Riparian Plants
Along the Three Rivers of Pittsburgh

Cephalanthus occidental is (buttonbush)

3 Rivers-2nd Nature
STUDIO for Creative Inquiry
CArnegie Mellon University
Pittsburgh, PA
2001

The Role of Riverside Vegetation

Riverside vegetation plays a critical role in protecting river banks and providing vital habitat for aquatic and semi-aquatic animals. The type of vegetation present also is important for stream bank stability and as food for wildlife. Leaves falling from trees provide food for some aquatic insect larvae. Tree and woody vegetation draw water from the streambank; this helps to dry the banks and improve their stability. Trees also provide shade for the stream, keeping water temperatures cooler. Cool water holds more dissolved oxygen.

Vegetation growing alongside the stream and in its floodplain buffer the stream from runoff pollution. According to the U.S Fish and Wildlife Service, a forested buffer as narrow as 50 feet can remove the majority of nitrogen and phosphorus from surface and subsurface runoff.

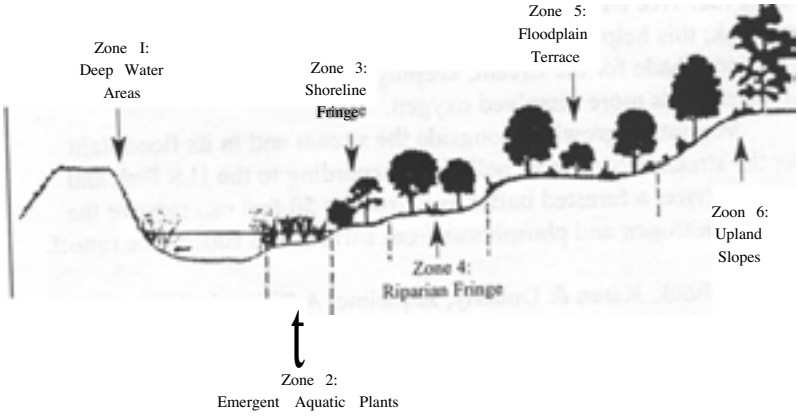
Source: Firehock, Karen & Doherty, Jaqueline; A Citizen's Streambank Reclamation Handbook: Save Our Stream Program, Izaak Walton League of America, Inc.; Gaithersburgh, MD, 1995

U.S. Fish and Wildlife Service Wetland Code

Code		Probability of occurrence in wetlands
OBL	Obligated wetland species	99%
FACW	Facultative Wetland Species	66-99%
FAC	Facultative species	34-66%
FACU	Facultative upland species	1-33%
UPL	Upland species	1%

The Vascular Flora of Pennsylvania
Ann Fowler Rhoads & William McKinley Klein, lR.
American Philosophical Society, 1993

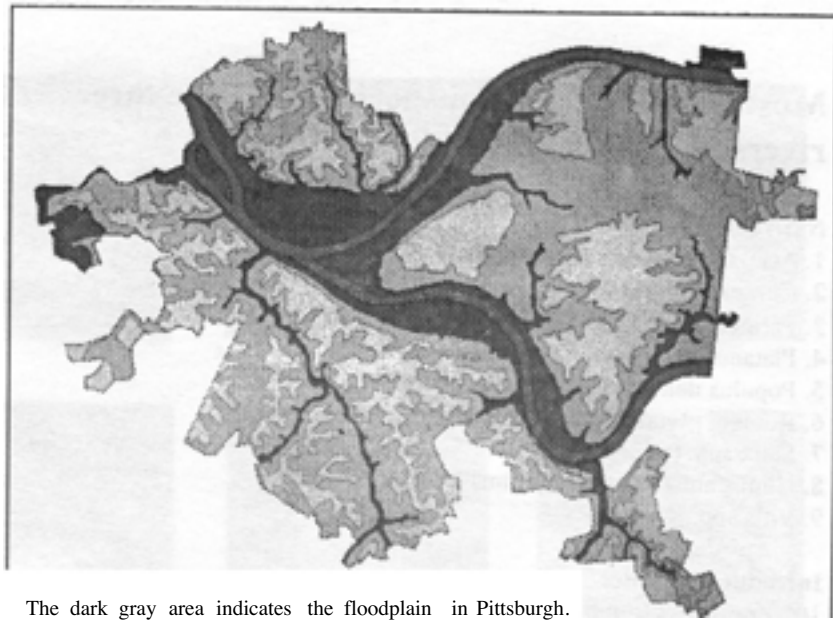
Figure **I.** River landscape zones (from Schueler 1992)
Note: the width of the zone is related to the side-slope angle
(the steeper the slope, the narrower the zone)



A typical stream area is divided into 6 zones, as shown in the image below. The 3Rivers-2nd Nature biodiversity study focuses on plants of Zone 3: Shoreline fringe and Zone 4: Riparian Fringe (20 feet from the water line.)

Zone 3: Shoreline fringe
Plants in this zone must be able to withstand being inundated during storms and drying during drought periods.

Zone 4: Riparian Fringe
Plants in this zone must be able to tolerate both wet and dry soil as well as periodic inundation.

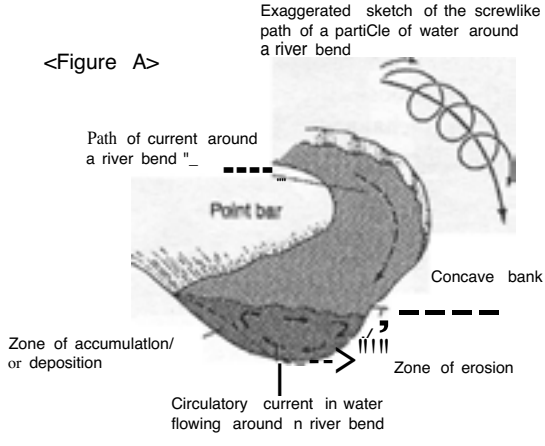


The dark gray area indicates the floodplain in Pittsburgh.

Floodplain

The flowing river and stream near the bottom usually carry along some clay, sand, or pebbles, and these are carried toward the inside of the curve by the slower-moving water. As indicated by the small arrows in the cross section shown in Figure A, water near the surface tends to move toward the convex bank of the point bar. Thus, material accumulates on the convex edge of the bend and builds up the bed on that side, giving it a gradual slope. Such deposition results in the building point bar, the top surface of which is the floodplain. (Luna B. Leopold, Water, Rivers and Creeks, University Science Books, 1997)

<Figure A>



Most common riparian species along the three rivers in Pittsburgh

Native Species

1. Acer saccharinum (silver maple) (FACW)
2. Comus spp. (dogwood)
3. Parthenocissus quinquefolia (Virginia creeper) (FACU)
4. Platanus occidentalis (sycamore) (FACW)
5. Populus deltoides (cottonwood) (FACU)
6. Robinia pseudoacacia (black locust) (FACU)
7. Salix spp. (willow)
8. Ulmus americanalrubra (elm) (FACW)
9. Vitis spp. (grape)

Introduced Species

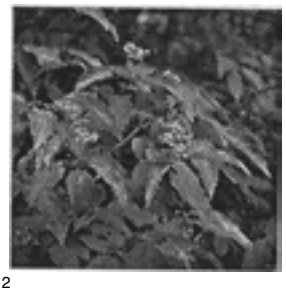
10. Morus spp. (mulberry)
11. Polygonum cuspidatum/sachalinense (Japanese knotweed) (FACU)
12. Rosa multiflora (multiflora rose) (FACU)

Invasive Species

When non-native plants were first introduced to this area years ago, no one expected that they would rapidly grow and displace native plants. This invasion of non-native species can both reduces the state's plant biological diversity and impact the animals that depend on a variety of native plants to survive.

The following invasive plant species are commonly seen along the three rivers:

Ailanthus altissima (Tree of heaven)
Celastrus orbiculatus (Oriental bittersweet)
Lonicera maackii (Amur honeysuckle)
Lythrum salicaria (Purple loosestrife)
Polygonum cuspidatum/sachalinense (Japanese knotweed)
Rosa multiflora (Multiflora rose)



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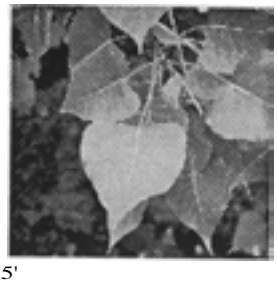

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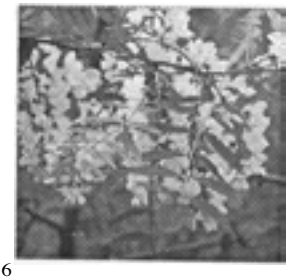

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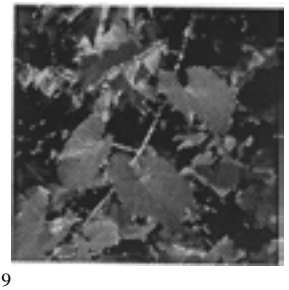

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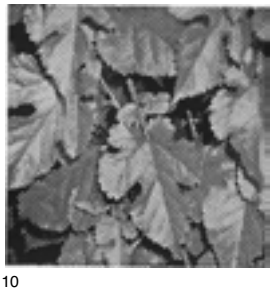

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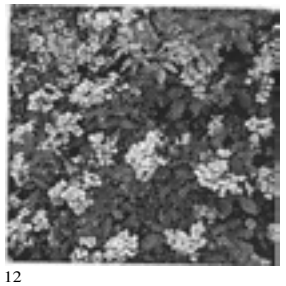

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Special riparian plants of interest

I. Lythrum salicaria (Purple loosestrife)

Introduced invasive species, Facultative wetland species
Purple looserife originally came from Europe. It grows in a variety of wetland habitats including marshes, river banks, ditches,and wet meadows. It can grow aggressively by underground stem (rhizomes) and seeds.

2. Justicia americana (Water willow)

Native, Obligate wetland species
Herbaceous perennial. emergent aquatic
Marshy shorelines of lakes and rivers, in shallow water.

'The Vascular Flora pf Pennsylvania, Ann Fowler Phoads & William McKinley Klein, Jr., American Philosophical Society, 1993

3. Iris pseudacorus (Yellow iris)

Introduced non-invasive species, Obligate wetland species
Herbaceous perennial, emergent aquatic marshes, shallow water or wet shores.

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"photo: The Audubon Society Field Guide to North American Wildflowers, Knopf

4. Lobelia cardinalis (Cardinal flower)

Native, Facultative wetland species
Herbaceous perennial.
Wet meadows, swamps, ditches, stream banks and lake shores.

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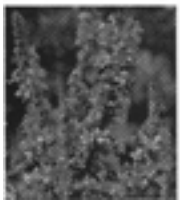


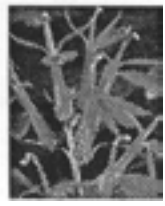

Other common woody riparian species along the three rivers in Pittsburgh

Acer negundo (box-elder) (FAC)
Acer rubrum (red maple)
Acer saccharum (sugar maple) (FACU)
Aesculus spp. (buckey)
Amorpha fruticosa (false indigo) (FACW)
Aralia spinosa (devil's-walking-stick) (FAC)
Betula spp. (birch)
Catalpa spp. (catalpa) <I>
Cephalanthus occidentalis (buttonbush) (OBL)
Crataegus spp. (hawthorn)
Fraxinus spp. (ash)
Gleditsia triacanthos (honey locust) (FAC)
Hydrangea arborescens (wild hydrangea) (FACU)
llex (holly)
Juglans spp. (walnut) (FACU)
Juniperus cv. Uuniper cultivar)
Liquidambar styraciflua cv. (sweet-gum) (FAC)
Liriodendron tulipifera (tuliptree) (FACU)
Lonicera spp. (honeysuckles)
Malus spp. (mulberry)
Parthenocissus quinquefolia (Virginia-creeper) (FACU)
Physocarpus opulifolius (ninebark) (FACW)
Picea cv. (spruce cultivar)
Pinus cv. (pine cultivar)
Prunus spp. (wild cherry) (poplar)
Ptelea trifoliolata (hop-tree) (FAC)
Quercus spp. (oak)
Ribes spp. (currant)
Robinia pseudoacacia (black locust) (FACU)
Rubus spp. (blackberry)
Sambucus spp. (elderberry)
Sassafras albidum (sassafras) (FACU)
Spiraea spp. (meadow-sweet)
Symphoricarpos cf. albus (snowberry) (FACU)
Tilia americana (basswood) (FACU)
Toxicodendron radicans (poison ivy) (FAC)
Viburnum spp. (arrow-wood)

*<1> Introduced species

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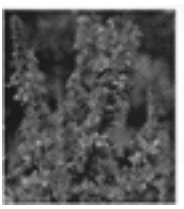


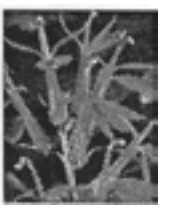

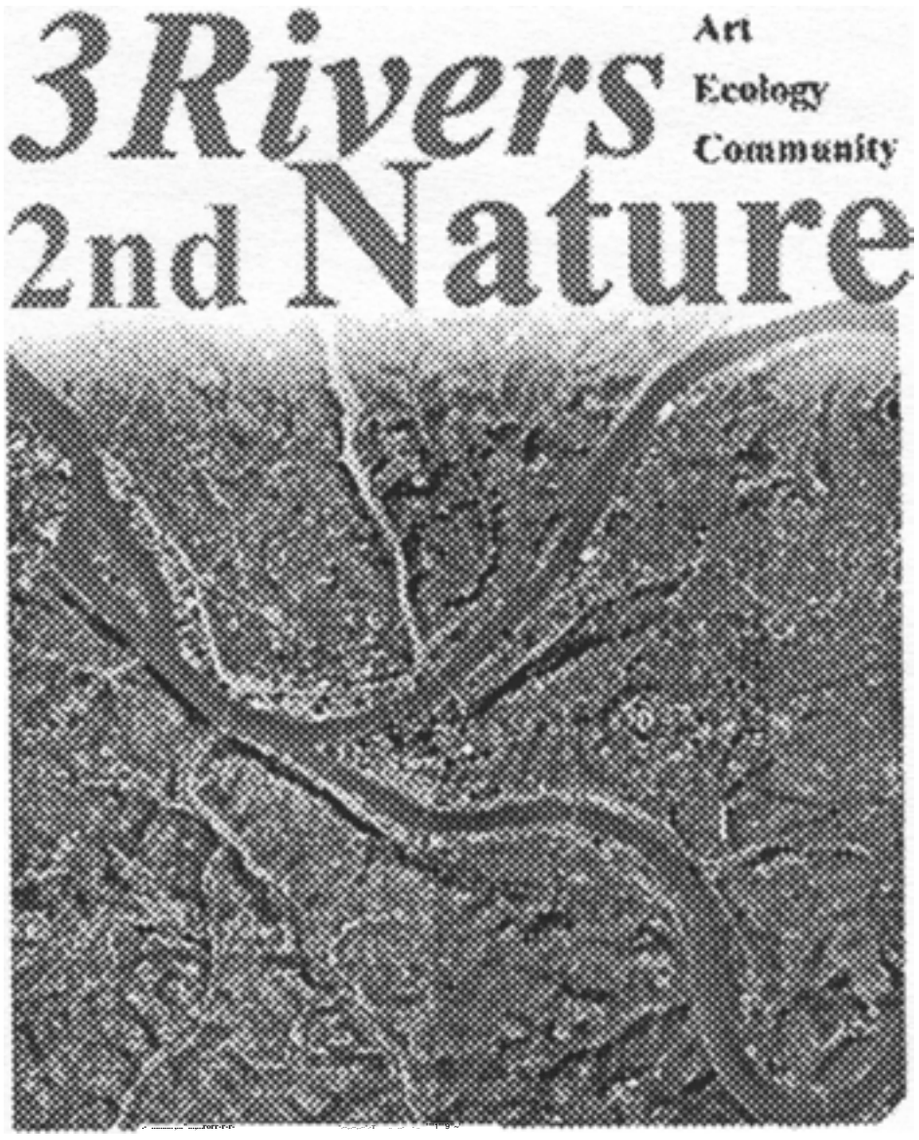

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