MINASKUAT LIMITED PARTNERSHIP

BASELINE MONITORING OF GOLDEN EAGLE (*Aquila chrysaetos*) IN CYA 732

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REGARDING

BASELINE MONITORING OF GOLDEN EAGLE (AQUILA CHRYSAETOS) IN CYA 732

2006

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1.0 INTRODUCTION

In response to an identified need to expand the current military training activities at 5 Wing Goose Bay, Supersonic flight and/or other training options, including night exercises, may be conducted by Canadian and foreign air forces in the future. In preparation for such initiatives and the anticipated need for related Environmental Effects Monitoring (EEM), Golden Eagle (*Aquila chrysaetos*) was selected in 2005 (Minaskuat 2005) as a focal species for observation and monitoring prior to, during and post-exposure to such activities. To learn more regarding the behaviour of Golden Eagles at nest sites and to examine the feasibility of monitoring techniques during the night, Minaskuat Limited Partnership (Minaskuat) was retained by the Institute for Environmental Monitoring and Research (IEMR). This report documents the efforts of the Minaskuat Study Team during the 2006 field season.

1.1 Objective

The objective of the 2006 monitoring program was to collect baseline observations of nesting Golden Eagles in the absence of (prior to) noise and visual disturbance associated with future night training activities by military aircraft. Suitable nest sites (i.e., with a good vantage and accessible by helicopter) were identified in 2005 (Minaskuat 2005).

1.2 Background

Active nests of Golden Eagle within CYA 731 (the low-level training area for 5 Wing Goose Bay) (Figure 1) are currently excluded from sub- and super-sonic military activity by a 2.5 nm radius. A new air range known as CYA 732 overlaps the northern portion of CYA 731 and contains several known Golden Eagle nests. In 2005, Minaskuat visited previously occupied Golden Eagle nests and identified new nests in areas of suitable habitat [areas with prominent cliff faces on the upper one-third of a cliff face, usually under a rock 'overhang' (JWEL 1997; Figure 2)] within the LLTA, specifically in the in CYA 732 air range (Figure 1).

Figure 1 Air Ranges at 5 Wing Goose Bay

Note: CYA 732 overlaps the Study Area

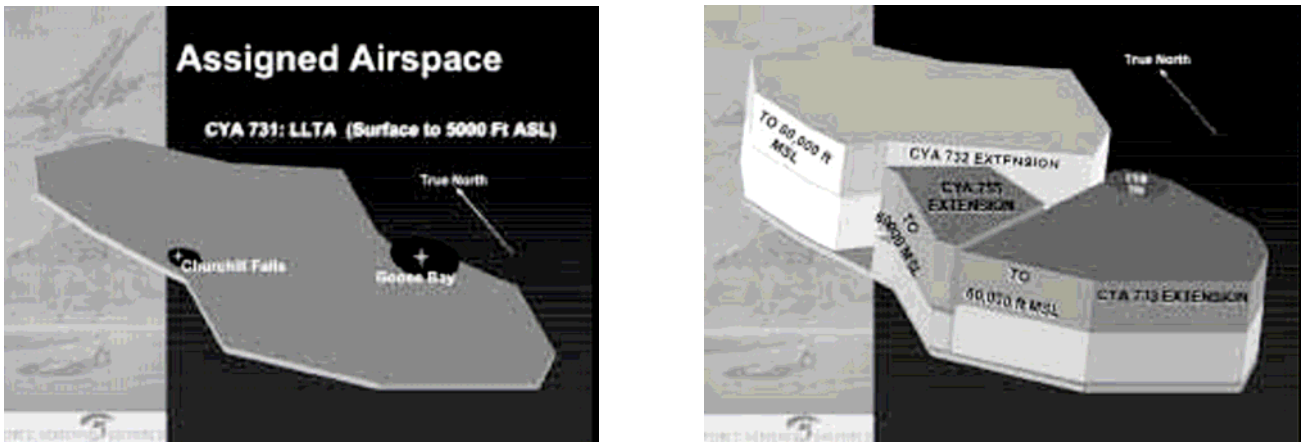

Figure 2 Golden Eagle Nest

The team assessed nest status and condition, to document possible locations for baseline (pre-exposure) observations in 2006. In total, five active nests were identified (three confirmed and two suspected/unconfirmed Golden Eagle nests) in the Study Area (CYA 732) and south along the Churchill River (Minaskuat 2005). To reduce disturbance during the anticipated nesting season the following spring, observation blinds were constructed in the fall of 2005 at two of the active nest locations, with a third established at a site known to have been repeatedly occupied in previous years.

2.0 METHODS

2.1 Study Team

Mr. Perry Trimper was the Project Manager for this study, responsible for the project deliverables and quality control. Field reconnaissance surveys were completed by Mr. Trimper and Mr. Geoff Goodyear (Universal Helicopters Newfoundland and Labrador). Reporting components were the primary responsibility of Ms. Karen Rashleigh and Mr. Trimper.

2.2 Schedule

Golden Eagle in the Study Area initiate their clutch (and incubation) during mid-April and typically hatch during the first week of June (JWEL 1996, 1997, 1998, 1999). Fledging occurs by mid-August, though dates may vary by several weeks (JWEL 1996, 1997, 1998, 1999). Based on this information, two two-day observation periods were scheduled during the early and late brooding periods in June, following the reconnaissance surveys.

2.3 Survey and Monitoring

Prior to the start of the field program, a permit application was submitted to the Department of Wildlife and Conservation, Wildlife Division, describing the project and requesting approval to proceed. Approval for the research and monitoring of Golden Eagle was received in a letter from Mr. Joe Brazil, Senior Manager of Endangered Species and Biodiversity, dated 9 May 2006. The Provincial Government requested that a report describing the project and its results be provided to the Wildlife Division on or before 31 March 2007. Consistent with Minaskuat procedures, a health and safety checklist was completed with daily toolbox meetings to ensure the Study Team was aware of hazards and appropriate Safe Work Procedures.

3.0 RESULTS

The nest sites described below were visited on 10 June 2006. Note that nest sites for this species are considered confidential and their exact location is not identified in public documents. The Study Team expanded the search to include four additional nests further east when the target nests were all found inactive (i.e., no adults or young present at the nest or observed in the area). Only one nest was found active during this expanded search (Table 1). The nearest vantage (observation) point for this site was over 1 km from the nest. As such, this nest was considered unsuitable for observation. All nest sites were intact and appeared suitable for this activity.

An email was sent on 12 June 2006 documenting the results of the field survey and recommending that field activities associated with this program end immediately with resources diverted elsewhere. The IEMR was in agreement with this decision.

Table 1 Status of Golden Eagle nest sites in CYA 732 during 2005 and 2006.

Nest	Species	Status	Location	Comments
Study Area				
1	Suspected Golden Eagle	*Active in 2005* Inactive in 2006	Kanairiktok River	Species not confirmed in 2005 but young appeared to be Golden Eagle.
2	Golden Eagle	*Not checked in 2005* Inactive in 2006	Kanairiktok River	
3	Golden Eagle	*Not checked in 2005* Inactive in 2006	Mistinipi Lake	Second cliff nest in this area also empty.
4	Golden Eagle	*Active in 2005* Inactive in 2006	Kanairiktok River	Several sites at this location – all empty
5	Golden Eagle	*Inactive in 2005* Inactive in 2006	Kanairiktok River	Believed to be a likely location for future nesting activity.
6	Golden Eagle	*Not checked in 2005* Inactive in 2006	Mistinipi Lake	
7	Golden Eagle	*Active in 2005* Active in 2006	Naskaupi River	Difficult location for observations; only possible landing/observation sites are >1 km from the nest, from which you can barely see the nest. Nest fate unknown.
Churchill River				
8	Golden Eagle	*Active in 2005* Active in 2006	Churchill River	Good site for observation; Failed, young found dead Note: Outside Study Area
9	Golden Eagle	*Active in 2005* Active in 2006	Churchill River	Fate unknown Note: Outside Study Area

4.0 DISCUSSION

Golden Eagle in Labrador typically initiate nesting (incubation) in mid-April, hatching occurs during the first week of June with fledging expected by mid-August (JWEL 1998). While variability exists, the timing of the 2006 surveys in early June was designed to capture both early- and late-nesting pairs that may be active. However, the Study Team found only one active nest in the Study Area and two outside the Study Area (Minaskuat, unpublished), indicating a low rate of breeding attempts and/or early nest failure.

Though nesting populations of Golden Eagle in Canada are considered stable (Kochert and Steenhof 2002), the number of active nests identified by the Study Team in Labrador (Minaskuat and formerly Jacques Whitford) has varied considerably over the past number of years and area surveyed (JWEL 1996a, 1996b, 1997, 1998, 1999, JWE 1992, 1994, 1995, Minaskuat 2005). One possible reason for the observed low level of nesting activity may be explained in terms of prey availability. Several researchers have linked the availability of prey with such parameters as the proportion of Golden Eagles that lay eggs, nest success, the mean brood size at fledging, the number of young fledged and hatching dates (Steenhof et al. 1997, McIntyre et al. 1997, Kochert et al. 2002). McIntyre (2002) found that laying rates, mean brood size and overall population productivity were significantly correlated with the abundance of the cyclic snowshoe hare (*Lepus americanus*) and Willow ptarmigan (*Lagopus lagopus*) populations. Winter severity is also believed to influence how severely Golden Eagle reproduction declines in years with low prey abundance (Steenhof et al. 1997). In contrast, however, occupancy rate or the number of territorial pairs was not influenced by the availability of cyclic prey (Steenhof et al. 1997, McIntyre 2002, Kochert et al. 2002) or winter severity (Steenhof et al. 1997).

Reproductive rates are also known to fluctuate with prey densities (and weather conditions), such that pairs may not lay eggs during years of low prey abundance (Steenhof et al. 1997, McIntyre et al. 1997, Kochert et al. 2002). Based on a review of the existing literature on Golden Eagles in North America, Kochert et al. concluded that mammals comprise 90% of their prey items. It is possible that the low small mammal abundance observed in 2005 and consequently low abundance the following spring (prior to breeding) (Minaskuat, unpublished), may explain the low number of confirmed nests (i.e., with eggs) in 2006. A similar relationship was evident in 1995, when high numbers of active Golden Eagle nests (n=15, JWEL 1997) coincided with relatively high small mammal populations in the region (Chubbs and Trimper 1998). In the following year, when there was a sharp decline in the local small mammal population (Chubbs and Trimper 1998), the Study Team were able to locate only two active nests (JWEL 1997). Additionally, few observations of another important prey item, Willow Ptarmigan (*Lagopus lagopus*), were recorded during 1991 and 1992, when active Golden Eagle nest densities were low (<0.2 active nests per 100 km of survey effort). But in 1994 when densities reached 1.28 active nests/100 km, Willow Ptarmigan were frequently encountered (JWE 1995).

5.0 SUMMARY

- The Study Team visited nine suitable, previously active, Golden Eagle nests within the CYA 732 Study Area. Note that two other Golden Eagle nests on the Churchill River, further south, were active in 2006. The fate of one was unknown but the second appeared to have failed, as a nestling approaching adult plumage was found dead in mid-August. Of those, only one nest was found active in 2006 but was considered unsuitable for observation. The nearest vantage (observation) point for this site was over 1 km from the nest. The fate of this nest was not investigated.

- The low rate of nest initiation (egg laying) or poor nest success may be related to the low small mammal abundance in 2005, and thus decreased food supply that persisted in 2006.

- Although no suitable active nests were identified for observation in 2006, nests were in good condition and observation/landing sites have been identified at suitable locations. Given the observed variability in nesting from year to year, several nests may be available (active) for monitoring in 2007, particularly as populations of prey also recover.

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