

# “Pop-up” Autonomous Acoustic Recorders in Glacier Bay

National Park Service  
U.S. Department of the Interior

Glacier Bay National Park and Preserve



We deployed two acoustic recorders from the Sand Lance on Friday June 22, 2007. Each of the two recorders (shown here) weighs 93 lbs.

**PURPOSE**  
Glacier Bay National Park monitors underwater sound to assess and gather information relevant to minimizing disturbance of endangered humpback whales and other marine mammals.

## How does it work?

- ★ The recorders will gather 45 days of continuous sound data while they are in the water.
- ★ When we are ready to retrieve them, around August 6, 2007, we will ‘call’ them back to the surface by playing a specific series of tones to them on an underwater speaker.
- ★ The tones instruct the recorder to “burn” a small metal wire that is part of the tether.
- ★ With luck, the recorders will then “pop up” back to the surface within a few minutes, and we will retrieve them.
- ★ Back at Bartlett Cove, we will download the sound data.
- ★ Data analysis will take place over the next 6 months.

For technical information about “pop-ups”  
<http://www.birds.cornell.edu/brp/hardware/hardware>



Ward Krkoska from Cornell University's Bioacoustics Research Program came to Glacier Bay to deploy the “pop-ups” and will return in August to retrieve them.

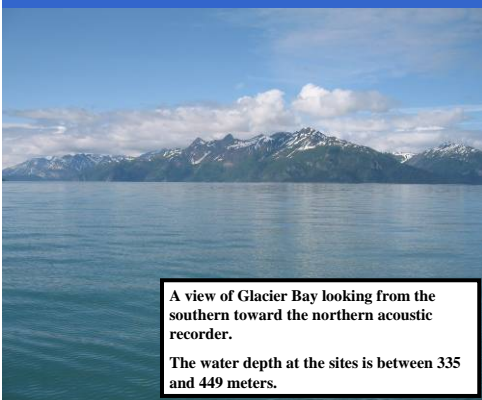
More about acoustic monitoring at Glacier Bay is found at the Park's web site:  
<http://www.nps.gov/glna/naturescience/acoustics.htm>

Funds for this project were provided by Ocean Alaska Science & Learning Center ([www.oceanalaska.org](http://www.oceanalaska.org)) and Glacier Bay National Park.



The acoustic recorder is anchored to the bottom by burlap bags containing about 160 lbs of gravel. It is suspended above the bottom by a short tether. This photo was taken by Carlo D'Angelo, (copyright Cornell Bioacoustics Research Program), and was taken in Brazil, not Glacier Bay.

We will be retrieving the floating pop-ups during the week of August 6<sup>th</sup>.

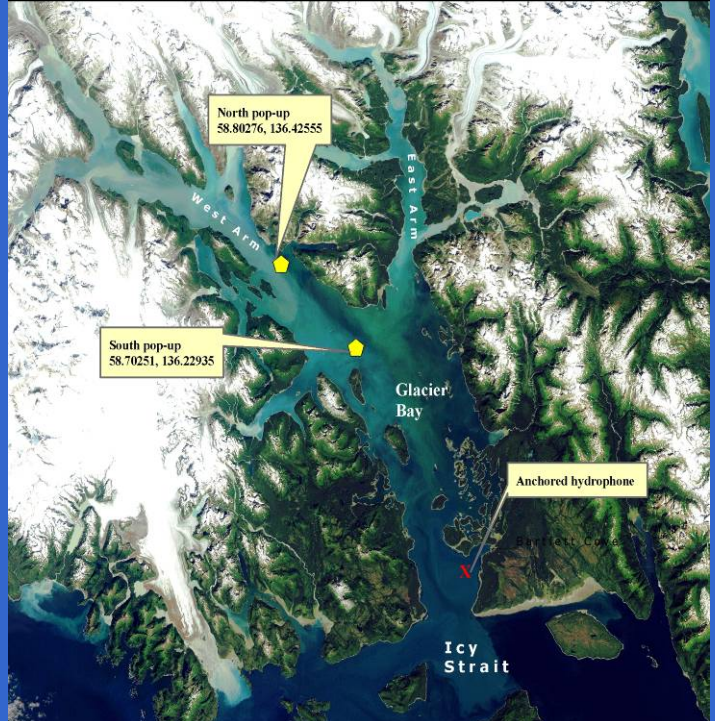


A view of Glacier Bay looking from the southern toward the northern acoustic recorder.

The water depth at the sites is between 335 and 449 meters.

## Glacier Bay, Alaska locations of 'pop-up' acoustic recorders

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## What Questions Do We Hope to Answer?

- ★ Using sound data from the Lower Bay anchored hydrophone, the Park is working with scientists from the Bioacoustics Research Program at Cornell University to study the acoustic effects of different levels of cruise ship traffic (0 ships, 1 ship, 2 ships).
- ★ As you might expect, our preliminary results indicate that days with more ships have significantly higher acoustic levels.
- ★ The Lower Bay is a good place for underwater listening because of the concentration of humpback whales there. However, we decided to deploy additional acoustic recorders elsewhere in Glacier Bay to determine whether our Lower Bay results are consistent in areas where ships are at their normal cruising speeds, and where port traffic accessing Bartlett Cove is not a major influence.
- ★ Slower ship speeds for picking up and dropping off Park naturalist rangers and harbor traffic in the Lower Bay may make ships seem acoustically less important than they actually are. So, listening elsewhere in the Bay will ‘even the playing field’ regarding the acoustic contributions of cruise ships and other vessel types in Glacier Bay's underwater soundscape.
- ★ We chose the locations for the “pop-ups” based on vessel traffic patterns, water depth and humpback and killer whale sightings.
- ★ The resulting information is intended to be used in the Superintendent's decisions about increases in cruise ship entries into Glacier Bay, allowed under the VQOR (Vessel Quotas and Operating Requirements) regulations.