

2005 POPULATION STATUS OF THE PEREGRINE FALCON IN THE YUKON TERRITORY

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1.0 INTRODUCTION

This survey was the Yukon section of the Canada-wide periodic monitoring of the status of the Peregrine Falcon, a requirement of the Canadian Recovery Plan for the species. The Yukon, through the Northern Research Institute at Yukon College maintains a database spanning three decades tracking the fortunes of Yukon's peregrines. Historically, this effort began in the 1960's when a population of the interior race of peregrine falcon (Falco peregrinus anatum) was first described breeding on the riparian cliffs of the rivers draining the central Yukon (Cade and Fyfe 1970). The birds' numbers subsequently crashed and more recently have been recovering. The Yukon Government has funded this effort in large part over the years; most recently as part of a biodiversity assessment partnership with Yukon College.

The 2005 survey was an attempt to visit a representative sample from all sub-populations of peregrine falcon known in the territory. The peregrine in the Yukon is thought of as a classic 'metapopulation' (McCullough, 1996). The groups, in part based on geographic separation (Figure 1), are mostly identified by demographic performance differences. (The subgroup nesting on the 'North Slope' is considered to be of

the tundrius race.) These findings have been detailed in a series of reports dating from the early 1970's (Cade & Fyfe 1970, Hayes & Mossop 1982, Mossop & Baird, 1985, Mossop 1986, Mossop & Hayes 1980, Mossop & Mowat 1990, Mossop, 1995, Mossop 2000) .

Figure 1. The Yukon Territory's major drainage basins and the five Peregrine Falcon sub-populations surveyed in 2005.

2.0 THE SURVEY

The methodology of the 2005 survey was as close as possible to an exact repeat of earlier surveys. It was an intensive standardized survey of representative portions all 5 known occupied drainage basins. Fieldwork was conducted in two

seasons, 2004 and 2005: (The large Yukon River sub-population was covered completely in the initial year). All survey was systematic search of riparian cliffs. By far the majority of survey was conducted from the ground by boat, supported where necessary by helicopter. On the arctic slope, all survey was conducted with helicopter. Although designed to depend on the fidelity of peregrines to former nest sites, the survey also attempted to cover all habitat between established pairs. Most nest sites were visited only once, in the brood rearing period. Survey began in late June in the southern populations and ended in the first week of August on the north slope.

At all potential nest sites a standardized procedure recorded the presence of adults, location of the nest ledge, number of young, and age of young. In some cases if the nest was visited, the young were banded with tarsal bands, and a collection was made of un-hatched eggs, eggshell fragments, moulted adult feathers, and prey remains.

3.0 RESULTS, CURRENT POPULATION STATUS

Tundrius race (North Slope: F.p. tundrius)

History: Locally extinct by 1980, this subpopulation saw captive bred young reintroduced 1983-85. One pair established in 1990; by 2000, 9 pairs were observed. Seven (78%) produced young in 2000. This productivity (just over 1.5 young per pair) was the highest of any of the subgroups monitored in the Yukon

Pairs known pre-decline: 15
Total pairs known by 2000: 9

Year	Known Sites Checked	New pairs	TOTAL prs. observed	*Occupied	*Productive	Yn/ productive pair
2000	16	4	9	5 (31%)	4 (25%)	1.6+1.1
2005	24	6	19	13 (54.2%)	9 (37.5%)	2.6+0.84

*These values are calculated only from sites known from earlier survey; they do not include sites newly established in 2005.

This group is considered surveyed in total. Current total population estimate: 19

Anatum Race: (South of the North Slope)

a) Porcupine drainage:

History: This group declined in the late 1960's but retained a Remnant; it was the first group to begin recovery (Hayes and Mossop 1982). It has increased steadily at about 6% annually.

Pairs known pre-decline: 21

Total pairs estimated by 2000: 54

Year	Known Sites Checked	New pairs	**TOTAL prs. observed	*Occupied	*Productive	Yn/ productive pair
2000	36	9	35	26 (72%)	14 (38%)	2.1±0.9
2005	37	3	30	27 (73%)	12 (32%)	2.1±0.8

*These values are calculated only from sites known from earlier survey; they do not include sites newly established in 2005.

**In the sampled group only. In the whole drainage: 5 new pairs are estimated, total pairs estimated:50-59).

b) Peel River drainage:

History: The group declined in the 1960's but retained a remnant; it slowly increased to 1990 then doubled by 1995; the productivity of this group was the lowest of all the subpopulations in 2000.

Pairs known pre-decline: 12

Total pairs by 2000: 51

Year	Known Sites Checked	New pairs	**TOTAL prs. observed	*Occupied	*Productive	Yn/ productive pair
2000	36	3	22	19 (53%)	10 (30%)	1.2±0.6
2005	28	4	22	18 (64%)	9 (32%)	1.2±0.4

*These values are calculated only from sites known from earlier survey; they do not include sites newly established in 2005.

**In the sampled group only; In the whole drainage: 7 new pairs are estimated, total pairs estimated:50-58

c) Yukon River drainage:

History: This group declined through the early 1970's; by 1978 only one occupied nest site was known. Captive-bred young were fostered 1978-92; a strong and sustained recovery has occurred since.

Pairs known pre-decline: 13
Pairs estimated in 2000: 60

Year	Known Sites Checked	New pairs	**TOTAL prs. observed	*Occupied	*Productive	Yn/ productive pair
2000	53	3	46	43 (81%)	22 (41%)	3.1±1.0
2004	62	22	77	55 (86%)	37 (60%)	1.4 ± 0.6

*These values are calculated only from sites known from earlier survey; they do not include sites newly established in 2005.

**This group is considered surveyed in total: current estimated pairs: 77

c) Southern lakes:

History: The few known breeders in this group disappeared in the 1970's; in 1990 the group was determined to be extinct; in 1995, one pair was found. Just that one pair was observed in 2000.

Pairs known pre-decline: 3
Pairs known in 2000: 1

Year	Known Sites Checked	New pairs	**TOTAL prs. observed	*Occupied	*Productive	Yn/ productive pair
2000	2	0	1	1 (50%)	0	--
2005	2	1	2	1 (50%)	1 (50%)	?

*These values are calculated only from sites known from earlier survey; they do not include sites newly established in 2005.

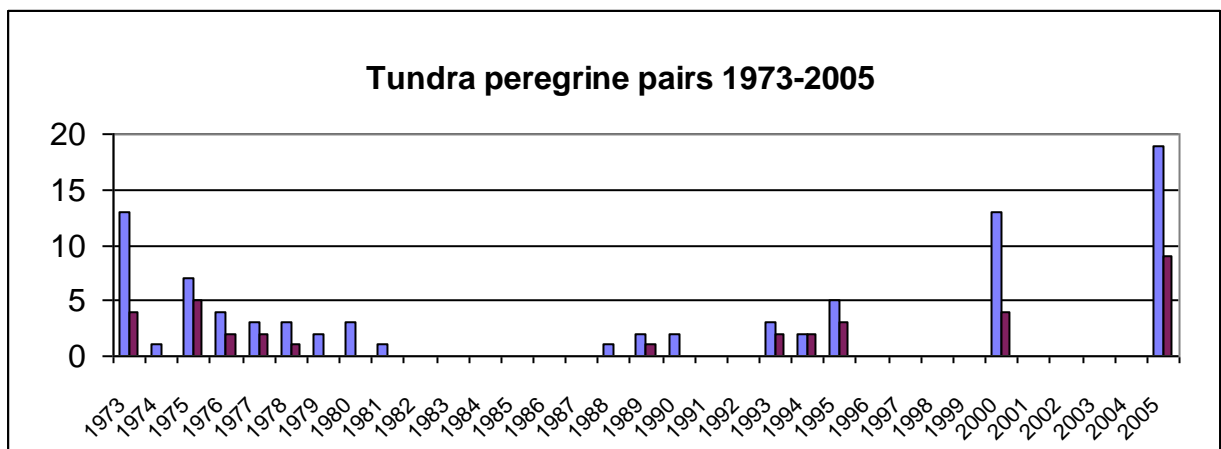
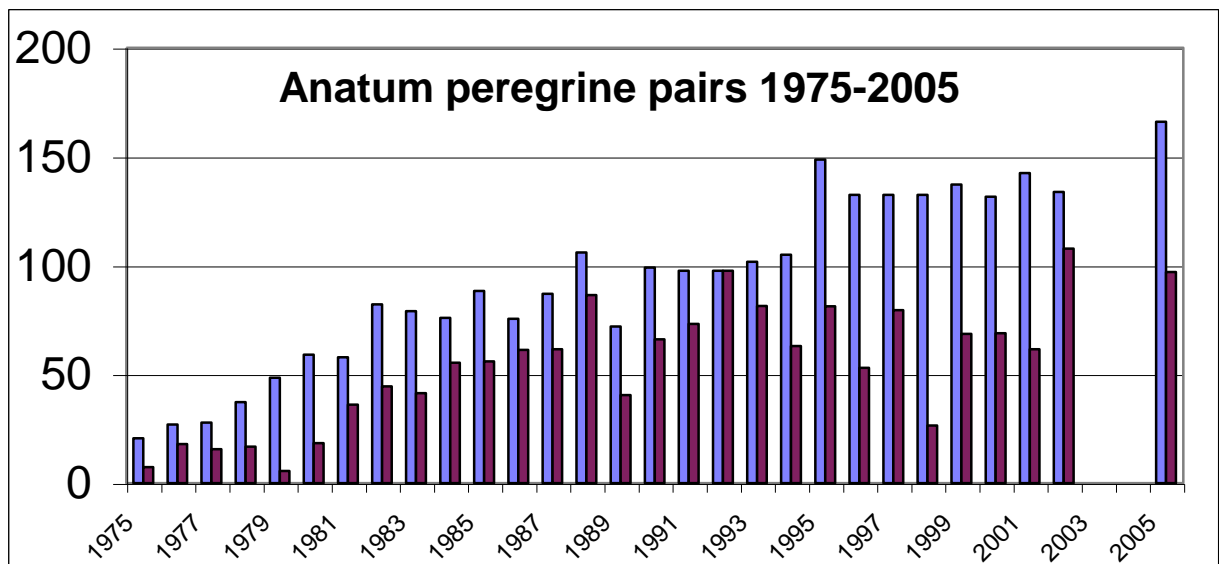
**This group is only surveyed by visiting occupied habitat, most of the region is unsurveyed. Current estimated pairs: 2

RESULTS SUMMARY: (surveyed areas only)

Sites known fr.prev. survey checked	New pairs	*Occupied	*Productive	Young/ Productive nest	Current Min.Popn Estimate (pairs)
<u>Tundrius:</u>					
2000: 16	4	5 (31%)	4 (25%)	1.6+1.1	9
2005: 24	6	13 (54%)	9 (38%)	2.6+0.8	19
<u>anatum:</u>					
2000: 127	15	89 (70%)	46 (36%)	2.3+1.5	134
2004/5:129	30	101 (78%)	59 (46%)	1.48+1.3	167

* Sample sizes shown and rates calculated do not include newly discovered nesting pairs from that year's survey.

Figure 2: Light lines show number of pairs in the surveyed areas; dark lines show number of pairs producing young.



Conclusions, future plans:

The visited sample of nest sites was about 70% of the known sites. In total 189 nest sites were visited, - 153 'previously known' sites. (This compares well with the 162 sites visited in 2000.)

Based on finding 36 new nesting pairs, population numbers in both races have continued to increase. The *anatum* groups have risen by about 20% over the 2000 survey and the *tundrius* group has doubled. Most of the *anatum* subgroups now contain many more breeding pairs than were known before the decline. In total the numbers of *anatum* Peregrines is in the order of two to three times the 'known historic' population and numbers apparently continue to climb.

Estimating from the 'known' breeders in our sample, the population in the habitat surveyed is about 167 pairs in the *anatum* groups and 19 pairs in the *tundrius* (Figure 2). Further expanding these estimates by the amount of known occupied but un-surveyed habitats, (in particular the large Pelly and Stewart river watersheds) at least 200-250 pairs are probably now occupying Yukon breeding habitats. A non-breeding segment of at least that number undoubtedly also exists.

The finding in 2000 that the *anatum* overall population performance seemed to have faltered significantly, continued but far less severely, in this survey. Both occupancy at 'established' nest sites and production of young apparently recovered more toward the long term. Just over 46% of nest sites visited produced young, an improvement of about 10% over 2000 (but still about 20% below the long term average.) Total annual production of young is still below 0.9 per breeding pair, a value usually seen as borderline to poor in a stable population, (Ratcliff, 1980). How these sub-populations continue to increase is an interesting mystery.

The Monitoring effort: The Yukon has continued to muster enough effort for at least some annual monitoring of segments of its Peregrine populations. This species has emerged as perhaps the best known 'mine canary' -- in 'harm's way' where things like persistent pesticides in large continental food webs are concerned. Its population performance, relatively easy to monitor, is undoubtedly equally sensitive to other global changes. The vision is to continue this effort as long as resources allow.

Population research: Following the 2000 survey and the apparent collapse in production of young, a MSc candidate, Brett Boukall from the University of N. B.C. under supervision of Russ Dawson and the author, began thesis research with the Yukon River group of peregrines. Key ideas of changing prey availability, comparative nest site parameters, female condition and nest parasite ecology were some of the focus. That thesis is expected in the current year.

The Southern Lakes group: This group's reappearance in 1995 and the discovery of a new breeding pair in the current survey has been exciting and makes completing the survey of its habitats important (notably in northern B.C.). Proposals have now been prepared for field work cooperatively with the Atlin based Taku Tlingit First Nation and others. If successful this work will commence in the upcoming field season.

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North Slope:

a) Outside National Park:

D. Mossop, Anna Tupakka (student assistant),
Dorothy Cooley (Regional biologist, YTG),
Lee John Meyook (Park Ranger, Herschel Isl)

b) Ivavik N. Park:

Ian McDonald, Al McKeeman, Linda Hutcheson,
Mervin Joe, Judy Selamio (Parks Can. Inuvik)

Porcupine Drainage:

a) Upstream:

D. Mossop, Anna Tupakka, Jennifer Smith (Old
Crow), Darcie Matthiessen (Old Crow)

b) Old Crow river section:

David Henry, Lance Nukon, Jeffrey Peter
(Parks Can, Old Crow)

Yukon Drainage:

a) White River

Dan and Val Drummond (Haines Jct)

b) Main Valley

Brett and Trish Boukall (UNBC), D. Mossop,
P. McKay

Peel Drainage:
a) Ogilvie River
D. Mossop, Anna Tupakka
b) Wind River & main valley
M. O'Donaghue, B.McLean, S.Cannings
J.Pangman, B.\$C.Hayes
Southern Lakes:
D. Mossop, Anna Tupakka, Clint Sawicki,

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