

WHY GO TO GEORGES BANK AND HYDROGRAPHER CANYON?

Georges Bank is a submarine plateau that roughly coincides with the eastern edge of the Continental Shelf and which is located approximately 100-150 miles east and southeast of Massachusetts. Without describing in detail all the bathymetric, hydrographic, and oceanographic parameters that make Georges Bank so critical to marine organisms, several key factors deserve to be mentioned. First, Georges Bank is bordered on three sides by waters of depths greater than 150 meters compared to depths of 40-100 meters on the bank itself. In the deep water off the bank nutrients such as nitrates and phosphates that are critical to phytoplankton (tiny floating algae) are generally below the depth of the sun's penetration. Here they are unable to serve as marine fertilizer for the phytoplankton. In addition, there is a complex water circulation pattern in the Gulf of Maine to the north and in the Gulf Stream-affected waters to the south. This creates a clockwise gyre over Georges Bank. This gyre draws the nutrient-rich deep water onto the bank. Then, in the well-illuminated shelf waters over Georges Bank, phytoplankton seasonally bloom, with particularly high productivity occurring in mid- to late summer. This bloom forms the base for a food pyramid that includes a myriad of zooplankton species, fish, and finally, marine birds and mammals. The effect of the mixing of the shallower shelf water and the deeper water off the Continental Shelf, called slope water, is often most profound at the edges of the submarine canyons along the southern border of Georges Bank, which roughly coincides with the 200 meter isobar.

Besides the high productivity over Georges Bank, a second factor that is critical to the seasonal concentration of marine birds is the occurrence of oceanographic fronts. Fronts are boundary areas between different water masses. When waters of differing temperatures and salinities come together, narrow bands, often detectable by lines of floating surface debris or differences in water color, form at the frontal interface. South of Cape Cod a frontal area exists that roughly corresponds to the southern edge of Georges Bank. This front occurs where cool shelf waters meet warmer slope waters. The result of such a frontal area is high biological productivity which is essential to concentrating marine birds and mammals. This frontal effect can be particularly dramatic when warm water eddies drift north from the Gulf Stream into slope water. This phenomenon is most apparent off southern New England in the vicinity of the southwest portion of Georges Bank at locations such as Hydrographer Canyon.

A third feature that makes Georges Bank so important to marine birds is the human artifact created by commercial fishing. Due to the concentrations of commercially valuable fish in the area, the presence of major fishing operations often attracts large numbers of scavenging sea birds. It is around these fishing fleets that major concentrations of shearwaters, storm-petrels, and gulls occur and where we are most apt to encounter skuas.

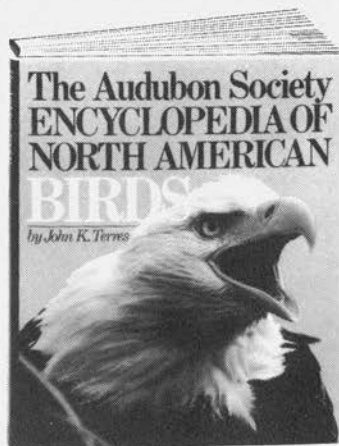
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