

Gannets signal influences of very warm ocean waters

Birds I View

Bill Montevecchi



Northern Gannet sky-pointing. Photo: Bill Montevecchi

Like a switch had been flipped on the morning of 8 August, naturalists Chris Mooney and Kyrin Power at Cape St. Mary's were utterly shocked to see that the adult gannets had abandoned the breeding colony. It is a completely rare and extreme event for gannet parents to abandon their chicks. There had been an intense rain the evening before with lightning, but nesting gannets have experienced storms and lightning for millennia.

On 15 August, Tony Power, Chris Mooney, Chantelle Burke, Seth Bennett and I observed that about 40% of the chicks were unattended. Parental gannets virtually never leave their chicks unattended. It's too dangerous, unattended chicks are attacked by neighboring adults, non-breeders and predators including black-backed gulls and eagles.

In the largest North American gannet colony on Bonaventure Island in the Gulf of St. Lawrence, there did not appear to be dramatic switch to chick abandonment as occurred at Cape St. Mary's. On 17 Aug 2012 however, Dr. John Chardine of Environment Canada reported parental abandonment and breeding failure. On 21 August, John reported that of 469 monitored nests, 394 had eggs laid in them. Of these, only 13% of the nests with eggs had live chick in mid-August live chicks. Dr. Stefan Garthe of the University of Kiel reported continued chick failure, so success may be even lower. Dr. Chardine will check the numbers of fledglings at nests in September. Here in Newfoundland, we will check the weights fledgling gannets on the water around Cape St. Mary's in late September.

Dr. Sabina Wilhelm of the Canadian Wildlife Service is running breeding success plots at Cape St. Mary's. This information will be forthcoming, but checks with the naturalists indicate breeding failure comparable to Bonaventure Island.

On 15 August at Cape St. Mary's, we captured breeding adults on the mainland cliffs, weighed them and took blood and body fluid samples to check for stress and avian virus. Many birds were light in weight. Their body masses averaged 300 grams lighter than those at Funk Island in early August when the colony there was in excellent condition. On Bonaventure Island, Dr. Garthe also found that the gannets were about 300 grams under weight and almost identical in weight to those of the Cape St. Mary's gannets. In late August, gannets in the colony on Baccalieu Island appeared fine.

Provincial veterinarian Dr. Laura Rogers performed an autopsy on a dead chick that we collected at Cape St. Mary's. Cause of death was reported to be starvation. Some dead chicks from Bonaventure Island have been sent for autopsy. Dead adult gannets have been recovered on the Quebec North Shore (Aurore Pérot) and on the beach at Bonne Bay in western Newfoundland (Marina Montevicchi, Andrew Stokes). They have been sent for autopsy. Kathryn Hahn reported that weakened adult gannet died at Battle Harbour in July.

Throughout August, many fishermen have been had gannets diving right next to their boats. Gannets have been diving for deck washings from shrimp trawlers and in the bubble streams of outboards (as never experienced before).

Warm water and food shortage hypothesis

So what's going on? The 1st obvious hypothesis about these events is food shortage and starvation.

The ocean in our region is warmer than usual. Sea surface temperatures are 3-4 degrees above average in Newfoundland, the Gulf of St. Lawrence and the entire Northwest Atlantic (http://weather.unisys.com/surface/sst_anom.gif). Cape St. Mary's and Bonaventure are the southernmost gannet colonies in the warmest water.

Yet how could warm water be problematic? In late summer, gannets prey on warm-water mackerel, Atlantic saury and squid, and it might be expected that the warm ocean water would facilitate their availability. Saury have been seen in the gannets' regurgitations of at Cape St. Mary's,

Bonaventure, Baccalieu and Funk Islands. The warm-water might however be causing warm water fishes and squid to move deeper. Fishermen have been reporting “very deep bait” on the south coast of Newfoundland. Gannets can dive to about 20 m, so any fish below that are essentially non-existent.

On the northeast Newfoundland coast, the capelin and seabird research led by Dr. Gail Davoren of the University of Manitoba indicated that sea-surface temperature was warmer than average and that the cold subzero water of the Labrador Current layer was about 20 meters deeper than the historical mean depth. An analysis of the sea surface temperatures and anomalies by Paul Regular shows thermal peaks around 8 August when the gannets abandoned the Cape. The acute onset of the parental abandonment at Cape St. Mary’s suggests a rapid onset event which is not fully understandable in terms of a food shortage interpretation. One possibility is that nutritional stress coupled with a storm on the night of 7 - 8 August triggered the colony abandonment.

Consistent with the warm-water perturbation interpretation, very high numbers of gannets have been observed diving in more northerly cold Labrador Current waters. Reports come from the Strait of Belle Isle (Chantelle Burke, Patsy Ploughman), Battle Harbour (Gordon Slade), and Saglek Fjord in Tourngat National Park (Darroch Whitaker, Tina Leonard). Higher than average numbers of gannets were seen in Witless Bay in early August (Michelle Fitzsimmonds). A couple of reports of large feeding aggregations of gannets have also however come from Nova Scotia.

Biologist Nadia Ménard reported that adult gannets were seen in exceptionally high numbers in the estuary of the Saguenay River at Parc Marin Saguenay St-Laurent. Using the shortest oversea route, the estuary is 500 km away from the nearest gannet colony on Bonaventure Island.

Drs. Stefan Garthe and David Pelletier have been applying bird-borne GPS devices to gannets on Bonaventure Island this summer. Initial tracks of foraging gannets show the birds making very long trips including some to cold water sites on the Quebec North Shore.

Environment Canada – Canadian Wildlife Service (Drs. Chardine and Wilhelm] conducted aerial photographic surveys of the North American gannet colonies during July. Counts from the images will be available in the fall.

Taken together the evidence is consistent with the hypothesis that the breeding failures at Cape St. Mary’s and Bonaventure Island, where surface water temperatures are exceptionally high, are due to climatic influences on prey availability. But the full story is still unfolding. And it is not just about gannets or even birds. Very unusual occurrences and behavior of fishes, marine mammals and sea turtles are evident throughout the northwest Atlantic. The gannets at Cape St. Mary’s and Bonaventure Island provided the first indications of an extreme ocean climate event. We are still watching.

Birds in the area and around the province

Early August reports included puffins on the water just west of Bell Island (Kathryn Welbourn), and on 10 August Karen Andrews photographed a Great Blue Heron in a tidal area on the road to Raleigh that had apparently been there for many days. At present there are great blues in Renew, St. Paul’s and

Gros Morne (Darroch Whitaker). In mid-August, Terrance Hounsell photographed a very interesting all white leucistic black-legged Kittiwake in Greenspond.

In early September, flocks of Canada geese were in Noggin Cove and North Harbour, St. Mary's Bay (Carolyn Mayo), and Linda Gaborko and Janet Montevecchi observed a red knot at Cape Freels. In early September, a less than usual spruce grouse was seen flying low across the TCH in Terra Nova Park (Janet Montevecchi).

The summer of 2012 is proving to be a bonanza year for northern harriers. Many red-breasted juveniles are making a great showing on the barrens and open forests throughout the island. What appeared be a least flycatcher moving around with a flock of yellow-rumped warblers added a new species to our yard list on 7 September.

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