RESOURCE BRIEF 4

PEREGRINE NUMBERS HAVE GROWN, BUT ENVIRONMENTAL THREATS REMAIN

PEREGRINE MONITORING IN THE CENTRAL ALASKA NETWORK: YUKON-CHARLEY RIVERS

2007 MARKED THE 32ND CONSECUTIVE YEAR OF AMERICAN PEREGRINE FALCON MONITORING ALONG THE UPPER YUKON RIVER CORRIDOR.

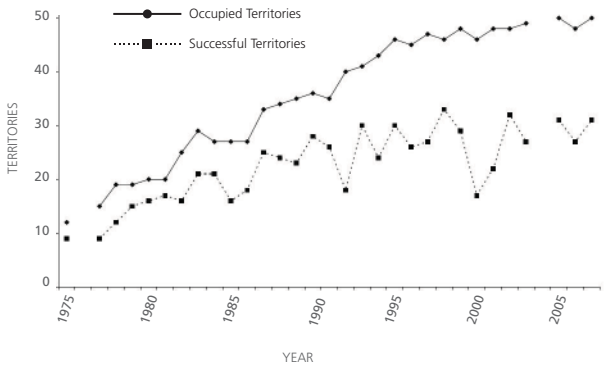
In late May 2007, biologists travelled the Yukon River between the communities of Eagle and Circle, Alaska, and counted the number of occupied Peregrine Falcon territories. A second survey was conducted in July to determine nest success and productivity. Both surveys indicate continued positive growth in the Yukon-Charley Rivers Peregrine Falcon population.

The number of occupied territories within the study area has shown a steady increase since the species neared extinction in the early 1970s because of nest failure caused by DDT contamination. In 2007, 50 occupied territories were observed, which is nearly a 5-fold increase since 1975.

Reproductive success has improved during the past 3 decades as well. The number of nestlings, though variable among years, has increased from 17 in 1975, to 82 in 2007. However, recent evidence suggests that American Peregrine Falcons are still threatened by environmental contaminants.

Analyses of Peregrine eggs from the upper Yukon River suggest that mercury levels are increasing. Mercury is a persistent compound which bioaccumulates at high trophic levels and causes toxic effects (similar to DDT). The amount of mercury being found in Yukon area eggs is currently at levels that may affect reproduction. High levels of mercury are made biologically available through industrial processes such as mining and waste incineration, and will likely increase with global industrialization. Additionally, DDT and other pesticides are still being used on Peregrine wintering grounds, which may cause continued risk to the population.

Number of Peregrine Falcon Occupied & Successful Territories 1975 - 2007



What do we want to understand about Peregrines?

1. Determine annual levels of nesting territory occupancy, nesting success, and overall population productivity.
2. Determine variation in nesting territory occupancy, nesting success, and productivity during the last decade.
3. Describe historic levels of environmental contaminants and eggshell thickness. Determine levels of organochlorine pesticides, mercury, and eggshell thickness every five years.
4. Measure changes in habitat on the breeding range.

Addled egg (above) from an upper Yukon aerie.

Graph (left) shows the steady increase in both occupied and successful (offspring were produced) territories from 1975 to 2007.

Why Are Peregrine Falcons Important?

Peregrines are a top predator that react not only to changes in the environment, but are highly sensitive to contaminants and habitat alteration.

Yukon-Charley Rivers National Preserve (YUCH) was created by the Alaska National Interest Lands Conservation Act in 1980 in part because of its population of nesting Peregrine Falcons (Falco peregrinus anatum), making them a high priority focal species for monitoring. Focal raptor species are also monitored in the other network parks (Golden Eagles in Denali and Bald Eagles in Wrangell-St. Elias).

Besides Yukon-Charley Rivers enabling legislation, it makes ecological sense to monitor this species because Peregrines are a top trophic level predator that respond quickly to changes in the environment. They are also highly sensitive to environmental contaminants and habitat alteration. Moreover, the Peregrine population of the Upper Yukon River corridor is one of the densest in North America. They have been surveyed each year since 1975 and have a legacy as being one of the longest and most thoroughly studied populations of Peregrine Falcons in the world.

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PARKS BEING MONITORED:

YUCH: Yukon-Charley Rivers National Preserve

How Are We Monitoring Peregrines?

Each summer, Peregrine Falcon monitoring is conducted along 265 km (165 mi) of the Yukon River between Circle, Alaska, and the border of Yukon Territory, Canada. The basic approach follows guidelines established in the Monitoring Plan for the American Peregrine Falcon (US Fish and Wildlife Service 2003).

Collecting data on nesting territory occupancy, nesting success, and productivity requires two annual surveys conducted by boat along the upper Yukon River. All potential nesting territories along the river are observed from shoreline or islands using binoculars and spotting scopes. Observations are conducted for a minimum of 4 hours at each potential nesting territory.

Collecting data on environmental contaminants requires visiting nests using standard rock climbing techniques. During these visits, the number of young are counted, prey remains are checked, and unhatched eggs and feather samples are collected for analysis.

CENTRAL ALASKA NETWORK

USING SCIENCE TO PROTECT OUR PARKS

THE CENTRAL ALASKA NETWORK (CAKN) IS ONE OF 32 NATIONAL PARK SERVICE INVENTORY AND MONITORING NETWORKS. EACH NETWORK EXISTS AS PART OF A NATIONAL EFFORT TO BETTER UNDERSTAND AND MANAGE PARK LANDS USING SCIENCE-BASED INFORMATION.

In order to focus this effort, 270 national park units with significant natural resources were grouped into 32 regional networks.

The Central Alaska Network is made up of 3 parks: Denali National Park and Preserve, Wrangell-St. Elias National Park and Preserve, and Yukon-Charley Rivers National Preserve. Together, these 3 parks contain over 21.7 million acres and makeup 25% of all the land in the National Park Service. They represent a great diversity of climate and landform, from temperate coastal rainforests to glaciated mountain ranges. What they share in common are their largely wild and unaltered landscapes.

In order to track the condition of our parks, Central Alaska Network scientists have chosen 37 key indicators, or "vital signs," to represent the overall health of the network. Each vital sign falls into one of 4 categories: animal life, physical environment, human use, or plant life. Underlying these 4 vital sign categories is a focus on habitat change.

CAKN VITAL SIGNS:

Animals

- Arctic Ground Squirrel
- Bald Eagles
- Brown Bears
- Caribou
- Freshwater Fish
- Golden Eagles
- Macroinvertebrates
- Moose
- Passerines
- Peregrine Falcon
- Ptarmigan
- Sheep
- Small Mammals
- Snowshoe Hare
- Wolves

Environment

- Air Quality
- Climate
- Fire
- Flooding
- Glaciers
- Land Cover
- Permafrost
- Rivers & Streams
- Shallow Lakes
- Snow Pack
- Soundscape
- Tectonics & Volcanoes

Humans

- Human Population
- Human Presence
- Natural Resource Consumption
- Trails

Plants

- Exotic Species
- Forage Quantity/Quality
- Insect Damage
- Plant Phenology
- Subarctic Steppe
- Vegetation Structure/Composition

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