

Ireland and the Kenai, oceans apart but with some common features

by Ed Berg

My wife Sara and I recently made our first trip to Ireland. We stayed with Sara's niece and her family in Dublin and took a three-day bus tour around southern Ireland. The bus trip was a great introduction to the geography and history of Ireland, and we are eager to make a return visit. On the face of it, Ireland is very different from the Kenai, yet there are some interesting parallels, especially as regards the future, as well as the past.

Like the Kenai the Irish landscape is geologically young, with the glaciers pulling out about 13,000 years ago. A key difference is that Ireland has been farmed for 6000 years. The human hand has touched this landscape virtually everywhere; only the mountaintops have what we would call natural or undisturbed vegetation. We visited the ruins of castles that dated as far back as the fifth century AD, and there are hundreds of burial mounds and stone tombs that date back more than 5000 years. Ordinary people live in houses that are several hundred years old, with generations of remodeling. This kind of timescale makes Alaskans feel like we were born yesterday.

I had expected the Irish countryside to be green, treeless, and rather barren. To be sure, there are such places especially along the west coast, but most of the countryside that we saw consisted of small farms on rolling hills with lots of stone fences. We saw extensive pine plantations, as well as Sitka spruce which has been widely planted in the British Isles and northern Europe for decades. Record Sitka spruce in Ireland grow to more than 50 meters tall and two meters in diameter.

Ireland was once heavily forested, during the worldwide Hypsithermal warm period following the last major glaciation. In Alaska the Hypsithermal climaxed about 9000 years ago. The Kenai was much dryer at this time, with summers two to four°F warmer, and lake levels were lower in closed-basin lakes. The "climatic optimum" of the Hypsithermal moved eastward across North America and arrived in Ireland about 7000 years ago. The slow rise and fall of the Hypsithermal temperatures brought thick de-

ciduous forests to Ireland, which dominated the landscape for about 4000 years. By 5900 years ago, however, natural disease and farming began to scale this forest back, according to the pollen record in lake sediment cores.

At 5100 years ago the pollen record shows that elms declined dramatically, probably due to something like the Dutch elm disease which wiped out elms in the eastern US in the 1970s. The Dutch elm disease is a fungus spread by bark beetles, and Irish researchers have found beetle scars on preserved tree trunks dating to 5100 years. Some Irish archeologists argue that the elms may well have been cut down by the early farmers for forage (elm leaves are nutritious for livestock), and as part of the general land clearing going on at that time. The presence of bark beetle scars on the wood, however, seems to make a persuasive case for the disease explanation.

Human beings first arrived in Ireland about 9000 years ago, and on the Kenai about 8000 years ago. The early Irish persisted as hunter-gathers for about 3000 years, but they didn't live on a very bountiful landscape, and began importing livestock and farming technology from Britain and western Europe about 6000 years ago. On the Kenai we have been blessed with rich salmon resources since the end of the glacial period, and the native people never had to resort to agriculture.

Generally speaking, when humans turn to agriculture, they begin to have a very heavy impact on the land and tend to create unsustainable ecosystems. In North America our current manifestation of this is a heavily petroleum-dependent field cropping which destroys topsoil much faster than it can be created. In Ireland the early farmers didn't have prairies, so they cleared the forests for farmland. As wood became in short supply, they turned to harvesting peat for fuel.

I have recently been studying peatlands and peat formation on the Kenai, and I was rather shocked to see that peat is harvested commercially in Ireland as a fuel. Peat bogs are ditched and drained, and the peat is harvested with large combine-like machines. The peat

(called “turf”) is then ground up and compressed into fuel logs that you can buy at convenience stores like charcoal briquettes.

Huge quantities of peat are used for electric power plants in Ireland, although it is considered a very inefficient fuel. The largest bogs have pretty well been stripped, but rural people still dig peat with a shovel, and you see it stacked in farm sheds just the way we stack firewood for the winter. I was told that people like the smell of peat burning in the stove and have the same kind of nostalgic fondness that we have for wood smoke.

Like the Kenai, Ireland didn’t always have a lot of peat. Peat formation appears to have gotten underway with the Hypsithermal warm period at least 7000 years ago, although conditions were still too dry for the peat mosses (i.e., *Sphagnum* moss) to really flourish. This early peat was highly “humified” or broken down into a fine-textured organic material where you can’t distinguish the individual plant parts, like stems and leaves.

In time the peat deposits grew thicker and higher, which allowed the surface of the bogs to dry out and facilitated the invasion of trees. This produced extensive forested peatlands, similar to the black spruce woodlands that are now forming on many muskegs on the Kenai. The forest phase was relatively short-lived, however, because *Sphagnum* moss thrives under the shade of trees and soon began to engulf the trees, producing what are called “raised” bogs.

In a raised bog the nutrients are all coming from rainfall; the bog surface is too far above the water table to draw up mineral-rich groundwater from below. The nutrients—however dilute—have to be washed out of the air. Few plants can grow in such a nutrient-starved environment, but *Sphagnum* moss excels at survival in this “no man’s land” of vegetation. The *Sphagnum* grows higher and higher, until the bog acquires a dome shape, several meters higher than the ground surface surrounding the bog.

On our bus tour we stopped at a commercial peat mine, just to see how it is done. Many acres of exposed brown peat were visible, and I assume that at least a meter of peat had already been removed. (Peat deposits in Ireland can be as much as 12-13 meters thick.) A two-meter deep trench had been cut to drain the remaining peat. As I looked at the cut face of the trench, I could see that the lower meter of peat was dense, dark and very compact. On top of this layer I could see a stump and some logs, a remnant of the

old forested peatland. Above the wood layer, the top meter was a lighter, looser peat. With my hand lens I could see the individual moss leaves in the top layer, which were grown during the later raised bog phase of the peatland.

When I first saw a museum exhibit on raised bogs, I assumed that the raised bog phase was due to a climate change, i.e., a climate cooling or more rainfall, after the forest phase. The experts however are divided on this issue: some say that raised bogs are simply following a natural succession process, that as the bog grows higher, it gets less water from below, which allows forest invasion, which in turn fosters the rapid growth of *Sphagnum* moss. Further evidence against the climate-change hypothesis is that in different bogs, radiocarbon dates of raised bog initiation vary by several thousand years. If climate change was the cause, the bogs should have all shifted into the raised bog phase at the same time.

The story is made more complex, however, by the fact that the climate in Ireland did indeed cool down starting about 4500 years ago, which no doubt accelerated raised bog growth along its successional path. This climate cooling appears to have initiated another mode of bog formation called a “blanket bog,” a phenomenon that would have done Alfred Hitchcock proud. Blanket bogs are relatively fast growing areas of *Sphagnum* peat moss, which can grow up hill (on as much as a 20° slope) and invade forests. Raised bogs began to creep out of their lowland homes, and new blanket bogs began to develop in upland areas at higher elevations.

These blanket bogs swallowed up forests and farmland, covering stone fences and dwellings and roads. The farmers fought back by putting down corduroy roads of logs on top of the bogs, but thousands of these roads were swallowed up by the unstoppable green wave of moss. The blanket bog invasion has continued into the present day, with 16% of Ireland now covered by peatlands. As peat mining has progressed, the buried roads, stone fences and tombs, and houses have progressively been uncovered, much to everyone’s amazement.

We don’t have true raised or blanket bogs on the Kenai, even though we have some thick peat deposits, at least as much as seven meters thick. Most of the peatlands that we call bogs or muskegs on the Kenai would actually be classified as “fens” rather than bogs, because they are fed by mineral-rich ground water and support a variety of sedges and woody shrubs, as well

as *Sphagnum* peat moss.

The absence of raised bogs and blanket bogs on the Kenai is probably due to our low annual precipitation, being as we are in the rainshadow of the Kenai Mountains. Our 19-25 inches of annual precipitation (at Kenai and Homer, respectively) are well below the 50 inches of western Ireland, where most of the bogs (and rain) are concentrated.

During our visit to Ireland a disastrous “bog burst” occurred which took out a number of homes down slope from a bog. Since blanket bogs can form on a slope, they are akin to a huge plastic bag full of water lying on the slope. Developers sometimes make the mistake of trying to mine peat or punch a road along the edge of a bog, which releases a wave of fine-grained peat slurry, much like a mudflow on the Homer bench.

One particularly heartening aspect of our visit to Ireland was seeing that the Irish economy has picked up and become quite vigorous over the last decade. In the past Ireland was very much the underdog of the British Isles. I recall that when I was a post-graduate student in London in 1970, every social problem was blamed on the Irish immigrants who flooded into London because there was no work in Ireland. Every petty

burglary in our neighborhood was attributed, often correctly, to unemployed Irish youth.

Today the Irish economy (known as the “Celtic tiger”) is booming, and the real estate market in Dublin makes San Francisco look cheap. In rural western Ireland we saw many new homes (probably second homes) under construction, especially near the coast. As the population grows and people have extra money in their pockets, the beautiful Irish farmland could be swallowed up in subdivisions. This struck a familiar chord for the 25 years that I have been watching (and participating) in subdivision sprawl on the Kenai. It would be nice to think that the Irish with 6000 years of land development experience might look ahead and consciously plan how they want their land to be used in the next round of development.

Details for this article were drawn largely from an excellent book on the ecological and cultural history of Ireland, *Reading the Irish Landscape* by Frank Mitchell and Michael Ryan, Towne House, 1997.

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