

COMMON MURRE POPULATION MONITORING

Project Number: 02144

Restoration Category: Restoration Monitoring

Proposer: DOI-FWS

Lead Trustee Agency: USFWS

Cooperating Agencies: None

Alaska SeaLife Center:

Duration: 0.5 years

Cost FY 01: \$14.8K (estimated close-out costs for analyzing FY 01 Project 01144 data, preparing a power analysis, and writing a final report)

Geographic Area: This proposed close-out study will be conducted at the Alaska Maritime National Wildlife Refuge headquarters in Homer, Alaska.

Injured Resource/Service: Common murres

ABSTRACT

This proposed project is a close-out study for common murre population monitoring Project 01144, a previously approved study that will census the Chiswell Islands murre colonies during the upcoming FY 01 field season (see the EVOS fiscal year 2001 work plan) The close-out work will consist of analyzing the data collected during the FY 01 Chiswell Islands field work and comparing these results with previous postspill population counts, running a power analysis using these and other murre population count data (e.g., from the Barren Islands), and writing a final close-out report discussing the recovery status of murres at this injured nesting location and in the spill area.

INTRODUCTION

This proposed project is a close-out study for common murre population monitoring Project 01144, a previously approved study that will census the Chiswell Islands murre colonies during the upcoming FY 01 field season (see the EVOS fiscal year 2001 work plan) The close-out work will consist of analyzing the data collected during the FY 01 Chiswell Islands field work and comparing these results with previous postspill population counts, running a power analysis using these and other murre population count data (e.g., from the Barren Islands), and writing a final close-out report discussing the recovery status of murres at this injured nesting location and in the spill area.

NEED FOR THE PROJECT

A. Statement of Problem

The Chiswell Islands murre colonies were censused in 1989-1992 and 1998, and they will be censused again by previously approved Project 01144 during the upcoming 2001 field season. There will be a need to analyze the data collected during this work, compare the results with previous postspill counts, prepare a power analysis, and write a final close-out report discussing the recovery status of this injured population and common murres in the spill area.

B. Rationale/Link to Restoration

The Chiswell Islands murre colonies were censused in 1989-1992 and 1998, and they will be censused again by previously approved Project 01144 during the upcoming 2001 field season. There will be a need to analyze the data collected during this work, compare the results with previous postspill counts, prepare a power analysis, and write a final close-out report discussing the recovery status of this injured population and common murres in the spill area.

C. Location

The proposed FY 02 common murre close-out study will be conducted at the Alaska Maritime National Wildlife Refuge headquarters in Homer, Alaska.

COMMUNITY INVOLVEMENT AND TRADITIONAL ECOLOGICAL KNOWLEDGE

A large format, computer-generated color poster summarizing the close-out study results will be prepared and submitted to the Trustee Council for public display after data have been analyzed (similar posters showing results from common murre population monitoring studies 93049, 94039, 96144, 97144, and 99144 have been displayed at the Trustee Council January 1996-2000 restoration workshops). The printed posters are easy to transport and can be used by Trustee Council staff for a variety of purposes, including public displays at oil spill community meetings and schools. The posters and abstracts summarizing annual findings will also be available on-disk for inclusion in any on-line products that the Trustee Council may develop for public display. Copies of the poster will be sent to the Alaska SeaLife Center and the National Park Service Kenai Fjords Visitor Center in Seward, and one will be displayed at the AMNWR Visitor Center in Homer. Also, copies of the final close-out report will be available to the public in Homer and Anchorage. Study results will also be presented at public Trustee Council-sponsored meetings and workshops, and in scientific publications.

PROJECT DESIGN

A. Objectives

The project objectives are to analyze the data collected during the FY 01 Project 01144 Chiswell Islands common murre population monitoring work and compare the results with previous postspill counts, prepare a power analysis based on these counts, and write a final close-out report discussing the recovery status of this injured population and common murres in the spill area.

B. Methods

The project is designed to help test the null hypothesis that murre populations have not increased at nesting colonies in the spill area since the time of the event. The hypothesis will be tested by analyzing the Project 01144 population count data collected at the six Chiswell Islands nesting colonies during 2001 and statistically testing the updated postspill data set [i.e. FWS population counts made in 1989-1992, 1998, and 2001; and Dames & Moore (D&M) counts made in 1991] for differences among years and trends in population size (see Roseneau et al. 1999). Results will also be compared with 1989-1999 Barren Islands murre population numbers data to help determine the current recovery status of common murres in the spill area (see Roseneau et al. 2000).

Data Collection

No data collection is required. The data that will be analyzed and compared with previous postspill counts will consist of the Project 01144 population census data collected at the six Chiswell Islands nesting colonies during the upcoming 2001 field season.

Data Analysis

Data will be analyzed by the same methods used during the 1998 Chiswell Islands and 1999 Barren Islands murre population monitoring studies (Projects 98144 and 99144; see Roseneau et al. 1999, 2000). To analyze the data, 1-day totals will be calculated for the 6-island nesting complex and then these scores will be averaged to obtain five- and six-island estimates. Results will be pooled with 1989-1992 and 1998 FWS and 1991 D&M scores (i.e., see Nysewander and Dipple 1990, 1991; Dipple and Nysewander 1992; Nysewander et al. 1993, Dragoo et al. 1995; Erikson 1995; Roseneau et al. 1999), and analyzed for trends and differences among years by running linear regressions and one-sample t-tests. The 0.1 significance level will be used to increase the power of the tests and reduce Type II error (the 0.9 confidence interval will be adequate for our purposes; see Roseneau et al. 1999 and 2000). The power analysis will be conducted using the latest version of the computer program MONITOR (new software by J.P.Gibbs).

C. Cooperating Agencies, Contracts and Other Agency Assistance

No contracts or other agency assistance are required for the study.

SCHEDULE

A. Measurable Project Tasks for FY 02 (1 October 2001 - 30 September 2002)

FY 02

- 1 Oct – 31 Dec 2001: Review and analyze the Project 01144 Chiswell Islands murre population data, compare results with the 1989-1992 and 1998 FWS and 1991 D&M Chiswell Islands data, prepare an abstract and poster for the January 2002 EVOS work shop.
- 1 Jan 2002 – 15 Mar 2002: Conduct a power analysis of the postspill Chiswell Islands common murre population census data, prepare a draft final close-out report and submit the draft for in-house review.
- 16 Mar - 10 Apr 2002: Finalize the close-out report.
- 15 Apr 2002: Submit the final close-out report to the Chief Scientist for peer review.

B. Project Milestones and Endpoints

- December 2001: Complete data analysis, and a poster and abstract for the January 2002 EVOS work shop.
- March 2002: Complete a draft final report on the FY 01 Chiswell Islands field activities, and a power analysis of the postspill murre population data.
- April 2002: Submit the final close-out report to the Chief Scientist.

C. Completion Date

A final close-out report will be submitted to the Chief Scientist on or before 15 April 2002.

PUBLICATIONS AND REPORTS

A final report on the 2001 Chiswell Islands common murre population monitoring study will be submitted to the Chief Scientist on or before 15 April 2002. Results of the study will also be included in the annual AMNWR seabird monitoring report, and reported in publications on northern Gulf of Alaska murre populations, as appropriate.

PROFESSIONAL CONFERENCES

Results from the 2001 Chiswell Islands common murre population monitoring study will be presented at the EVOS workshop in January 2002 (\$0.9K have been included in the budget to cover the costs of the principle investigator attending this meeting). Results will also be presented at the next Alaska Bird Conference in 2003 (travel expenses for this conference will be paid by AMNWR).

NORMAL AGENCY MANAGEMENT

The proposed work is not something that AMNWR or the FWS is required to do by statute or regulation. The Chiswell Islands are listed as an intermittent monitoring site for seabirds in the refuge's seabird monitoring program, and as such, these colonies are only censused opportunistically about once every 10 years. Also, because the islands are not part of the FWS's highest priority ecosystem, the Bering Sea, support for this type of work will probably not be

available until overall FWS priorities change (i.e., from the Bering Sea to other officially designated ecosystems within Alaska). The proposed project is needed to analyze the Chiswell Islands common murre population census data collected by Project 01144 during the upcoming FY 01 field season, compare these data with previous post spill murre population counts at these colonies, run a power analysis using the postspill census data, and write a final close-out report discussing the recovery status of this injured population and common murres in the spill area.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

The proposed close-out study will be coordinated with other AMNWR seabird monitoring work in the northern Gulf of Alaska. The refuge will donate up to one month of the project manager's time to the project, and will also supply office space and computers/printers for the study.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

This is a close-out project. No changes have been made to the analytical methods and schedules listed in the previously approved Common Murre Population Monitoring Project 01144 DPD, with the exception that a power analysis will be run on the Chiswell Island postspill population counts.

PROPOSED PRINCIPAL INVESTIGATOR

Name: David G. Roseneau

Affiliation: Alaska Maritime National Wildlife Refuge

Mailing address: 2355 Kachemak Bay Drive (Suite 101), Homer, Alaska 99603-8021

Phone number: (907) 235-6546

Fax number: (907) 235-7783

E-mail address: dave_roseneau@fws.gov

PRINCIPAL INVESTIGATOR

1. David G. Roseneau (Principal Investigator)

David Roseneau will be responsible for conducting the project. He will analyze and interpret data, prepare posters and presentations for scientific conferences and meetings, and write the final close-out report. Mr. Roseneau received his B.S. degree in wildlife management and M.S. degree in biology from the University of Alaska - Fairbanks in 1967 and 1972, respectively. His thesis research was on the numbers and distribution of gyrfalcons, *Falco rusticolus* on the Seward Peninsula, Alaska. He joined the U.S. Fish and Wildlife Service in January 1993 and was project leader of common murre restoration monitoring studies in the Barren Islands during 1993-1994 (Projects 93049 and 94039). Mr. Roseneau was also principal investigator of the 1995-1999 APEX Barren Islands seabird and large fish as samplers studies (Projects 95163J, 95163K, 96163J, 97163J, 97163K, 98163J, 98163K, 99163J, and 99163K), and the 1996-1997 and 1999 Barren Islands and 1998 Chiswell Islands common murre population monitoring studies (Projects 96144, 97144, 98144, and 99144). Currently, he is principal investigator of the 2000 APEX Barren Islands seabird and large fish as samplers studies (Projects 00163J and 00163K) and the 2000 Barren Islands common murre population monitoring project (Project 00144). Prior to 1993, Mr. Roseneau was a consulting biologist for over 20 years. During that time, he conducted and managed marine bird, raptor, and large mammal projects in Alaska and Canada for government agencies and private-sector clients, and he also participated in several

large-scale murre (*Uria* spp.) population monitoring projects. In 1976-1983, as co-principal investigator of NOAA/OCSEAP Research Unit 460, he conducted monitoring studies of murre and black-legged kittiwakes (*Rissa tridactyla*) at capes Lisburne, Lewis, and Thompson in the Chukchi Sea, and St. Lawrence, St. Matthew, and Hall islands in the Bering Sea. He also studied auklets (*Aethia* spp.) at St. Lawrence and St. Matthew islands, and participated in murre and kittiwake projects at Bluff in Norton Sound. During 1984-1986, he also participated in monitoring studies of murre and kittiwakes in the northeastern Chukchi Sea, and in 1987-1988, 1991-1992, and 1995-1999, he conducted additional murre and kittiwake monitoring work at capes Lisburne and Thompson, and Chamisso and Puffin islands. Mr. Roseneau is experienced in collecting and analyzing data on numbers, productivity, and food habits of seabirds; relating trends in numbers and productivity to changes in food webs and environmental parameters (e.g., air and sea temperatures, current patterns); and assessing potential impacts of petroleum exploration and development on nesting and foraging marine birds. He has broad knowledge of rock climbing techniques and has operated inflatable rafts and other outboard-powered boats in the Bering, Chukchi, and Beaufort seas and on various Alaskan rivers in excess of 3,000 hrs. He has also accrued several hundred additional hours operating time in small boats and larger, more powerful vessels (e.g. 25 ft, 300-400 hp HydroSports and Boston Whalers) in Kachemak Bay, Prince William Sound, and Kenai Peninsula and Barren Island waters. . During his career, Mr. Roseneau has authored and co-authored 100 reports and publications, including 33 on Alaskan seabirds and 5 on a new sampling technique for capelin and sand lance. He has also made over 30 public presentations on seabirds, raptors, and caribou at scientific and wildlife law enforcement conferences and meetings.

Selected Seabird Publications

- Murphy, E.C., A.M. Springer, and D.G. Roseneau. 1991. High annual variability in reproductive success of kittiwakes (*Rissa tridactyla* L.) at a colony in western Alaska. *J. Anim. Ecol.* 60: 515-534.
- Springer, A.M., E.C. Murphy, D.G. Roseneau, C.P. McRoy, and B.A. Cooper. 1987. Paradox of pelagic food webs in the northern Bering Sea - I. Seabird food habits. *Cont. Shelf Res.* 7: 895-911.
- Murphy, E.C., A.M. Springer, and D.G. Roseneau. 1986. Population status of *Uria* aalge at a colony in western Alaska: results and simulations. *Ibis* 128: 348-363.
- Springer, A.M., D.G. Roseneau, D.S. Lloyd, C.P. McRoy, and E.C. Murphy. 1986. Seabird responses to fluctuating prey availability in the eastern Bering Sea. *Marine Ecol. Prog. Ser.* 32: 1-12.
- Springer, A.M. and D.G. Roseneau. 1985. Copepod-based food webs: auklets and oceanography in the Bering Sea. *Marine Ecol. Prog. Ser.* 21: 229-237.
- Murphy, E.C., D.G. Roseneau, and P.J. Bente. 1984. An inland nest record for the Kittlitz's murrelet. *Condor* 86: 218.
- Springer, A.M., D.G. Roseneau, E.C. Murphy, and M.I. Springer. 1984. Environmental controls of marine food webs: food habits of seabirds in the eastern Chukchi Sea. *Can. J. Fish Aquat. Sci.* 41: 1202-1215.

OTHER KEY PERSONNEL

1. G. Vernon Byrd (Project Manager)

Vernon Byrd will supply overall guidance to the project, including providing advice during data analysis and report writing. He will also review reports and presentations as needed, and help prepare manuscripts for publication. Mr. Byrd received his B.S. degree in wildlife management from the University of Georgia in 1968, did post-graduate studies in wildlife biology at the University of Alaska-Fairbanks in 1975, and completed a M.S. degree in wildlife resources management at the University of Idaho in 1989. His thesis, entitled "Seabirds in the Pribilof

Islands, Alaska: Trends and monitoring methods", explored statistical procedures for analyzing kittiwake (*Rissa* spp.) and murre (*Uria* spp.) population data. Mr. Byrd has worked for the U.S. Fish and Wildlife Service for over 20 years, focusing on studies of marine birds in Alaska and Hawaii. His major interests center around monitoring long-term trends in seabird populations, including numbers of birds and reproductive performance, and he has worked at murre colonies in the Aleutian Islands, the Bering and Chukchi seas, and western Gulf of Alaska. Mr. Byrd was a co-author of the final T/V Exxon Valdez oil spill damage assessment report for murre. Also, he was project manager of the 1993-1994 Barren Islands common murre restoration monitoring projects (Projects 93049 and 94039), the 1995-1999 APEX Barren Islands seabird and large fish as samplers studies (Projects 95163J, 95163K, 96163J, 97163J, 97163K, 98163J, 98163K, 99163J, and 99163K), the 1996-1997 and 1999 Barren Islands and 1998 Chiswell Islands common murre population monitoring projects (Project 96144, 97144, and 98144), and EVOS-sponsored work designed to remove predators from seabird nesting habitats (Projects 94041 and 95041). Currently, Mr. Byrd is project manager of the 2000 APEX Barren Islands seabird and large fish as samplers studies (Projects 00163J and 00163K) and the 2000 Barren Islands common murre population monitoring project (Project 00144). He has authored and co-authored over 50 scientific papers and 75 U.S. Fish and Wildlife Service reports on field studies, and has made over 35 presentations on seabirds at scientific conferences and meetings. Mr. Byrd is the supervisory wildlife biologist at the Alaska Maritime National Wildlife Refuge, the premier seabird nesting area in the national public land system.

Selected Seabird Publications

- Byrd, G.V., E.C. Murphy, G.W. Kaiser, A.J. Kondratyev, and Y.V. Shibaev. (In press). Status and ecology of offshore fish-feeding alcids (murre and puffins) in the North Pacific Ocean. Proceedings of "Symposium on the Status, Ecology, and Conservation of Marine Birds of the Temperate North Pacific". Canadian Wildlife Service, Ottawa.
- Byrd, G.V., and J.C. Williams. Whiskered Auklet. 1993. A chapter describing the biology of the species in The birds of North America, No. 76 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia PA, and the American Ornithologists' Union, Washington, D.C. 12 pp.
- Byrd, G.V., and J.C. Williams. Red-legged Kittiwake. 1993. A chapter describing the biology of the species in The birds of North America No. 60 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia PA, and the American Ornithologists' Union, Washington, D.C. 12 pp.
- Springer, A.M. and G.V. Byrd. 1989. Seabird dependence on walleye pollock in the southeastern Bering Sea. Pages 667-677 in Proceedings of the International Symposium on the Biology and Management of Walleye Pollock. Alaska Sea Grant Rep. No. 89-1, Univ. of Alaska-Fairbanks.

LITERATURE CITED

- Dipple, C. and D. Nysewander. 1992. Marine bird and mammal censuses in the Barren Islands, 1989 and 1990, with specific emphasis on species potentially impacted by the 1989 Exxon Valdez, including supplemental appendices for 1991 murre data. Unpubl. rept., U. S. Fish Wildl. Serv., Homer, Alaska.
- Dragoo, D.E., G.V. Byrd, D.G. Roseneau, D.A. Dewhurst, J.A. Cooper, and J.H. McCarthy. 1995. Effects of the T/V Exxon Valdez oil spill on murre: A perspective from observations at breeding colonies four years after the spill. Final rept., Restoration Proj. No. 11, U.S. Fish Wildl. Serv., Homer, Alaska.
- Erikson, D.E. 1995. Surveys of murre colony attendance in the northern Gulf of Alaska following the Exxon Valdez oil spill. Pp. 780-819 in Exxon Valdez oil spill: Fate and

effects in Alaskan waters, ASTM STP 1219, P.G. Wells, J.N. Butler, and J.S. Hughes (eds.), Amer. Soc. for Testing and Materials, Philadelphia, Pennsylvania.

Nysewander, D. and C. Dipple. 1990. Population surveys of seabird nesting colonies in Prince William Sound, the outside coast of the Kenai Peninsula, Barren Islands, and other nearby colonies, with emphasis on changes in numbers and reproduction of murre. Bird Study No. 3. Unpubl. prog. rept., U.S. Fish Wildl. Serv., Homer, Alaska.

_____ and _____. 1991. Population surveys of seabird nesting colonies in Prince William Sound, the outside coast of the Kenai Peninsula, Barren Islands, and other nearby colonies, with emphasis on changes of numbers and reproduction of murre. Bird Study No. 3. Unpubl. prog. rept., U. S. Fish Wildl. Serv., Homer, Alaska.

_____, C.H. Dipple, G.V. Byrd, and E.P. Knudtson. 1993. Effects of the T/V Exxon Valdez oil spill on murre: A perspective from observations at breeding colonies. Bird Study No. 3. Final rept., U.S. Fish Wildl. Serv., Homer, Alaska.

Roseneau, D.G., A.B. Kettle, and G.V. Byrd. 1999. Common murre restoration monitoring in the Chiswell Islands, Alaska, 1998. Unpubl. annual rept. by the Alaska Maritime National Wildlife Refuge, Homer, Alaska for the Exxon Valdez Oil Spill Trustee Council, Anchorage, AK (Restoration Project 98144).

_____. 2000. Common murre restoration monitoring in the Barren Islands, Alaska, 1999. Unpubl. annual rept. by the Alaska Maritime National Wildlife Refuge, Homer, Alaska for the Exxon Valdez Oil Spill Trustee Council, Anchorage, AK (Restoration Project 99144).

2002 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 2001 - September 30, 2002

Budget Category:	Authorized FFY 2001	Proposed FFY 2002					
Personnel	\$14.6	\$11.6					
Travel	\$1.2	\$0.9					
Contractual	\$24.0	\$0.0					
Commodities	\$1.8	\$0.6					
Equipment	\$1.0	\$0.0	LONG RANGE FUNDING REQUIREMENTS				
Subtotal	\$42.6	\$13.1	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	Estimated FFY 2006	Estimated FFY 2007
General Administration	\$3.9	\$1.7					
Project Total	\$46.5	\$14.8	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Full-time Equivalentents (FTE)	0.4	0.2					
Dollar amounts are shown in thousands of dollars.							
Other Resources							

Comments: This project is a close-out study. The proposed budget covers the costs of analyzing the data collected by Common Murre Population Monitoring Project 01144 at the Chiswell Islands murre colonies in 2001, comparing the results with previous postspill counts, running a power analysis on these and other murre population count data (e.g., Barren Islands), and writing a final close-out report discussing the recovery status of this injured population and common murres in the spill area.

Travel costs to attend the 2002 EVOS workshop in Anchorage are included in the proposed FFY 2002 budget.

The Alaska Maritime National Wildlife Refuge will donate 1 month of the project manager's time to the project. The refuge will also provide computers and office space for the study.

FY02

Prepared: 04/2/01

Project Number: 02144
 Project Title: Common Murre Population Monitoring
 Agency: DOI-FWS

2002 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 2001 - September 30, 2002

Personnel Costs:		GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	
Name	Position Description					
David G. Roseneau	Project Leader (Principal Investigator)	GS11/6	2.0	5.8	0.0	
G. Vernon Byrd	Project Manager	GS13/1	1.0	0.0	0.0	
C. Berg	Program Manager	GS12	0.5	0.0	0.0	
		Subtotal	3.5	5.8	0.0	
						Personnel Total
Travel Costs:		Ticket Price	Round Trips	Total Days	Daily Per Diem	
Description						
Travel to the EVOS workshop in Anchorage in January 2002		0.3	1	3	0.2	
						Travel Total

FY02

Prepared: 04/2/01

Project Number: 02144
 Project Title: Common Murre Population Monitoring
 Agency: DOI-FWS

2002 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 2001 - September 30, 2002

Contractual Costs:		
Description		
When a non-trustee organization is used, the form 4A is required.		Contractual Total
Commodities Costs:		
Description		
Costs of producing & printing 4 large laminated format posters for public display of project results (1 each for the Trustee Council, Alaska SeaLife Center, National Park Service Kenai Fjords Visitor Center, and AMNWR Visitor Center).		
[Note: FWS will furnish office materials and computers.]		
		Commodities Total

FY02

Prepared: 04/2/01

Project Number: 02144
 Project Title: CommonMurre Population Monitoring
 Agency: DOI-FWS

2002 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 2001 - September 30, 2002

New Equipment Purchases:		Number of Units	Unit Price
Description			
No equipment is needed for the project			
Those purchases associated with replacement equipment should be indicated by placement of an R.		New Equipment Total	
Existing Equipment Usage:		Number of Units	
Description			
Computers and printers (non oil spill equipment)		2	

FY02

Prepared: 04/2/01

Project Number: 02144
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