THE STANDARD

Effects of Ecosystem Change

Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

ANCHORING PHENOMENON

The Wolves That Brought Back the Aspens

In 1995 and 1996, 31 gray wolves were reintroduced to Yellowstone after a 70-year absence (14 in 1995, 17 more in 1996). Within a decade, aspen trees were taller, beavers were building dams again, and songbirds were returning. The wolves didn't plant trees or build dams. But they changed elk behavior and elk numbers, and that change moved through the whole ecosystem. One predator. A reshaped landscape. Students will keep circling back to this all week.

DRIVING QUESTION

"How can adding one species change an entire ecosystem?"

INVESTIGATIVE 1

A Lake Where One New Fish Crashed the Others

Lake Davis in northern California had a healthy mix of trout and other native species. In the 1990s, northern pike showed up (likely introduced illegally). Pike are aggressive predators with no natural enemies in that lake. Within a few years, trout populations crashed and the recreational fishery nearly collapsed. Use this one to sharpen the lens the anchor is pushing on: how a new biological component shifts populations even when the physical environment doesn't change.

DRIVING QUESTION

"What makes a new species so disruptive when other species have always lived in that lake together?"

INVESTIGATIVE 2

A Forest a Year After the Fire

Aerial photos of a section of the British Columbia interior, 2017 (before the wildfire) and 2018 (one year after). The 2017 image shows a dense conifer forest. The 2018 image shows blackened ground, surviving trees, and patches of new green growth where fireweed and other early plants have already moved in. The forest isn't gone. It's being rebuilt by a different set of species first. Same kind of disturbance-and-response as the anchor, only in slow motion.

DRIVING QUESTION

"How does an ecosystem 'come back' after fire wipes out most of what was living there?"