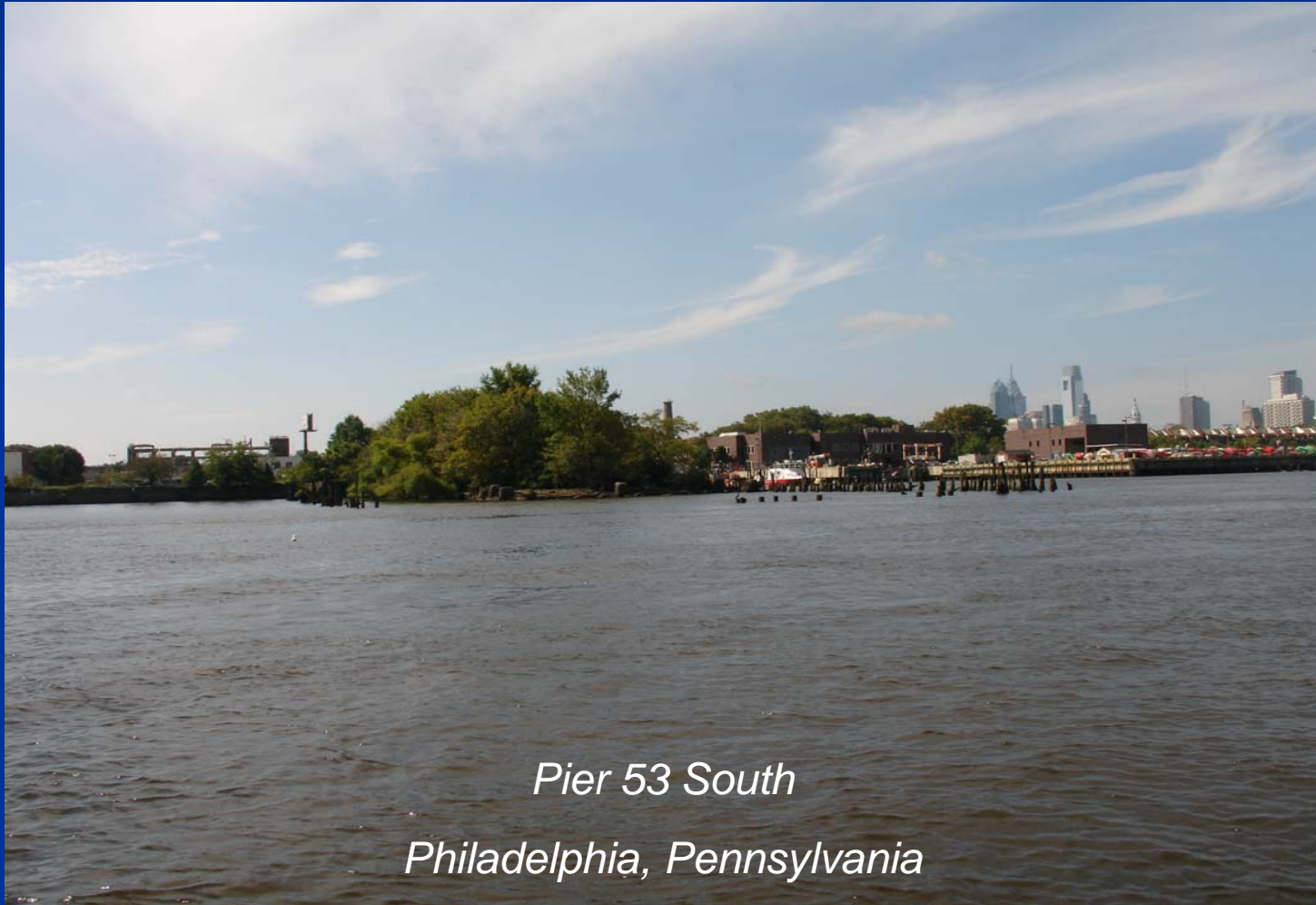


Ecological Assessment Of The Delaware Riverfront

Philadelphia, Pennsylvania

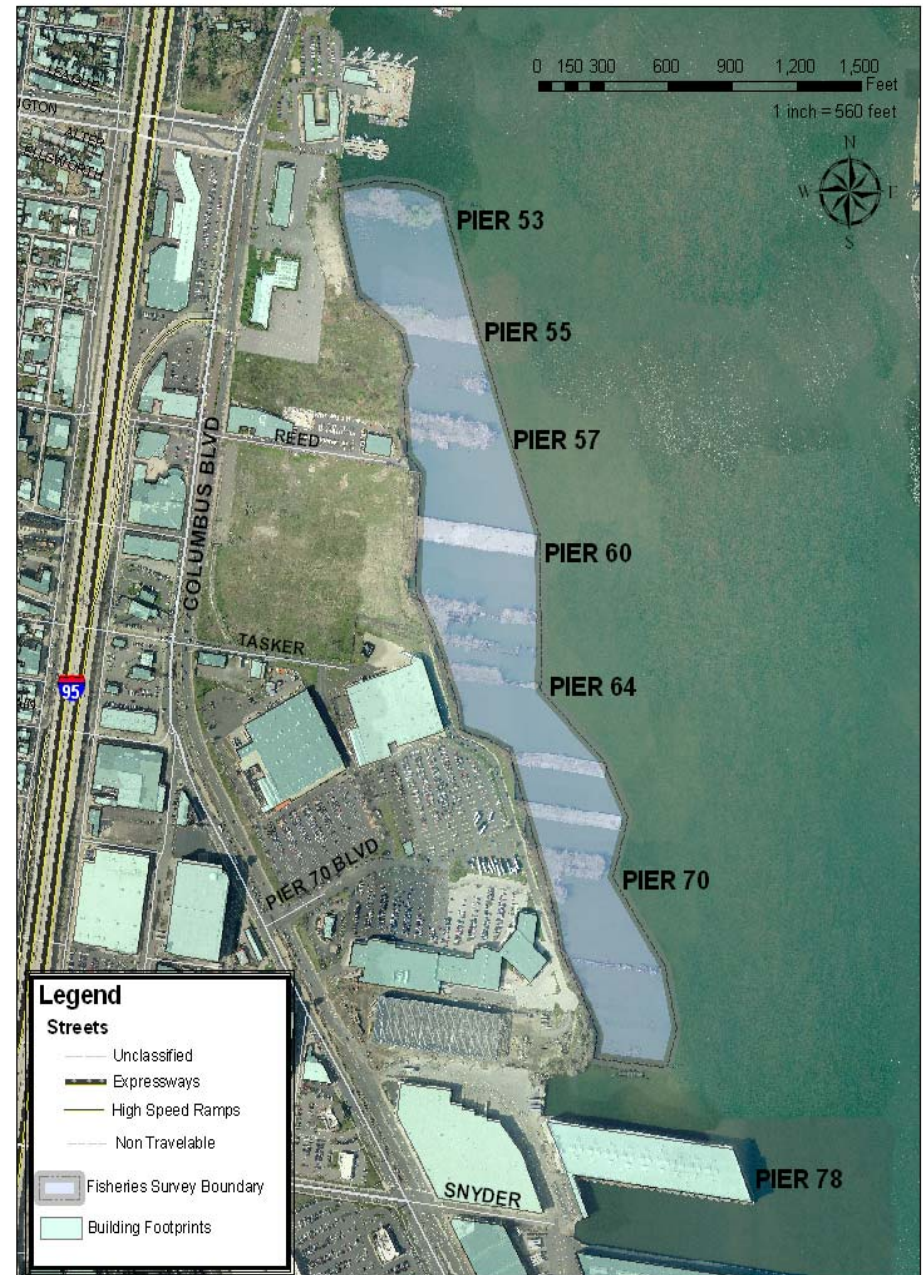


Pier 53 South

Philadelphia, Pennsylvania

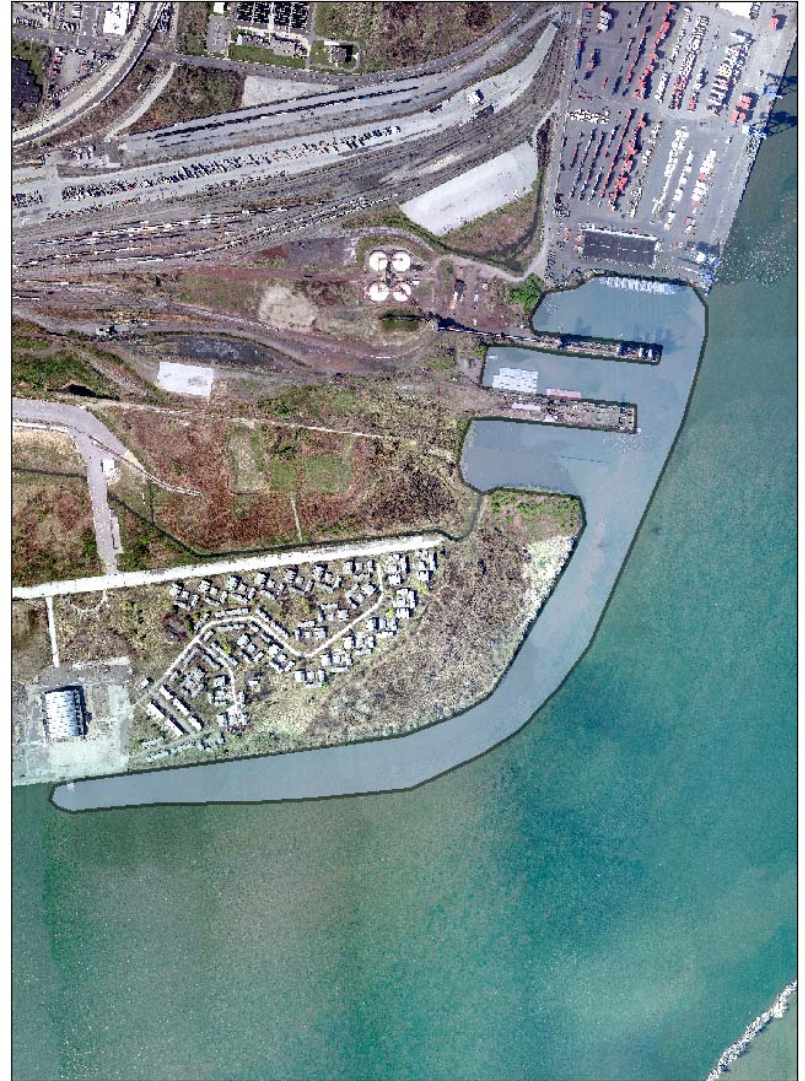
Pier 53 S to 70 S

- 2009 fisheries survey
- Conducted as part of in-kind services for grants received by PWD from DCNR



SouthPort Ecological Assessment

- Summer 2009 Fisheries Survey
- Conducted as part of an ecological assessment for future mitigation



FINDINGS

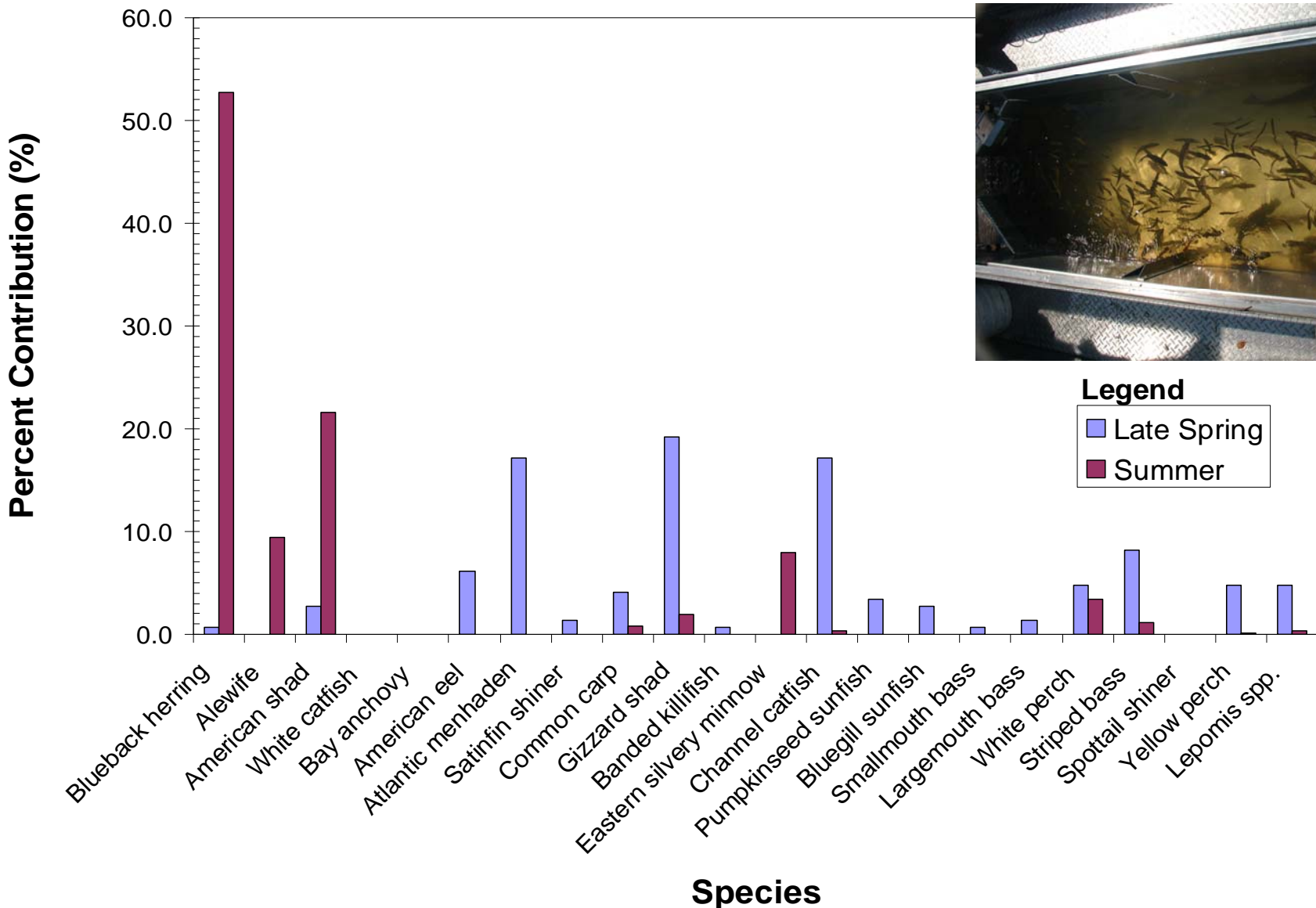
- High Value Resource
- Diverse fish community
 - 20 different species
 - resident and migratory fish
- Habitat for migratory species “of concern”
 - Blueback herring
 - Alewife
 - American shad
 - Atlantic Menhaden



Young-of-Year American Shad



Juvenile River Herring



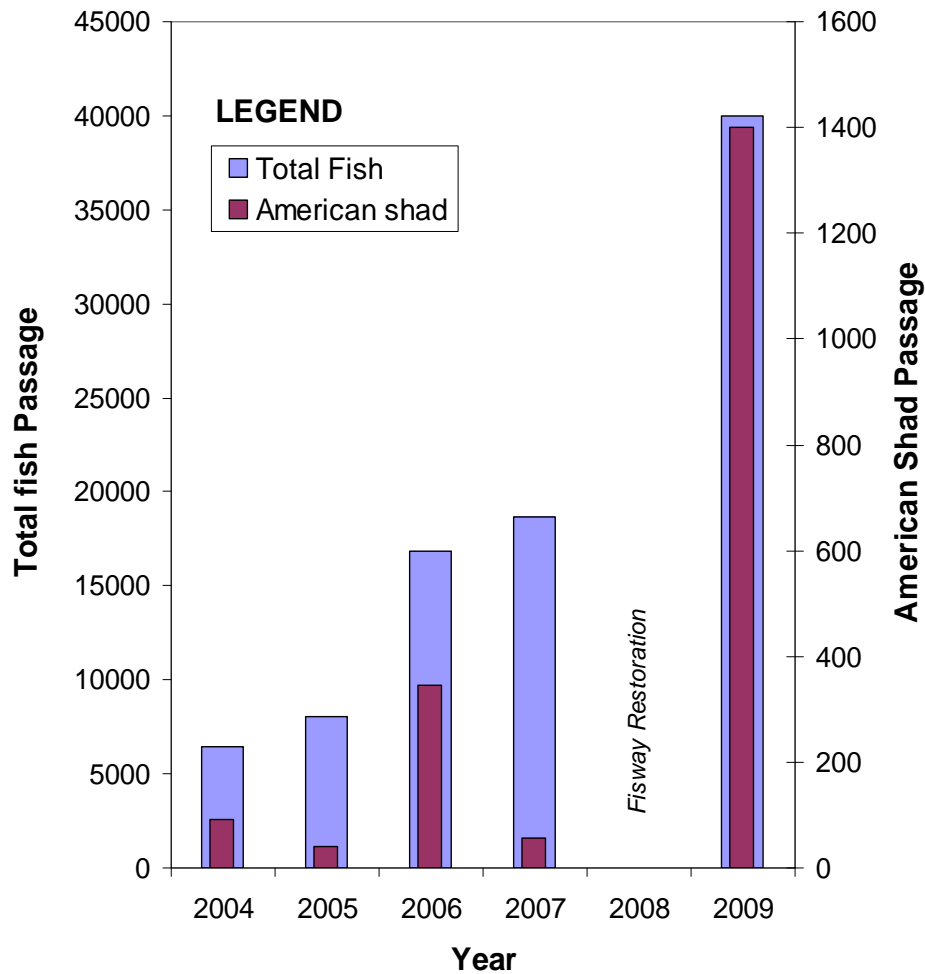
Fish species collected during spring and summer surveys

Pier 53 S to Pier 78 S

Conclusions

- **Pier area is being used by migratory species as:**
 - Areas of refuge (predator avoidance)
 - Foraging (food acquisition)
 - Reproduction (spawning habitat)
- **These results were:**
 - Unexpected and promising
 - Indicate an extremely precious ecological commodity along the Delaware River Waterfront in central Philadelphia
 - Suggest that sustainable urban fisheries may be attainable





Annual Trends In Fish Passage At The Fairmount Fishway, Philadelphia, PA (2004-2009)



American shad passing through Fairmount Fishway

Tidal Delaware Riverfront

- 2007-2008 surveys revealed approximately 30-40 locations of enhancement or creation potential
- 60-100 acres



Areas of potential wetland creation or enhancement from Walt Whitman to Benjamin Franklin bridges



Potential Enhancement Area



Zone 2: Naval Yard Benjamin Franklin Br

Potential Tidal Wetland Creation Sites: Pier 70 "Walmart Site"



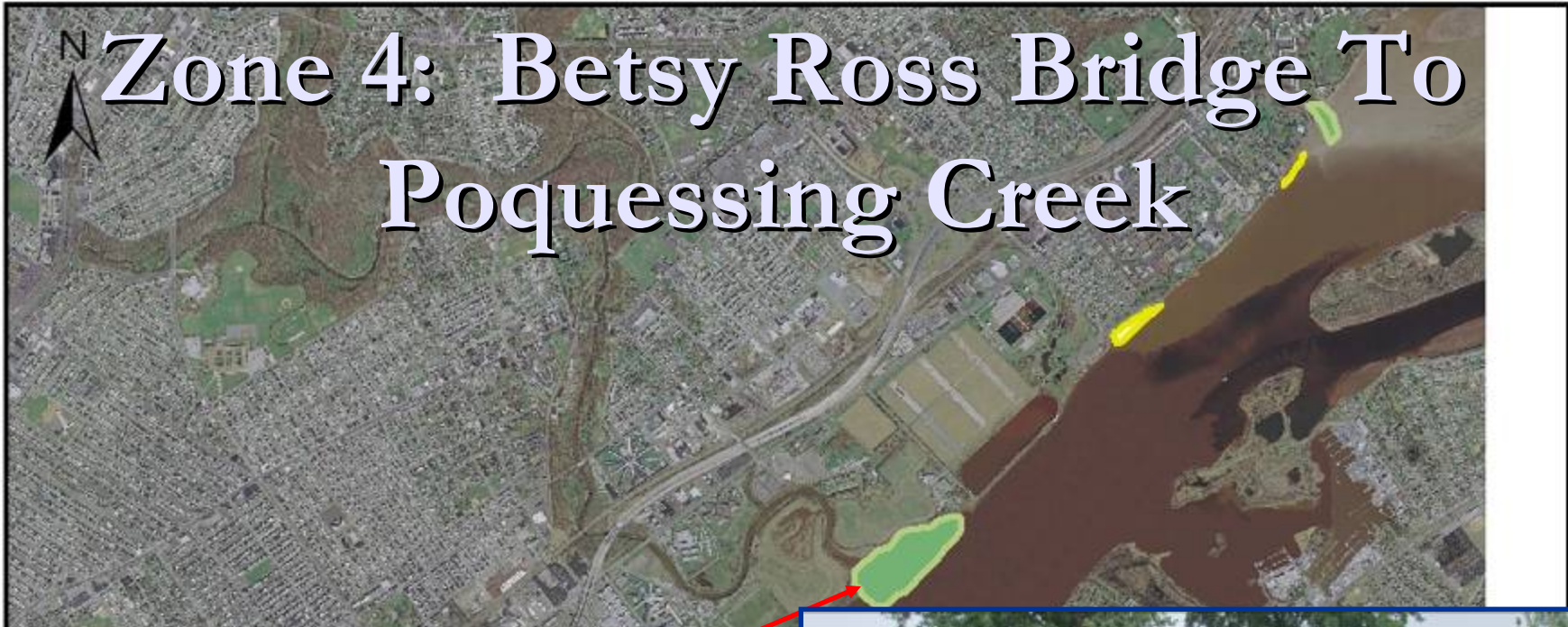
Benjamin Franklin Bridge by Ross Bridge



"DEW-37" Potential Enhancement



"DEW-36" Potential Creation



Zone 4: Betsy Ross Bridge To Poquessing Creek

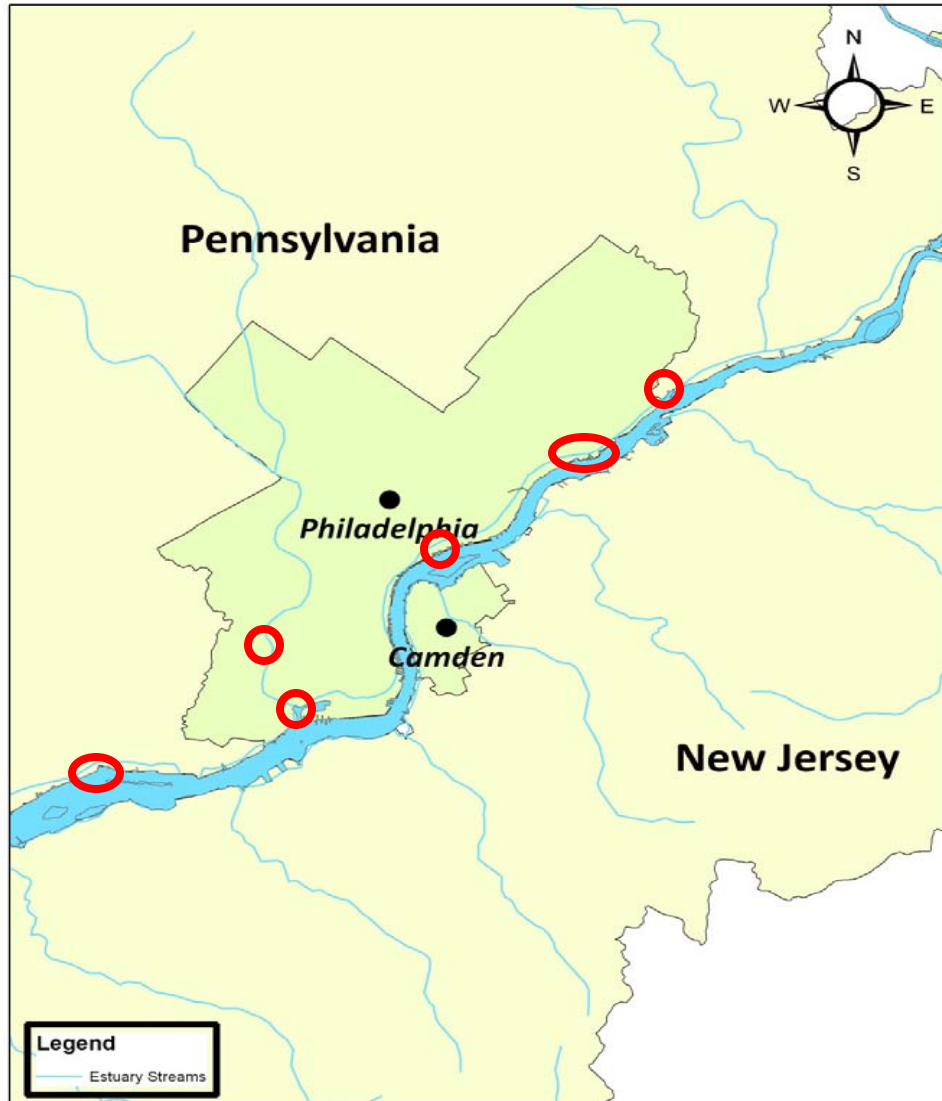


Site "DEW 46": Pennypack Creek Confluence



Site "DEW 45": Potential Enhancement Project

Additional Studies: Freshwater Mussels Survey



Dredging surveys
occurred in the
Schuylkill as well as
the Delaware River



Freshwater Mussels

Thought Extirpated
from PA



Leptodea ochracea

Rare



Strophitus undulatus

Patchy, Impaired



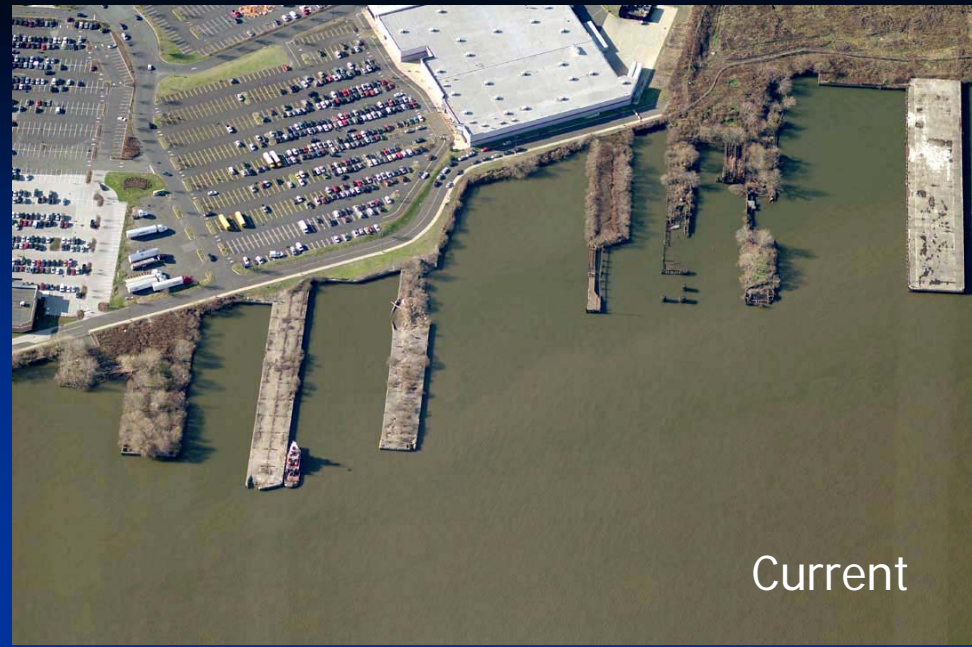
Elliptio complanata

		State Conservation Status		
Scientific Name	Scientific Name	DE	NJ	PA
ALASMIDONTA HETERODON	DWARF WEDGEMUSSEL	Endangered	Endangered	Critically Imperiled
ALASMIDONTA UNDULATA	TRIANGLE FLOATER	Extirpated ?	Threatened	Vulnerable
ALASMIDONTA VARICOSA	BROOK FLOATER	Endangered	Endangered	Imperiled
ANODONTA IMPLICATA	ALEWIFE FLOATER	Extremely Rare	no data	Extirpated ?
ELLIPTIO COMPLANATA	EASTERN ELLIPTIO	common	common	Secure
LAMPSILIS CARIOSIA	YELLOW LAMPMUSSEL	Endangered	Threatened	Vulnerable
LAMPSILIS RADIATA	EASTERN LAMPMUSSEL	Endangered	Threatened	Imperiled
LASMIGONA SUBVIRIDIS	GREEN FLOATER	no data	Endangered	Imperiled
LEPTODEA OCHRACEA	TIDEWATER MUCKET	Endangered	Threatened	Extirpated ?
LIGUMIA NASUTA	EASTERN PONDMUSSEL	Endangered	Threatened	Critically Imperiled
MARGARITIFERA MARGARITIFERA	EASTERN PEARLSHELL	no data	no data	Imperiled
PYGANODON CATARACTA	EASTERN FLOATER	no data	no data	Vulnerable
STROPHITUS UNDULATUS	SQUAWFOOT	Extremely Rare	Species of Concern	Apparently Secure

Recent findings of shells and live specimens in tidal PA areas by PDE are circled

Implications

- Increased potential for recreational activities
 - Boating
 - Fishing
 - Passive Recreation
- Increased economic value of the waterfront property
- Developers will need to balance waterfront development interests with protection of this high value resource
- Increased level of mitigation required for intertidal or open water takings
- There is limited areas of opportunity for freshwater tidal wetland enhancement or creation



Current

A conceptual rendering of tidal restoration along Delaware Riverfront near Pier 70 South



Post-enhancement