

**Alaska Department of Fish and Game
State Wildlife Grant
ANNUAL INTERIM PERFORMANCE REPORT**

Grant Number: T-1 **Segment Number:** 6
Project Number: 6
Project Title: GIS mapping of terrestrial ecosystems in Southeast Alaska
Project Duration: July 1, 2004 – June 30, 2006
Report Period: July 1, 2004 – June 30, 2005
Report Due Date: September 30, 2005

Objectives (*as submitted in grant project statement*):

1. Develop a GIS database and map of terrestrial ecosystems in Southeast Alaska;
2. Conduct a retrospective analysis to evaluate climatic/geologic/landform characteristics associated with previously logged areas;
3. Conduct a GAP analysis of ecosystem types in areas protected under the Tongass Land Management Plan, Alaska State Forest Practices Act, and other statutes.

Summary of Accomplishments (*Describe accomplishments related to the work that was proposed to be done during this same period in the Project Description and work schedule*):

The following accomplishment relates to Objective 1:

1. Compiled GIS database for Southeast Alaska including land ownership & management, timber inventory, managed stands, plant associations, soils, landform, ecological subsections, biogeographic provinces, elevation (slope & aspect), Landsat ETM, wetlands, and a series of DEM-derived metrics to describe geomorphic setting.

The following accomplishments relate to Objective 2:

2. Completed review of scientific literature on the development of ecological classifications, role of landform in defining terrestrial ecosystems, and existing classifications that have been developed for Alaska and coastal British Columbia.
3. Developed an ecological framework of physical processes that define terrestrial systems, and a qualitative description of terrestrial communities to be included within the classification.

The following accomplishment relates to Objective 3:

4. Developed the theoretical framework for the comprehensive GAP analysis in the region including appropriate geographic stratification and scale of analysis. Conducted preliminary analysis of current condition and conservation status of rare big-tree forests on karst and riparian soils.

The following accomplishment relates to Objectives 1-3:

5. Peer review: To date we have presented this work for review to a wide range of interests including Tongass NF leadership, USFS regional scientists, and the local conservation community, within the context of the broader Ecoregional Conservation Assessment and conservation planning under development by The Nature Conservancy and National Audubon Society.

Significant Deviations *(if any, and explain the reasons for these):*

None

Actual Costs during this Report Period *(personnel plus all operating expense totals):*

Federal (from ADF&G):	Partner (nonfederal share):
\$21,796.59	\$7,265.53

Project Leader *(or Report Contact Person):* Rob Bosworth

Additional Information: *(Not required. Add any additional detail, if desired, related to the progress of the project):* None

**Alaska Department of Fish and Game
State Wildlife Grant
FINAL PERFORMANCE REPORT**

Grant Number: T-1 **Segment Number:** 6
Project Number: 6
Project Title: GIS mapping of terrestrial ecosystems in Southeast Alaska
Project Duration: July 1, 2004 – June 30, 2006
Report Period: July 1, 2005 – June 30, 2006
Report Due Date: September 30, 2006
Partner: The Nature Conservancy

Objectives:

1. Develop a GIS database and map of terrestrial ecosystems in Southeast Alaska;
2. Conduct a retrospective analysis to evaluate climatic/geologic/landform characteristics associated with previously logged areas;
3. Conduct a GAP analysis of ecosystem types in areas protected under the Tongass Land Management Plan, Alaska State Forest Practices Act, and other statutes.

Summary of Accomplishments: The following summary covers accomplishments from the project's inception.

The following accomplishments relate to Objective 1:

1. Completed a regional GIS database of existing vegetation in Southeast Alaska based on USFS timber inventory, and augmented by USGS Interim Landcover Map (ILC) and Landsat ETM for non-Tongass lands within the region. USGS ILC data were current in the late-1980's but currently remain the best available data for large areas of Southeast Alaska not within the Tongass National Forest. Many changes in land cover in these areas since this time were documented with Landsat ETM, current in 2000 – 2002. Areas logged since the late-1980's were clearly visible using Landsat and were superimposed upon the previous forest condition represented in the USGS ILC data.
2. Compiled a regional map of Landform Associations based primarily on USFS Soils database. Gaps in data from non-TNF lands and Wilderness areas within the Tongass were filled using a supervised classification of elevation, slope and topographic position index based on signatures developed in areas with photo-interpreted landform data.
3. Completed a GIS map illustrating the terrestrial ecosystem classification and a report detailing methods and results of the GAP analysis have been completed.

The following accomplishment relates to Objective 2:

4. Completed retrospective selectivity analysis of historic logging in Southeast Alaska. This analysis was designed to address the extent to which the highest volume (big-tree) forest stands have been high-graded in Southeast Alaska. We examined this question using a selectivity analysis of the distribution of forest types available in comparison with the distribution of forest types logged (% use / % availability). At

the stand level, data were available on the composition of forest types logged since 1986. Data were not available from the earliest days of industrial logging in Southeast Alaska, when fewer environmental regulations allowed much greater access to large-tree riparian and other forests. Thus, our estimate of the proportion of large-tree forests logged is very conservative. Secondly, we conducted a landscape-level analysis to compare the proportional representation of productive forest lands among landform types with the proportion of logging that occurred. Finally, we also compared the distribution of logging activity with the distribution of productive forest lands among biogeographic provinces. These 3 analyses indicate that: (1) at the stand level, logging activity has been directed toward the largest tree forests disproportionate to their availability; (2) at the landscape level, low-elevation valley floor and karst forests have been logged disproportionate to their availability; and (3) at the regional level, some of the most productive provinces (e.g., North Prince of Wales, Dall / Long Island) have been logged disproportionate to the availability of productive forest lands.

The following accomplishments relate to Objective 3:

5. Completed a regional GIS data layer of land ownership and management for Southeast Alaska by integrating data from the Tongass National Forest Land Status, Land-Use Designations under the Tongass Land Management Plan, Alaska Dept. of Natural Resources Land Status, and tidelands estimated using an integrated bathymetry map developed by The Nature Conservancy and NOAA Auke Bay Lab. Further, conservation areas were coded based on management agency and legal or administrative authority of designation.
6. As a component of our GAP analysis, we developed a system to describe the scale of conservation areas. We adapted the Tongass NF map of Value Comparison Units (VCU) as a general representation of watersheds for regional scale analysis. Conservation areas that protected entire VCUs were considered as watershed-scale protection. Conservation areas that do not protect entire watersheds such as small and medium old growth reserves under the TLMP, state marine parks, the Alaska Chilkat Bald Eagle Preserve and others were considered as sub-watershed reserves. All stand-level protections such as buffers on riparian areas, beach and estuary fringe forests under the TLMP and Alaska State Forest Practices Act were considered as stand-level conservation areas. The rationale was that a GAP analysis should consider the extent to which large, intact landscapes are conserved within the existing system of conservation in the region.
7. Completed GAP Analysis and Summary Report. As our retrospective analysis indicated, large-tree forests are the component of forest ecosystems that have been most impacted by logging activity, and as a consequence, our GAP analysis focused on the management status of this rare forest type. We evaluated the representation of big-tree forests within conservation areas among biogeographic provinces at 3 scales: watershed, sub-watershed reserves and buffers.

Significant Deviations *(if any, and explain the reasons for these):*

1. Our cursory GAP analysis of all ecosystem types indicated that coastal wetlands are under-represented within conservation areas in the region. These include marine and

estuarine types such as salt marsh, aquatic bed, rocky shore, tide flats, etc. Alaska Dept. of Natural Resources has primary responsibility for management of tidelands, but comprehensive GIS data on management of tidelands were not available. Thus, we were unable to evaluate whether these types are adequately represented within existing conservation areas. Development of GIS data on management status of tidelands from DNR Area Plans should be a priority for future work in the area, and would allow a regional of conservation representation of coastal wetland types.

Actual Costs during this Report Period (*personnel plus all operating expense totals*):

(Reported costs included ADF&G indirect calculated at 13.5%)

Federal (from ADF&G): Partner (nonfederal share):

\$43,746 \$14,952

Project Leader (*or Report Contact Person*): Rob Bosworth

Additional Information: None

**Alaska Department of Fish and Game
State Wildlife Grant
ANNUAL INTERIM PERFORMANCE REPORT**

Grant Number: T-1 **Segment Number:** 6
Project Number: 15
Project Title: Evaluating the effects of forest management on bird and vegetation communities
Project Duration: July 1, 2004 – June 30, 2006
Report Period: July 1, 2004 – June 30, 2005
Report Due Date: August 1, 2005

Objectives (*as submitted in grant project statement*):

1. Monitor how bird densities, forest structure, and understory composition have changed since 1991-1993.
2. Compare bird densities, forest structure, and understory composition among treatments to test whether thinning or gapping helps enhance recruitment of birds, plants, or forest structural attributes that are characteristic of old-growth forests.
3. Test whether retention of old-growth trees in harvested stands helps hasten recruitment of birds and vegetation components that are characteristic of old-growth stand.

Summary of Accomplishments (Describe accomplishments related to the work that was proposed to be done during this same period in the Project Description and work schedule):

The following accomplishments are related to Objective 1:

1. Six biologists spent over 1,000 hours in the spring (approx. 10%) and summer (approx. 90%) i) summarizing protocols, data, and plot locations from 1991–1992; ii) re-establishing monitoring plots; and iii) surveying birds and forest vegetation to monitor decadal trends.
2. Existing data and all study plot locations from 1991–1992 were made available by Dominick DellaSala and his staff from the World Wildlife Fund in the spring of 2005.
3. We re-surveyed breeding bird and forest vegetation communities using the original methods at 5 replicate study areas for each of 3 different treatments; old-growth, young-growth untreated, and young-growth thinned. Each study area included 5 points that were surveyed 4 times from 1–20 June to estimate breeding bird densities and one time from 10–27 June for vegetation structure and composition. All points were also geo-referenced using GPS.
4. All data are currently being compiled and prepared for analysis and reporting.

No progress was made or planned to be made on Objectives 2 and 3 during this report period.

Significant Deviations (if any, and explain the reasons for these):

1. We had intended to resurvey 4 different treatments; the 3 described above (#1) and young-growth with canopy gaps (gapped hereinafter). However, after revisiting the original gapped plots we found that most (60%) had been subsequently thinned and were no longer suitable for study. We searched for replacements but found that no gapped sites were available that met the original criteria in terms of location, stand size, year of

harvest, and year of treatment. Resurveying the remaining 40% of the plots was considered but abandoned because the small sample of plots (10) would not provide sufficient samples for monitoring.

2. We could not find candidates from the FWS biotechnician register that were i) available for the short time-frame of sampling and ii) had adequate field experience. Thus we used personal service contracts to hire qualified personnel. These contracts included hourly rates and travel expenses comparable to those included in the original proposal.
3. Considerable savings were incurred in this study because lodging was provided by USDA Forest Service and vehicles and gas were provided by U.S. Fish and Wildlife Service, Juneau Fish and Wildlife Field Office and the Denver Zoological Foundation. We will use the additional money left over to help finance statistical analysis of the data in 2005-2006 by U.S. Fish and Wildlife Service temporary personnel (Jim Johnson), and to partially fund a second field season in 2006.
4. Additional non-federal services were made available by the Denver Zoological Foundation in the form of use of a vehicle for field research.
5. Non-federal matching services were also provided by SEAWEAD in the form of leadership in the collection of data on vegetation communities. Normal rate of \$40/hr was reduced to \$20/hr. This replaces services outlined in the proposal (GIS, palm pilot programming), as this was deemed more useful to our immediate project needs.
6. Finally, we are seeking funding to fully support an additional year of surveys which would complete the replication of the original study conducted in 1991–1992.

Federal (from ADF&G):	Partner (nonfederal share):
\$18,033.38	\$6,011.13

Project Leader (or Report Contact Person):

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**Alaska Department of Fish and Game
State Wildlife Grant
ANNUAL INTERIM PERFORMANCE REPORT**

Grant Number: T-1 **Segment Number:** 6
Project Number: 15
Project Title: Evaluating the effects of forest management on bird and vegetation communities
Project Duration: July 1, 2004 – December 31, 2006
Report Period: July 1, 2005 – June 30, 2006
Report Due Date: September 30, 2006
Partner: U. S. Fish and Wildlife Service

Objectives:

1. Monitor how bird densities, forest structure, and understory composition have changed since 1991-1993.
2. Compare bird densities, forest structure, and understory composition among treatments to test whether thinning or gapping helps enhance recruitment of birds, plants, or forest structural attributes that are characteristic of old-growth forests.
3. Test whether retention of old-growth trees in harvested stands helps hasten recruitment of birds and vegetation components that are characteristic of old-growth stand.

Summary of Accomplishments

The following accomplishments are related to Objective 1:

1. Four biologists spent approximately 150 hours during summer surveying birds and forest vegetation to monitor decadal trends.
2. Existing data from 1991-1992 on bird and plant communities were made available by Dominick DellaSala and his staff from the World Wildlife Fund in the spring of 2006.
3. We re-surveyed breeding bird communities using the original methods at 5 replicate study areas for each of 3 different treatments; old-growth, young-growth untreated, and young-growth thinned. Each study area included 5 points that were surveyed 3 times from 6–20 June. All points were also geo-referenced using GPS.
4. All data are currently being compiled and prepared for analysis and reporting.

No progress was made or planned to be made on Objectives 2 and 3 during this report period.

Significant Deviations

1. We had intended to resurvey 4 different treatments; the 3 described above (#1) and young-growth with canopy gaps (gapped herinafter). However, after revisiting the original gapped plots we found that most (60%) had been subsequently thinned and were no long suitable for study. We search for replacements but found that no gapped sites were available that met the original criteria in terms of location, stand size, year of harvest, and year of treatment. Resurveying the remaining 40% of the plots was considered but abandoned because the small sample of plots (10) would not provide sufficient samples for monitoring.

2. We could not find candidates from the FWS biotechnician register that were i) available for the short time-frame of sampling and ii) had adequate field experience. Thus we used personal service contracts to hire one qualified technician. This contract included hourly rates and travel expenses comparable to those included in the original proposal.
3. Considerable savings were incurred in this study in 2005 because lodging was provided by USDA Forest Service and vehicles and gas were provided by U.S. Fish and Wildlife Service, Juneau Fish and Wildlife Field Office and the Denver Zoological Foundation. We will use the money left over from 2005 to fund the second field season in 2006.

Actual Costs during this Report Period (*personnel plus all operating expense totals*):

(Reported costs included ADF&G indirect calculated at 13.5%)

Federal (from ADF&G):	Partner (nonfederal share):
\$9,809	\$3,270

Project Leader (*or Report Contact Person*):

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**FEDERAL AID
FINAL PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

**Alaska Department of Fish and Game
State Wildlife Grant**

Grant Number: T-1 **Segment Number:** 6
Project Number: 15
Project Title: Evaluating the effects of forest management on bird and vegetation communities
Project Duration: July 1, 2004 – June 30, 2007
Report Period: July 1, 2006 – June 30, 2007
Report Due Date: September 30, 2007

Project Objectives

1. Monitor how bird densities, forest structure, and understory composition have changed since 1991-1993.
2. Compare bird densities, forest structure, and understory composition among treatments to test whether thinning or gapping helps enhance recruitment of birds, plants, or forest structural attributes that are characteristic of old-growth forests.
3. Test whether retention of old-growth trees in harvested stands helps hasten recruitment of birds and vegetation components that are characteristic of old-growth stand.

Project Accomplishments for entire project

1. Existing data on the locations of study plots from 1991–1992 were made available by Dominick DellaSala and his staff from the World Wildlife Fund in the spring of 2005.
2. Existing data from bird and vegetation surveys conducted in 1991–1992 were made available by Dominick DellaSala and his staff from the World Wildlife Fund in the spring of 2006.
3. Eight biologists spent over 1,150 hours in the spring and summer 2005–2006:
 - a. Re-establishing survey protocols and study areas used from 1991–1992;
 - b. Re-establishing monitoring plots; and
 - c. Surveying birds and forest vegetation to monitor decadal trends.
4. More specifically, in 2005 and 2006 we re-surveyed breeding bird and forest vegetation communities using the original methods at 5 replicate study areas for each of 3 different treatments; old-growth, young-growth untreated, and young-growth thinned. Each study area included 5 points that were surveyed 4 times from 1–20 June to estimate breeding bird densities and one time from 10–27 June for vegetation structure and composition. All points were also geo-referenced using GPS.

Project accomplishments during the last segment only (July 1, 2006 – June 30, 2007)

1. Field data from 1991, 1992, 2005, and 2006 were electronically compiled, verified, and prepared for analyses.

2. Two Statisticians were consulted to determine the appropriate statistical models for addressing objectives 1–3.
3. Data analyses and report writing were begun and are scheduled for completion by 30 September 2007.

Significant Deviations

1. We had originally intended to resurvey 4 different treatments; the 3 described above (#1) and young-growth with canopy gaps (gapped hereinafter). However, after revisiting the original gapped plots we found that most (60%) had been subsequently thinned and were no longer suitable for study. We searched for replacements but found that no gapped sites were available that met the original criteria in terms of location, stand size, year of harvest, and year of treatment. Resurveying the remaining 40% of the plots was considered but abandoned because the small sample of plots (10) would not provide sufficient samples for monitoring. Thus, gapped plots were removed from Objective 2.
2. In 2005, we could not find candidates from the FWS biotechnician register that were i) available for the short time-frame of sampling and ii) had adequate field experience. Thus we used personal service contracts to hire one qualified technician. This contract included hourly rates and travel expenses comparable to those included in the original proposal.
3. An additional \$15,000 in funds were provided to this project by the USDA Forest Service's Tongass National Forest and by the U.S. Fish and Wildlife Service's Pacific Joint Venture.
4. Considerable savings were incurred in this study in 2005 and 2006 because lodging was provided by USDA Forest Service and vehicles and gas were provided by U.S. Fish and Wildlife Service, Juneau Fish and Wildlife Field Office, the Denver Zoological Foundation, and the USDA Forest Service.
5. Additional funds and cost savings were used to fund a second field season in 2006. This will greatly strengthen any findings from this study.
6. The original project completion date of March 2007 was extended.

Project Leader:

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value of these areas to wildlife and the potential impacts of various types of human uses on wildlife and habitats.

Summary of Project Accomplishments (numbers correspond to project objectives/activities):

1. a. During the reporting period we contracted with an environmental firm in Gustavus to conduct sandhill crane and other wildlife observations on the DCCHA. The data collection period started on September 1, 2003 and will be completed by October 1, 2003 with the analysis and write up being completed by December 30, 2003.

b-d. The dissolution of the Habitat and Restoration Division resulted in a setback in the planning process for a management plan for the DCCHA. Preliminary discussions towards this goal had begun, but further work could not be accomplished without the leadership and personnel of the Habitat and Restoration division. Therefore, Job/Activities b-d were not accomplished.
2. a. ADF&G staff prepared for and attended monthly meetings of the Mendenhall Wetlands Citizens Advisory Group. This group actively investigated issues and activities that had the potential to affect the Mendenhall Refuge. Because of the dissolution of the Habitat and Restoration division, our role in the planning efforts that include attending these monthly meetings has increased.

b. During this report period we discussed options for achieving fine scale habitat mapping of the MWSWR and met with potential contractors to determine their capability to do it.

c. ADF&G staff investigated options for signs aimed at educating refuge users about refuge issues.

Project Costs: Federal share \$15,725.25 + state share \$5,241.75 = total cost \$ 20,967

Prepared By: Neil Barten, Principal Investigator, Wildlife Biologist III

Date: September 4, 2003

allow refuge managers to focus mitigation measures towards habitat with similar values if possible.

Job/Activity c: To assist the public in being active and informed participants in the planning process and conservation strategies, provide information (using print media, field trips, lectures or other means deemed appropriate and within means of available resources) on the value of these areas to wildlife and the potential impacts of various types of human uses on wildlife and habitats.

Summary of Project Accomplishments:

1. Objective 1: Dude Creek Critical Habitat Area (DCCHA)

- a. During September 2003, Icy Straits Environmental Consultants conducted sandhill crane observations on the DCCHA. A report was completed by the consultant and submitted to ADF&G in January of 2004. In addition, sandhill crane fecal samples and stomach samples were collected and shipped to Washington State University for microhistological analysis of crane diets. This data should be available during late fall 2004.

During November 2003-April 2004, Icy Straits Environmental Consultants conducted snow depth measurements on the DCCHA to use in interpreting moose habitat use and diet throughout the winter in this area. A report was completed and submitted to ADF&G in May 2004.

- b,c,d. We made no progress toward accomplishing these objectives during the report period primarily because of the dissolution of Habitat and Restoration Division which was to take the lead on the planning process for DCCHA.

2. Objective 2: Mendenhall Wetlands State Game Refuge (MWSGR)

- a. ADF&G staff prepared for and attended monthly meetings of the Mendenhall Wetlands Citizens Advisory Group. This group actively investigates issues and activities that could potentially affect the Mendenhall State Game Refuge. Our role in the planning efforts, including attending these monthly meetings has increased because of the dissolution of the Habitat and Restoration division.
- b. During the report period, a contract was prepared for Spectrum Mapping LLC to analyze LIDAR mapping imagery for the production of a fine scale topographic map of the Mendenhall Wetlands State Game Refuge. A final version of the contract was recently sent to the company and we anticipate having this work completed by late fall 2004.
- c. Signs associated with dogs and wildlife harassment were placed on the MWSGR during this period.

Project Costs (includes indirect costs):

Federal share \$ 8,931.82 + state share \$ 2,977.28 = total cost \$ 11,909

Prepared By: Neil Barten, Principal Investigator

Date: August 25, 2004

Job/Activity c: To assist the public in being active and informed participants in the planning process and conservation strategies, provide information (using print media, field trips, lectures or other means deemed appropriate and within means of available resources) on the value of these areas to wildlife and the potential impacts of various types of human uses on wildlife and habitats.

Summary of Project Accomplishments:

Objective 1: Dude Creek Critical Habitat Area (DCCHA)

- a. We are still waiting for the analysis of sandhill crane fecal and stomach samples that were collected under the 03-04 grant. They were shipped to Washington State University for microhistological analysis but that analysis has yet to be completed. No other new data was collected under this grant during the reporting period.
- b. Some efforts have been made towards determining the materials and size of signs needed to delineate the DCCHA border. Efforts have also begun towards working with community members regarding the placement of a large educational sign at the main entrance to DCCHA.
- c-d. ADF&G staff attended several public meetings in Gustavus with the community and at Glacier Bay National Park to discuss moose biology and moose management in the DCCHA. These meetings invariably provide staff with names of people and groups interested in preserving the nature of DCCHA. ADF&G staff also commented on and supported the procurement of Mental Health Trust lands by the Nature Conservancy adjacent to DCCHA that might eventually be added to this area to add to its value.

Objective 2: Mendenhall Wetlands State Game Refuge (MWSGR)

- a. ADF&G staff prepared for and attended monthly meetings of the Mendenhall Wetlands Citizens Advisory Group. This group actively investigates issues and activities that could potentially affect the Mendenhall State Game Refuge. Our role in the planning efforts, including attending these monthly meetings has increased because of the dissolution of the Habitat and Restoration division.
- b. During the report period, a contract with Spectrum Mapping LLC to analyze LIDAR mapping imagery for the production of a fine scale topographic map of the Mendenhall Wetlands State Game Refuge was completed.
- c. Seasonal brochures were produced that emphasize the highlights of the season on the refuge in relation to wildlife activity. These brochures were made available to the public at trailheads leading to the refuge, and were well received by the public. The educational aspect of this media will hopefully provide for further support of the refuge by the constituents who learn from this.

Project Costs:

Stewardship Investment items: None

Total costs: Federal share \$22,556.25 + state share \$7,518.75 = total cost \$30,075

Prepared By: Neil Barten

Date: August 10, 2005

**FEDERAL AID
FINAL PERFORMANCE REPORT**

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

STATE WILDLIFE GRANT (SWG)

STATE: Alaska

GRANT AND SEGMENT NR.: T-1-3

PROJECT NR.: 1

WORK LOCATION: Fairbanks

PROJECT DURATION: 1 July 2003 – 30 June 2004

PROJECT REPORTING PERIOD: 1 July 2003 – 30 June 2004

PROJECT TITLE: Creamer's Field Migratory Waterfowl Refuge: Conservation, Research,
Management and Plan Revision

Project Objectives:

- 1:** Review and refine management strategies for the Refuge. Job Activity
Job Activity a: Review the 10-year "Interim Management Plan" for the Refuge, which was developed in 1993 and is due for revision.
Job Activity b: Involve stakeholders (including public) in the Plan revision and provide a variety of opportunities and avenues to inform them about the Refuge and conservation and management issues, and to receive input.
Job Activity c: Revise the plan as necessary based on stakeholder input and the status of refuge resources.
Job Activity d: Address current issues and problems on Creamer's Refuge.
 - d.1.)** Investigate issues concerning of dogs on the Refuge and develop guidelines and regulations.
 - d.2.)** Design new boardwalks, viewing platforms and other facilities to replace Boreal Forest Trail.

- 2.** Protect and enhance habitat for migratory birds with special emphasis on waterfowl (AS16.20.039(c)(1)). Monitor results and use information to modify existing plan as required.
Job Activity a.: Farm fields to provide mature grain, sprouts and open habitat for cranes, waterfowl, and other wildlife.
Job Activity b.: Maintain ponds and wetlands for waterfowl, cranes, shorebirds, and other wildlife. Monitor and evaluate effectiveness of different habitats and improvements in meeting management goals relating to wildlife conservation. Monitor water quality in ponds and nutrient levels in farm fields.
Job Activity c.: Conduct regular counts of waterfowl and cranes during spring and fall migration periods.

- 3.** Provide opportunities to study various species of wildlife and wildlife habitat typical to Interior Alaska (AS16.20.039(c)(2)).

Job Activity a.: Continue to support and conduct scientific studies, such as the migration banding station, and swallow and crane projects. Develop as possible additional studies to assist in management of Refuge, address biological knowledge gaps, and improve management of wildlife and their habitats in Interior Alaska. Where appropriate, encourage and develop citizen science components that allow for increased public involvement in wildlife conservation activities and greater understanding of the role of scientific research in conservation and management.

4. Participate in cooperative agreements with local airports and others to attract birds to the Refuge to lessen likelihood of bird hazards at airports.

Job Activity a.: Coordinate meetings of cooperators.

Job Activity b.: Provide advice and information to cooperators on bird behavior and biology, and deterrence of birds from airports.

Job Activity c.: Develop and maintain attractive farm crops, open space, water bodies and wetlands.

5. Develop informational materials to help ensure long-term conservation of refuge resources.

Job Activity a.: Develop educational materials, including brochures and signs, essential to conserving refuge resources.

Summary of Project Accomplishments:

1. a-b. Finally completed formal agreement with Friends of Creamer's Field, entering into concession agreement. Initiated updating and renewal of agreement with Camp Habitat (summer day camp program), a cooperative agreement with 2 local organizations.
 - c. Worked with USFWS Law Enforcement in regards to their concerns about potential migratory bird baiting as a result of Refuge farming practices.
 - d. Completed planning for reconstruction of Boreal Forest Trail in conjunction with Division of Administration, Friends of Creamer's Field and public.
2. a. In spring 2004, 44 acres in mature barley were planted and another 93 were prepared for planting to sprouting barley in late July. Planting was modified to provide mature grain in narrow strips and small squares, both providing more accessible edges than previous large blocks of rectangular field. This was an effort to avoid having to cut and leave lay mature grain which has been construed as baiting.
 - b. Nutrient levels of fields and ponds was monitored. No chemical fertilizers, herbicides or pesticides are used on the Refuge. In fall 2003, Worked with our Sport Fisheries Division to improve the "Kids Fishing" pond in farm fields.
 - c. Record numbers of geese (4420) and ducks (3090) were attracted to the farm fields in fall 2003. The number of cranes (2450) was close to the record set in fall 2002 (2770).
3. a. Continued studies of Sandhill crane survival and movement. In August 2003, captured and banded 14 additional cranes (a total of 106 banded since 2001). Observed and recorded banded cranes in Refuge fields daily during August and early September. Mist-netting and banding of songbirds continued for the 12th consecutive year at the Creamer's migration station operated by the Alaska Bird Observatory. A local high school student

continued to monitor the tree swallow boxes in the farm fields and won awards at the state-wide Science Symposium.

4. a. Hosted annual bird/aircraft safety coordination meeting with representatives from Fairbanks International Airport, Eielson Air Force Base, Fort Wainwright, University of Alaska Experimental Agriculture Station, US FWS, and Corps of Engineers.
- b. Provided advice and assistance to Fairbanks International Airport and other local airports on bird hazing, bird behavior, and other aspects of bird/aircraft safety program.
5. a. Hosted 8703 guests to the Creamer's Refuge Visitor Center, 4,889 to educational/interpretation programs, and 26,362 to our Refuge trail system. In addition, the Alaska Bird Observatory provided bird banding and conservation programs at the migration station to 88 groups, including more than 2,755 individuals (mostly school groups). Newly developed teaching units focusing on natural history, ecology and conservation were used in Refuge programs for the first time in 2003. Educational articles conveying conservation and natural history information about refuge wildlife and habitat were published monthly in the Fairbanks Daily Newsminer. Artwork and other assistance was provided in the production of wildlife viewing brochures and wildlife ecology interpretive signs (owls, fire and other subjects).

Project Costs (includes indirect costs):

Federal share \$ 126,630.25 + state share \$ 75,978.15 = total cost \$ 202,608.40

Prepared By: John Wright

Date: August 23, 2004