

Variety is the spice of life

by John Morton

George Shiras III, a famous nature photographer for the National Geographic Society, once wrote that “were all of Alaska erased from the map except the Kenai Peninsula and its immediately adjacent waters, there would yet remain in duplicate that which constitutes the more unique and that which typifies the whole of this wonderful country.”

Shiras was simply acknowledging something that most of us already know—the Kenai is a wildly diverse landscape. It ranges in elevation from the salt marshes of the Chickaloon Flats to remote nunataks in the Kenai Mountains. It includes vast expanses of spruce and hardwood forest, and wild rivers that originate from the Harding Icefield, the largest glacier wholly within the U.S.

And there’s more than moose that live here. Snow buntings peck at ice worms which, in turn, feed on algae growing among ice crystals on Exit Glacier. Bristletails chew on lichen-encrusted rocks along Skyline Trail. Dwarf forms of longnose suckers spawn in the Finger Lakes. Merlins nest in witchbrooms that sprout from white spruce because of a fungal parasite.

Wildlife and plants on the Kenai are indeed very diverse. The Kenai Refuge has 200 vertebrate species and almost 500 vascular plant species. This diversity results in part from the peculiar geography of the peninsula. The Kenai Mountains ensure that the eastern side is much wetter than the western side of the peninsula. The Sitka spruce forests on the Seward side and in Turnagain Arm are the northern-most extremes of the coastal rainforest that extends all the way to Oregon. The white and black spruce forests on the Soldotna side are near westernmost extreme of the boreal forest that extends across Canada.

In 2004, we launched our Long Term Ecological Monitoring Program or LTEMP, an ambitious effort to expand our knowledge of biological diversity on the Refuge. Working cooperatively with the U.S. Forest Service’s Forest Inventory and Analysis program, we sample breeding landbirds, vascular and nonvascular plants, and arthropods on 350 plots at five km intervals across 2 million acres.

Data from LTEMP sites have expanded our species inventory to over 1000 species including 168 arthropod

taxa (16 orders) and 205 bryophyte and lichen species. We’ve identified almost 100 species within an 18 foot radius of one of our LTEMP plots in a 40-year old black spruce wetland in the Kenai Lowlands!

Most recently, we’ve identified a plant hopper (in the family Achilidae) that’s new to science! And this is the second insect species new to science that has recently been found on the Refuge. All of this simply underscores how little most of us, even professional biologists, know about the world immediately around us.

Exactly what is biological diversity or “biodiversity,” for short? Biodiversity is more than a simple list of species. Definitions often include some reference to the relative abundance and spatial distribution of species. Biodiversity can include how populations vary over time, as well as through space. So, for example, it’s not enough to know that we have moose on the Kenai. It’s as important to know that moose populations vary with the availability of hardwood browse which, in turn, varies with the frequency of wildfire. Our discussions of biodiversity at the Refuge include these natural processes that create and sustain our diverse landscape.

What might surprise some Kenai old-timers is that moose, although an important critter, is not the primary focus of the Refuge. The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 mandated that the Refuge’s primary purpose is to conserve fish and wildlife populations and habitats in their natural diversity. This piece of legislation even went so far as to define “fish and wildlife” as any member of the animal kingdom including, without limitation, any mammal, fish, bird, amphibian, reptile, mollusk, crustacean, arthropod or other invertebrate. ANILCA greatly broadened the refuge’s primary purpose beyond that of the old Kenai National Moose Range, which was established in 1941 to protect the then-described “giant Kenai moose” and its habitat.

Why care about biodiversity? We all have a tendency to focus on the life forms with which we interact the most. For some of us, that may be the four-legged animals that we hunt and eat. For others, it might be the salmon or shellfish that we fish for recreationally

or commercially. And for some, it might be the chickadees and nuthatches that visit our feeders in winter or the spruce bark beetles that kill the trees in our backyards.

But biodiversity includes much more than our limited knowledge of the species that overtly affect us. Biodiversity is quite literally the foundation upon which natural systems function. The fact that we know so little about what inhabits the Kenai is somewhat daunting and certainly a little alarming to a professional biologist. Aldo Leopold, the author of the

book *A Sand County Almanac* and the father of modern wildlife management, said that “the key to intelligent tinkering is to keep all the parts.” This statement sums up both the legal and philosophical basis for management and science on the Kenai National Wildlife Refuge.

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