

Update on the Bottlenose Dolphins in the Shrewsbury & Navesink Rivers

January 13, 2009



NOAA/NMFS-SEFSC



National Marine Fisheries Service
National Oceanic and Atmospheric Administration

NOAA/NMFS Offices

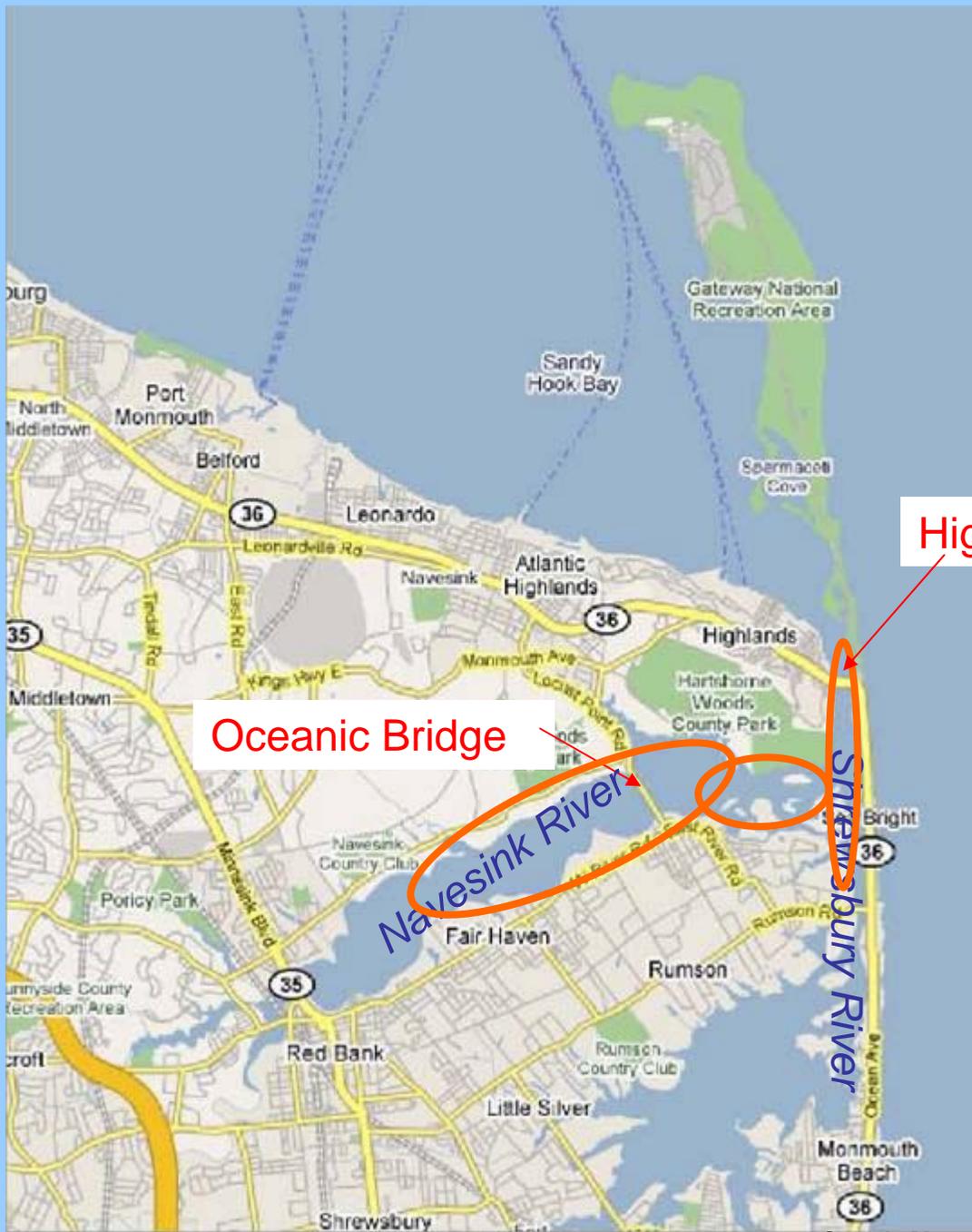


- **Northeast Regional Office**
 - Stranding Network Coordination
 - Coordination with State Wildlife and DOT Officials
 - Media and Public Outreach
 - Enforcement
- **Northeast Fisheries Science Center – Sandy Hook Lab**
 - Support for dolphin monitoring surveys (water and land based)
 - Environmental monitoring (temp, currents, prey, etc.)
- **Southeast Fisheries Science Center**
 - Dolphin monitoring surveys (photo-id & behavioral observations)
 - Genetic analyses
- **Headquarters (Office of Protected Resources, Office of Science and Technology, Office of Legislative Affairs)**
 - Marine Mammal Health and Stranding Response Program
 - Overall policy, budget, coordination with Congressional staff
 - Acoustic monitoring plan

Survey Efforts



NOAA/NMFS-SEFSC



Highlands Bridge

Oceanic Bridge

Navesink River

Shrewsbury River

○ = dolphins' ranging areas

Latest Sighting Information

- Survey date: Jan 13, 2009
- No. of Dolphins: 5
 - *NJ02, NJ03, NJ07, NJ09, NJ12*
- Location: Shrewsbury River south of Highlands Bridge
- Behaviors: Traveling in a group
- Water temp.: 1.4 °C
- Salinity: 18.2 ppt
- No dolphins seen in Navesink



Previous Sighting Information

- Survey dates: Jan 5 & 6, 2009
- No. of Dolphins: 5
 - *NJ02, NJ03, NJ07, NJ09, NJ12*
- Location: Shrewsbury River near Highlands Bridge
- Behaviors: Traveling in tight group; feeding
- Water temp.: 0.7 – 1.2 °C
- Salinity: 15.7 – 18.2 ppt
- No dolphins seen in Navesink
- Extensive survey of rivers banks found NO carcasses



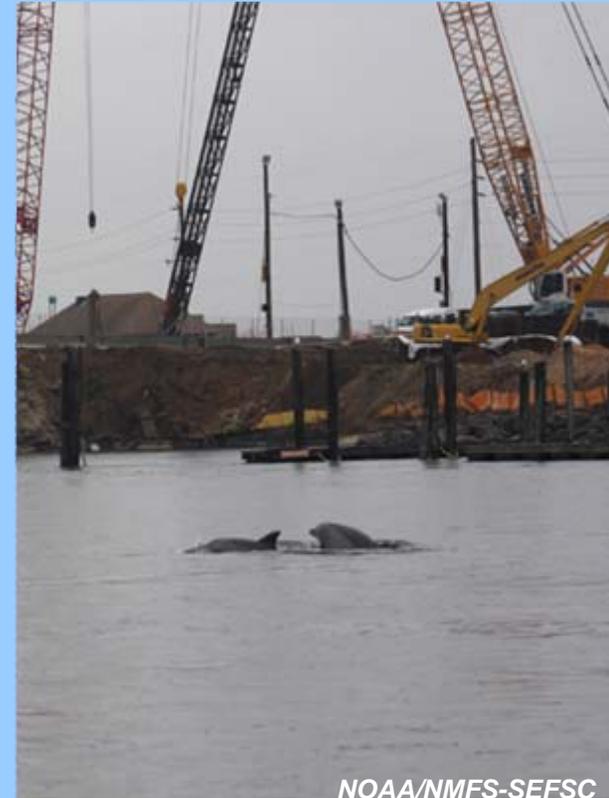
Additional Sighting Information

- Date: Jan 10, 2009
- No. of Dolphins: 5
- Location: Shrewsbury River at Highlands Bridge
- Report from Marine Mammal Observer - Confirmed:
 - Dolphins entered 500-yard zone 3 times
 - 2 dolphins swam under Bridge to North side and remained ~ 2 hours
 - 3 dolphins remained on South side
 - All 5 dolphins rejoined on South side of Bridge



Additional Sighting Information

- Date: Week of December 21, 2008
- No. of Dolphins: 2+
- Location: Shrewsbury River at Highlands Bridge
- Report from Local Resident -
Unconfirmed:
 - 2 dolphins swam under Bridge to North side and out to Sandy Hook Bay
 - Witnessed by 3 local citizens
 - NOAA trying to interview eye-witnesses for details



Dolphin Photo-Identification

NJ 04



NJ 08



NJ 09



NJ 15



Dolphin Photo-Identification



Genetic Analyses

- 4 dolphins were biopsy sampled by SEFSC to determine sex and stock:
 - NJ02 = Female
 - NJ09 = Female
 - NJ12 = Male
 - NJ13 = Female
- DNA analysis confirmed dolphins are from the ***“Coastal Migratory Stock”***



NOAA/NMFS Survey Efforts

| Survey No. | Dates | No. Dolphins | Dolphin IDs |
|-------------------|--------------|---------------------|---|
| 1 | Jun 27-30 | 16 | 01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16 |
| 2 | Oct 16-20 | 12 | 01,02,03,04,05,06,07,08,09,11,12,15 |
| 3 | Nov 4-6 | 12 | 01,02,03,04,05,06,07,08,09,11,12,15 |
| 4 | Nov 24-25 | 12 | 01,02,03,04,05,06,07,08,09,11,12,15 |
| 5 | Dec 16-17 | 12 | 01,02,03,04,05,06,07,08,09,11,12,15 |
| 6 | Dec 29-30 | 6 | 02,03,07,09,12,15 |
| 7 | Jan 5-6 | 5 | 02,03,07,09,12 |
| 8 | Jan 13 | 5 | 02,03,07,09,12 |

Current Status of Dolphins as of Jan 13, 2009

| Dolphin | Status | Dolphin | Status |
|---------|-------------------|---------|--|
| NJ01 | Stranded 12/25/08 | NJ09 | In Shrewsbury |
| NJ02 | In Shrewsbury | NJ10 | Last seen Jun 30 |
| NJ03 | In Shrewsbury | NJ11 | Last seen Dec 15 |
| NJ04 | Last seen Dec 17 | NJ12 | In Shrewsbury |
| NJ05 | Last seen Dec 16 | NJ13* | Stranded 10/08/08* <i>*carcass decomposed - identification pending genetic analysis</i> |
| NJ06 | Last seen Dec 17 | NJ14 | Stranded 09/24/08 |
| NJ07 | In Shrewsbury | NJ15 | Last seen Dec 30 |
| NJ08 | Last seen Dec 17 | NJ16 | Last seen Jun 30 ¹³ |

Stranding Results



NOAA's Partners for Stranding Response & Necropsy Investigations

- Marine Mammal Stranding Center of NJ
- NJ Division of Fish, Game and Wildlife
- University of Pennsylvania's New Bolton Center for Veterinary Medicine
- University of Tennessee
- Smithsonian Institution's National Museum of Natural History

Overview of Strandings

- Number of Confirmed Strandings:
3
- Sex:
All Females
- Age Classes:
2 Juveniles
1 Adult
- Causes or Contributing Causes of Death (*known or suspected*):
 - Juvenile Female: Fungal Pneumonia
- Open/Cases Not Completed:
 - Juvenile Female
 - Adult Female

NJ14 = MMSC-08-132

- Date Found: September 24, 2008
- Sex: Female
- Age: Juvenile
- Necropsy Exam Findings:
 - Carcass condition: **Fresh**
 - Good body condition
 - Not emaciated
 - Ulcers in esophagus and stomach
 - Stomach empty
 - Stomach parasites
 - Fungal pneumonia
- Cause of Death: Fungal Pneumonia



NJ13(?) = MMSC-08-141

- Date Found: October 8, 2008
- Sex: Female
- Age: Juvenile
- Necropsy Exam Findings:
 - Carcass condition: **Decomposed**
 - Stomach empty
 - Some stomach parasites
 - Not emaciated
 - Lungs congested
- Cause of Death: Undetermined because carcass too decomposed for detailed tissue cellular analyses



NJ01 = MMSC-08-161

- Date Found: December 25, 2008
- Sex: Female
- Age: Adult
- Exam Findings:
 - Carcass condition: **Fresh**
 - Fair body condition
 - Not emaciated
 - Teeth worn or missing
 - Ulcers in mouth
 - Stomach empty
 - Scars on lung surface (previous parasite infection?)
 - Pregnant with viable fetus
- Cause of Death: Unknown, Pending Microscopic Evaluation & Other Tests



Next Steps for Evaluation of NJ01

- Microscopic evaluation of organs
- Stock Identification: Evaluation of head/skull by Smithsonian Institution NMNH
- Age Estimation: Analysis of Growth Layer Groups in teeth



Acoustic Monitoring



NOAA/NMFS-SEFSC

NOAA's Partners for Acoustic Monitoring Effort

- Rutgers University
- Geo-Marine, Inc.

Highlands Bridge



Oceanic Bridge



NOAA/NMFS-OPR

Acoustic Monitoring: Deployments

- 2 listening sensors deployed to measure underwater sounds in the river (natural and human-generated)
 - Sensor 1 placed close to the Highlands Bridge
 - Sensor 2 placed 1.3 miles south at confluence of the Navesink and Shrewsbury Rivers
- Record sounds up to ~22.5 kHz
 - On for 200 sec
 - Off for 400 sec
 - 33% sampling duty cycle



Loggerhead 123

Loggerhead 113

Image © 2008 TerraMetrics
Image NASA

Google 26

40°23'14.42" N 73°58'54.27" W

Eye alt 11.63 mi

Acoustic Monitoring: Preliminary Results

- 2 hydrophones deployed over five periods in Nov-Dec 2008
- ~475 hours of recordings
- Both units recorded construction activity (including pile driving sounds 1.3 miles away) and sounds associated with vessel traffic
- Received levels still being calculated for the recordings but appear as expected for these kinds of activities

Acoustic Monitoring: Preliminary Results

- Half of recordings have been analyzed so far
- No dolphin sounds have been detected
 - Likely just social whistles (not echolocation) would be detected
- Nothing surprising about the results to date
- River sounds like industrialized underwater environment with intermittent construction



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