

# CRIB: Continued Repair of the Inland Bays



Ashley Morley, Kelsey Wentling, & Sandra  
Demberger

# Overview

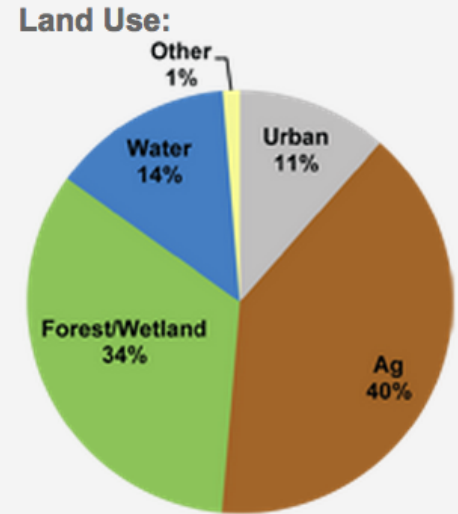
- Mission Statement
- Watershed Characteristics
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# Our Mission

To improve water quality within the Inland Bay's watershed in order to elevate water standards to swimmable levels within a fifteen year period, effectively increasing the economic and environmental value of the watershed by reducing nitrogen loads and chemical contaminants from agricultural runoff .

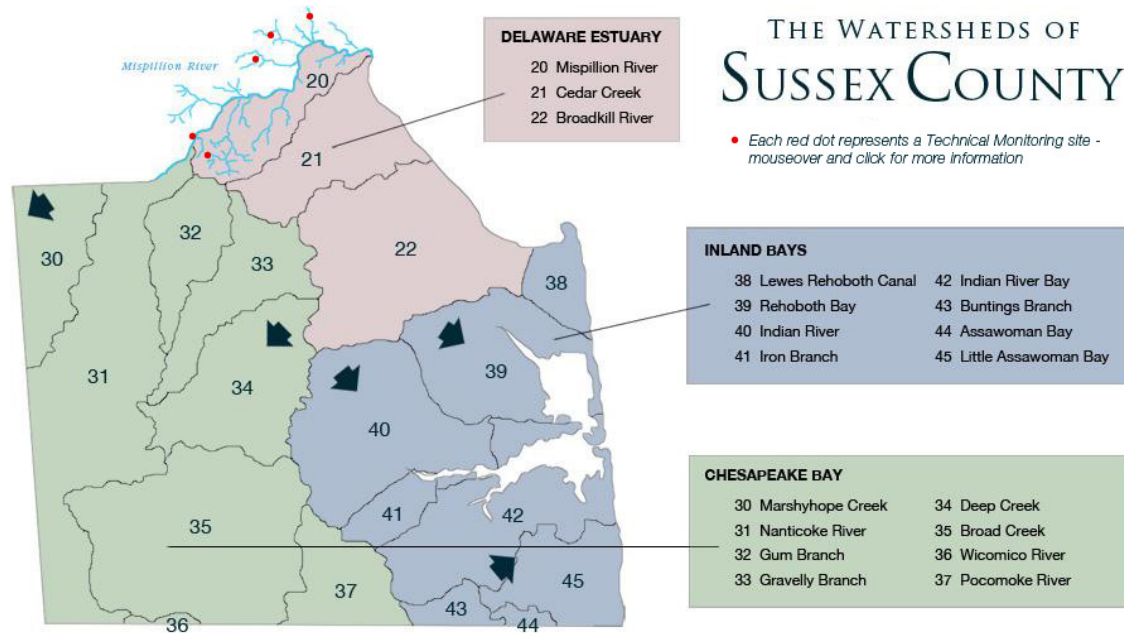
# Watershed Characteristics

- **Drainage Basin:** 320 square miles.
- **Population:** 112,280
- **Location:** Sussex County, Delaware
- **Inland Bays Include:** Little Assawoman Bay, Rehoboth Bay, & Indian River Bay
- **Outlet:** to the Atlantic Ocean through the Indian River Inlet



Source: NOAA Coastal Services Center (CSC), Coastal Change Analysis Program (C-CAP) Land Cover data based on analysis of Landsat 30m resolution imagery.

# Watershed Drainage Basin



➡ Indicates direction of water flow

[http://www.delawarenaturesociety.org/watersheds/sussex\\_watersheds.html](http://www.delawarenaturesociety.org/watersheds/sussex_watersheds.html)

# Watershed Drainage Basin



[http://www.inlandbays.org/wp-content/documents/general\\_map\\_of\\_the\\_watershed.pdf](http://www.inlandbays.org/wp-content/documents/general_map_of_the_watershed.pdf)

# History

- Eclectic mix of both urbanized beach towns and rural farms
- Until World War II the area was characterized by the coexistence of agriculture and marine trade



1904



2015  
Bethany  
Beach

# History cont.

- Following WWII returning soldiers relocated to white-collar jobs; Bethany and Rehoboth became vacation destinations.
  - rapid and extensive development
  - failed to develop technologically in terms of water treatment, effectively using the bays as raw sewage dumps.
  - farmers adopted new practices of irrigating and increasing fertilizer and pesticide application.
- Clean Water Act of 1972, the IRBW saw marked improvement in the amount of pollutants entering the water as raw sewage and domestic runoff.

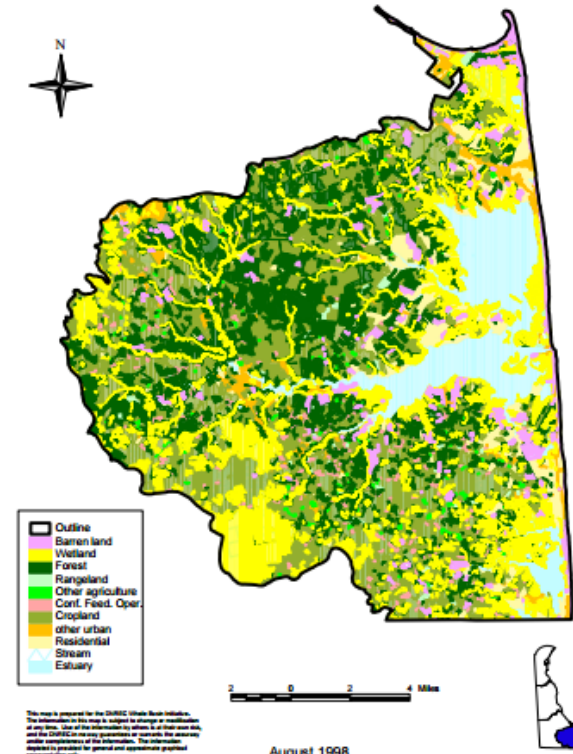


# Land Use & Geology

- A drowned river valley
- Diverse land use



Figure 1.2 1992 Land Use



# Governance

- **Delaware Center for the Inland Bays (CIB)** 1994- promotes the wise use and enhancement of the Inland Bays and their watersheds.
  - Delaware's Inland Bays were designated an "estuary of national significance in 1988 by the **U.S. Congress**, and as such, the Center for the Inland Bays is one of the 28 National Estuary Programs (NEP's).
  - **Delaware General Assembly** passed H.B. 540 – the Inland Bays Watershed Enhancement Act (69 Del. Laws, c. 468, § 1.).
- **Department of Natural Resources and Environmental Control (DNREC)**- ensures the wise management, conservation, and enhancement of the State's natural resources, protect public health and the environment, provide quality outdoor recreation, improve the quality of life and educate the public on historic, cultural, and natural resource use, requirements and issues.
  - Prepares and submits Watershed Assessment Reports to the EPA every other year

# P1.S1. Agricultural & Urban Runoff

- 37% agriculture
- High concentration of animal waste, corn and soybean production
- Urban development expected to grow
- Buffer zones
- Cover crops/crop rotation
- Fertilizer/ nutrient taxation



# P.2.S.2 Dumping of Untreated Wastewater

- Historical lack of sufficient technology and development
- Dead zones
- Progressive water treatment and collection
- Protection/construction of wetlands and estuaries



# P.3.S.3 Habitat Destruction

- Loss of wetlands
- Forestlands
- “Buffers”
- Native species



- Shoreline Stabilization Programs to replenish wildlife habitat and reduce erosion.



## Common Critters of the Inland Bays



**Blue Crab**  
Grows up to 4 inches long.  
The blue crab can live in salt and eat a variety of food.  
From near lakes to oceans, the spot of the water's class are greenish blue. The females are blue and are underwater along the spot where the water's blue. Blue crabs are one of the most valuable fisheries along the Atlantic coast. From near the Gulf of Mexico, blue crabs are a favorite summer-time food for many coastal residents.



**Diamondback Terrapin** lives in a small pond, 1 to 2 inches. The turtle gets its name from the diamond-shaped shape of its shell. Years ago, it was hunted almost to extinction, but proved important to turtle soup. In the inland bays of June and July, you may see the turtle nesting their nests under its leaves and flowers to lay its eggs, which hatch about 16 days later.



**Horseshoe Crab** lives up to 4 inches long. They referred to as the walking, breathing, and breathing crab. The horseshoe crab is the earliest of its kind.

They can lay eggs that it lives out of the water. The horseshoe crab, the horseshoe crab, is a living organism, "horseshoe crab", meaning that it has been able to survive since the time dinosaurs were the globe. It lives on the coast of the bay, which is the only place where it lives.



**Horseshoe Crab** lives 20 inches long. The largest population of horseshoe crabs in the world lives in the United States, in nearby Delaware Bay. The horseshoe crab is more closely related to spiders and scorpions than crabs. Each spring, migrating shorebirds stop to rest and feed on horseshoe crab eggs before nesting. The eggs are used for nesting grounds. A single horseshoe crab can lay up to 1 million eggs. The horseshoe crab is used by the pharmaceutical industry as a part of its ability to do things that horseshoe crabs, horseshoe crabs, and other horseshoe crabs are not.



**Summer Flounder** lives up to 2 feet long, 20 pounds. The summer flounder fish is called a "flat fish" because it lays and grows flat. Flat fish are up to 100 feet, the water's surface. When it comes to fish, the flat fish is unique. The summer flounder can live in the ocean. Just before it dies, the flat fish changes its head and grows its eyes. The color of the summer flounder and other flat fish is that people it to get a flat fish and a shrimps fish.



**Osprey** lives 20 inches tall, up to a 12 inch wing span. It is a large fish-eating bird. The osprey is called the "fish hawk" because it eats and carries fish. It has a wingspan of up to 12 feet, the water's surface. When it comes to fish, the osprey is unique. The osprey can live in the ocean. Just before it dies, the flat fish changes its head and grows its eyes. The color of the summer flounder and other flat fish is that people it to get a flat fish and a shrimps fish.

# Issues and Solutions Summary

<b>Issues</b>	<b>Solutions</b>
P.1 Agricultural and urban runoff	S.1 Implement buffer zones, nutrient management programs, cover crops, nutrient/fertilizer tax
P.2 Dumping of untreated wastewater	S.2 Introduce more progressive wastewater collection and treatment plans through IDEAS, enact permits system
P.3 Habitat destruction (estuary and wetland filling, stream channelization)	S.3 Permit program for development in sensitive areas, increased regulation and protection

# Conclusion

Overall conditions are improving, but a lot is needed to reach swimmable and fishable levels