The Southeast Alaska Network

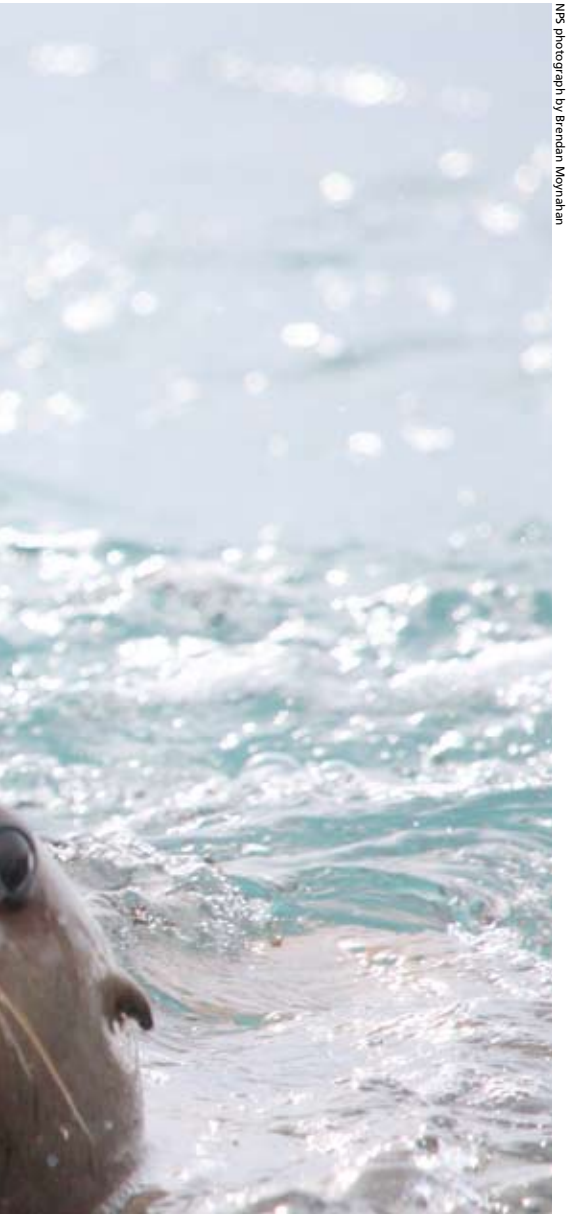
Vital signs of the Southeast Alaska Network

Monitoring Framework	Vital Sign	Parks Where Monitored		
		GLBA	KLGO	SITK
Air and Climate	Airborne Contaminants	●	●	●
	Visibility and Particulate Matter	+	+	+
	Weather and Climate	●	●	+
Geology and Soils (Geomorphology and Hydrology)	Glacier Dynamics	●	●	
	Streamflow	●	●	●
	Oceanography	●		
Water	Freshwater Benthic Macroinvertebrates and Algae	+	+	○
	Freshwater Water Quality	●	●	●
	Freshwater Contaminants	●	●	●
	Marine Contaminants	●	○	●
Biological Integrity	Invasive/Exotic Animals	+	+	+
	Invasive/Exotic Plants	○	○	○
	Pests and Diseases	+	+	+
	Bald Eagles	+	+	+
	Bears	+	+	+
	Biodiversity of Select Groups	+	+	+
	Breeding Land Birds Assemblages	+	+	+
	Forage Fishes	+	+	
	Harbor Seals	+		
	Intertidal Communities	+	+	●
	Killer Whales	+		
	Marine Predators	●		
	Kittlitz's Murrelets	●		
	Salmonids	+	+	+
	Ungulates	+		
	Western Toads	+	○	
	Wetland Communities	+	+	+
	Humpback Whales	○		
	Steller Sea Lions	+		
Human Use	Consumptive Uses	+	+	+
	Human Uses and Modes of Access	○	○	○
	Airborne Sounds	+	+	+
	Underwater Sound	○		
Landscape	Landform and Landcover	●	●	●
	Phenology	+	+	+
	Plant Communities	+	+	+

● Vital signs for which the network will develop protocols and implement monitoring with funding from the vital signs or water quality monitoring program.

○ Vital signs that are currently being monitored long-term by a network park, another NPS program, or by another federal or state agency. The network will collaborate with these other monitoring efforts where appropriate but will not use vital signs or water quality monitoring program funds.

+ Vital signs for which monitoring will likely be done in the future but which cannot currently be implemented due to limited staff and funding.



NPS photograph by Brendan Moynahan

By Brendan Moynahan

The Southeast Alaska Network (SEAN) comprises Glacier Bay National Park and Preserve (GLBA), Klondike Gold Rush National Historical Park (KLGO), and Sitka National Historical Park (SITK). These units collectively encompass 3.3 million acres of diverse resources including tidewater glaciers, temperate coastal rainforest, recently deglaciated transitional landscapes, nearshore and offshore marine habitat, intertidal zones, continental subalpine and alpine zones, and a variety of freshwater resources, including streams, lakes, and ponds. GLBA includes over 2.6 million acres of marine and terrestrial wilderness, the largest marine area managed by the NPS, and close to one-quarter of all NPS coastline – nearly 1,200 miles (1,930 km). KLGO and SITK protect important cultural landscapes that overlay significant ecological resources, which themselves maintain communities' sense of history and place, to the point that cultural and natural properties are indistinguishable.

Close to the Gulf of Alaska and embedded in the maritime passages of the Alexander Archipelago, SEAN parks are profoundly influenced by two key element features: water and dynamism. SITK receives an average of nearly 100 inches (254 cm) of precipitation each year and protects the mouth of the Indian River, an important salmon stream. Coastal and ocean processes in GLBA drive tremendously productive marine systems and deliver over 30 feet (9 m) – yes, feet – of precipitation to the higher elevations of the Fairweather Range. KLGO is considerably drier (about 25 inches/64 cm annually) and contains unique, rich linkages between maritime and interior ecosystems; it is continually shaped and reshaped by the Taiya and Skagway rivers. Water – as humidity, mist, rain, snow, glaciers, icefields, icebergs, rivers, estuaries, bays, and the open ocean – drive both dramatic and subtle patterns and processes in plants, wildlife, climate, and landform. And at all scales, SEAN's dynamic ecosystems both exhibit and respond to the effects of ecological transition. The interplay between disturbance and response are spectacularly showcased along the length of Glacier Bay proper. KLGO protects human and natural histories that teach us about both sensitivity and resilience. The Indian River in SITK teaches us about connections between terrestrial, estuarine, intertidal, and submerged ecosystems, and the cultural richness woven within them.

In meeting the challenge of working effectively across these transitions and scales, SEAN staff has chosen to focus primarily on monitoring a few critical species and community level subjects (we refer to them as "response" vital signs), and a somewhat broader set of key ecological processes or drivers (i.e., "covariate" vital signs). Response vital signs include Kittlitz's murrelets, marine predators, western toads, and intertidal communities. Weather and climate, oceanography, freshwater water quality, and several contaminants projects are examples of covariate vital signs. By taking this approach, we ensure that the network will provide resource stewards with information on key resources, communities, and park features, while also providing internal and external managers and investigators with high-quality, longterm data and reports on the most fundamental ecological processes that drive park resources.

Figure 1. Stellar sea lions in Glacier Bay.