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Environments

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More than any other landscape on the globe, islands and their cultures are shaped and sculpted by their all-encompassing, all-encroaching and omnipresent seas. From their seas spring the environmental forces that have carved out local island cultures. In the case of the islands of the Gulf of Maine, salt, water, waves and wind work above and beneath its restless surface to shape life and death along the archipelago. To understand the environments of islands, and hence, their cultures, you must begin with the sea.

The islands of Maine are mountaintops and ridgelines isolated by seas that rose above the complex bathymetry of the Gulf of Maine as the glaciers melted. The seaward edge of the Gulf of Maine is bounded on the Canadian side by the bedrock upper arm of Brown's Bank, which extends southwest from Nova Scotia, and by the legendary glacial sand and gravel-capped forearm of Georges Bank, which extends northeast from Cape Cod. Offshore of Brown's and Georges, Northeast Channel provides a narrow, deep entrance for oceanic waters that surge into the partially enclosed Gulf of Maine from the expanse of the North Atlantic. Inshore of these banks lie an intricate maze of basins, ledges, grounds and guzzles, each with its dis-

tinctive marine community.

In 1978 the United States extended its seaward territorial jurisdiction to 200 miles—largely at the insistence of New England states that protested the decimation of historic fish stocks on Georges Bank by foreign fishing fleets, just beyond the then-12-mile territorial sea limit. The imposition of the 200-mile limit led ineluctably to the question of who would control the rich fishing rights in the Gulf of Maine and on Georges Bank, which led ultimately to the division of the Gulf of Maine between Canada and the United States, along what we now call the Hague Line. We now have two systems, if one Gulf.

During the last two decades of sophisticated oceanographic observations, we've learned that the marine environments of the Gulf of Maine are influenced not just by the deepwater connection to the North Atlantic, but also by the interplay of cold arctic waters with the warmer waters of the Gulf Stream that run as countercurrents to each other just outside the boundary of the Gulf of Maine. Occasionally a surface eddy off the Gulf Stream will sweep over Georges Bank and drastically alter the marine ecology, swiping away an entire year-class of larval fish that will thereafter be missing from

the system—a loss that will reverberate throughout the marine food web for years to come. On other occasions, the temperature of the bottom water entering Northeast Channel will be distinctly colder than normal, circulating deep within the Gulf of Maine along the margins of the coasts of the Canadian Maritimes and northern New England during the following six-month circulation period, causing bottom temperatures to decrease and creatures like lobsters to change their patterns of behavior.

In recent years, the marine research community has begun to ponder how oceanic currents that cycle in a vast counterclockwise gyre throughout the Gulf of Maine will be affected by changes in the Arctic, as sea ice melts and Greenland's glaciers and ice cap pour new rivers of freshwater into the salty northern seas. Enormous changes in the marine ecology of the Gulf of Maine have occurred at least once before. Archaeological research has revealed one dramatic climate change five thousand years ago: Indigenous Indians who inhabited the islands of Maine left records of their subsistence diet in bone deposits of swordfish and deer, characteristic of a warm climate—until different bone fragments deposited later reveal a rapid shift in diet to moose and cod, characteristic

of a colder climate. It is hard to imagine that such a rapid reorganization of marine and terrestrial ecosystems in the Gulf of Maine five thousand years ago did not also coincide with an equally dramatic shift in marine currents.

Today the ecology of the Gulf of Maine and its islands is also influenced by strong westerly winds that pick up speed offshore and blow across the gulf's surface—harder in the winter than in the summer. One of the ecological effects of these winds is to stir the water column and re-suspend nutrients. Maine islands were settled because the rich inshore fishing grounds—in combination with abundant wind power along the offshore islands and the local boat-building talent—enabled fishermen and mariners to exploit a valuable resource and then harness the local wind energy to export this bounty from the Gulf of Maine to the rest of the world. Islanders on Vinalhaven, North Haven, Monhegan, Swan's, Frenchboro, Grand Manan and elsewhere are now back at the forefront of a new technology to harness the wind energy of the Gulf of Maine to light their communities, heat their homes and export this resource to the mainland.

Environmental history, like nature itself, runs in cycles.