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Wastelands to Wonderlands: The Shifting Environmental Identities of Alaska and Florida

By Paul Arena

As NSU explored our college's academic theme of “identity” in 2014-2015, it seemed appropriate to take a look at two of our country’s most treasured and unique wilderness areas: the Florida Everglades and Alaska’s varied ecosystems. While these two states are over 4,000 miles apart and governed by very different climatic characteristics, they have similar historical identities in that both ecosystems were considered to be worthless wastelands by some of the first pioneers to explore these areas.

I have had the wonderful opportunity to lead students through the Everglades every term for the last 15 years and every other summer in Alaska since 2008. I cannot emphasize enough the value of field experiences, which reinforce lecture material and enhance student learning. While my passion for the organisms in these habitats and their ecological role is evident in my classes, it cannot rival the experience of seeing these creatures firsthand. In our travels we have been fortunate enough to see humpback whales breaching yards from our boat, a grizzly bear sow and her new born cubs crossing the road in front of our car, a wolf chasing a caribou and her calf down a braided stream, alligators bellowing during breeding season and the rare opportunity to see the endangered Florida Panther and Snail Kite. Below are some photos from my trips through these two unique environments, as well as some historical background on these areas.

I hope this will inspire you to get out and explore these regions, experience them for yourself and create your own personal identity of these unique wonderlands.

SOME HISTORICAL PERSPECTIVE

In his book *The Swamp*, Michael Grunwald provides several firsthand accounts from the military as they attempted to eradicate the Seminoles from the Everglades in the

Second Seminole War (1835-1842). Jacob Motte, a 26-year-old Army surgeon, described the area in his journal as “. . . the most hideous region to live in, a perfect paradise for Indians, alligators, serpents, frogs and every other kind of loathsome reptile.” This was a common sentiment shared by many of the first pioneers who travelled through the heart of the Everglades.

Luckily, both Alaska and Florida turned out to harbor vast treasures of resources. Florida's visionaries like Henry Flagler, John Disston and Napoleon Bonaparte Broward believed Florida was a paradise waiting to be exploited. Of course, draining the Everglades would be the first priority in order to safely achieve this dream. The collective 2,100 miles of canals in South Florida alone are evidence of this herculean engineering feat started in the early 1900s. As the water was redirected it exposed rich organic soil, which is what led to the large expansion of agriculture throughout Florida. According to the Florida Department of Agriculture, Florida agriculture contributed \$100 billion to the economy in 2012. Unfortunately, a good chunk of the Everglades had to be destroyed to utilize this land commercially. Currently, the Everglades is only 50% of its original size, which extended from Kissimmee to the southern tip of the peninsula. Everglades National Park (ENP) only protects the southern twenty percent of what is left, and what remains is still under threat from agricultural effluent, sea level rise, and, of course, continual urban development.

Everglades National Park was originally established in 1934, primarily in response to the widespread overexploitation of wading birds in the late 19th century due to the popular plumed hat fashion of that time. During this period, an ounce of feathers was worth more than an ounce of gold. The draw of the natural beauty and diversity in ENP has brought with it tremendous economic benefits. A recent National Park Service (NPS) report from 2011 revealed that “the 934,351 visitors to Everglades National Park spent approximately \$146.8 million in communities surrounding the park and supported 2,408 jobs in the local area.” Florida's initial pioneers undoubtedly would have been quite surprised by the contributions this inhospitable, vermin-filled place has provided.



Figure 1: 19th-century woman in hat decorated with plumes from wading birds.

Photo: <http://www.floridamemory.com/items/show/129925>

While ENP was originally established to conserve the unique wilderness and wildlife in the area, one of the main reasons we are spending over \$11 billion currently to restore it is to protect our water supply. As the third most populous state in the country, there is high demand for potable water in Florida. One of the most important contributors to our water resources is the Everglades, also known as the River of Grass, which allows rainwater to slowly percolate through Florida's limestone base and replenish our aquifers.

Similarly, Alaska was considered nothing but a vast area of ice, snow and inhospitable terrain. However, Secretary of State William Seward was an expansionist and the sheer size of Alaska attracted his attention. Most TV weather maps display both Alaska and Hawaii in small pop up boxes next to a larger image of the rest of the country; however, this grossly underestimates the actual size of Alaska, which is around one fifth of the size of the continental U.S. and twice the size of Texas. In 1867 Alaska was bought from Russia for \$7.2 million, which equates to about two cents per acre. This would seem to be a great deal, yet many people at the time considered it a waste of money on what they called "Seward's Icebox" and "Seward's Folly."

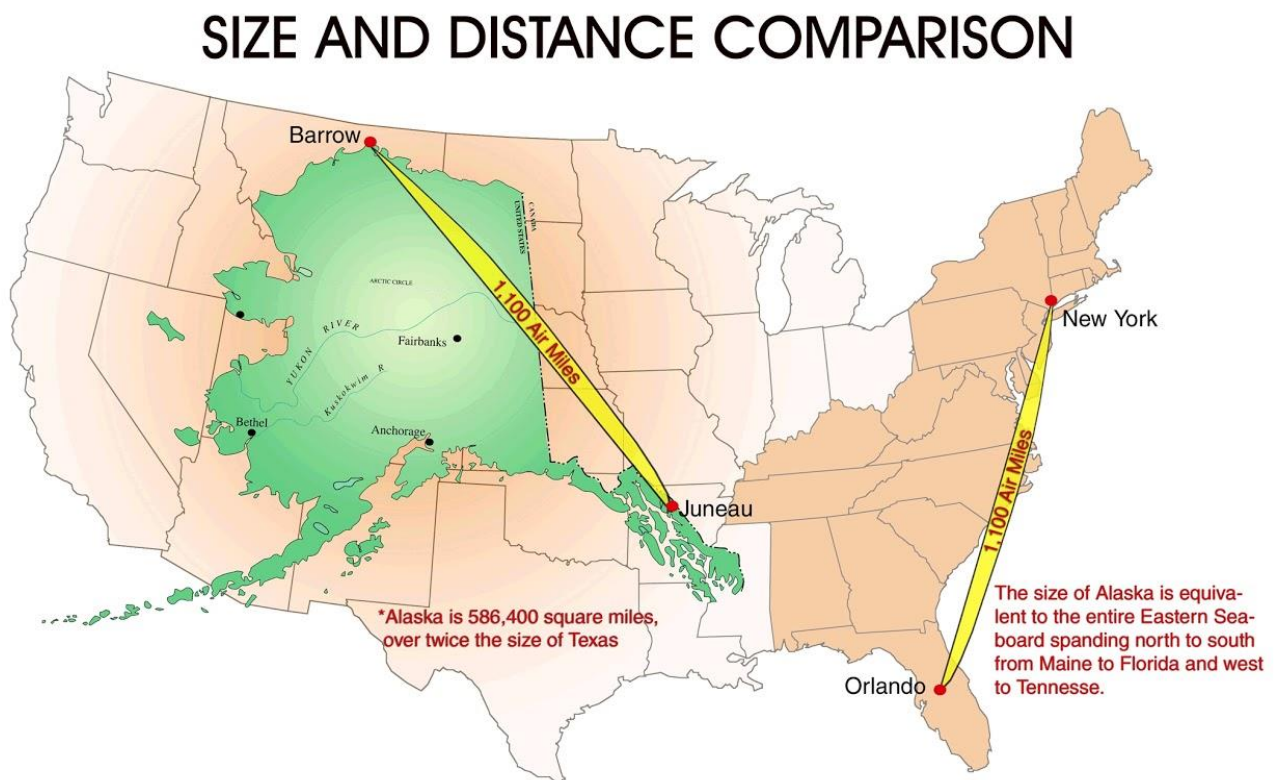


Figure 2: Comparison of Alaska and Florida in terms of size and distance.

Photo: <http://matadornetwork.com/trips/just-how-big-is-alaska-anyway/>

Alaska's past reveals a similar story of surprising benefits from an area considered to be a poor investment in an icy and uninviting territory. At the time Alaska was acquired by the U.S. most of its land remained unexplored and it remained that way for some time, primarily being used by the government as a national security outpost. This quickly changed when gold was discovered in 1899 in Nome which led to the rapid development of several outposts, one of which became the city of Fairbanks. Soon thereafter, other mineral resources such as copper were being mined and logging also became an important Alaskan industry. Memories of "Seward's Folly" quickly faded and the purchase of Alaska was seen in a new beneficial light.

Of course, many of us are familiar with Alaska's fishing identity. One of the most productive fishing grounds in the world exists in the coastal waters that surround the state. Cod was the first species targeted in the mid to late 1800's, with salmon, halibut, and crab to follow. Alaska leads the nation in the value of its commercial fishing catch. The Alaska Seafood Marketing Institute, an Alaskan-based research firm reported "... the combined value of Alaska seafood exports and the retail value of Alaska seafood sold in the U.S. totaled an estimated \$6.4 billion in 2011." Additionally the overall economic output of Alaska's fisheries was projected to be \$11.6 billion in 2011. Despite being primarily an export industry with 2/3 of its catch exported internationally, Alaska is still the largest supplier of domestically produced seafood in the U.S.

The abundance of fishery resources in the area not only attracts recreational fishers, but also sustains a wide diversity of other tertiary predators. This in turn attracts flocks of tourists hoping to view or hunt these magnificent creatures in their native habitats. The National Oceanographic and Atmospheric Administration reported the total economic impact from recreational fishing in Alaska to be as high as \$1.4 billion annually and the Alaska Department of Fish and Game reported residents and visitors combined to spend \$3.4 billion in the state on hunting and viewing activities.

However, none of the aforementioned economic drivers are actually the number one contributor to the state's economy. That is reserved for the oil and gas industry. Oil had been discovered in Alaska in the early 1900s; however, wide scale drilling and export did not occur until the discovery of the largest oil field in North America on the North Slope in Prudhoe Bay during 1968. In order to transport this oil from the Arctic Ocean to the ice-free port of Valdez, another engineering feat needed to be designed and built, the Trans-Alaskan pipeline. From 1974-1977, an 800-mile long pipeline traversing rivers, tundra, and several mountain ranges was built. Depending on the makeup of the subterranean environment the pipeline is in some locations buried, lying directly on the ground, or elevated. The often zigzag like patterns of the pipeline across the vast landscape make you wonder whether they were built by drunkards, however each turn, each angle, each variation is precisely designed.



Figure 3: The Trans-Alaskan pipeline snakes across the Alaskan landscape. Photo: Arena personal collection.

The oil and gas industry is intricately tied into the Alaskan economy and its residents' quality of life. Approximately 93% of Alaska's General Fund (\$8.86 billion in fiscal year 2012), which covers education, transportation, public health and many other important services is provided by the oil industry. Widespread opposition to the pipeline establishment led to another benefit to Alaskan residents, the Alaska Permanent Fund. Twenty five percent of all oil revenues made by the industry would be paid into this fund for future generations, who would no longer have oil as a resource. A dividend is paid to each Alaskan citizen each year and it averages around \$1,000 per person. As we have witnessed recently closer to home, the acquisition and transport of oil is risky business and accidents can occur, leading to disastrous results such as the Deepwater Horizon Spill and the well-known Exxon Valdez Spill. Oil spills and mining-related activities cause the most devastating impacts to Alaska's natural ecosystems, rather than urban development which is more prevalent in South Florida. Urban development is less of a problem for Alaskan ecosystems due to the fact that Alaska is the third least populous state in the country. There are more

residents in Broward County (1.8 million) than all of Alaska (~730,000). In fact, there are more caribou in Alaska than there are humans.

Florida and Alaska, rarely discussed in the same breadth, were initially considered to be more of a burden to our nation than an asset. Time, exploration, and discovery of valuable natural resources led to the enlightenment of most Americans and a reversal of these states' identities as wastelands not worthy of our efforts. Today, both areas are prized by many conservationists and naturalists for the unique biodiversity they harbor.

ALASKA

“The mountains are calling and I must go.” – John Muir



Figure 4: Mt. McKinley. Photo: Arena personal collection.

Mt. McKinley—the tallest peak in North America (20, 237')—is actually the tallest mountain in the world if you consider its vertical rise from base to summit (~18,000').

Mt. Everest sits on a much higher plateau and has a rise of $\sim 17,000'$. The native Athabascans gave it the name “Denali” which means the high one. Only 30% of all visitors to the park actually see this amazing wonder of geology, as its sheer height caused it to interact with upper level winds creating clouds which obscure it from view the majority of the time. The large dark mountainous feature to the left is actually the terminus of the Muldrow Glacier which originates on Denali’s northeast side.



Figure 5: Flattop Mountain. Photo: Arena personal collection.

Where’s Waldo? I was blown away when I finally made it to the top of Flattop Mountain (3,510’), the most hiked mountain in Alaska, located just outside downtown Anchorage. My students and I were rewarded by this jaw-dropping view of the Chugach Mountains on an absolutely perfect day.



Figure 6: Humpback whale breaching. Photo: Arena personal collection.

We spent 30 minutes watching this humpback whale, *Megaptera novaeangliae*, and her calf performing what seemed to be at times synchronized swimming behaviors in Kenai Fjords National Park. They were lobtailing, flippering, and tail slapping, behaviors which may be related to dominance or mating. These baleen whales have a pretty good life spending their winters in Hawaii, where they breed and calve and then migrate to Alaska to spend the summer feeding primarily on abundant krill and schooling fishes. The final act of this spectacular show was a stunning breaching display only thirty feet from our vessel!



Figure 7: Aialik Glacier, Kenai Fjords National Park. Photo: Arena personal collection.

So this is where Superman's Fortress of Solitude is located! Aialik Glacier, Kenai Fjords National Park. Alaska has 100,000 glaciers – more than the rest of the world combined. Many are receding at an alarming rate due to accelerated climate change. As we idled nearby we could hear the constant cracking of the glacier as it melted, and at times large sections of the glacier would break free and crash into the surrounding waters forming new icebergs, a process known as calving.



Figure 8: Land of the midnight sun. Photo: Arena personal collection.

This picture was taken at 11pm. Typically, we have 19-20 hours of daylight during our trips to Alaska. While searching for wolf, moose, and caribou tracks along the Teklanika River in Denali National Park, we were provided with the colorful display of a rainbow over the Alaska Range.



Figure 9: Alaska, a fisherman's paradise! Photo: Arena personal collection.

Typically, there is a reason the activity is called fishing and not catching. In Alaska, however, the reverse is true, and your day on the water is typically over because you have reached your quota. Salmon, rockfish, cod, and of course halibut are common species caught during a day at sea. Pacific halibut are the largest flatfish in Family Pleuronectidae and can reach over 8 feet in length and over 500 pounds! These monsters are called “barn door” halibut. Unfortunately many of these behemoths have been overfished and a common catch consists of “chicken halibut” pictured above left.



Figure 10: Brown bear sow and cubs. Photo: Arena personal collection.

Most people who see a brown bear, *Ursus arctos*, in Alaska would say they saw a grizzly bear. However, grizzly bears are specifically an inland population of brown bear with no access to protein-rich salmon and thus are generally smaller, averaging about 500 lbs. The cubs seen here crossed the park road a few feet from our van while exploring Denali National Park. They will stay with their mother for approximately two years and begin bulking up for the upcoming winter by feeding nonstop on available berries and roots, a process called hyperphagia.

“To the lover of wilderness, Alaska is one of the most wonderful countries in the world.” – John Muir

FLORIDA

“There are no other Everglades in the world. They are, they have always been, one of the unique regions of the earth, remote, never wholly known. Nothing anywhere else is like them.” – Marjory Stoneman Douglass



Figure 11: Everglades National Park. Photo: Arena personal collection.

The Everglades is a slow moving river, which flows from north to south due to a slightly lower elevation in the southern peninsula of Florida. The ecosystem is an oligotrophic system, which is defined by low nutrients. Large influxes of nutrients caused by runoff from surrounding agricultural areas lead to eutrophication and a subsequent change in vegetation from a sawgrass dominated landscape (pictured above) to one dominated by cattails, which degrades the quality of the habitat for the native fauna. In order to protect the Everglades from these impacts, the largest created wetlands in the world have been established, known as Stormwater Treatment Areas, to remove these excess nutrients before the water reaches the park.



Figure 12: American alligators along the Anhinga Trail. Photo: Arena personal collection.

Visitor's to Everglades National Park hope to experience the thrill of seeing an American Alligator, *Alligator mississippiensis*. One of the best times to do this is during the dry season, when they aggregate in deeper areas known as sloughs. At the end of one of the boardwalks along the Anhinga Trail is the "alligator lounge" where many gators are spotted and the roar of males can be heard during the mating season. In the 1960's, the American Alligator was threatened to near extinction due to hunting for its skin and other human-related impacts. After protection under the Endangered Species Act its populations rebounded and the American Alligator was removed from the protected list in 1987.



Figure 13: The American crocodile. Photo: Arena personal collection.

Another crocodilian species in ENP is the American Crocodile, *Crocodylus acutus*. This is the only place in North America where crocodiles are found, and South Florida is the only place in the world where both alligators and crocodiles can be found in such close proximity. In ENP alligators are generally restricted to freshwater areas, while crocodiles are found in saltwater areas. The crocodile above was observed at the end of the park road in the Flamingo marina estuary.



Figure 14: Red-shouldered hawk. Photo: Arena personal collection.

This red-shouldered hawk provided us with a wonderful feeding display while hiking the Guy Bradley Trail along Florida Bay. It swooped over our heads, captured a flying grasshopper in midair and perched directly above us. It made a quick meal out of this insect after it tore off most of its wings and appendages and flicked them towards us.



Figure 15: Tricolored heron. Photo: Arena personal collection.

This tricolored heron, *Egretta tricolor*, typically wades through shallow waters foraging for small fishes. Its long retracted neck can be used as a spear and quickly projected to impale larger fishes. It is an opportunist and will often feed on frogs, snakes, and a variety of insects, like the roseate skimmer seen in its beak. Its breeding plumage is also visible here, which made it a target species for hunters during the hat plume trade.

"The Everglades is a test. If we pass it, we may get to keep the planet."
– Joe Podgor