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GIS

Army Corps GIS Protects Endangered Shore Species

21 Oct, 2009

By: [JoAnne Castagna](#)

The U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service collaborate to create a tool for monitoring threatened birds and plants.

Our health may be at risk, warns the U.S. Fish and Wildlife Service (FWS). The agency whose mission is to monitor and manage threatened and endangered wildlife reports that bird populations are plummeting at an alarming rate, and the health of our feathered friends is "a critical indicator of the health of the environment on which we all depend."



A piping plover incubates its eggs in a sandy hollow. Image courtesy of the U.S. Army Corps of Engineers.

provide a central point of data entry for surveys and site observations related to threatened and endangered species," said Rose Dopsovic, a GIS contractor with the Army Corps, Mobile District, who is assisting the New York District.

Any agency that has an interest in the monitoring and management of these threatened and endangered species can submit its observations to TESS. Presently, the site comprises data on threatened and endangered birds including the piping plover, common tern, and least tern, as well as plants including the seabeach amaranth.

TESS serves as a user-friendly interface to the GIS, a tool capable of capturing, storing, analyzing, and displaying spatial information. The GIS incorporates data from various sources, such as aerial photographs and electronic data. A primary source of data for the GIS is beach surveys conducted by members of the Army Corps and other agencies. These field workers visit beaches, observe birds and nests, and record their numbers and locations on forms available through TESS.

One way that FWS is keeping an eye on birds at risk is through a website called the [Threatened and Endangered Species System \(TESS\)](#). The site — created in collaboration with the U.S. Army Corps of Engineers, New York District — includes a geographic information system (GIS) that is a repository of information on threatened and endangered bird and plant species living along the New York and New Jersey coasts.

Scientists, decision makers, and other interested parties can use this information to come up with joint solutions for protecting these species. "The purpose of the website is to

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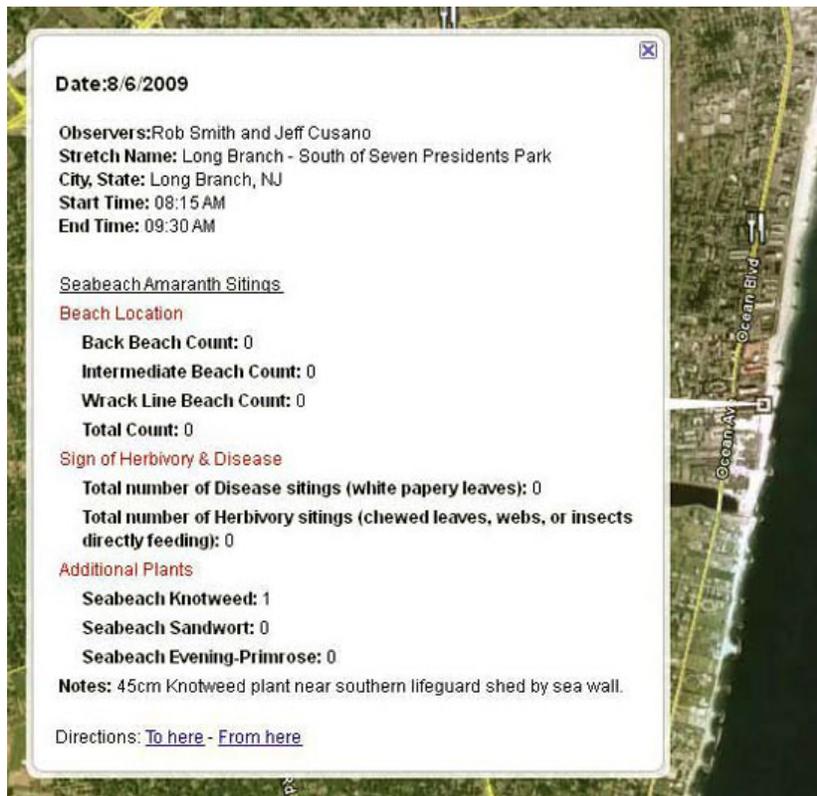
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The TESS website allows users to download survey forms, view and search survey submissions, and plot observations of piping plover or seabeach amaranth in Google Earth. Image courtesy of Rose Dopsovic, Army Corps, Mobile District.

The GIS combines these layers of information to perform analyses, creating products such as maps, reports, and charts. For example, the beach survey data is used to create nesting and bird sitting maps that help officials decide when to close off certain areas of the beaches, thereby preventing human visitors from disrupting the nesting process.

Monitoring Habitats with TESS

The TESS website provides several seasons' worth of habitat information that can be analyzed and used to make decisions that will improve the survival of threatened and endangered species. To retrieve information from the GIS, visitors can select a portion of a map of the New York and New Jersey shoreline and pull up data on that particular region. Alternatively, they can perform a search in a database to find the information they seek.

Users of the system can see where birds are nesting and plants are growing each season. Changes in these habitat locations from one season to another can prompt an investigation into why this has occurred.

According to Robert Smith, "Wildlife can change where it lives for a number of different reasons, including if a predator has entered a habitat or because a man-made project is in progress in the habitat area. In fact, the Army Corps is required to monitor and protect wildlife near any of its projects." Smith is an acting regional endangered species expert, Army Corps, New York District, who has personally conducted many observations and posted them to the TESS website.

Monitoring bird and plant habitats over time also helps people find relationships among different categories of data, such as the impact of weather on population numbers. "For example, we can see how a storm event affects the population of a species in a specified area by viewing the habitat before and after the event," said Dopsovic.



Users of the TESS website can input coordinates and information to generate Google Earth files, so they can view, track, and compare species observations and nesting locations across seasons. Image courtesy of Rose Dopsovic, Army Corps, Mobile District.

Dopsovic said, "We can also track trends in habitats. For example, we are able to see if birds are more or less likely to nest in beach fill areas." Beach fill areas are portions of the coast that eroded and were replenished with sand dredged from the ocean.

Benefiting Birds and Humans Alike

Having seasonal habitat information can also improve the quality of life for New York and New Jersey residents that visit the beach.

Jeff Cusano, project geographer, Army Corps, New York District, said, "Often we place fencing along the coast to protect threatened and endangered wildlife from being harmed from people visiting the beach. Usually when this is initially done a large area is fenced off, which can be annoying to the public that wants to visit the beach. Having seasonal habitat information helps us to monitor where these species are actually living and enables us to adjust where we have the fencing."

In the near future, the participating agencies will expand TESS. The site will include more threatened and endangered species and may cover a greater portion of the Northeast's coastal region.

Using GIS on a website "provides a great tool for managers to see what is going on with a click of a button," said Smith. "If more of our partners and local groups adopt and use the website it will be a great benefit to all parties interested in the monitoring and protection of these species."

About the Author: JoAnne Castagna

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