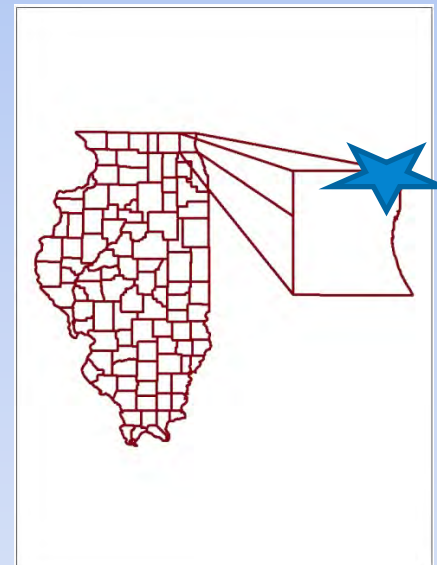


# Reducing swim bans through habitat restoration

Kathleen M. Paap  
Lake County Health Department  
Environmental Services Unit

# North Point Marina Beach



# Gull (*Larus* spp.) population of the Great Lakes region

Ring-billed gulls  
(*L. delawarensis*)

Herring Gulls  
*L. argentatus*

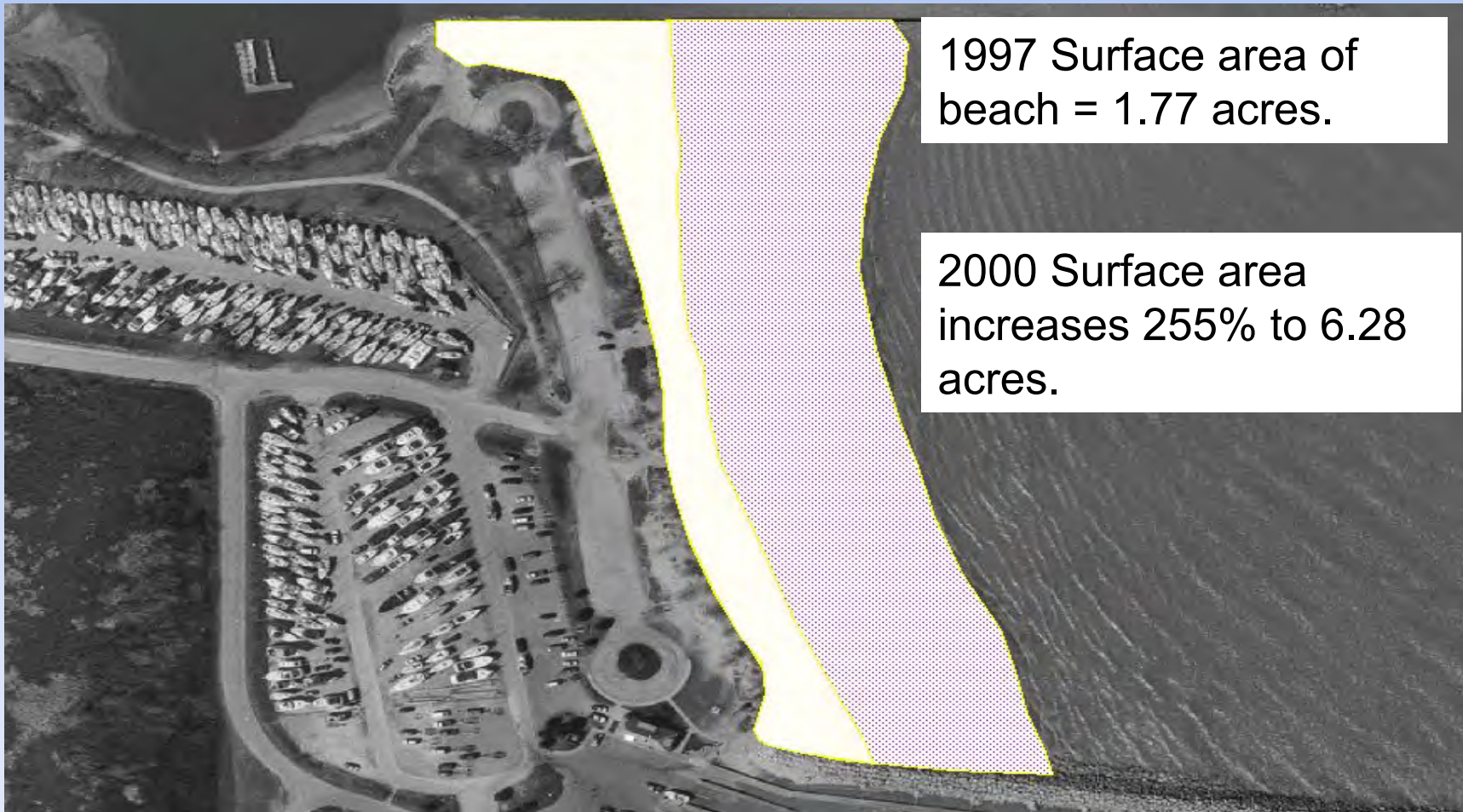


# Gull Feces – LCHD study

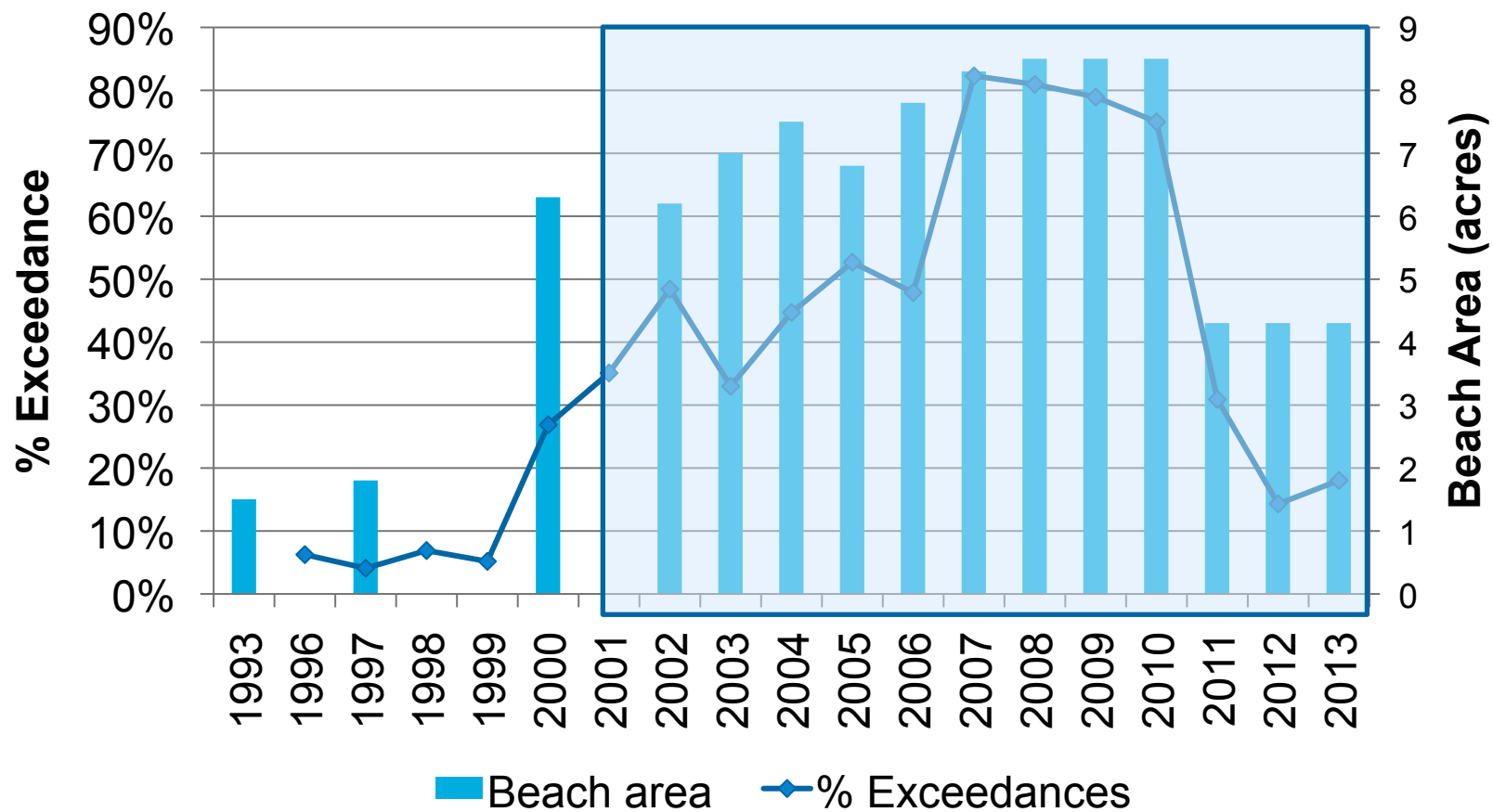
- In 2009, DNA ribotyping was used to genetically analyze E-coli samples from beaches.
- Main source of contamination in bacterial counts was gull feces.
- Salmonella and Proteus mirabilis were two pathogens discovered in additional studies conducted on gull feces.



# Beach Size and Area Change



# Background

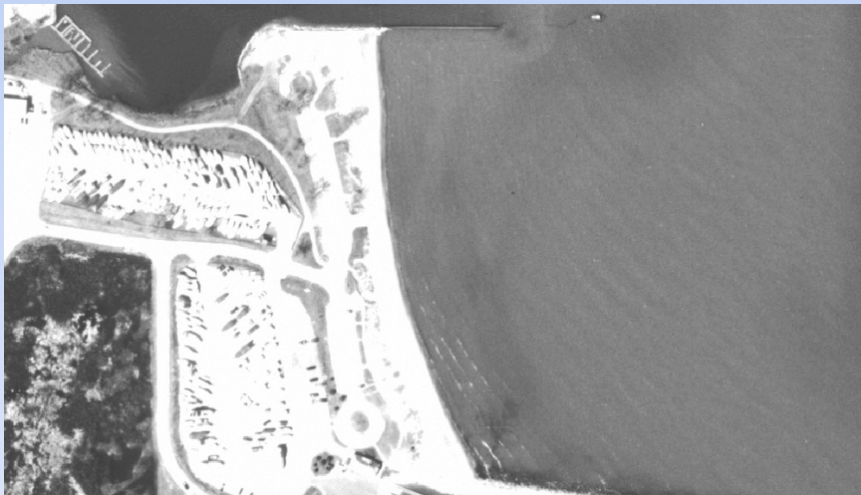


# Beach area increase 2000 -

10  
2000

2010

2008 – 2010 beach area = 8.5 acres.



# Swim Bans at North Point Beach

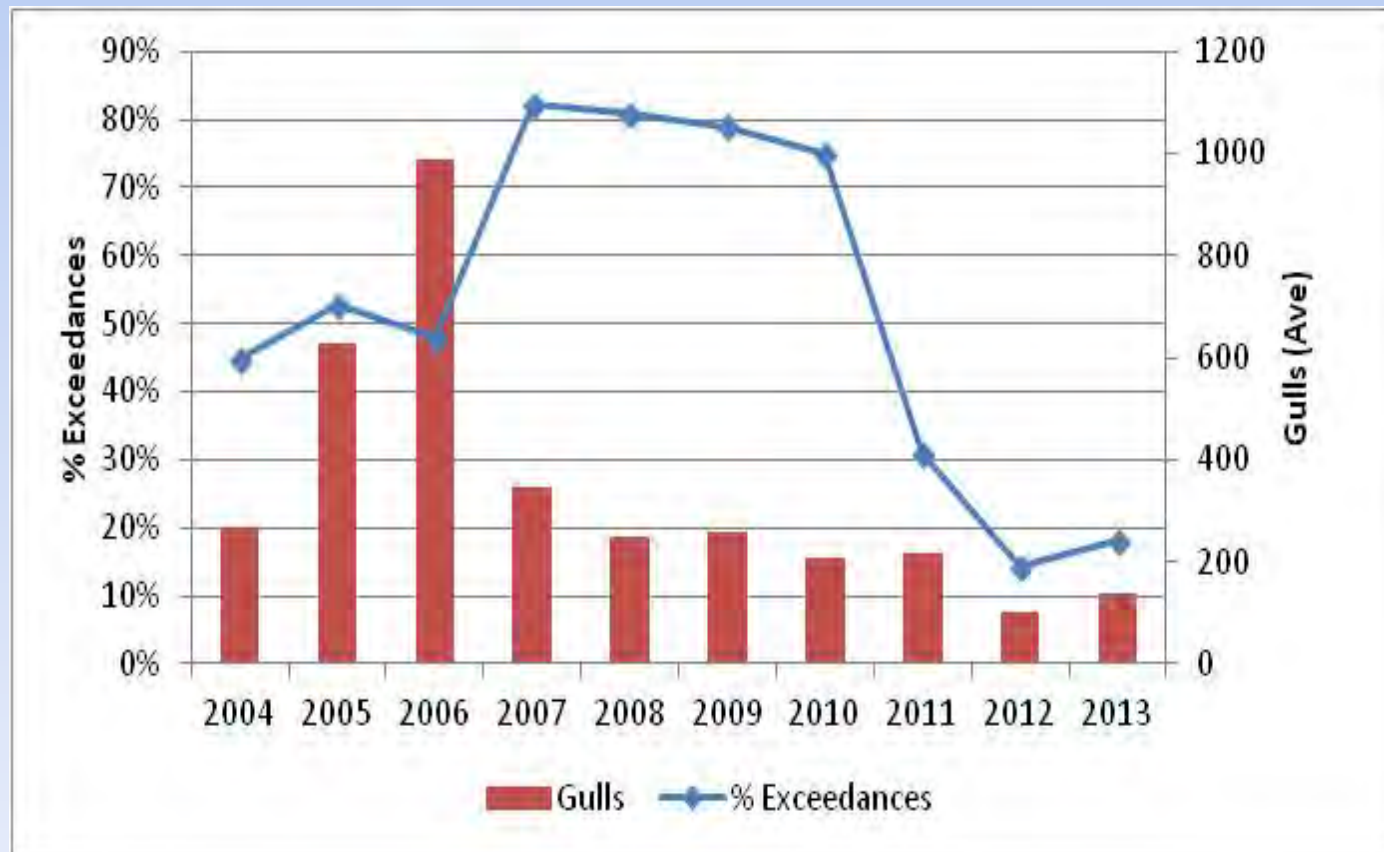
- Swim bans are issued causing beach closure when e-coli concentrations are above 235 mpn (most probable number)/100 mL.
- North Point Marina beach closed 80% of the time in 2007 and 2008.
- In 2008, North Point Marina beach ranked 3<sup>rd</sup> worst beach in nation in terms of swim bans due to e-coli contamination.
- In 2012 North Point Beach exhibited the largest decline in swim bans (14%).



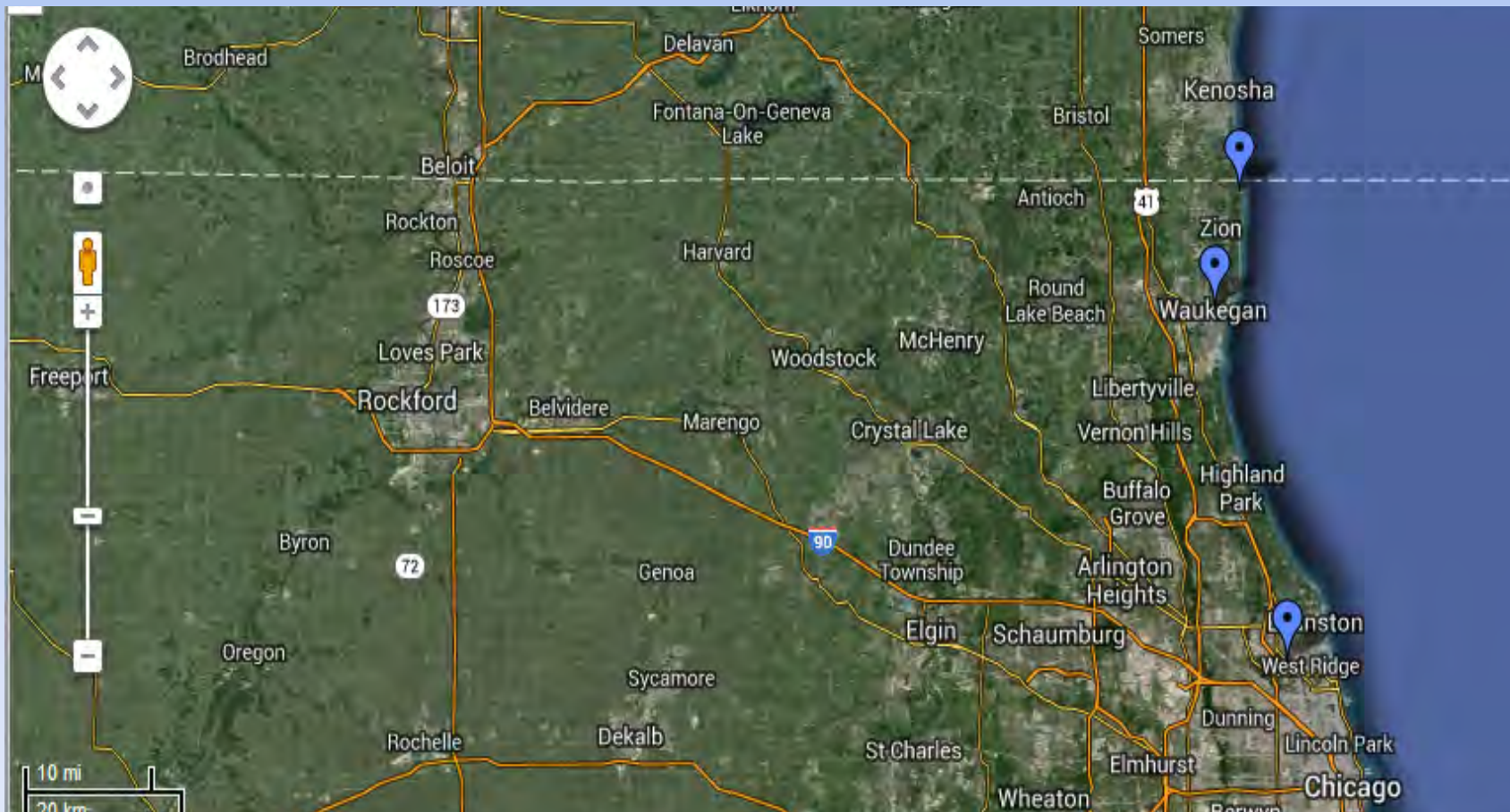
# North Point Marina Beach

	Samples	>235	% >235
2002	95	46	48.4%
2003	97	32	33.0%
2004	85	38	44.7%
2005	93	49	52.7%
2006	94	45	47.9%
2007	96	79	82.3%
2008	63	51	81.0%
2009	57	45	78.9%
2010	52	39	75.0%
2011	55	17	30.9%
2012	56	8	14.3%
2013	61	11	18.0%

# Average number of gulls and exceedance of e-coli conc. (2004 – 2013)



# Gull Nesting Colonies



# Occurrences at North Point

## Facts

- In 2012 the USDA-APHIS – Illinois Wildlife Services found 7,927 gulls found loafing at the beach.
- A large nesting colony was found at National Gypsum in Waukegan.

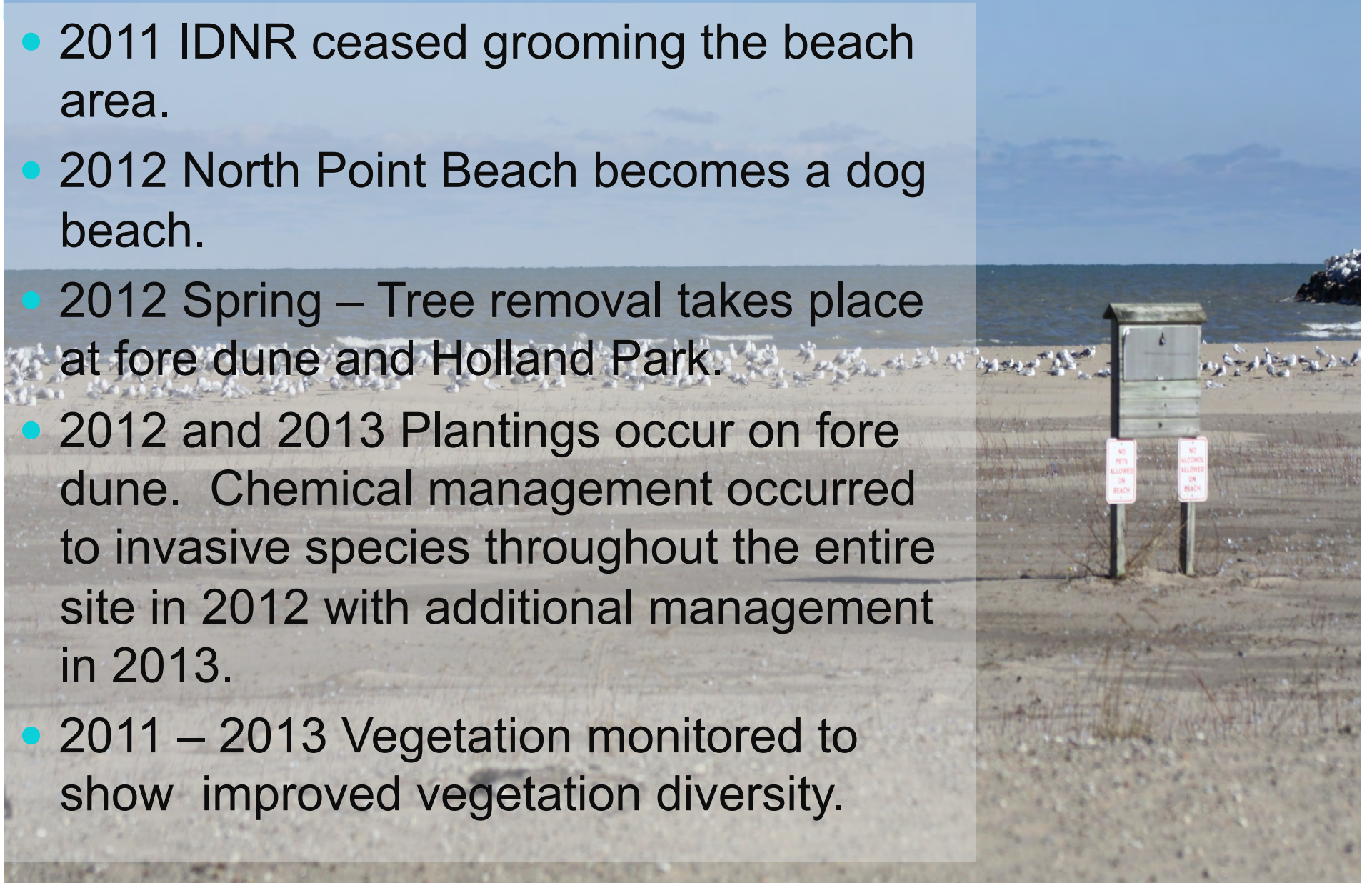
## Eggs oiled at National Gypsum

Species	Ring Billed		Herring	
	Nests	Eggs	Nests	Eggs
2012				
5/2	24	34	58	166
5/21			56	151

# Dune restoration

- A naturalized approach to reducing e-coli contamination at beach
- 9.5 acres of beach ridge shoreline are currently being restored by different agencies, prior to these efforts this landscape was only present at Illinois Beach State Park in Illinois.
- Restoring dune and swale system at beach would:
  - Improve aesthetics
  - Provide “roughness” to reduce sand movement at beach
  - Eliminate loafing area available to gulls
  - Decrease sight lines to the gulls, therefore altering the perception of threat by predators.

- 2011 IDNR ceased grooming the beach area.
- 2012 North Point Beach becomes a dog beach.
- 2012 Spring – Tree removal takes place at fore dune and Holland Park.
- 2012 and 2013 Plantings occur on fore dune. Chemical management occurred to invasive species throughout the entire site in 2012 with additional management in 2013.
- 2011 – 2013 Vegetation monitored to show improved vegetation diversity.



# Pre-construction

June 2011

July, 2011



# Tree Removal

April 2012 -





**February 2012**



**October 2012**

# Planting and Maintenance 2012

July 2012



2012



# Vegetation 2011 - 2013

## Dominant species in restoration area from pre-construction to present

September, 2011		September, 2012		October, 2013	
Species	Importance	Species	Importance	Species	Importance
East. Cottonwood	25.10	Grass	13.56	Witch Grass	14.26
Black Willow	22.34	Sand Grass	13.19	Canada Rye	13.94
Riverbank Grape	22.24	Cheat Grass	12.61	Quack Grass	13.55
Peach Tree Willow	15.01	Canada Rye	11.65	Sand Grass	12.95
Sandbar Willow	13.51	Sandbar		Bugseed	9.94
Sand Grass	10.35	Lovegrass	11.20	Horseweed	9.53
		Lovegrass	9.93	Grass	9.01
		Ladies Thumb	9.58	Ladies Thumb	8.44
		Marram Grass	9.07	Riverbank	
		Eastern Cottonwood	6.97	Grape	6.26
		Spotted Sandmat	6.28	Sand Grass	6.08

# 2013 Partnerships

Winthrop Harbor

Lake County Forest Preserve  
District



# Thank you

- United States Environmental Protection Agency (GLRI grant)
- Illinois Department of Natural Resources
- Illinois Department of Public Health
- Lake County Health Department
- The Nature Conservancy

