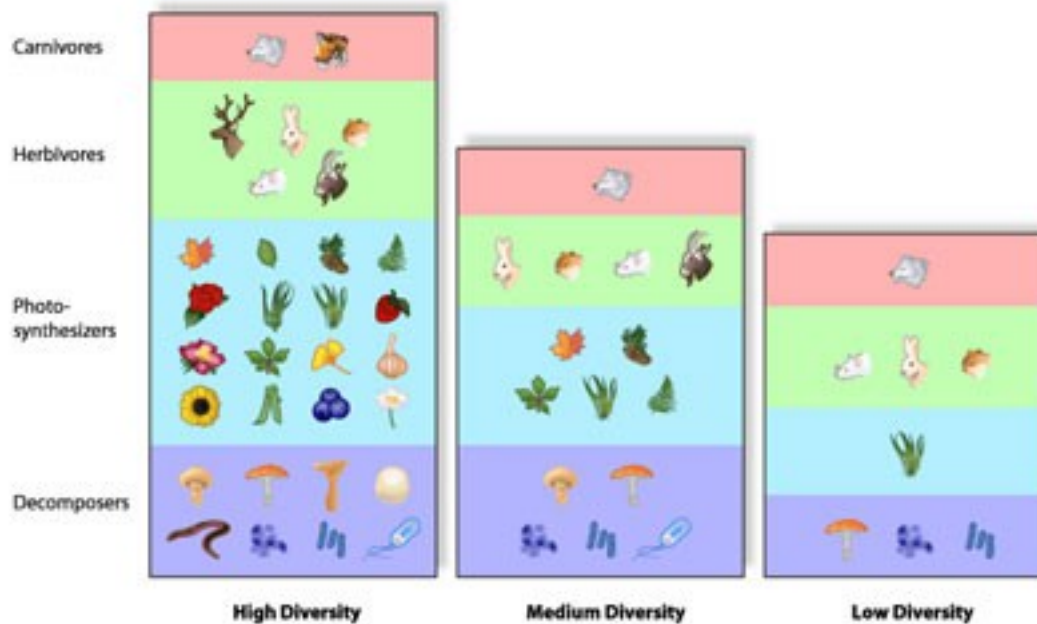


Do the aquatic ecosystems of  
Gateway National Recreation Area  
support Biodiversity?

# Biodiversity

The variety of ecosystems, species , or organisms in an area.

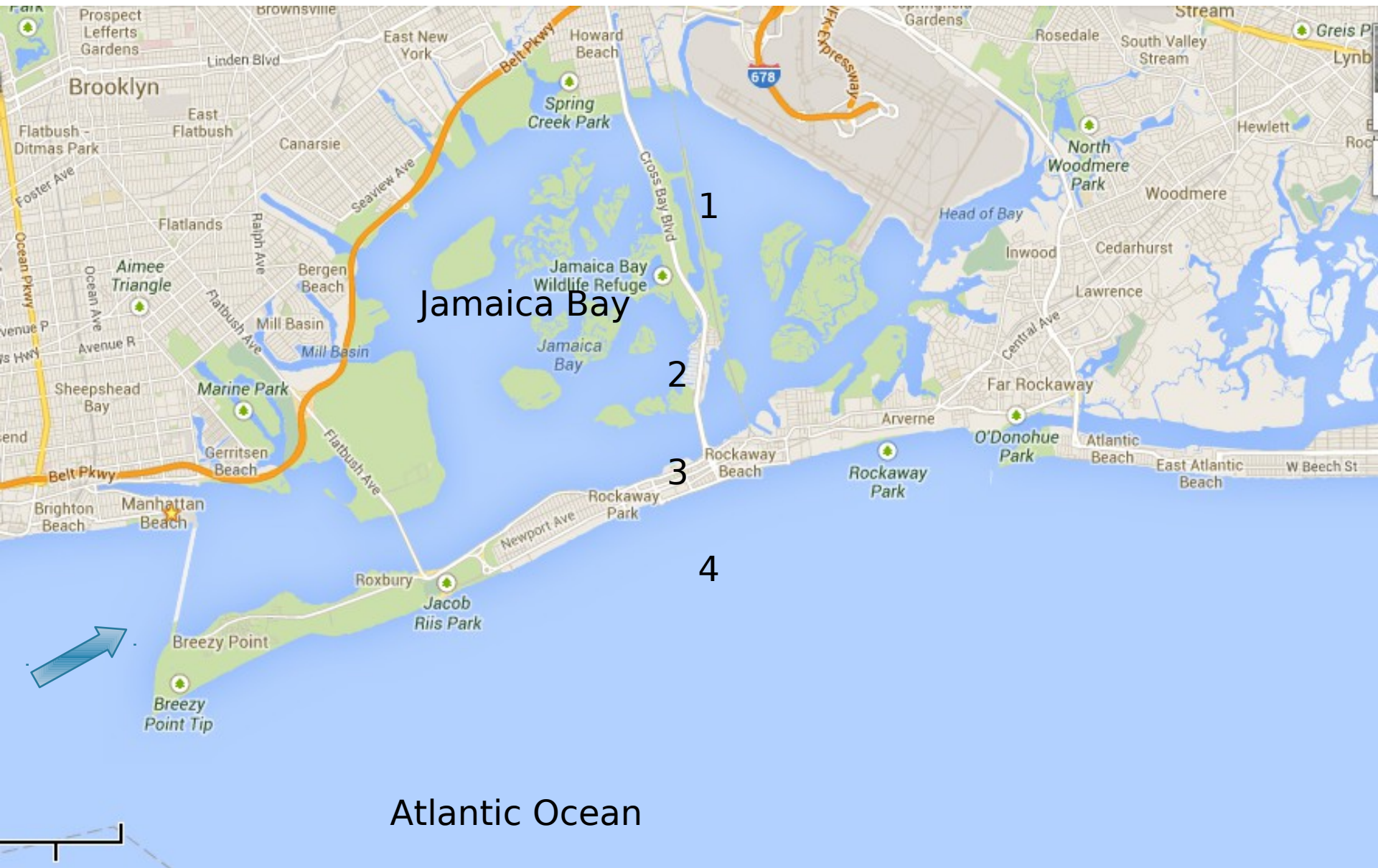
**Greater biodiversity  $\square$  greater stability/resilience!**



# What are some factors that species require to survive in an ecosystem?

- Abiotic
- Biotic

# Google map of GNRA



# Satellite image of GNRA



# Close up



# SIBLEY'S BACKYARD BIRDS

EASTERN NORTH AMERICA

ILLUSTRATED BY DAVID ALLEN SIBLEY



**▼ BASS**  
**LARGEMOUTH**  
(*Micropterus salmoides*)  
World Record 22 lbs. 4 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Montgomery Lake, Georgia, June 2, 1932



**SMALLMOUTH**  
(*Micropterus dolomieu*)  
World Record 10 lbs. 14 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Dale Hollow, Tennessee, April 24, 1969



**SPOTTED**  
(*Micropterus punctulatus*)  
World Record 10 lbs. 4 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Pine Flat Lake, California, April 21, 2001



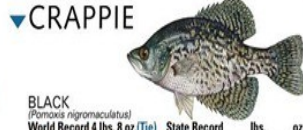
**STRIPED**  
(Landlocked)  
(*Morone saxatilis*)  
World Record 67 lbs. 8 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Los Banos, California, May 7, 1992



**STRIPED BASS HYBRID**  
(*Morone saxatilis* x *Morone chrysops*)  
World Record 27 lbs. 5 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Greens Ferry, Arkansas, April 24, 1997



**WHITE**  
(*Morone chrysops*)  
World Record 6 lbs. 13 oz. State Record \_\_\_ lbs. \_\_\_ oz.



**▼ CRAPPIE**  
**BLACK**  
(*Pomoxis nigromaculatus*)  
World Record 4 lbs. 8 oz. (Tie) State Record \_\_\_ lbs. \_\_\_ oz.  
Otoe County, Nebraska, June 15, 2003  
Kerr Lake, Virginia, March 1, 1981



**WHITE**  
(*Pomoxis annularis*)  
World Record 5 lbs. 3 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Enid Dam, Mississippi, July 31, 1957



**▼ CATFISH**  
**BLUE**  
(*Ictalurus furcatus*)  
World Record 121 lbs. 0 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Lake Texoma, Texas, January 16, 2004



**CHANNEL**  
(*Ictalurus punctatus*)  
World Record 58 lbs. 0 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Santee-Cooper, South Carolina, July 7, 1964



**FLATHEAD**  
(*Pylodictis oliviana*)  
World Record 123 lbs. 0 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Independence, Kansas, May 4, 1998



**▼ PIKE**  
**MUSKELLUNGE**  
(*Esox masquinongy*)  
World Record 67 lbs. 8 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Hayward, Wisconsin, July 24, 1949



**NORTHERN**  
(*Esox lucius*)  
World Record 67 lbs. 1 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Lake Greifen, West Germany, October 16, 1986



**▼ SALMON**  
**CHINOOK**  
(*Oncorhynchus tshawytscha*)  
World Record 97 lbs. 4 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Kenai, Alaska, May 17, 1985



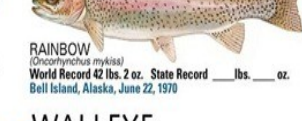
**COHO**  
(*Oncorhynchus kisutch*)  
World Record 33 lbs. 4 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Polaski, New York, September 27, 1989



**▼ TROUT**  
**BROWN**  
(*Salmo trutta*)  
World Record 40 lbs. 4 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Heber Springs, Arkansas  
May 2, 1992



**LAKE**  
(*Salvelinus namaycush*)  
World Record 72 lbs. 0 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
North West Territories, Canada, August 15, 1995



**RAINBOW**  
(*Oncorhynchus mykiss*)  
World Record 42 lbs. 2 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Bell Island, Alaska, June 22, 1970



**▼ WALLEYE**  
(*Stizostedion vitreum*)  
World Record 25 lbs. 0 oz. State Record \_\_\_ lbs. \_\_\_ oz.  
Old Hickory Lake, Tennessee, August 2, 1960

For more information about world records, visit [www.igfa.org](http://www.igfa.org)  
IGFA World Records as of August 1, 2005.  
Photography by Tim Knepp. IGFA Corporate Member

# J&J Sports

265 W. Main St., Patchogue NY 11772  
 (631) 654-2311  
 Patchogue Fishing Center  
[www.jjsportsfishing.com](http://www.jjsportsfishing.com)



kingfish have an elongated body with an arched back that gives them almost a triangular shape. They are an overall silver-gray or copper in color, often with darker shades on the back. On their sides are a series of dark, vertical bars. kingfish also has a large head and a single chin barbel. They have two dorsal fins, the first tall and pointed. **Size Limit: No Restrictions, Bag Limit: No Restrictions, Season: All Year. Excellent eating!!** Kingfish feed on sandworms, squid, and clam.

## Striped Bass



Size Limit: 1 Between 28"-40"  
 Size Limit: 1 Greater Than 40"  
 Bag Limit: 2 Per Day  
 Season: 4/15-12/15

## Bluefish



Size Limit: No Restrictions  
 Bag Limit: 15 Per Day  
 (only 10 may be under 12")  
 Season: All Year

## Blackfish



Size Limit: 16"  
 Bag Limit: 4 Per Day  
 Season: 10/5- 12/14

## Sea Bass



Size Limit: 13"  
 Bag Limit: 8 Per Day  
 Season: 7/10-12/31

## Weakfish



Size Limit: 16"  
 Bag Limit: 1 Per Day  
 Season: All Year

## Fluke



Size Limit: 19"  
 Bag Limit: 4 Per Day  
 Season: 5/1-9/29

## Codfish



Size Limit: 22"  
 Bag Limit: 10 Per Day  
 Season: All Year

## American Eel



Size Limit: 6"  
 Bag Limit: 50 Per Day  
 Season: All Year

## Flounder



Size Limit: 12"  
 Bag Limit: 2 Per Day  
 Season: 4/1-5/30

## Pollock



Size Limit: 19"  
 Bag Limit: No Restrictions  
 Season: All Year

## Porgy



Size Limit: 10"  
 Bag Limit: 30 Per Day  
 Season: 5/1-12/31

## Blue Claw Crab



Size Limit: Hard Shell 4-1/2"  
 Size Limit: Soft Shell 3-1/2"  
 Bag Limit: 50 Per Day  
 Season: All Year



For updated info: [www.dec.ny.gov/outdoor/7894.html](http://www.dec.ny.gov/outdoor/7894.html)



# Which parameters do we test?

**Salinity**- *saltiness*. Comes from minerals

**Ammonia**- comes from animal waste; can be toxic

**Nitrite**- derivative of ammonia; also can be toxic

**Nitrate**- derivative of nitrite, NON-toxic, fertilizes plants

**pH**- quantity of H<sup>+</sup> ions (*acid or base*)

# 4 Water Samples

1: East Pond

2: Jamaica Bay (inner)

3: Jamaica Bay (Beach Channel)

4: Atlantic Ocean

• Which do you think will be the most saline (salty)?

• Freshest? Level

- Third Outline

Which will have the most nitrate?

• Fourth Outline

Level

Which will have the most ammonia?

- Fifth Outline  
Level

- Sixth Outline  
Level

- Seventh Outline

# Prediction Time!

By looking at the 4 samples (A,B,C,D) try to predict where I collected each sample.

Then predict which location will have most salt, nitrate, and ammonia.

# Fun time!

Youngest person: You're up first! Salinity

Oldest person: organize bottles and instruction cards. Don't confuse nitrate with nitrite.

Be careful not to stain clothes.

Bring me your results when ready!

# Results

	<b>Sample A</b>	<b>Sample B</b>	<b>Sample C</b>	<b>Sample D</b>
<b>Salinity</b>				
<b>pH</b>				
<b>Ammonia</b>				
<b>Nitrite</b>				
<b>Nitrate</b>				