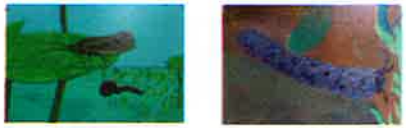
Water surface:

Dobsonfly (Male) on Cattail, Caddisfly on Water Lily Leaf, Otter, Mallard, Great Blue Heron, Osprey, Green Frog on Floating Hyacinth Plant, Duckweed, and Algae.

Dobsonfly and Larva



Caddisfly and Larva



Otter

Green Frog on Hyacinth

Open water:

Frogs, Tadpoles, Frog Eggs, Toadlets, Turtles, Freshwater Shrimp (Palaemonetes paludosus), Water Mites, Gilled (Prozobranch) Snails (Spiral Shell), Lunged (Pouch) Snails (Coil Shell), Snail Eggs, Newts, Newt Larva, Hydras, Fish, and Planktonic Organisms such as Copepods, Daphnia (Water Fleas), Jellyfish, and Algae.

Gilled Snail

Snail Eggs

Red-spotted Newt Lunged Snail

Newt Larva, Toadlets, Jellyfish

Bottom:

Curly-leaf Pondweed and Chara Muskgrass

Elodea and American Pondweed

Asellus

Food Relationships:

Water striders feed on spiders, worms, larvae, and live or dead insects that fall onto the water surface. They are prey for birds and fish.

Diving beetles eat aquatic organisms such as tadpoles and small fish. Diving beetles are eaten by frogs. The beetle larva is very aggressive and is known as the water tiger. The larva eats tadpoles, small fish and other small animals. In some countries such as Mexico, Japan, China, Taiwan, Thailand the diving beetle is a food source for people.

Mayfly nymphs live for about one year in the water. Once they become insects they cannot eat anymore and live from a few hours to 1-2 days. Mayflies are eaten by birds, bats, frogs, and fish, particularly trout.

Snails are scavengers and eat decaying plants on the bottom substrate.

Environmental Topics Illustrated for Discussion:

•Farm: Runoff carrying pesticides, insecticides, herbicides, and fertilizers from gardens, lawns and farms enters lakes, rivers and ponds contaminating the water and increasing its nutrient levels causing algal blooms and increased plant growth
•Runoff prevention and green ways to protect water quality
•City: pollution and waste
•Air pollution: Acid rain
•Transportation: gasoline powered vehicles, green vehicles, and bikes
•Parks: nature in the city
•Also consider discussing invasive and native species of plants and animals and their impacts.

Open water:
Green Frogs, Tadpoles, Frog Eggs, Toadlets, Turtles, Freshwater Shrimp, Snails, Snail Eggs, Newts, Newt Eggs, Fishes, and Planktonic Organisms such as Euglena, Cyclops Copepod, Purple Sulfur Bacteria, Diatoms, Rotifers and Algae.

Green Sunfish

Largemouth Bass

Striped Bass

Redfin Shiner

Newt Eggs

Redear Sunfish

Golden Shiner

Yellow Perch

Bottom:
Asellus (Sow Bug), Dragonfly Nymph, Mayfly Nymph, Red-eared Slider, Eastern Painted Turtle, Clams, Newts, Snails and Submerged Plants (Curly Leafed Pondweed, American Pondweed and Elodea). Red-eared Sliders and Painted Turtles are almost entirely aquatic, leaving the water just to bask and lay eggs.

Eastern Painted Turtle

Red-eared Slider

Open water:

Catfish

Freshwater Shrimp

Alewife

Frog Eggs

Hydra

Water Mite

Redfin Shiner

Sunfish

Brook Trout

Minnows

Bottom (Muddy Area from Shore to Bottom):
Scavengers such as Crayfish (also known as Mudbugs), Snails, White Suckers, Shrimp, and Larvae (Dobsonfly and Caddisfly), Turtles, Bacteria, Freshwater Mussels, Newts, Worms, Fish, Emergent Plants, Submerged Plants.

Seed Shrimp

Crayfish

Bottom:

Eelgrass and Echinodurus

Elodea and Chara Muskgrass

Bloodworm, Eels, Mussels

White Sucker

Arrowhead Cattail and Water Lily

Food Relationships:
Phytoplankton (drifting plants and algae) and plants are the main source of food for the zooplankton (Daphnia, jellyfish, copepods, rotifers, Euglena), shrimp, some fish, turtles, tadpoles, crayfish and larvae.

Zooplankton are food for other predators such as birds, mammals, larger fish and frogs.

Scavengers such as snails, crayfish, shrimp, and white suckers feed on decaying matter.

Environmental Topics Illustrated for Discussion:
•Trees: importance of trees; trees, plants and water act as natural carbon sinks; real estate value, etc.
•Solar panels, wind turbines, power station: Electricity generation
•The impact of such environmental elements on our lives, aquatic life and animals that depend on aquatic life for their survival.

Mural Panel II

Water surface:
Dragonfly, Water Strider (Gerridae), Diving Beetle (Dytiscidae), Diving Beetle Larva (Water Tiger), Mayfly, and Floating Plants such as Water Hyacinth, Parrot Feather (Myriophyllum Aquaticum), and Duckweed.

Dragonfly

Mayfly

Dragonfly Nymph (Bottom)

Mayfly Nymph (Bottom)

Diving Beetle and Larvae

Parrot feather plant, Duckweed, and Minnows