

Reindeer Inspire New Teaching Guide

by Doreen Fitzgerald

When Elsa the reindeer first stepped into the classroom, handler Greg Finstad had no idea where that first educational excursion would lead. Now, five years later, the Reindeer Research Program (RRP) has published *Reindeer Roundup! A K-12 Educator's Guide to Reindeer in Alaska*. Development of the curriculum, complete with book, CD-ROM, and instructional kit, was supported by the National Science Foundation, the US Department of Agriculture Cooperative State Research, Education, and Extension Service, and the UAF College of Rural Alaska, with considerable support also coming from the SNRAS Reindeer Research Program.

"*Reindeer Roundup!* is our response to the countless requests we've had to take Elsa to classrooms and give presentations on reindeer," said Finstad, project manager for the research program. Finstad took Elsa to that first classroom visit at the request of his wife, Bev Finstad, a kindergarten teacher in Fairbanks.

Reindeer bulls on the Seward Peninsula in June. Note their large velvet antlers and dark brown summer coats.

—PHOTO COURTESY REINDEER RESEARCH PROGRAM

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“Kids need real life experiences to link to the information they are being presented in the classroom,” she said. “What could be more real than a reindeer they can touch and observe up close? That experience makes the adaptations of arctic animals much more meaningful to the students. Of course,” she added, “Greg had to think fast on his feet when the kindergardeners asked if Elsa could fly, and then he had to be very entertaining to get them over their disappointment when he told them only Santa’s reindeer could do that.” She also noted that because the reindeer industry in Alaska is rich in history, science, and culture, it offers a local vehicle for teaching many of the Alaska state standards in science, math, and social studies.

Interest by other teachers led to many such visits by Elsa to Fairbanks area schools, and the new curriculum will expand this outreach to Bering Straits, Fairbanks North Star Borough, and various Lower 48 school districts that will receive the book, CD-ROM, and a kit of support material related to reindeer anatomy and physiology. All but the support kit will be available on line for teachers everywhere to download.

“The curriculum was developed in part using lesson plans written by Nome and Fairbanks teachers who attended our reindeer education workshops,” Finstad said. “We wanted to produce a unit that uses Alaska’s reindeer industry as a working model for the management of a sustainable natural resource in a northern ecosystem, one that would broaden the curriculum and expose students to applied science. Reindeer are an excellent medium to study the characteristics of tundra ecosystems and adaptations of animals living in the Arctic.”

Teachers were exposed to reindeer production and research through workshop presentations made by Larry Davis, Carl Emmons, Rose Fosdick, Dan Karmun, Knut Kielland, Heather Oleson, Kumi Rattenbury, William Schneider, Tim



Greg Finstad, Reindeer Research Program manager, with Elsa visiting schoolchildren in class.

—PHOTO COURTESY REINDEER RESEARCH PROGRAM

Smith, and Suzanne Worker. Tammy A. Smith, a teacher of the Fairbanks North Star Borough School District in Fairbanks, served as educational consultant to the project.

“The educators who participated in UAF Reindeer Curriculum Development workshops in Fairbanks and Nome developed many of the ideas and some of the individual lesson plans in the book. Their enthusiasm motivated us to incorporate many of their ideas,” said Carrie Bucki, former educational outreach coordinator for the RRP and *Reindeer Roundup!* author.

“Although many excellent educational materials are available on caribou, *Reindeer Roundup!* is unique to the culture and history of Alaska,” Bucki said. “We hope these materials will enable teachers to incorporate this regional knowledge into the Alaska curriculum.”

Bucki said development of the curriculum materials benefited from university researchers and scientists working with local educators and from the help of community members who want to teach future generations about this rural Alaska tradition. She also credited the RRP staff for their support and especially their assistance with materials collection for the educational support



A three-week-old reindeer calf.

—PHOTO COURTESY REINDEER RESEARCH PROGRAM

kits: Rob Aikman, Darrell Blodgett, Robert van Buren, Randy Fulweber, Rhonda Wadson, and Suzanne Worker.

The “Reindeer, People, and Land” section of the curriculum guide contains factual, background information about reindeer and how they interact with their Alaska environment. It is an overview that can be used for some basic research. Topics include arctic ecology, reindeer history, biological adaptations, behavior, disease, current research, and applied programs.

The “Lesson Plans” and “Extensions” sections contain twenty-two activities covering a wide range of subjects and grade levels. While most lessons were written for elementary and middle school students, many can be used as introductory material with older students, or be enhanced and developed for more rigorous study. Each lesson contains information on grade level, subject, duration, and performance objectives. A cross-referencing index provides access to the desired grade level, subject, or topic. Each lesson correlates to Alaska state standards and Alaska cultural standards for students and educators. The lesson plan example on page 6 shows how the plans are organized.

Along with the lessons, extension activities, such as ranger tag, thermal regulation and insulation, reindeer diorama, and recording herding culture are suggested. A glossary is included and the “For Further Study” section contains a list of adult reference books, children’s books, videos, and other resources.

To augment lessons, or support teachers who want to create their own lessons, an array of other materials and props are provided on a CD-ROM and in the kit of reindeer-related physical materials. (See page 5 for a description of the props). The CD-ROM includes photos and slide shows which teachers can use as-is or integrate into related lesson plans. The RRP staff also will be available to assist teachers with presenting lecture material, developing advanced lesson ideas, coordinating live reindeer classroom visits, or planning a field trip to the Reindeer Research Program’s facility at the Agriculture and Forestry Experiment Station’s Fairbanks farm.

The curriculum’s audiovisual material (films and videos) include two films: *The Reindeer Queen* and *High Tech on the Tundra*. Three PowerPoint slide shows are provided. Fifty slides illustrate how reindeer are adapted to life in the Arctic. They show such characteristics as summer and winter foraging, flotation and gait, and travel through snow, and how hair coat, nose, metabolism, and other features are

Reindeer are gentle and easily herded.

—PHOTO COURTESY
REINDEER RESEARCH PROGRAM

Lesson Plans

- Reindeer Herding in Alaska
- Website Scavenger Hunt
- Reindeer vs. Caribou
- History of Reindeer in Alaska
- Reindeer Numbers
- Traditional Uses of Reindeer
- Eskimo Ice Cream
- Velvet Antlers
- What Do Farmed Reindeer Eat?
- How Much Do Reindeer Eat?
- Hair Identification
- Reindeer Rumen
- Building a Radio and Transmitter
- Creating a Reindeer Brochure
- Reindeer Alphabet Book
- Reindeer Bingo
- Creating an Arctic Food Web

Extensions

- Rangifer Tag
- Thermal Regulation and Insulation
- Reindeer: Cattle of the Arctic?
- Reindeer Diorama
- Recording Herding Culture



adaptations to the cold. The role of lichen in diet, functions of antlers, defense, reproduction and herding are also covered. The “History of Reindeer in Alaska” slides cover five distinct periods, beginning with conditions before reindeer were introduced. The story continues through the introduction of reindeer in 1892, training of Alaska Native herders, mission reindeer, the first Native herd owners, use of reindeer by miners, reindeer stations in northwestern Alaska through 1977, and the story of people who were involved in the introduction and development of the industry. It also covers the Reindeer Act of 1937, range management, and permits. “Radio and Satellite Telemetry” by Suzanne Worker covers the basics of wildlife telemetry. It begins with VHF telemetry and how it works, then addresses satellite telemetry and how it differs from VHF telemetry. It is written in general terms but addresses reindeer-specific uses.

The guide includes other reindeer and education related resources (seven website links); the cross-reference section, with indexes to grade levels, teaching subjects, and topics; and the slide indexes, with descriptions and titles for each slide in the PowerPoint shows. The entire package includes the guide, educational kit materials, and CD-ROMs *Reindeer Herding in Alaska* (UAF Jukebox series interactive oral history of reindeer herding in Alaska) and *Reindeer Visual Aids* (slide shows and images).

Unless noted, all photos and graphics in the guide were taken or created by the UAF Reindeer Research Program. The historical photos are from the following publications: *Arctic Exodus: The Last Great Trail Drive* by Dick North; *Where Did the Reindeer Come From? Alaska Experience, the First Fifty Years* by Alice Postell; *The Yukon Relief Expedition and the Journal of Carl Johan Sakariassen* edited by V.R. Rausch and D.L. Baldwin; *Longest Reindeer Herder* by Chester Seveck; and *Reading, Religion, and Reindeer: Sheldon Jackson's Legacy to Alaska* by Elizabeth Tower.

The *Reindeer Roundup!* materials are based on work supported by the National Science Foundation (project number OPP-9979473), the USDA Cooperative State Research, Education, and Extension Service (special project number 2001-38426-11488), and supported by the UAF College of Rural Alaska.



The Davis family reindeer corral near Nome.
—PHOTO COURTESY REINDEER RESEARCH PROGRAM

Reindeer Roundup! will be available from the Reindeer Research Program in August 2004. For more information contact Rhonda Wadson, Reindeer Research Program, P.O. Box 757200, University of Alaska Fairbanks; (e-mail) fyrrp@uaf.edu; (phone) 907-474-5449; (fax) 907-474-7175. The printed guide will be available on line at <http://www.uaf.edu/snras/afes/pubs/index.html>. The publication was edited by Deirdre Helfferich and Doreen Fitzgerald, AFES Publications Office, School of Natural Resources and Agricultural Sciences, University of Alaska Fairbanks.

you can visit the Reindeer Research Program at
<http://reindeer.salrm.uaf.edu/>



Cow and newborn calf at the Fairbanks Experiment Farm.
—PHOTO COURTESY REINDEER RESEARCH PROGRAM

Reindeer Roundup! Educational Kit Materials

Each kit includes the book, *Reindeer Roundup!* and the following items:

Animal specimens

- Reindeer pelt
- Reindeer skull
- Velvet antler
- Bone antler
- 2 reindeer hooves (1 shovel shaped, 1 snowshoe shaped)
- 2 caribou hooves (1 shovel shaped, 1 snowshoe shaped)

Videos

- High Tech on the Tundra*, 20 minutes
- Reindeer Queen*, 28 minutes

CD-ROMs

Reindeer Herding in Alaska

UAF Jukebox series, an interactive oral history program

Reindeer Visual Aids

1. PowerPoint slide shows:

- Adaptations of Reindeer to Life in the Arctic
- History of Reindeer in Alaska
- Radio and Satellite Telemetry
- Eskimo Ice Cream

2. Images (see samples on the following page):

- Cartoon drawings of reindeer biology and behavior
- Graphs and maps
- History photos
- Reindeer photos
 - Fairbanks farm reindeer
 - Seward Peninsula reindeer and activities

Where do Reindeer Come From?

Reindeer and caribou share the same genus and species name, *Rangifer tarandus*. Reindeer are a semidomesticated subspecies of *Rangifer*. They were probably domesticated along the Russian-Mongolia border five to seven thousand years ago, and might have been first used as decoys to help hunters catch wild game. Once domesticated by the nomadic tribes of this region, they pulled sleds and supplied meat, clothing, and milk. Their domestication spread throughout Russia and Scandinavia, where raising and herding reindeer is still a way of life today. Reindeer did not arrive in North America until the 1890s.

Reindeer and caribou taxonomic chart:

Kingdom:	Animalia
Phylum:	Chordata (backbone with spinal cord)
Class:	Mammalia (milk producing)
Subclass:	Ungulata (hooved)
Order:	Artiodactyla (even-toed)
Suborder:	Ruminantia (true ruminant)
Family:	Cervidae
Genus:	Rangifer
Species:	tarandus

Different subspecies of reindeer and caribou exist throughout the Circumpolar North. The subspecies name is an additional name added to the genus and species name to further classify the animal. In Eurasia, reindeer are classified as either domesticated or wild. Only in North America are indigenous (wild) *Rangifer* referred to as caribou.

There are seven subspecies of *Rangifer*:

Rangifer tarandus tarandus: Eurasian tundra reindeer found in Alaska and in parts of Eurasia

Rangifer tarandus fennicus: Eurasian forest reindeer found in the forested areas of Russia

Rangifer tarandus platyrhincus: Svalbard reindeer found on Svalbard Island

Rangifer tarandus granti: the caribou subspecies found in Alaska and the Yukon

Rangifer tarandus groenlandicus: Barren ground caribou found in Greenland and Northern Canada

Rangifer tarandus caribou: Woodland caribou found in Central and Southern Canada

Rangifer tarandus pearyi: Peary caribou found in the far Northern Arctic Islands of Canada

4. History of Reindeer in Alaska

(sample lesson plan from *Reindeer Roundup!*)

Grade 5 - 9

Subject History

Duration 2 hours

Alaska Content Standards H.B.3, H.C.3

Cultural Standards for Students A.3, E.5

Cultural Standards for Educators B.3, B.4, E.5

Instructional Goal

Students will gain a historical understanding of the history of the reindeer in Alaska, explore various cultural lifestyles, and synthesize historical information in chronological order.

Performance Objective

Students will listen to or view an account of the history of reindeer in Alaska. Students will identify important events and complete a timeline.

Materials

PowerPoint slide show entitled *History of Reindeer in Alaska* (on the *Reindeer Visual Aids* CD-ROM)

Reindeer History Timeline worksheet for each student
(photocopy master on page 60)

Video, *The Reindeer Queen* (included in this kit)

Background

By the late 1880s, there were reports of starving Alaska Native populations in western Alaska due to the decimation of marine mammals from the whaling industry and scarce numbers of caribou. Dr. Sheldon Jackson, a U.S. general agent for education and a Presbyterian missionary, lobbied for federal monies to assist Alaska Natives. He built mission schools and in the late 1800s introduced reindeer into Alaska from Russia as a source of protein and revenue. Reindeer were brought to Alaska on Captain Healy's U.S. Revenue Cutter, the *Bear*. Siberian herders and then Saami herders were brought to western Alaska to teach Native Alaskans how to herd reindeer. The reindeer industry grew until there were over 600,000 animals present in the 1930s. Mismanagement and losses to wolves and caribou sparked a dramatic decline to only 50,000 reindeer by the 1950s. The Reindeer Act of 1937 allows only Alaska Natives to own reindeer. Today there are approximately 30,000 throughout the state and 20,000 in western Alaska, with most living on the Seward Peninsula and in island herds.



Mary Antisarlook, or "The Reindeer Queen," was the first Native Alaskan woman to own reindeer.

—PHOTO FROM *WHERE DID REINDEER COME FROM?*, BY ALICE POSTELL, 1990, P. 33

Procedure

1. Show your class the *History of Reindeer in Alaska* slide show using the accompanying slide index in **Appendix B** on page 170 for assistance, or create your own slide show using the same pictures found on the *Reindeer Visual Aids* CD-ROM.
2. Pass out the **Reindeer History Timeline** worksheet and have the students complete it during the slide show presentation or afterward.
3. Discuss the historical significance of the events on the timeline worksheet.
4. Show the video, *The Reindeer Queen*.

Extensions

1. View the oral history Jukebox CD-ROM, *Reindeer Herding in Alaska*, included in this kit. Assign groups of students different reindeer herders listed on the CD. Have each group summarize the herders' history and involvement in the reindeer industry in a short report.
2. Use the oral history Jukebox CD-ROM, *Reindeer Herding in Alaska*, in other ways for further study and research.
3. Have a reindeer herder or Native elder visit your classroom and discuss their experiences with reindeer and reindeer herding.

Assessment

Accurate completion of worksheet—see answers below.


Quiz—from the events on the timeline, choose five and record them out of order on a paper or the board for the students. The students must number them in chronological order.

Answers to the history timeline worksheet:

- 1892 – K
- 1894 – E
- 1900 – D
- 1901 – H
- 1908-1914 – F
- 1914-1929 – B
- 1930 – C
- 1937 – I
- 1950 – G
- 1968 – A
- 1981 – J

Reindeer History Timeline

Complete the timeline by placing the letter of each event below the correct year.



A. The Bureau of Indian Affairs takes over issuing range permits.
B. Lomen Brothers had successful reindeer business.
C. Over 600,000 reindeer in Alaska
D. Gold is discovered in Nome
E. Saami herders arrive in Alaska to assist Native Alaskan herders
F. Increase in Native reindeer ownership
G. 25,000 reindeer in Alaska due to wolves, caribou and disorganized herding.
H. Mary, the Reindeer Queen, has Alaska's largest herd.
I. The Reindeer Act is passed.
J. The Reindeer Research Program at UAF is formed.
K. Sheldon Jackson brings reindeer to Alaska.

1892 1894 1900 1901 1908-1914 1914-1929 1930 1937 1950 1968 1981

TIMELINE SHOWN AT APPROXIMATELY
45 PERCENT ACTUAL SIZE IN CURRICULUM.

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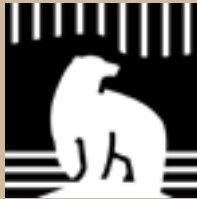
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Cow and calf at the Fairbanks Experiment Farm.
—PHOTO COURTESY REINDEER RESEARCH PROGRAM