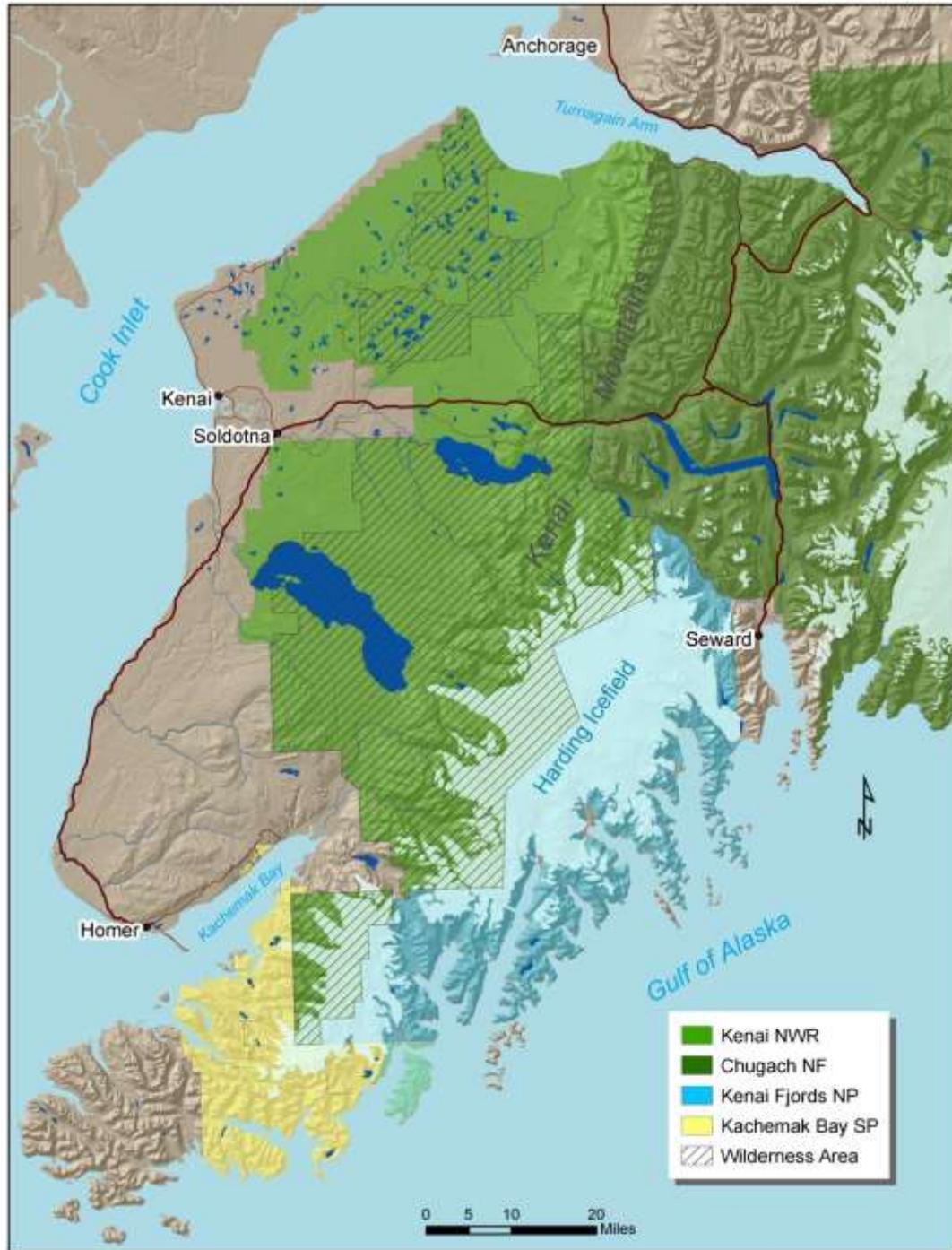


RESPONSE OF THE TRUMPETER SWAN POPULATION TO MANAGEMENT ON KENAI NATIONAL WILDLIFE REFUGE, ALASKA



John Morton, Todd Eskelin, Dawn Magness, Mark Laker and Ted Bailey (retired)





REFUGE PURPOSES

1980 ANILCA



- conserve fish & wildlife populations and habitats in their natural diversity including but not limited to *waterfowl*...
- fulfill international fish & wildlife treaty obligations

OTHER REFUGE PURPOSES

1964 Wilderness Act

- secure an enduring resource of wilderness
- protect and preserve wilderness character
- leave them unimpaired for future use as wilderness

1997 Refuge Improvement Act

- ensure biological integrity, diversity and environmental health









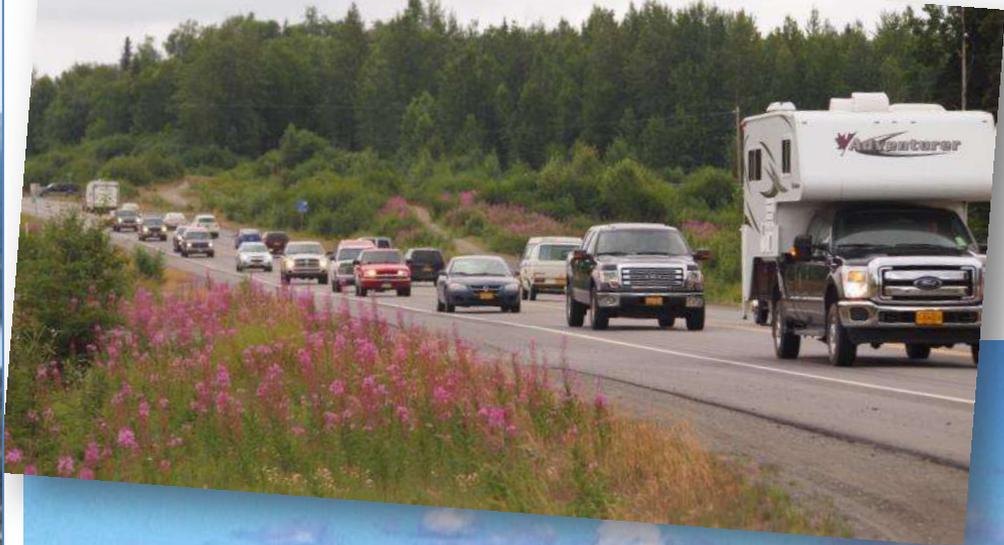


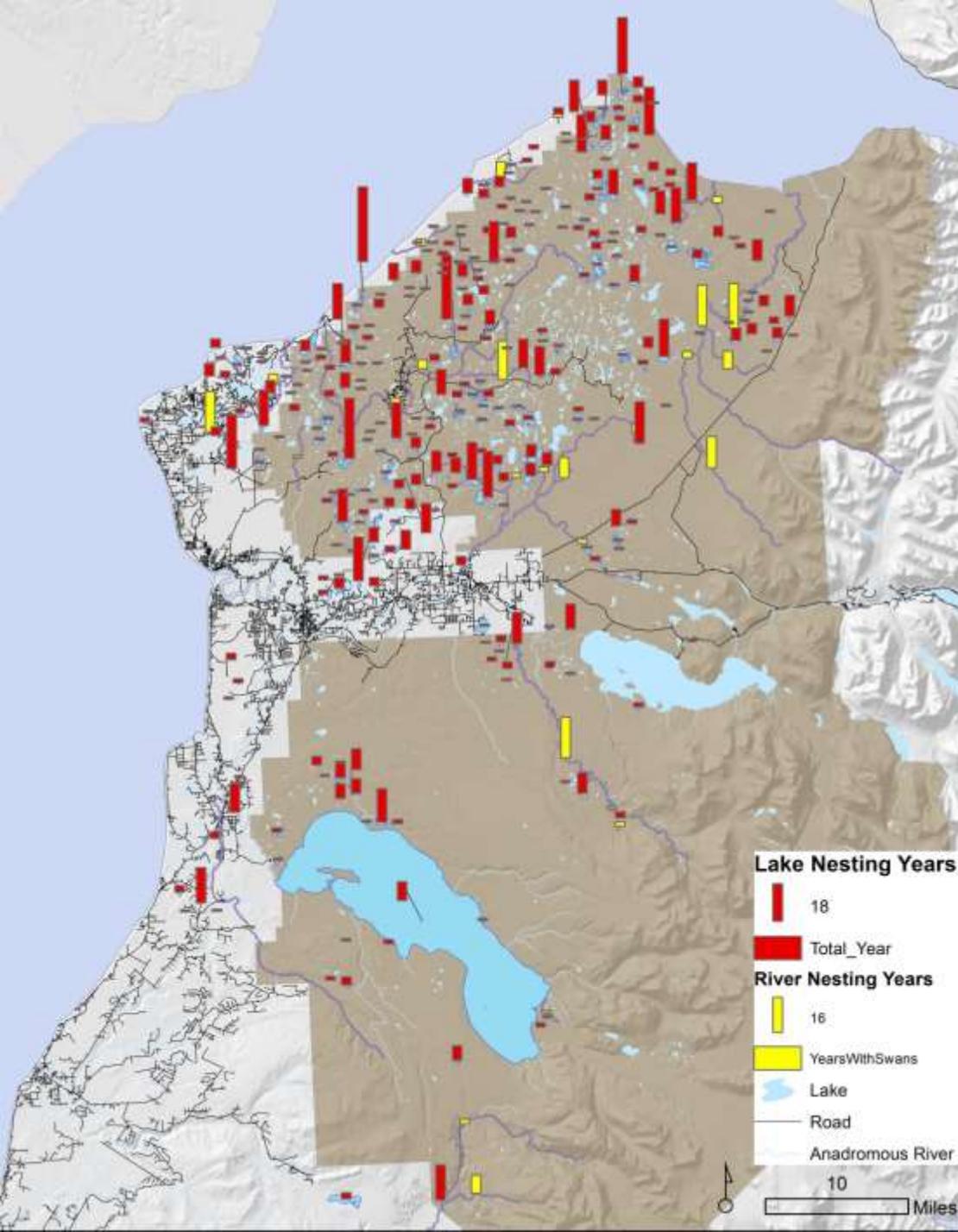
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6/14/2004 9:



05.15.2007





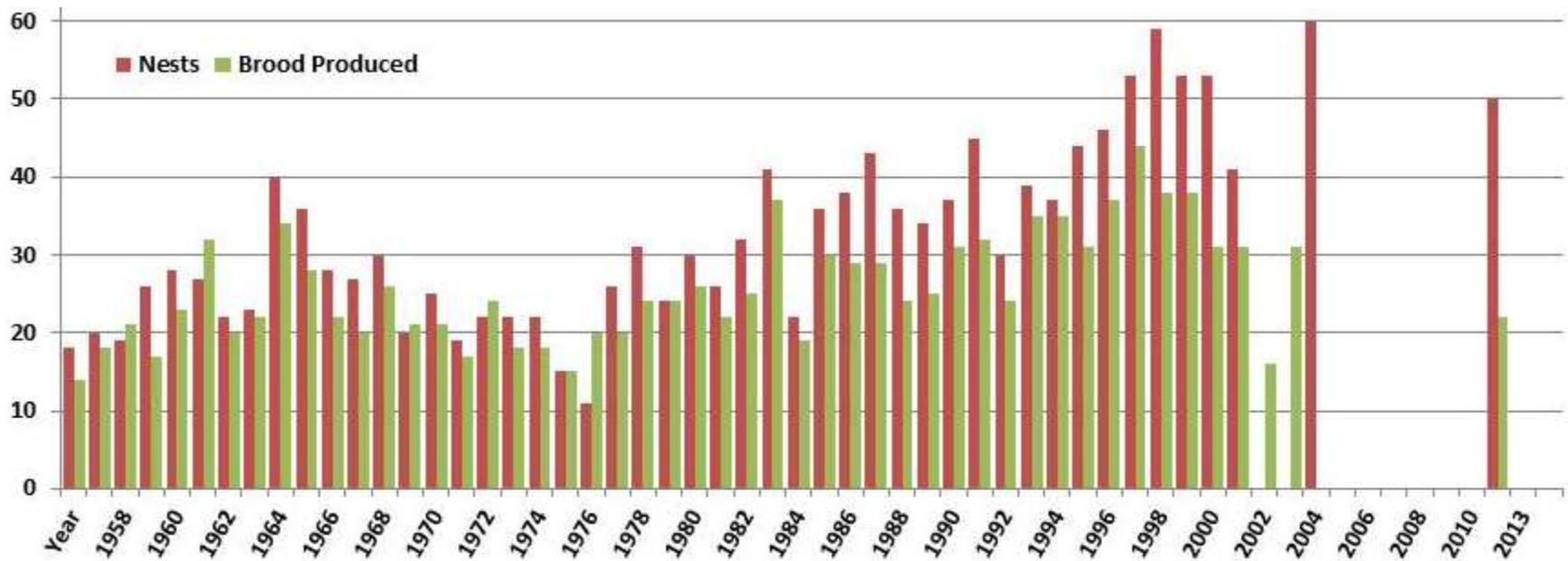
**311 waterbodies
nested on since 1957**

83% on refuge

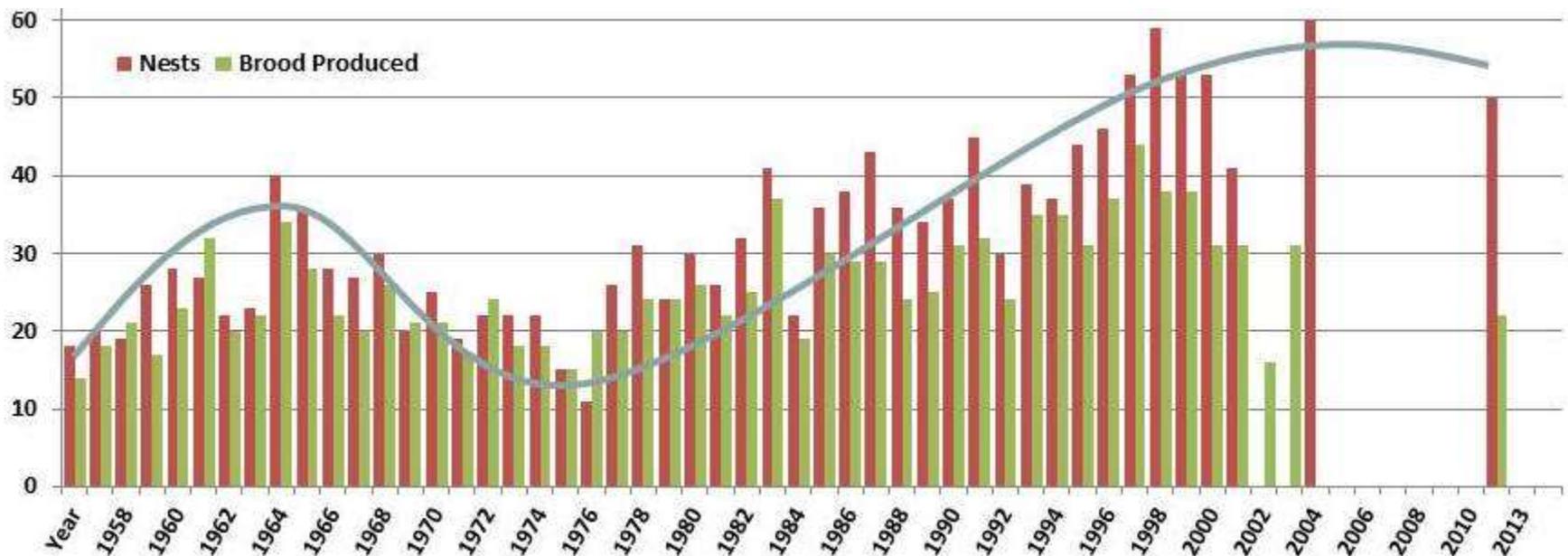


| | Heavy Use (3+ Years) n=122 | Light Use (1 or 2 Years) n=189 | No Swans n=4629 |
|--|----------------------------------|---|--------------------|
| Percent Wetland in 200m Buffer Average | 11% | 18% | 15% |
| Percent Wetland in 200m Buffer SD | 17% | 23% | 24% |
| Lake Acres Average | 702 | 41 | 15 |
| Lake Acres SD | 6,640 | 67 | 363 |
| Lake Acres Median | 55 | 17 | 2 |
| Minimum Acres | 0.54 | 0.21 | 0.04 |
| Maximum Acres | 73,432 | 419 | 24,519 |
| Lake Perimeter Miles Average | 2.6 | 1.1 | 0.4 |
| Lake Perimeter Miles SD | 6.9 | 1.1 | 1.0 |
| Lake Perimeter Miles Median | 1.6 | 0.7 | 0.2 |

Nesting TRUS have increased from <20 in 1957 to >50 in recent years



A generally increasing trend with a population depression in the mid 1970s



Hansen, H.A., P.E.K. Shepherd, J.G. King, and **Will A. Troyer** (1971). The Trumpeter Swan in Alaska. Wildlife Monographs 26.



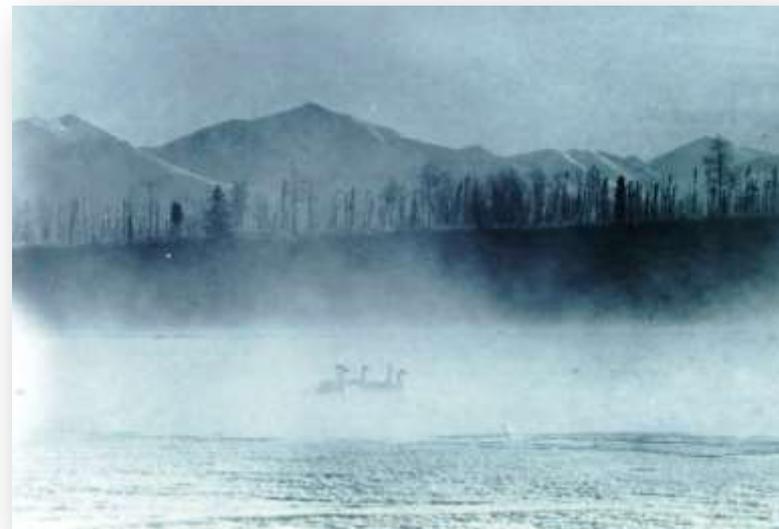
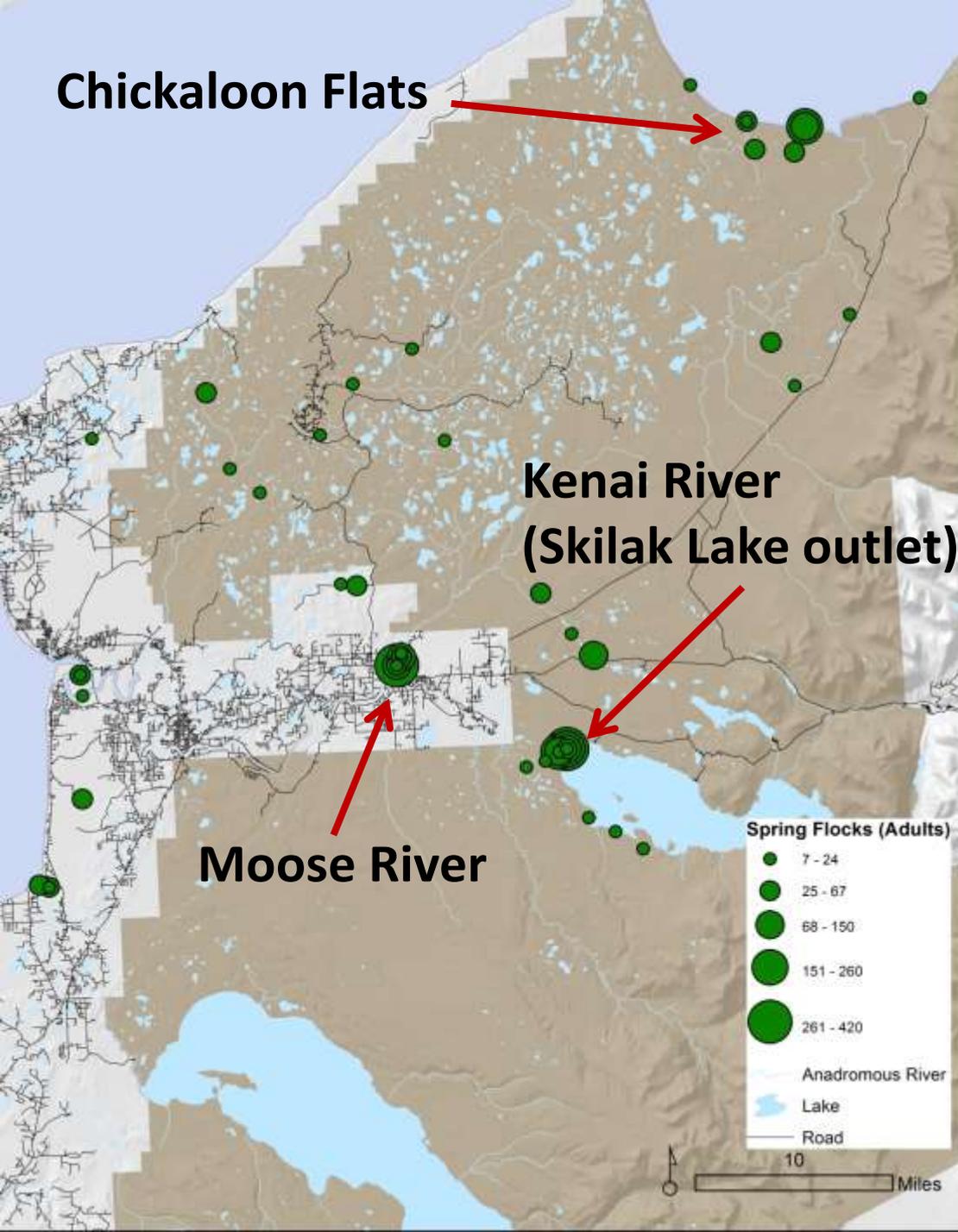
Bob Richey. (1981). Status of the Trumpeter Swan on the Kenai National Wildlife Refuge. 6th TTSS Conference.



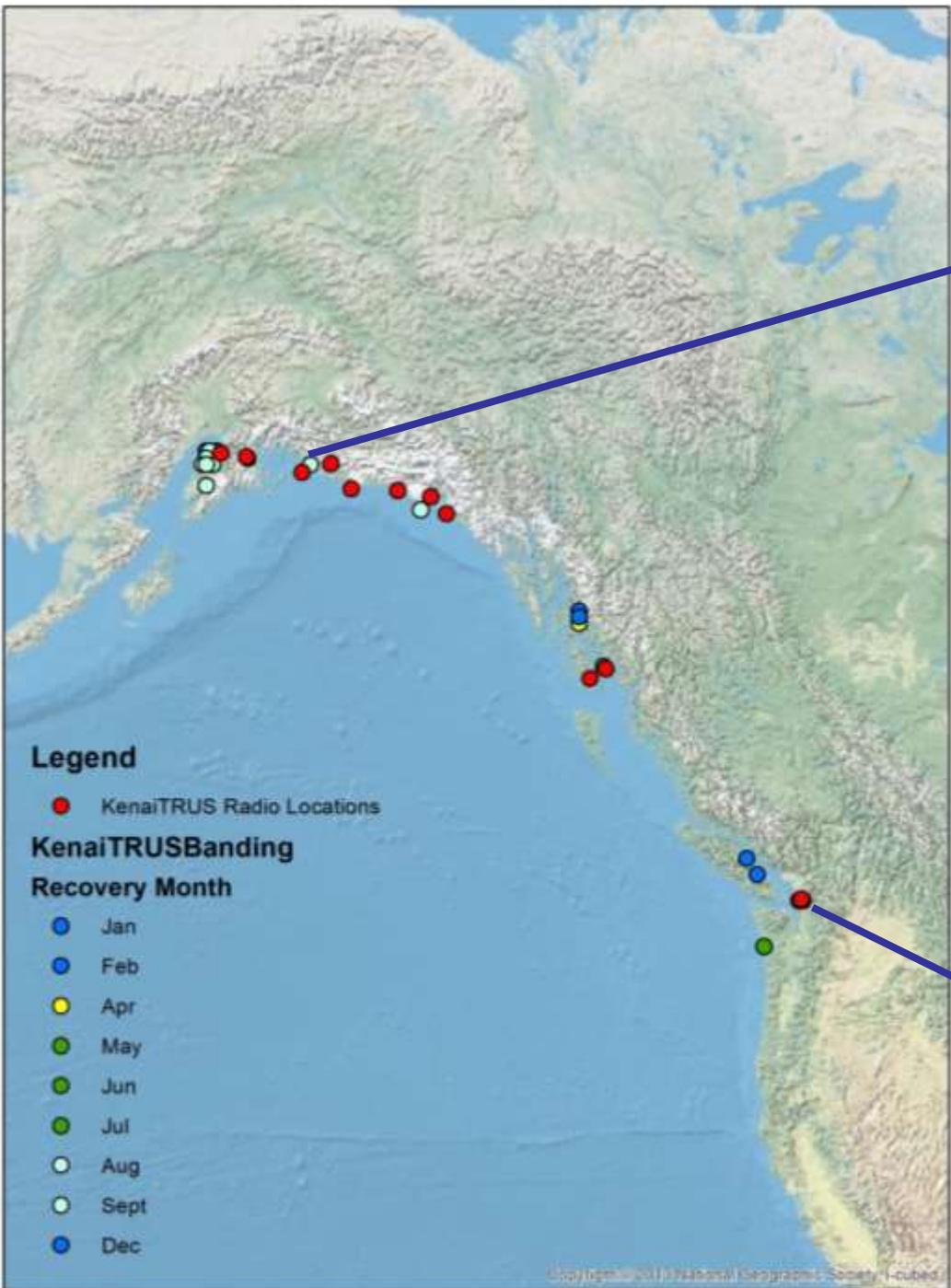
Ted Bailey et al. (1988). Summer and migratory movements of Trumpeter Swans using the Kenai National Wildlife Refuge, Alaska. 11th TTTS Conference.



Chickaloon Flats



Spring staging areas



Eyak Lake (Cordova, AK)



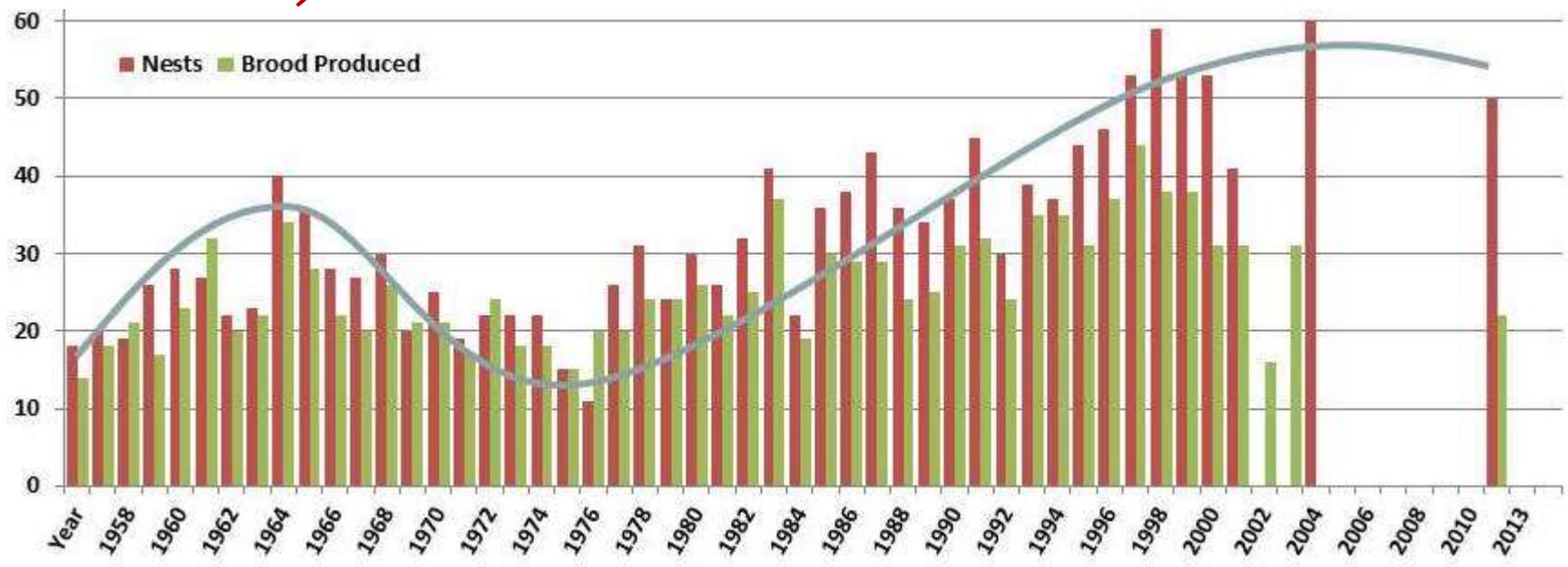
Barney Lake (Burlington, WA)

1st aerial survey

Hansen et al. monograph
1st Alaska TRUS survey

1st USFWS bands

Radio-transmitted TRUS





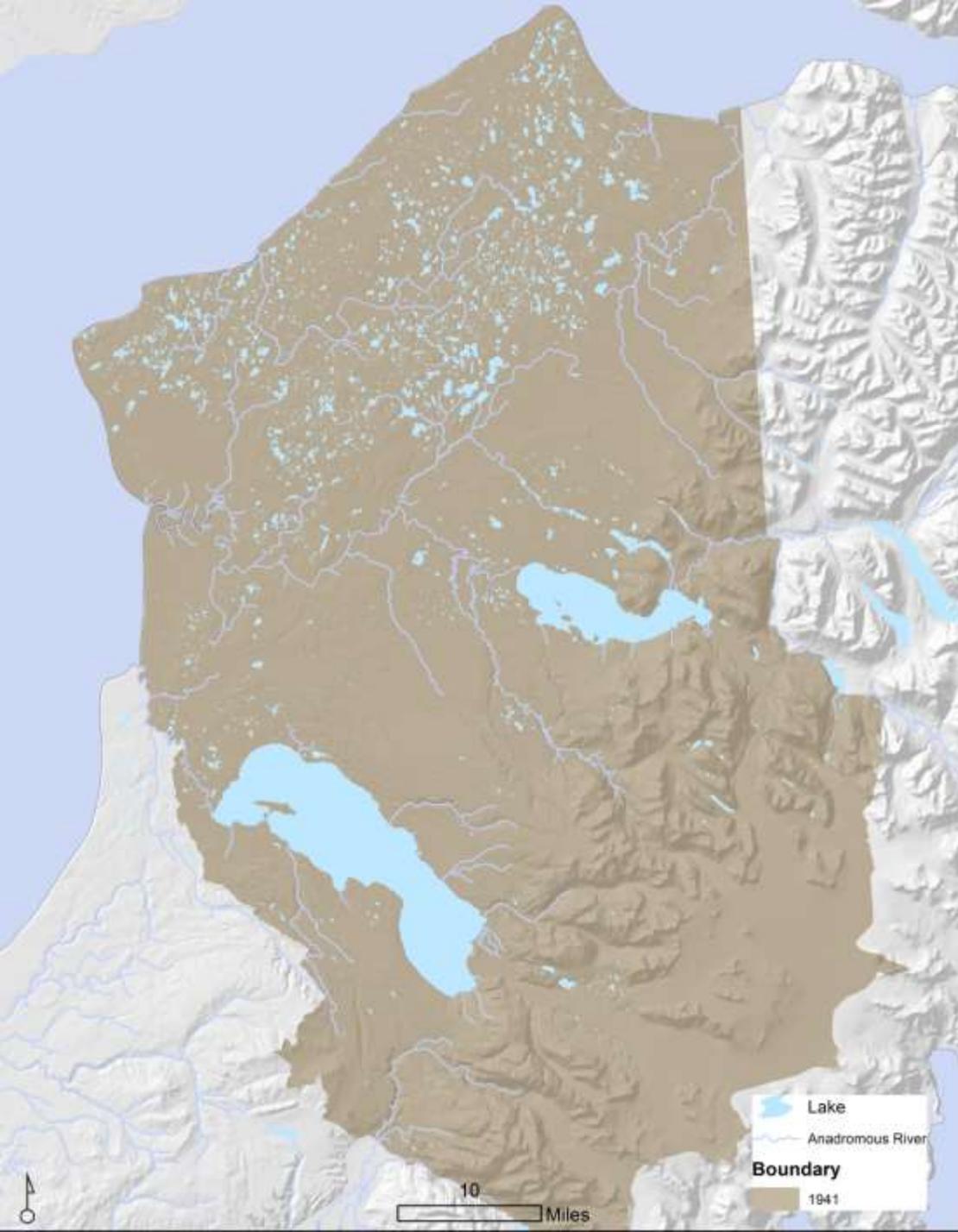


#5A-40. Herb Clark with the trumpeter swan that was killed when the bird struck a power line near Sterling. The swan has been sent to Jonas Brothers for a habitat display in the future. Photo by Seemel.

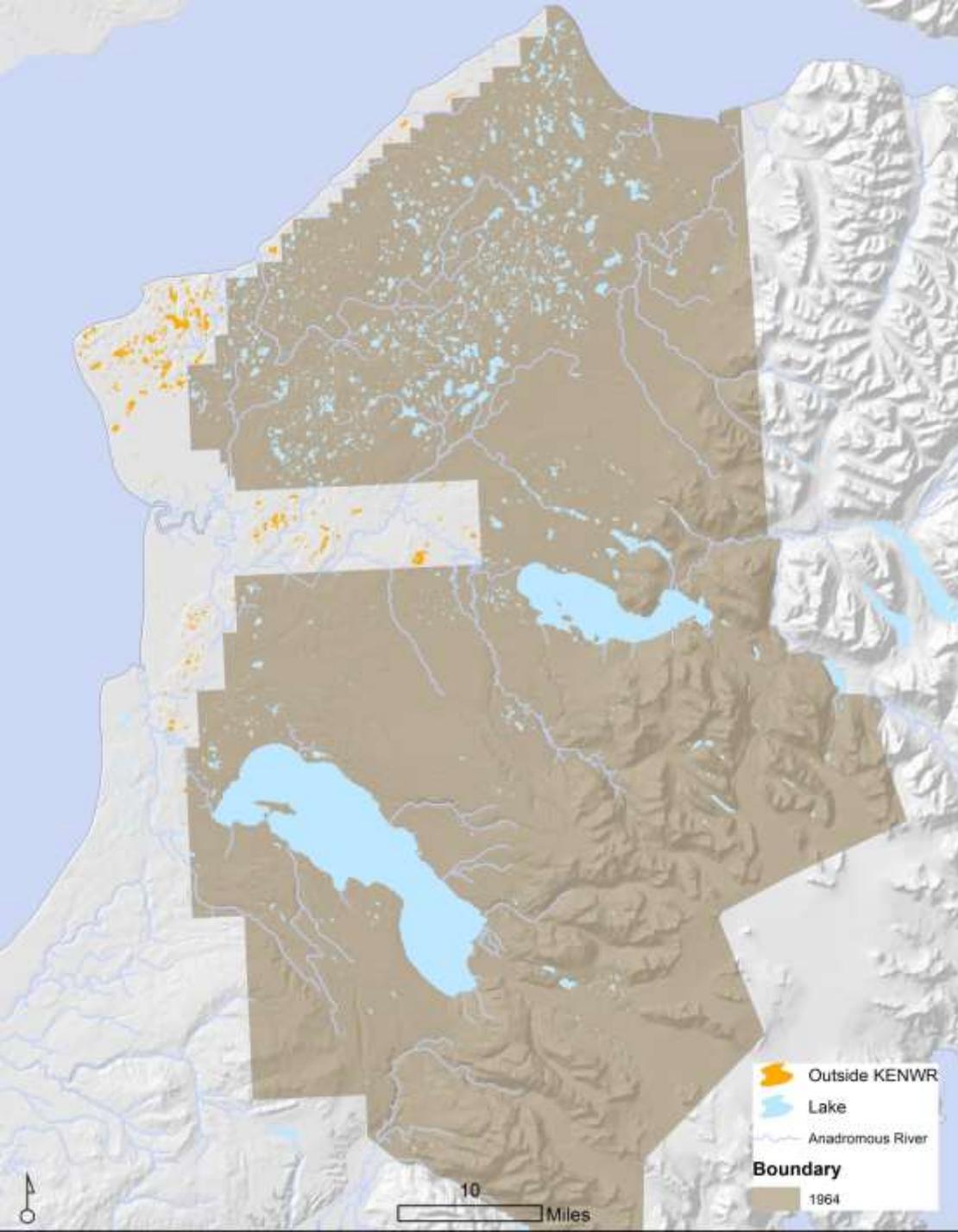
**1960—1962, 51 oil wells
and 8 gas wells drilled on
KENWR**

**Eventually > 200 wells on
KENWR**





1941



1964





More Than 7,400 Moose Now Roam National Range

During the course of 1965, the percentage of the lambs in national surveys on the Kenai Moose Range were conducted by the Bureau of Sports, Fisheries and Wildlife of the Department of the Interior, to determine the population trend, composition of the herd and reproductive success.

Aerial surveys flown, said William A. Troyer, refuge manager, over the extensive moose calving grounds in late June revealed that 19 per cent of the moose population consisted of newly-born calves. These surveys are conducted during the early morning daylight hours when moose are feeding in the open meadows. Most cows had single calves; a few twins and one set of triplets was observed.

A new method has been used the past two years in making winter moose population counts. The method provided in

the population and the number of trophy rams. This entails hiking and camping in much of the mountain regions.

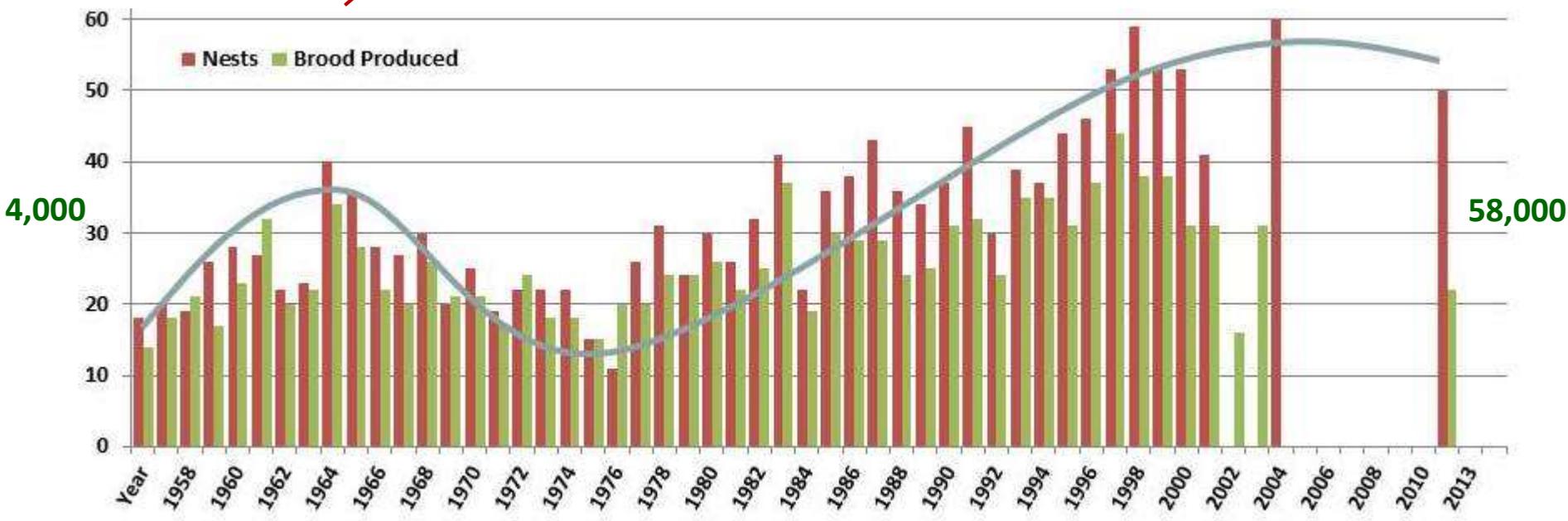
This past year the rare trumpeter swan showed a sudden increase on the Moose Range. Thirty-nine nests, the greatest number ever recorded, were counted. A total of 204 cygnets were hatched and clutches varied from one to nine. One swan family with nine cygnets was the largest ever seen in Alaska.

A cooperative program was undertaken with the Alaska Department of Fish and Game in sampling various lakes and streams. These

Charles H. Nelson - Jan. 1966
B. in Folds



1st aerial survey
 Hansen et al. monograph
 1st Alaska TRUS survey
 1st USFWS bands
 Radio-transmitted TRUS



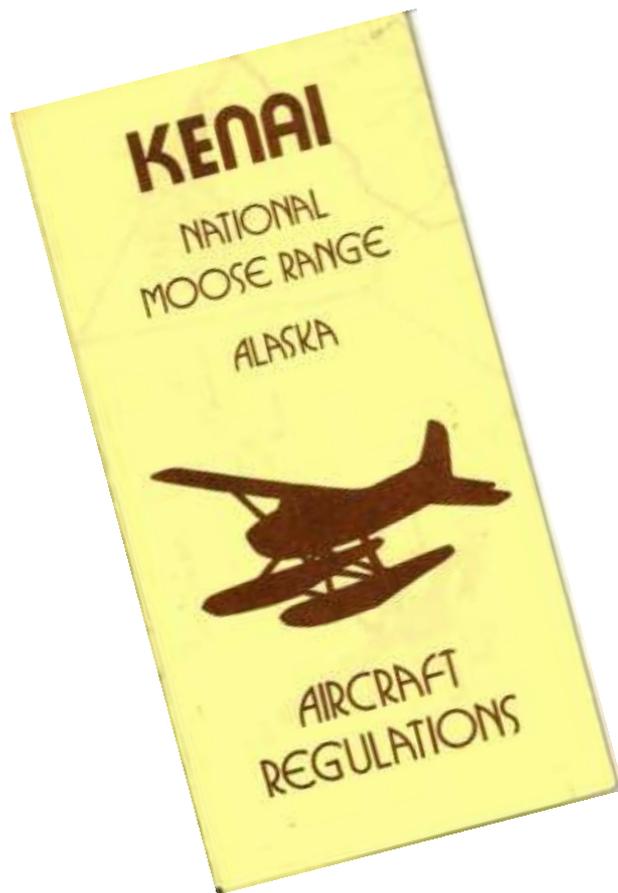
1957 Discovery Well
 1,500 miles seismic lines
 Refuge boundary change
 Beaver Creek O&G Field
 Swanson River Fire

"Increased air activity by moose hunters, use of lakes of all sizes by float aircraft with planes flying at tree top level during all daylight hours, forced most of the birds to abandon their nesting lakes and go into hiding"

~ 1960 Annual Narrative

'Appeal to Sportsmen' sign at Kenai River staging area (1963)



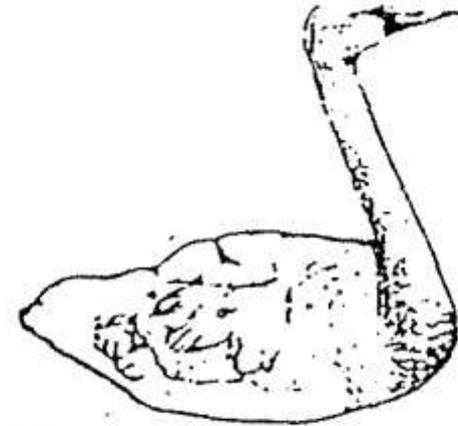


105 lakes closed to aircraft

1972-73



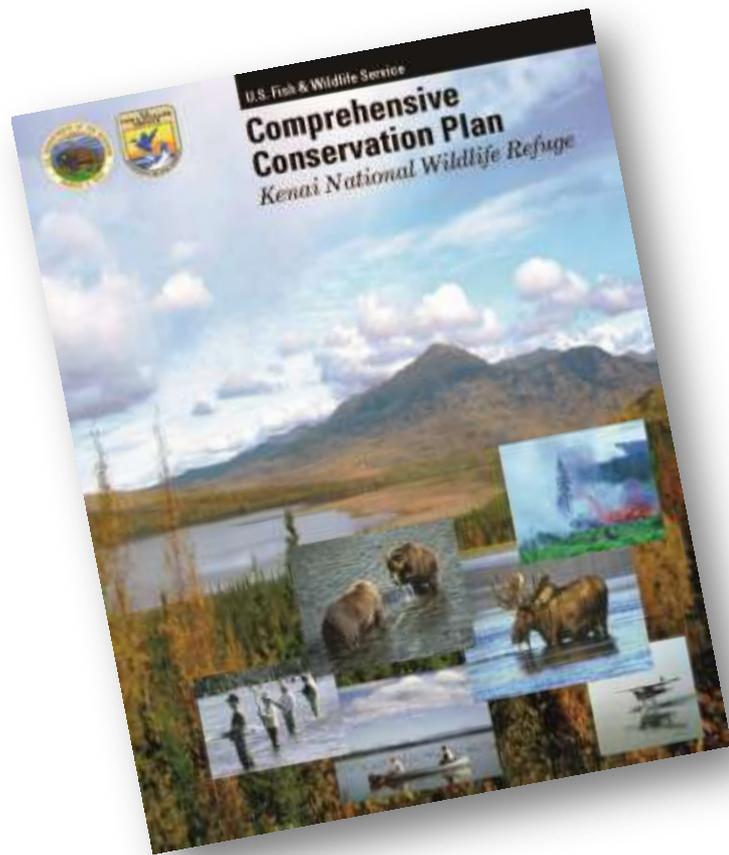
NOTE: The landing of aircraft on lakes occupied by nesting trumpeter swan is highly discouraged. The period of incubation and brooding of young cygnets is extremely critical. All pilots are requested to respect this majestic bird by minimizing any aircraft disturbance during this critical period, generally, mid-May through July.



Lakes with nesting Trumpeter Swans or their broods closed 5/1-9/30. Consult refuge manager for lakes.

- 207 lakes closed to aircraft
- 15 Mar-1 May motorboat prohibition on Skilak outlet (staging area)

1985

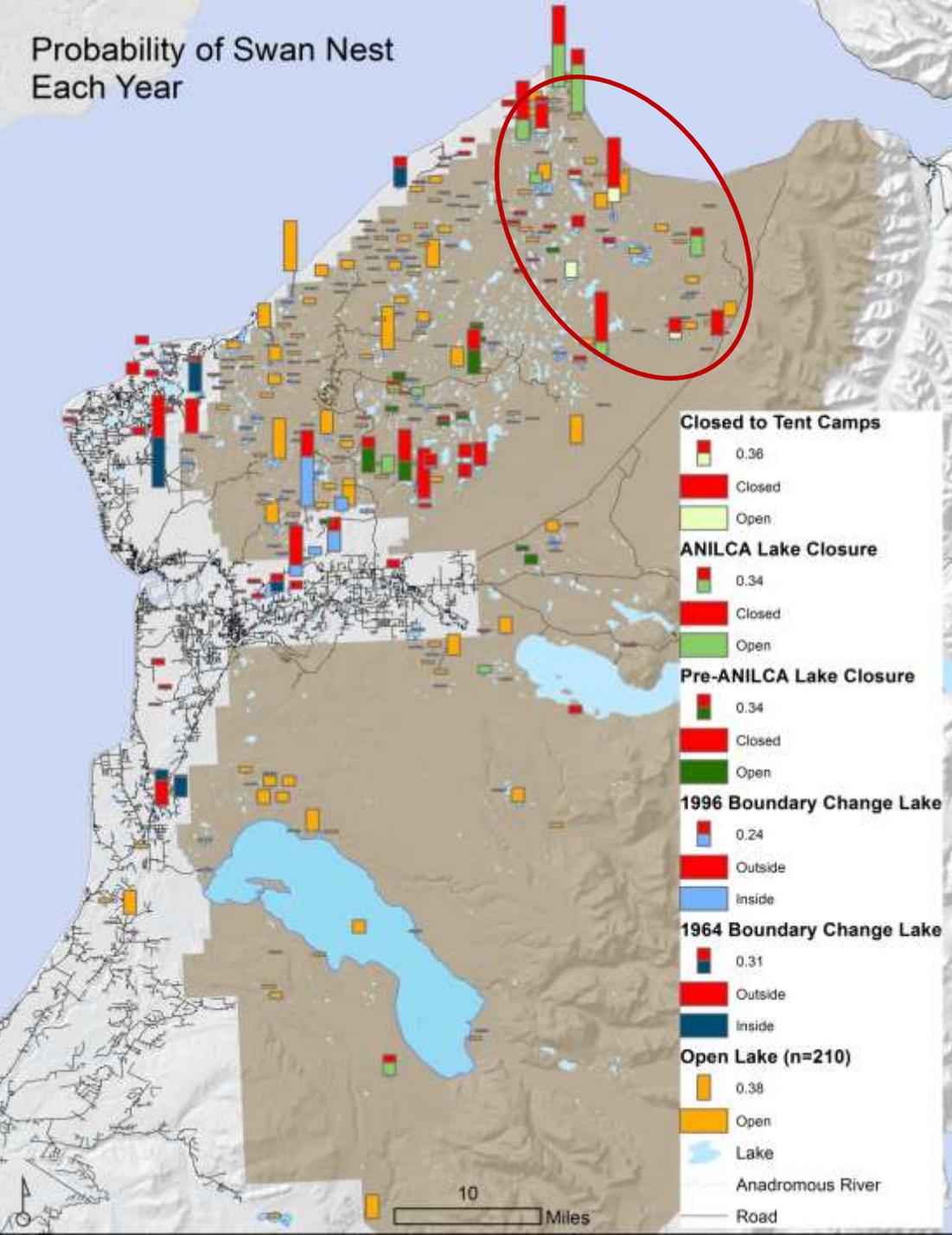


“Operation and/or use of aircraft between **May 1 and September 10** is prohibited on any lake where nesting trumpeter swans and/or their broods are present.”

- 207 lakes closed to aircraft
- Extended motorboat restriction on Skilak staging area to 15 Mar-14 Jun
- **but must revisit TRUS data with State of Alaska to assess if regulations restrict backcountry access...**

2010

Probability of Swan Nest Each Year



POLICY FOR MANAGEMENT
OF
COMMERCIAL TENT CAMP PROGRAM
KENAI NATIONAL MOOSE RANGE

Submitted by: James E. Fyfe Date: 1-25-80
Refuge Manager

Approved by: _____ Date: _____
Refuge Supervisor

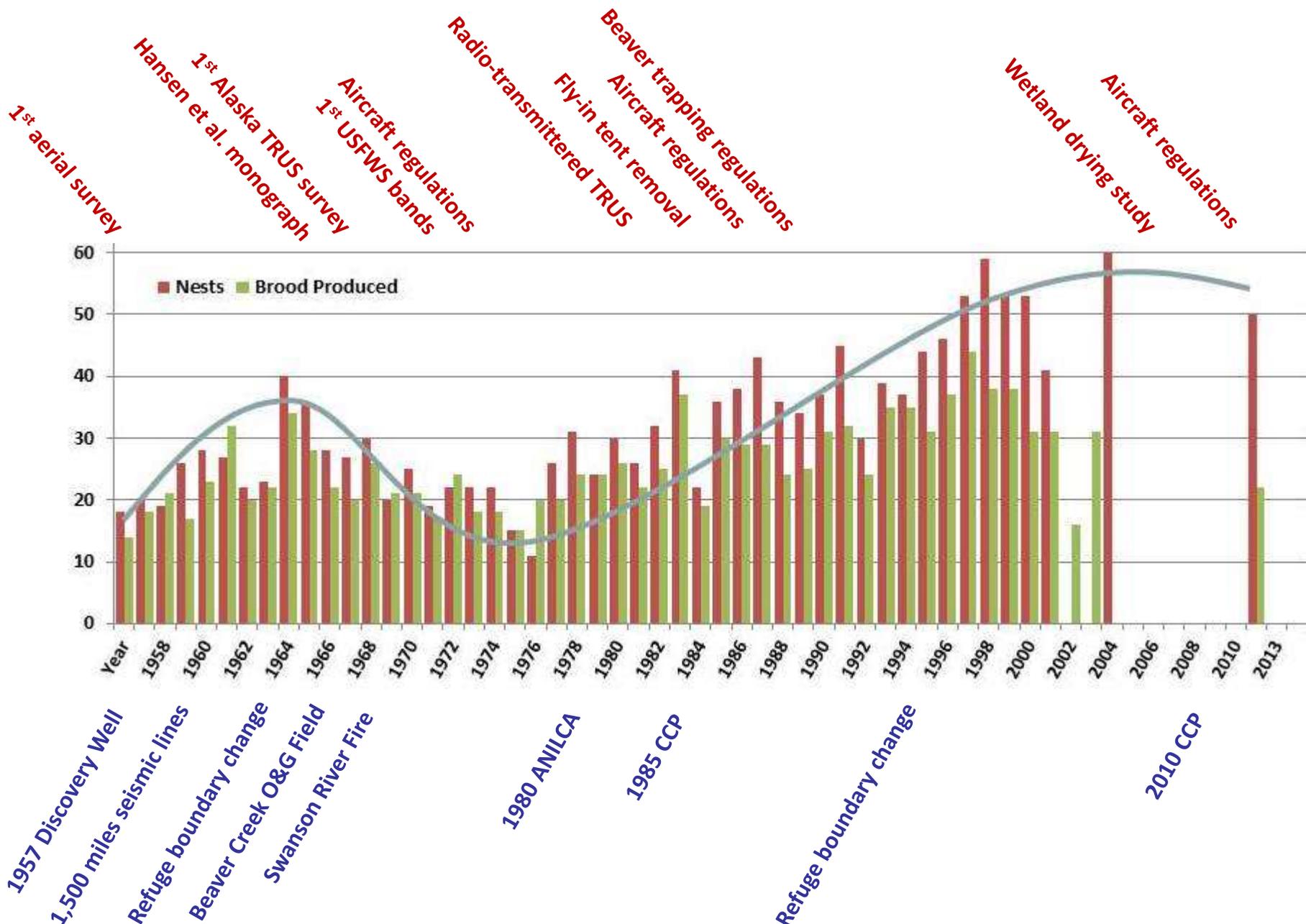
Keith H. Schreiner
Area Director

6 of 8 lakes had higher nest probability after removal of commercial tent camps in 1980s



Lake closures to floatplanes increased average late cygnet production per year

| | 1957-1980 | 1981-2015 | CHANGE |
|------------------------|------------------|------------------|---------------|
| Closed lakes | 17.38 | 25.96 | 46% |
| Remaining lakes | 54.79 | 67.30 | 23% |



1st aerial survey

Hansen et al. monograph
1st Alaska TRUS survey

Aircraft regulations
1st USFWS bands

Radio-transmittered TRUS
Beaver trapping regulations
Fly-in tent removal
Aircraft regulations

Wetland drying study
Aircraft regulations

1957 Discovery Well

1,500 miles seismic lines
Refuge boundary change
Beaver Creek O&G Field
Swanson River Fire

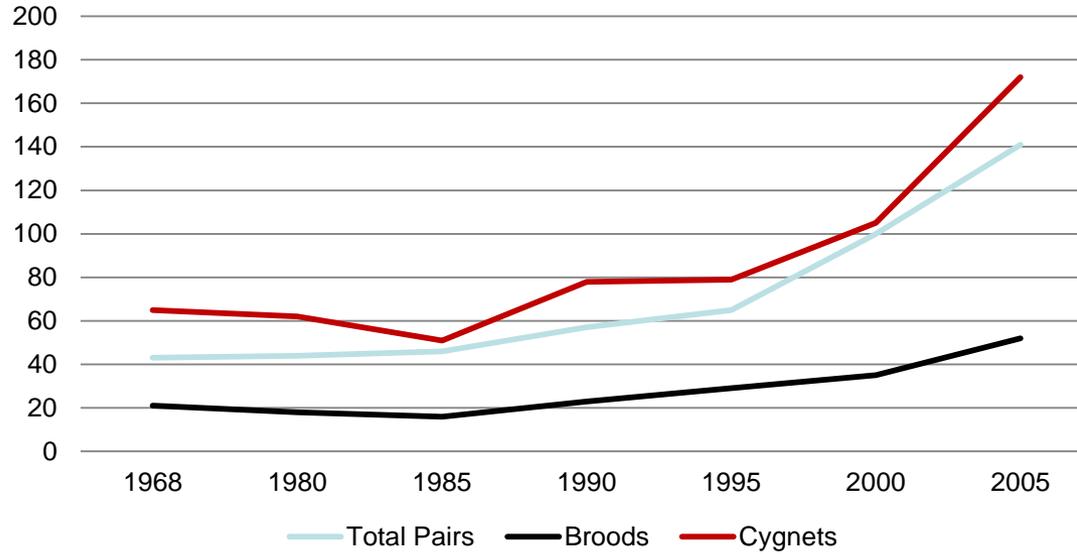
1980 ANILCA

1985 CCP

Refuge boundary change

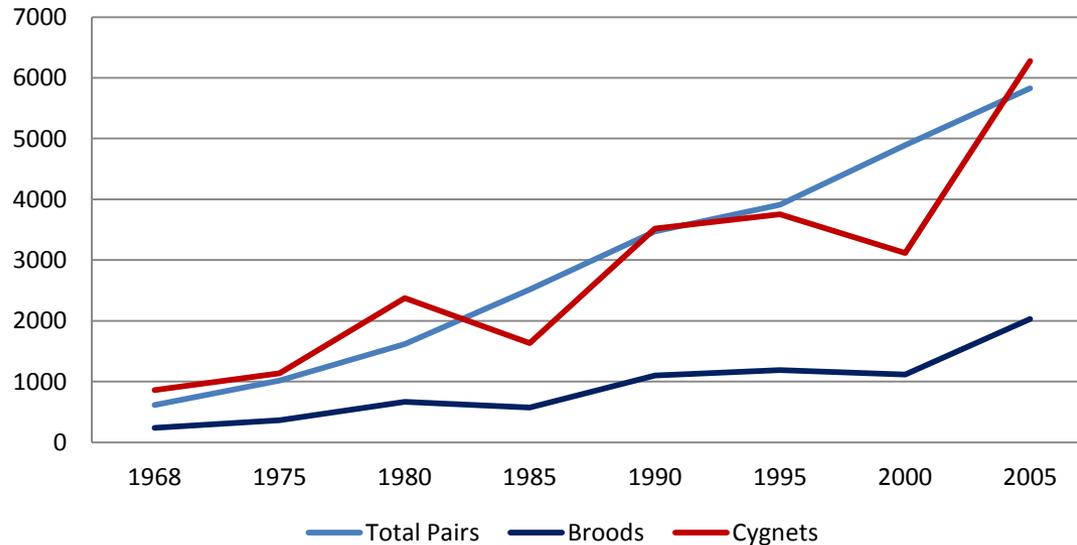
2010 CCP

TRUS on Kenai Peninsula



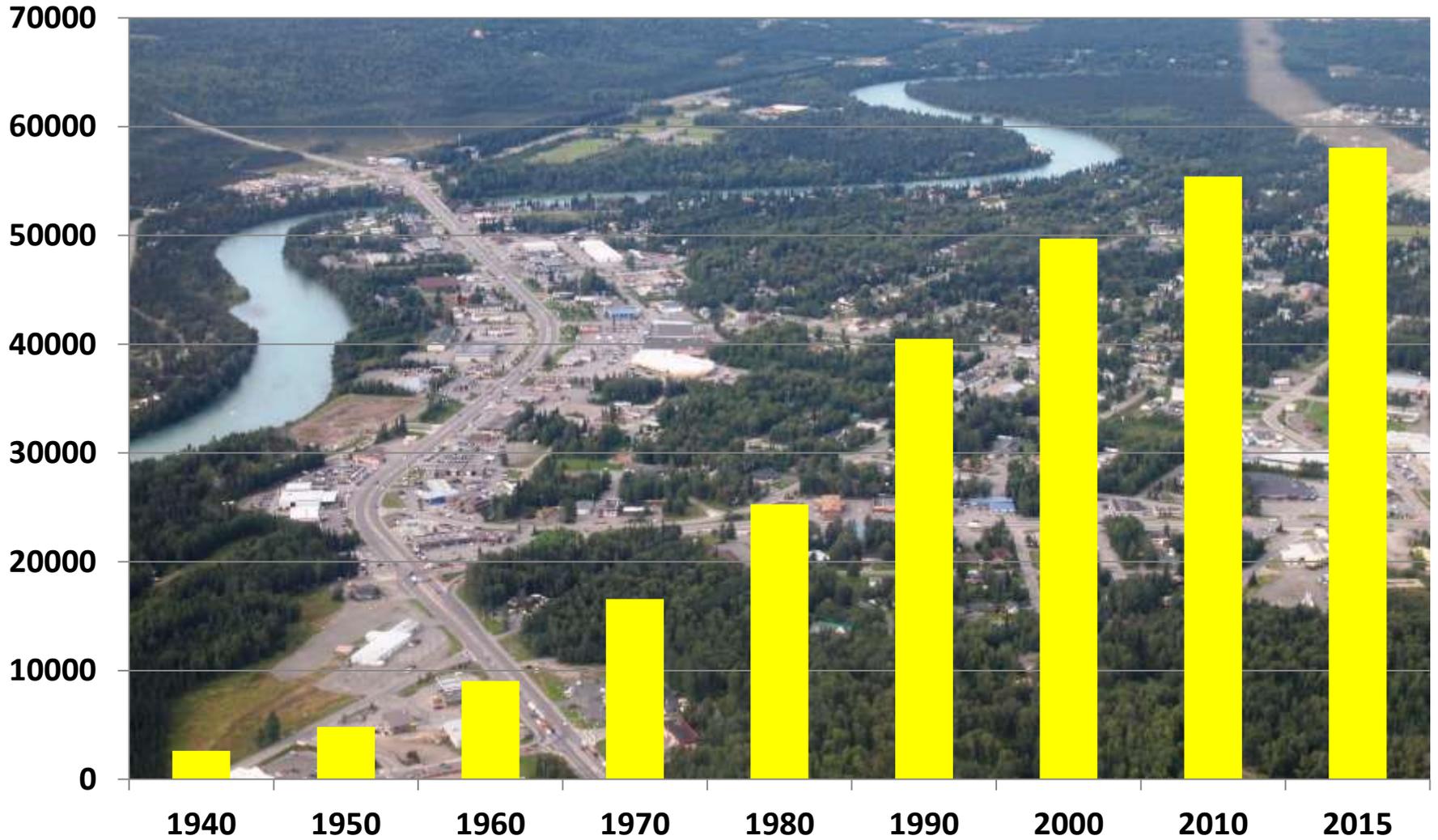
3-fold increase

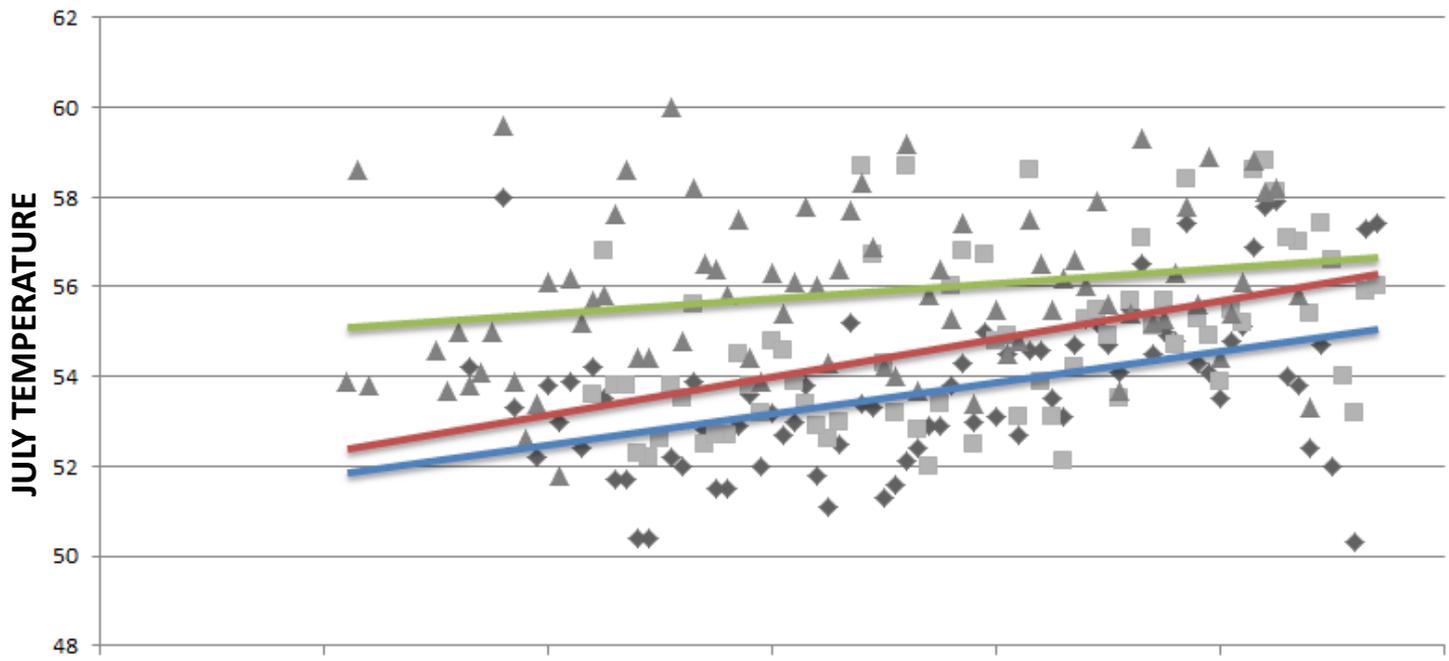
TRUS in Alaska (without Kenai)



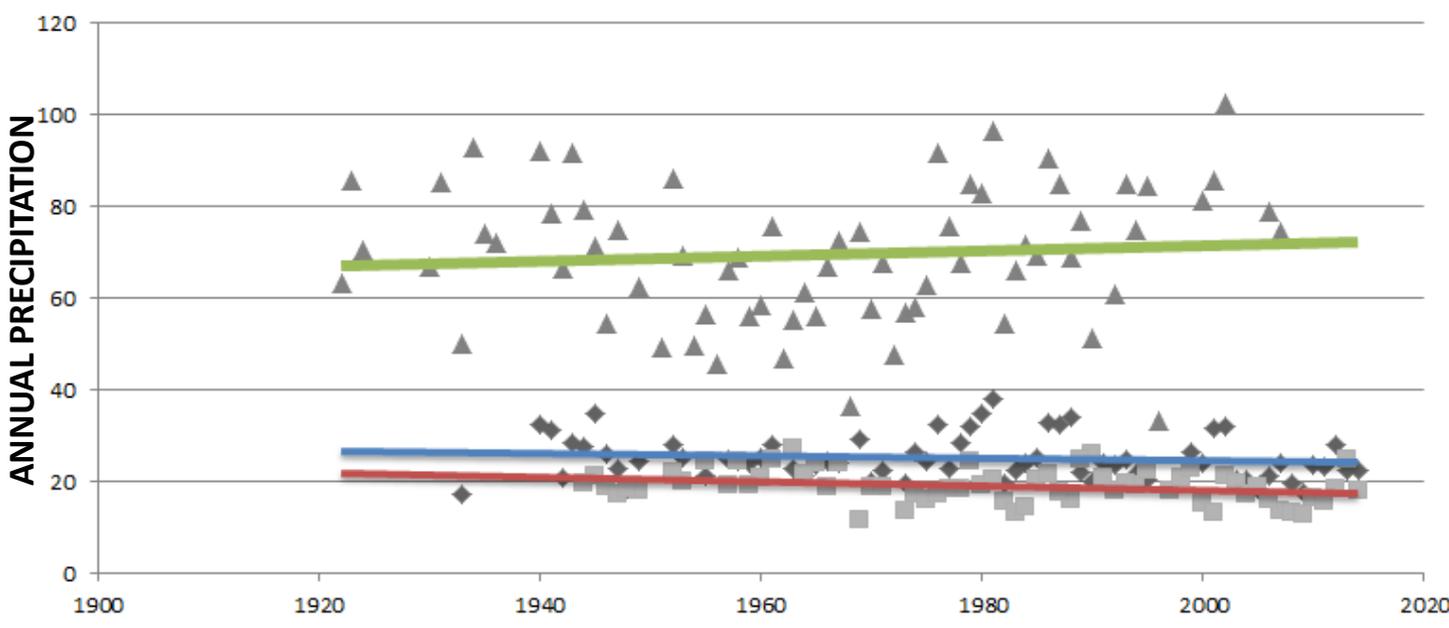
9-fold increase

Kenai Peninsula Human Population





SEWARD
KENAI
HOMER



Future concerns for Kenai swans...



- **drying wetlands and closed-basin lakes**
- **renewed interest in aircraft access**
- **increasing recreational use**
- **declining beaver populations**



Refuge Supervisor Spencer - Piper SuperCub N705
Trumpeter Swan nest on Moose River.
5/22/57 Johnson

"May fate be kind and let us have them back next spring"

~ Dave Spencer 1957