

Understanding How Park Ecosystems Are Changing

3rd Biennial Monitoring Symposium, Southwest Alaska Network

Synthesis and Discussion.
Board of Directors, Technical
Committee, and SWAN Staff.



Long-term Vital Signs Monitoring in the Southwest Alaska Network
Alagnak Aniakchak Katmai Kenai Fjords Lake Clark

Synthesis and Discussion. Board of Directors, Technical Committee, and SWAN Staff.

➤ Reflections on the last 2 years

➤ A Look Ahead



Full
Implementation

2002

2005

2010

SWAN 2001-2006

Ecological History Studies

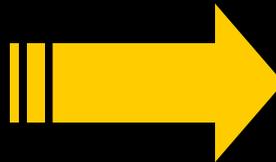
Paleolimnology

Paleoecology

Paleontology

Historic Insect Outbreaks

Repeat Photography



Biological and Physical Inventories

Vascular Plants

Small Mammals

Freshwater Fish

Coastal River Otter

Black Bear Genetics

Marine Invertebrates

Forest Birds

Montane Birds

Nunataks

ShoreZone Mapping

Surficial Geology

Surface Water Chemistry



Project	Vital Sign	ALAG	ANIA	KATM	KEFJ	LACL
Weather and Climate	Weather and Climate			X	X	X
Landscape Dynamics and Terrestrial Vegetation	Glacial Extent			X	X	X
	Landscape Processes	X	X	X	X	X
	Land Cover and Land Use	X	X	X	X	X
	Vegetation Composition and Structure	X	X	X	X	X
	Sensitive Vegetation Communities	X	X	X	X	X
	Insect & disease Outbreaks	X	X	X	X	X
	Earthquake and Volcanic Activity	X	X	X	X	X
Marine Nearshore	Geomorphic Coastal Shoreline Change			X	X	X
	Kelp and Eelgrass			X	X	X
	Maine Intertidal Invertebrates			X	X	X
	Seabirds			X	X	X
	Black Oystercatcher			X	X	X
	Coastal River Otter			X	X	X
	Sea Otter			X	X	X
	Harbor Seal			X	X	X
Water Quality			X	X	X	
Lakes, Rivers and Fish	Surface hydrology	X	X	X	X	X
	Water Quality	X	X	X	X	X
	Resident Lake Fish	X	X	X	X	X
	Salmon	X		X		X
Terrestrial Animals	Brown Bear	X		X		X
	Wolf	X		X		X
	Wolverine			X	X	X
	Moose			X		X
	Caribou	X	X	X		X
	Bald Eagle	X	X	X	X	X
Human Activities	Resource Harvest	X	X	X		X
	Visitor Use	X	X	X	X	X
	Invasive Plants and Animals	X	X	X	X	X
	Air Quality		X			X

Inventory Work:

- Aniakchak bird Survey 2008
- Alagnak bird survey -2009
- Synthesis – Modeling the distribution of rare plants -based on plant inventories

Ecological History:

- Ongoing work –bark beetle infestations
- Ongoing work –lake cores (now looking at contaminants)

Information Transfer & Public Outreach

- 2007
 - 7 reports, 3 draft protocols, 5 peer-reviewed articles
 - 16 presentations, 10 posters
- 2008
 - 9 reports, 2 draft protocols, 3 peer-reviewed articles
 - 22 presentations, 5 posters

Southwest Alaska Network Inventory and Monitoring Program National Park Service

Midwinter Notes 2008

Serving the Alagnak, Aniakchak, Katmai, Kenai Fjords, and Lake Clark units of the National Park Service

The SWAN completed biological inventories in 2007, and is now in the process of developing Protocols and Standard Operating Procedures (SOPs) to monitor a suite of vital signs (V.S.) in six project areas. The 2008 edition of the Midwinter Notes presents a synopsis of project updates and plans for 2008. Not all vital signs are presented here. Additional information related to SWAN projects and vital signs is available on the Internet: <http://science.nature.nps.gov/im/units/swan/>



Biological Inventory

Biological inventories have been completed in SWAN park units for:

- amphibians; invertebrates; freshwater fish; birds; mammals and vascular plants

The only amphibian known to occur in the wood frog. Biologists confirmed of several previously undocumented where thought to reside in SWAN park plant inventories led to range extension plant species. The results of these inventories are summarized in reports that are available and downloading at: <http://science.nature.nps.gov/im/units/swan/index.cfm?theme=inventory>



Southwest Alaska Network Inventory and Monitoring Program National Park Service

Field Season Highlights 2008

Breeding Bird Survey - ANIA

Aniakchak National Monument and Preserve (ANIA) is one of the most remote and least-visited park units in the NPS. Scientific research in ANIA has primarily been focused on the geology of the region, there has never been a systematic survey of breeding birds in this park unit.

- Biologists from USGS Alaska Science Center, KATM and SWAN conducted ground-based bird surveys in ANIA during 5/31-6/8.

- 68 species were detected, including seven not previously recorded in ANIA: Gadwall, Golden Eagle, Merlin, Marbled Godwit, Downy Woodpecker, Horned Lark, and Hoary Redpoll.

- First ever observation of an active nest for this subspecies of Marbled Godwit.



KATM Interpretive Ranger Michael Fitz records bird survey data in the Meshik River Valley (ANIA), June 2008. Inset: Rock Ptarmigan.

Rapid Vegetation Change - KEFJ

Rates of community change thought course of National Park cession has exposed subsites by early



Alaska Natural Tina Boucher measured in 11

- Botanists Ural Heritage relocated, regraphed 26 tied in 1993.

- Plot data cords will be and magnitude across the su

Marine Nearshore

These highly productive nearshore

Weather and Climate

Basic climatological data are neces-



The Southwest Alaska Network Inventory & Monitoring Program Newsletter

Diverse Landscapes within SWAN Parks Provide Important Landbird Habitat

Compared to many regions of Alaska, bird species in Katmai NPP (KATM) and Lake Clark NPP (LACL), are relatively well described. However, much of this information was derived from casual surveys and other accessible aquatic habitats. Much of these large remote parks are increasingly rugged and largely free of roads. Consequently, our understanding of the presence and distribution of birds away from casual areas is very limited.

Previous inventories point to the importance of montane areas as nesting habitat for particular assemblages of birds. However, the breeding distribution of alpine-nesting shorebird species such as Pacific Golden-Plover, Surf Scoter, and Wandering Tattler, is poorly understood. For one individual seabird, the Kittiwake Murrelet, nearly one-quarter of the 890 nests found in the North American portion of its range were located on the steep rocky slopes of the Alaska Peninsula.

When habitats are used for nest sites and which bird species use montane areas for nesting? Are different bird assemblages found in KATM and LACL? Biologists from the U.S. Geological Survey set out to answer these questions by conducting bird inventories in montane habitats in KATM and LACL. Surveys were conducted during the early breeding season from mid-May to early-June during 2008 - 2006. This period coincided with peak courtship activity. Biologists recorded their observations from 54 plots distributed among low (100-350 m), mid (351 - 600 m) and high (601-1620 m) elevation sites. Biologists recorded 92 species in KATM and 104 species in LACL, including 116 unique species. Approximately 70% of all species observed were found in both parks. The 13 most numerous species were all songbirds, which dominated the counts in both parks, comprising



USGS Biologist Caroline Van Meter surveys for montane-breeding birds at a site overlooking Kinak Bay (KATM). Photo by P. Farrell, USGS.



A male Rock Ptarmigan surveys its surroundings for suitable nesting sites to match its snow-free environment. Photo by D. Rulifson, USGS.

over two-thirds of all bird-crowded Sparrow, a species detected at midline elevations as 1.5 times the rate of any commonly detected winged Sparrow, American Pipit, and Horned Lark. Birds were more abundant in sizes, where common ptarmigan abundance and to common Sparrow, Pine Siskin, Warbler, and Wilson's Warbler. low and mid-elevation abundance as alpine species. Biologists recorded 41 species of concern, as defined Partners in Flight, U.S. Fish Alaska Shorebird Group, and Flight. Species of concern included, declining in abundance in related species among study-crowded King Yellow-rumped Warbler, Junco were observed. Horned Thrushes, and Fox Sparrows observed in KATM. Many boreal bird species were only seen in Lake Clark (e.g., Trumpeter Swallow, Sandwich Sparrow, Lesser Yellowlegs, Olive-sided Flycatcher). Of 13 species listed only in KATM.

Outreach



Weather and Climate

Basic climatological data are neces-



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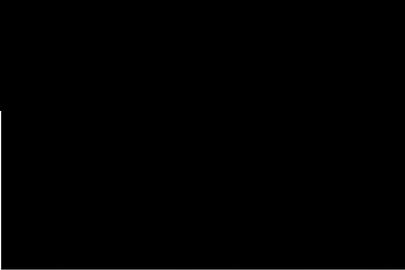
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Cover photos credited to NPS



SWAN

Website considered one of the best –and getting better

2008 – web made fully compliant:

W3C or Section 508 compatible – to make the web easier for those with disabilities

2009 – capturing more web real estate to more efficiently display SWAN materials; now searchable via google; new reports intranet page coming soon.

The screenshot shows the National Park Service Inventory & Monitoring Program website. The header includes the National Park Service logo and the text "National Park Service U.S. Department of the Interior". The main navigation bar features the "Southwest Alaska Network Inventory & Monitoring Program" and a list of units: SWAN, Alagnak, Aniakchak, Katmai, Kenai Fjords, and Lake Clark. A search bar is located in the top left. The left sidebar contains a search input field and a list of navigation links: Nature & Science, Inventory & Monitoring, Southwest Alaska Network (with sub-links for About Us, Inventories, Monitoring, Reconstruct History, Newsroom, Education Outreach, Product Guidelines, SWAN Intranet - NPS Only, and Site Map), and Vital Signs (with sub-links for Weather & Climate, Marine Nearshore, Landscape Dynamics & Terrestrial Vegetation, Lakes, Rivers, and Fish, Terrestrial Animals, and Human Activities). The main content area is titled "Southwest Alaska Network Inventory and Monitoring Program" and includes a description of the network. A "2009 SWAN Science Symposium" section is also visible, listing the date (April 1, 2009), location (Alaska SeaLife Center, Seward, AK), and a link for details. On the right, there is a "Parks in this Network" section with a map of Alaska and a "Quick Links" section.

Address: <http://science.nature.nps.gov/im/units/swan/index.cfm>

National Park Service
Inventory & Monitoring Program

National Park Service
U.S. Department of the Interior

Southwest Alaska Network
Inventory & Monitoring Program

SWAN Alagnak Aniakchak Katmai Kenai Fjords Lake Clark

I & M » Networks » Southwest Alaska Network » Home

Southwest Alaska Network
Inventory and Monitoring Program

The Southwest Alaska Inventory & Monitoring Network (SWAN) is an office of the National Park Service dedicated to providing the scientific foundation for effective, long-term protection and management of natural resources in five units of the national park system. Collectively these units comprise approximately 9.4 million acres, 11.6 percent of the land managed by the National Park Service, or 2 percent of the Alaska landmass, and include a diversity of geologic features, ecosystems, fish, wildlife, and climatic conditions that are equaled few places in North America.

2009 SWAN Science Symposium

- When: April 1, 2009
- Where: Alaska SeaLife Center Seward, AK
- Click for details

Parks in this Network

Please select a park

Southwest Alaska Network Map
National I & M Map

Quick Links

What's New
Vital Signs Monitoring Plan

Related Links:
Alaska Region I&M Program

Vital Signs 2008-9

- Setting realistic achievable goals:
- Eliminated, Reduced scope or simplified some Vital Signs
 - Wolverine, river otter
 - Resident lake fish. Now just contaminants
 - Visitor Use –will assist parks as needed (getting CUA numbers in each year)

Data Harvest Vital Signs (seven)

(will spend more time on these once we have others up and running)

- Insect Outbreaks, Exotic Plants, Resource Harvest, Volcanic and Earthquake activity, Caribou, Harbor seals
- Air quality previously was data harvest now also NADP station in KS, and doing Pilot moss sampling

SWAN 2009

Status of protocol development and implementation of monitoring.

Some Vital Signs have been reduced in scope, or still being assessed
 Kelp, Resident Lake Fish

Project	Vital Sign	Protocol Under Development	Draft Protocol completed, Testing and pilot monitoring	Protocol Finalized and monitoring in progress in 1 or more parks
Weather and Climate	Weather and Climate			
Landscape Dynamics and Terrestrial Vegetation	Glacier Extent			
	Landscape Processes			
	Land Cover and Land use			
	Vegetation Composition and Structure			
	Sensitive Vegetation Communities			
Marine Nearshore	Geomorphic Coastal Change			
	Kelp & Eelgrass			
	Intertidal Invertebrates			
	Marine Birds			
	Black Oystercatcher			
	Coastal River Otter			
	Sea Otter			
Lakes, Rivers and Fish	Water Quality - Marine			
	Surface Hydrology			
	Water Chemistry			
	Resident Lake Fish			
Terrestrial Animals	Salmon			
	Brown Bear			
	Wolf			
	Wolverine			
	Moose			
Human Activities	Bald Eagle			
	Visitor use			

SWAN 2009
looking to 2011

Status of protocol development and implementation of monitoring.

Some Vital Signs have been reduced in scope, or still being assessed:
Kelp, Resident Lake Fish

Project	Vital Sign	Protocol Under Development	Draft Protocol completed, Testing and pilot monitoring	Protocol Finalized and monitoring in progress in 1 or more parks
Weather and Climate	Weather and Climate			
Landscape Dynamics and Terrestrial Vegetation	Glacier Extent			
	Landscape Processes			
	Land Cover and Land use			
	Vegetation Composition and Structure			
	Sensitive Vegetation Communities			
Marine Nearshore	Geomorphic Coastal Change			
	Kelp & Eelgrass			
	Intertidal Invertebrates			
	Marine Birds			
	Black Oystercatcher			
	Coastal River Otter			
	Sea Otter			
Lakes, Rivers and Fish	Surface Hydrology			
	Water Chemistry			
	Resident Lake Fish			
	Salmon			
Terrestrial Animals	Brown Bear			
	Wolf			
	Wolverine			
	Moose			
	Bald Eagle			
Human Activities	Visitor use			

Current Protocols in NPS intranet database

- Peirce, K. 2006. Monitoring brown bears in Southwest Alaska Network National Parks: draft protocol narrative for the Southwest Alaska I&M
- Reed, B., M. Budde, P. Spencer, and A. Miller. 2006. Satellite-derived measures of landscape processes: DRAFT monitoring protocol for the Southwest Alaska I&M Network.

Updated Protocols and SOPs Drafts will be posted to National Intranet Database in the next 2 months:

- Giffen, B. 2009. Glacier Extent of the Southwest Alaska Network DRAFT Monitoring Protocol for the Southwest Alaska Network
- Miller, A., B. Thompson, D. Mortenson, C. Moore, C. Lindsay. 2009. Protocol for ground-based monitoring of vegetation in the Southwest Alaska Network.
- Joregenson, T. 2009. Protocol for Monitoring Coastal Salt Marshes in the Southwest Alaska Network.
- Shearer, J. and C. Moore. 2009. DRAFT Freshwater flow systems Monitoring for the Southwest Alaska Network
- Dean, T. and J. Bodkin. 2009. Protocol narrative for Marine Nearshore Ecosystem Monitoring for Southwest Alaska Network
Combines 6 different Vital Signs Protocols

New Version of:

- Peirce, K, B. Thompson, B Mangipane, T. Olson. 2009. DRAFT Monitoring brown bears in Southwest Alaska Network National Parks

SWAN 2009 -

Program Review:

The 1st Review should be after 3 yrs...

Fall 2009 for SWAN

October 27-29th, 2009

S. Fancy

-4 points after the first 15 reviews:

1. Trying to do too much.... Trim or reduce VS if needed, concentrate on 1st Tier first
2. Researchers gone Wild (Too elaborate) -must be simple
3. Measurable objectives (some over promising)
4. So committed to maximizing data collection -no analysis or reporting

SWAN Project	Vital Sign and Protocol	Protocol Development Status				
		2006	2007	2008	2009	2010
Weather and Climate	Weather and Climate		<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize	
Landscape Dynamics and Terrestrial Vegetation	Glacier Extent	Implement & Test	Peer Review & Finalize			
	Sensitive Vegetation Communities		<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize	
	Vegetation Composition and Structure	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	Land Cover/Land Use		<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize	
	Landscape Processes	Implement & Test	Peer Review & Finalize			
Marine Nearshore	Geomorphic Coastal Change	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	Marine Water Chemistry	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	Kelp and Halgrass	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	Marine Intertidal Invertebrates	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	Black Oystercatcher	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	Seabirds	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	River Otter (Coastal)	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
	Sea Otter	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
Lakes, Rivers, and Fish cont.	Resident Lake Fish	Implement & Test	Peer Review & Finalize			
	Salmon	<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize		
Terrestrial Animals	Bald Eagle			<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize
	Brown Bear		<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize	
	Wolf			<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize
	Wolverine			<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize
	Moose			<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize
Human Activities	Visitor Use		<i>Develop Draft</i>	Implement & Test	Peer Review & Finalize	

SWAN 2009-

2009 **Public Highlights** (so far):

Marine Science Symposium –poster presented

George Wright Society -3 posters presented

Seward science symposium

New series of resource Briefs for all SWAN

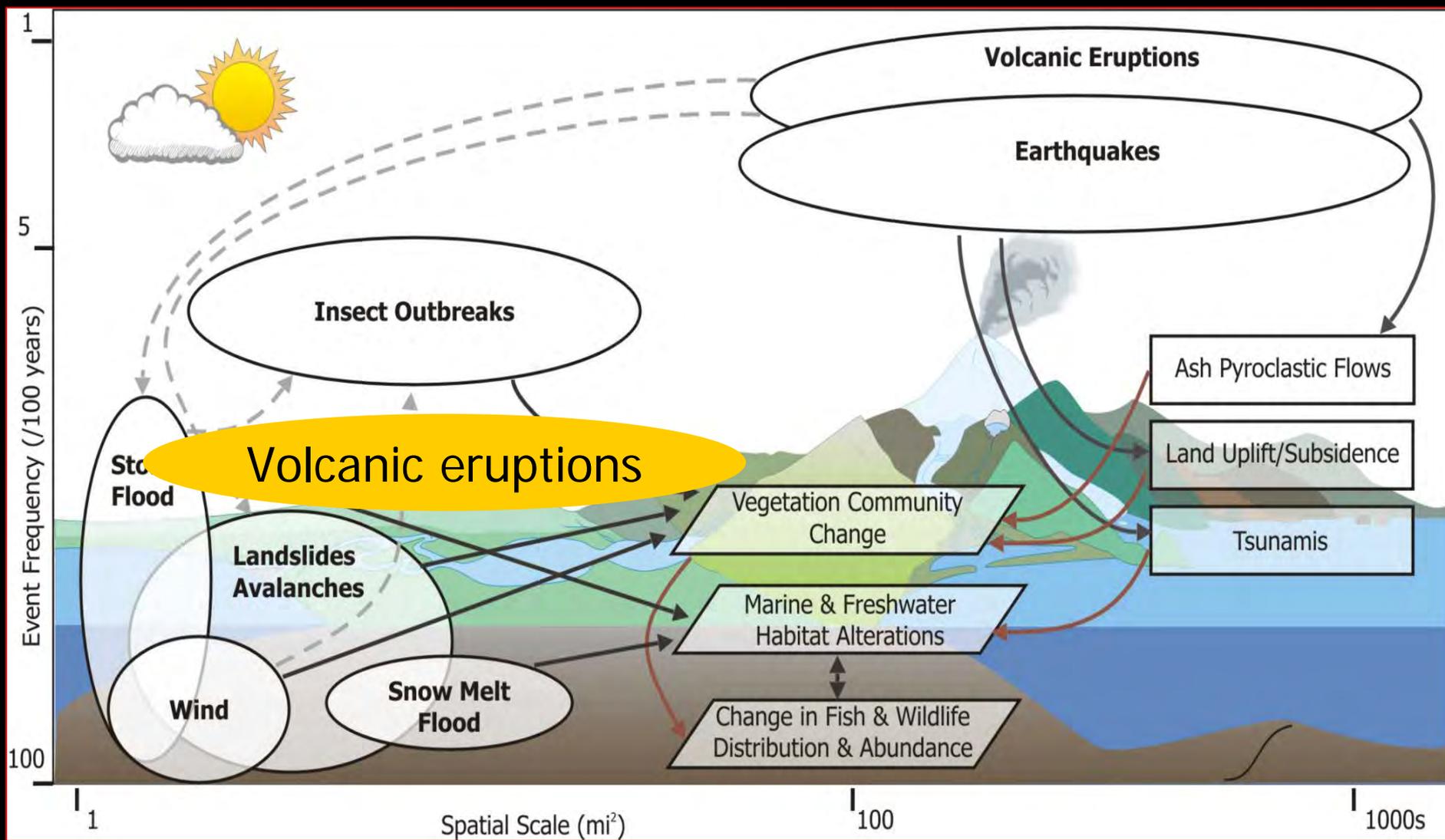
Staff changes: new data manager, new biotech (veg monitoring) (Anchorage-based); loss of part-time lead for Landscape Processes Vital Sign

Working towards hiring for new data manager assistant and new Admin Assistant

Budget: FLAT -erosion of buying power

Impressions?

- Impressions from Superintendents
- Impressions from Technical Committee, Staff and others?
- How did this symposium work?
- What would people like to see in the future for Symposia?
 - SW AK Park and I&M symposium scheduled for fall 2010



Spatial and temporal scale of volcanic events.
 May be more frequent than originally described
 Augustine/4 Peaks/Redoubt.....

Wildlife Protocols and Implementation – still in front of us

- Moose, Brown bear, bald eagle, wolf
- Need full park involvement if they are going to succeed



Core Duties of I&M Network Staff:

Using shared staff and funding to facilitate inventories and do long-term monitoring of a modest set of vital signs:

1. Determine status and trends in the condition of a few key natural resources for each park, and

2. Effectively deliver information to park managers, planners, interpreters, scientists, and other key audiences.

- Productivity by some people and networks is very impressive
- The results to date have exceeded everyone's expectations.
- Is the current pace sustainable??
- Some have burned out....