



July 2015: Alaska's two realms of burning meet north of Fairbanks. At left, the trans-Alaska pipeline carries fossil fuel; at right, a "burnout" operation consumes timber to block the Aggie Creek forest fire.

PHILIP SPOR/LASKA DIVISION OF FORESTRY

Alaska: Portal to the Pyrocene

For much of the past decade I have stalked the American fire scene. The four corners of the country nicely stake down the narrative pelt that resulted. Florida, a place so prone to fire that, as the old saying held, it burned twice a year. New England, a place where natural fire is alien but controlled burning is indigenous. California, always at the vanguard of fire's suppression, where an unstoppable economy rams against an equally immovable ecology. And Alaska, where the country has come as close as it is likely to get to restoring quasi-natural regimes.

Alaska is where anthropogenic fire first entered Pleistocene North America, and it is where the consequences of burning fossil fuels is most vigorously ushering in Pyrocene North America. The state boasts three grand fire provinces, two patterns of ignition, and one continuous narrative of warming since the end of the last glaciation.

The three pyro-landscapes are the poorly combustible lands from the coast north to the Alaska Range, the immense (and immensely burnable) valley of the Yukon between the Alaska Range and the Brooks Range farther north, and the tundra north of the Brooks Range that slopes to the Arctic Ocean. Patches of the coastal province

burn, notably the Kenai Peninsula. So, too, do patches of tundra. But the bulk of burning is concentrated in the black spruce forests of the Yukon.

The geography of ignition is also differentiated. Lightning rides the thunderstorms that float inland from the coast, eastward up the Yukon River Valley, only occasionally spilling north or south over the mountains. People start the remainder of fires—the largest number—and these crowd roads, towns, and villages. Few places show this separation so starkly (Hawaii among them).

The grand narrative of Alaskan fire tracks a chronicle of more or less continual warming since the Pleistocene. With the advent of industrial combustion, the warming has accelerated. It is a truism of climatology that the effects will be felt first and foremost in the higher latitudes. They are now felt, undeniably, in Alaska.

Alaska finds itself caught between two fires, one kindled in ecology and one in economics.

Ecologically, because of the 1980 Alaska National Interest Lands Conservation Act, Alaska was able to restore a facsimile of natural fire regimes and avoid repeating the errors of the Lower 48. It was a unique political

moment that allowed the state to leapfrog into the future. Overall, more fire has meant better fire.

Economically, however, Alaska is a petro-state. Its wealth of fossil fuels funds local governments, permits

the state to avoid imposing income and sales taxes, and even allows annual rebates to its citizens. That political economy will likely worsen fire in Alaska's living landscapes. If the process moves into permafrost, exhuming carbon frozen during the Pleistocene, a positive feedback loop can result that will affect global climate and render Alaska's landscapes much different from their historic character. Mostly, more fire will mean worse fire.

In 2009, in Denali National Park, a fire started in vegetation that had formed a combustible crust atop the toe of Ruth Glacier, a type of "rock glacier" in which talus overlies the ice. Such a scene arouses a moment of cognitive wind shear: fire burning on rock-veneered ice. On reflection it seems to distill the Alaskan fire story: here fire is delicately balanced against the last of the Pleistocene ices.

In this case, after an initial attempt to suppress the fire, park officials allowed it to continue and burn out on its own. But if the deeper burning of lithic landscapes continues, those fires will not merely thaw buried ice but also unhinge the world we have adapted to and admire. In most temperate lands that competition is disguised. In Alaska it fills the horizon.

Stephen J. Pyne is the Guest Editor of this issue of *Natural History*.