Memorandum

To: Migratory Bird Coordinator

From: Project Leader, Migratory Bird Project, Anchorage

Subject: Report to Pacific Flyway Study Committee on Breeding Pair Survey for Dusky Canada Geese on the Copper River Delta.

Development of an expanded aerial survey on the Copper River Delta was begun in 1985. Survey design was standardized in 1988 and the same transects have been flown since that time. The 1990 survey was flown from 15-18 May.

Two population indices were developed for this report: 1) a population index based on the total number of birds seen on each transect and 2) a breeding pair index based on the number of singles and pairs seen on transects. The latter estimate is based on the assumption that flocked birds are predominately non-breeders and singles represent a mated pair. Thus, the total population estimate reflects both the breeding and non-breeding components of the population, and the breeding pair index reflects the reproductive portion of the population.

Population estimates and variances were made using ratio-estimate procedures expanded by area (without visibility correction factors) in five strata: Egg Island, East Delta, West Delta Coastal, West Delta Intermediate, and West Delta Interior.

The total population index and breeding pair index declined, though not significantly, from 1989 levels (Table 1). Examination of survey data (Figure 1) indicate no significant differences (95% confidence intervals overlap) in population indices among the 5 years of survey data. Thus, no trend in the dusky Canada goose population can be determined for this time period. The increase in total geese observed in 1989 may have been the result of higher production (22.5% young) in 1988. The dramatic drop in total goose index in 1990 suggests few of these birds survived or returned to be counted.

Similar aerial surveys on the Yukon Delta detected significant changes in cackling Canada goose populations (Figure 2). Comparison of the population curves for these subspecies since
1986 emphasizes the lack of response in the dusky population. Without a change in the negative factors affecting dusky populations, it is difficult to believe current population levels can be sustained.

My thanks to Bill Eldridge for his help in collecting and interpreting the data, Keith Geisentanner for his help during our stay in Cordova, and Fritz Gerhardt for producing the graphs.

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    Tom Rothe, ADF&G
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Table 1. Population indices from aerial surveys of dusky Canada geese on the Copper River Delta.

<table>
<thead>
<tr>
<th>Year</th>
<th>Breeding(^1) Pair Index</th>
<th>95% CI</th>
<th>Percent Difference</th>
<th>Total(^2) Goose Index</th>
<th>95% CI</th>
<th>Percent Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>2,171</td>
<td>± 308</td>
<td></td>
<td>4,334</td>
<td>± 542</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>1,805</td>
<td>± 273</td>
<td>-17</td>
<td>3,730</td>
<td>± 817</td>
<td>-14</td>
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<tr>
<td>1988</td>
<td>1,930</td>
<td>± 254</td>
<td>+7</td>
<td>3,729</td>
<td>± 593</td>
<td>-</td>
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<tr>
<td>1989</td>
<td>1,925</td>
<td>± 269</td>
<td>-</td>
<td>4,918</td>
<td>± 877</td>
<td>+32</td>
</tr>
<tr>
<td>1990</td>
<td>1,824</td>
<td>± 284</td>
<td>-5</td>
<td>3,596</td>
<td>± 758</td>
<td>-27</td>
</tr>
</tbody>
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1. Breeding pair index based on the number of singles plus pairs observed on transect.
2. Total goose index based on the number of singles plus pairs*2 plus the number of birds observed in flocks.
Figure 1. Breeding pair and total goose indices for dusky Canada geese on Copper River Delta, Alaska, 1986–1990.
Figure 2. Breeding pair and total goose indices for cackling Canada geese on the coastal zone of Yukon Delta N. W. R., Alaska, 1985–1990.