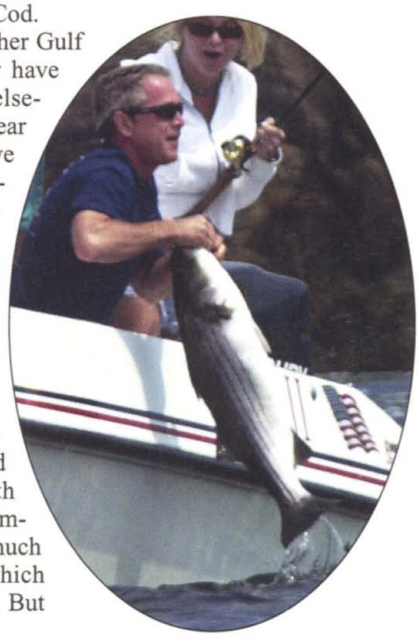
# POTUS and the Fish

Summer is the time for fun—and as I write, looking at today's *New York Times* (8 July), there is the president of the United States having some. In a four-color photograph above the fold, he is helping his daughter Jenna boat an impressively large fish. It is not named in the caption but is readily identifiable as Morone saxatilis, called striped bass by us New Englanders, though doubtless known to the White House chef by its Chesapeake name, rockfish. Everyone in the picture is having a wonderful time. But the president, without his knowledge, has just captured a fish with a message.

In my summertime reverie, I imagined that the 43rd president might have turned to no. 41, who was driving the boat, and said "Gee, Dad—did you catch 'em like this when you were Jenna's age?" Although tempted to employ the usual fisherman's license to lie, former President Bush would have had to answer: "No, son. I don't remember that we did." In fact, when I was Jenna's age and studying fish biology at Woods Hole, it was almost a mantra that stripers (and bluefish, another sport-fishing favorite) were relatively scarce north of Cape Cod.

The recent northward redistribution surely delights the Bushes and other Gulf of Maine fishermen. More important, these changes in biogeography have many parallels, as the striper's message to the president is repeated elsewhere. On the West Coast, in the intertidal at Hopkins Marine Station near Monterey, California, old transects made in John Steinbeck's day have been reexamined, demonstrating a massive replacement of northern invertebrates by ones with a more southern distribution. On land, around the Bush estate in Kennebunkport, Maine, American cardinals, birds unknown in New England in my youth, now not only breed but even come to feeders in the dead of winter!



Bush and bass.

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These observations typify a growing host of phenetic studies that have documented biological responses to global warming during the past century. The list is rich indeed: significant advances in the dates for first breeding in a number of bird species; changes in the dates at which British plants first flower; upward shifts in the distribution of Alpine flowering plants, at rates up to 4 meters of elevation per decade; and northward adjustments in the distribution of several species of North American butterflies. Such changes document the reality of global warming, though they are not necessary for that purpose, as we now have so much physical data (ranging from average global temperature to rates at which glaciers are receding or river ice breaks up) to show that it's happening. But examining the biological impacts is useful for at least two reasons.

The first is that it tells us something about what continuing change may portend. What is clear is that natural communities will not be displaced intact as the temperature rises. Each ecosystem depends on a kind of coevolved synchrony, in which flowers and pollinators, predators and prey, herbivores and their food plants not only depend on one another but also on one another's timing. If the flower isn't blooming, the butterfly can't pollinate it: result, no nectar for the insect, no seeds for the plant. Most of the studies show that different species respond at different rates, dismembering communities that once worked well together. It is something we should expect in estimating the impacts of climate change.

The second is that the biological effects tell us things directly that we can otherwise learn of only from someone else's numbers. Anyone my age (I'm 71) can document such changes as a result of personal experience. That's why it always surprises me when thoughtful outdoorsmen like the president don't buy into the reality of global warming right away, without requiring persuasion from bevies of advisers.

My impression is that President Bush is coming awake to this particular problem, and he probably doesn't need much help from me. Nevertheless, here is a suggestion. The next time he meets with a group of old friends from the oil bidness who are still in denial about climate change, he should tell them a fish story. The message from Jenna's striper could just as well have come in a bottle from the scientific community: Climate change is real, and it's time to do something.

**Donald Kennedy**