Research Learning Center (RLC) Report to Congress – 2005 Form

RLC Name (1st FY funded)	**Host Park** (states) **&** Others Parks Served (states)	**Initial/main Funding Source**
Crown of the Continent Research Learning Center (2002)	**Glacier National Park** (MT) Grant Kohrs Ranch National Historic Site (MT) Little Bighorn Battlefield (MT) Waterton Lakes National Park (Alberta, Canada)	NRC

CCRLC Mission Statement:

To facilitate inquiry and learning in and about the Crown of the Continent Ecosystem toward assisting communities in making informed decisions and enhancing stewardship of the region's cultural and natural resources

Summary paragraph:

The Crown of the Continent Research Learning Center (CCRLC) received its first Challenge funding in FY 2002. The Director, Dr. Leigh Welling, was hired December 2002, the Resource Education Specialist, Dr. Sallie Hejl, began work in August of 2003, and Billie Thomas, the Center's Administrative Assistant was hired in April 2004. Parks directly served by CCRLC are Glacier National Park (MT), Grant Kohrs Ranch National Historic Site (MT), and Little Bighorn Battlefield (MT). We also serve Waterton Lakes National Park in Canada because we share a boundary with the park and together, Waterton-Glacier share three international designations: 1) the world's first International Peace Park, 2) a Biosphere Reserve, and 3) a World Heritage Site. Aside from permanent staff salaries that are entirely base funded, the CCRLC must acquire support from programs outside the Natural Resource Challenge (NRC) to function. Operational support (administrative functions, supplies, equipment, travel, etc) are written into all proposals we submit for specific research and educational projects, to both external and internal sources. However, there is no partner that supports operational functions for the RLC on a regular, committed basis.

Basic facilities for the CCRLC include two renovated Mission 66 3-bedroom houses located in the Glacier National Park (GLAC) headquarters area. One building has been converted for office space, providing staff offices, an internet accessible

conference/presentation room that can accommodate up to 12 people, and a computer lab that currently has 5 workstations with software to support a wide range of research and educational activities. The computer lab is used by students and faculty and also serves as a teaching/training area. The second house has been converted to bunkhouse style accommodations that will sleep up to 8 adults and serves as a residence for visiting scientists, students, and other collaborators.

Collaboration across the Challenge: 1-5 examples of how the CCRLC is improving efficiency and effectiveness in working with other NRC programs.

1) *Rocky Mountain Inventory & Monitoring Network* – the CCRLC Director serves on RM I&M Technical Committee
2) *Rocky Mountain Cooperative Ecosystem Studies Unit* – both the CCRLC Director and Resource Education Specialist communicate on a regular basis with the RM-CESU Coordinator and the Cultural Resource Specialist; we currently have 1 research project (Cultural significance of Chief Mountain), 2 education projects (Grant-Kohrs teacher workshop; Tehabi Internship), and 1 technical assistance project (Citizen Science on Common Loons) being conducted in cooperation with the RM-CESU. In FY 2005 we received $18,000 in seed grants through the RM-CESU for our network parks and moved $15,000 of park projects to the CESU for research at the University of Montana.
3) *National Cooperative Ecosystem Studies Unit* - the CCRLC Director co-organized, with the National CESU Coordinator, a workshop at the 2005 George Wright Society Conference and subsequently co-authored a white paper on Collaboration Across the Challenge.
4) *Northern Rockies Exotic Plant Management Team* – the CCRLC works closely with the Glacier field crew and team leader for the NR-EPMT. Efforts include organizing and hosting a workshop on exotic plant management for land managers in the Crown of the Continent (includes regions of Montana, Alberta, and British Columbia), forming and chairing the Crown Invasive Plant Network (CIPN) to facilitate communication in this transboundary region, co-writing proposals to fund exotic plant management projects, and supporting graduate students and international volunteers to work with the NR-EPMT. The CCRLC hosted one graduate student in 2005 who completed a MS Thesis on predictive modeling of invasives in wilderness.
5) *Research Learning Centers* – the CCRLC Director has worked closely with the National RLC Coordinator to facilitate communication among the existing RLCs; she also co-organized 2 sessions at the George Wright Society conference in 2005 that brought representatives from all 13 funded RLCs together for the first time to talk about their research programs.

Funding: (see funding table below)

CCRLC Funding – FY 2005

Type (internal or external)	Source Name	Direct Funds ($1000)	In-kind		% Dispersal (total to 100%)					
			Value ($1000)	Item(s)	Staff	Research	Infrastructure & Serving Research*	Education & Outreach	Maint. Back-log	Other (travel, utilities)
Internal	NRC - Park base	$225			92					8
Internal	Park standard base	$5					100			
Internal	Intermountain Region International Conservation Office	$30			10	50		40		
External	The Glacier Fund	$14				100				
External	National Center for Landscape Fire Analysis		$9	Geodatabase for fire management			100			
External	Joint Fire Sciences Program	$18						100		
External	Geological Society of America – Geologist in park program		$5	Survey of paleontological resources in Glacier		100				
External	Volunteers – Loon Project		**	Total time: 1,948 hours		80		20		
External	Volunteers - International		**	Total time: 1214 hours		100				
External	Volunteers - general		**	Total time: 140 hours		44	56			

* How you are facilitating research: providing lab space, facilitating research permitting, etc.
** WASO will calculate value using standard value/hour.

Housing: (see housing table below)

CCRLC Housing Table - 2005

Type of Housing	$ / Night @ # Nights	Total Cost	Equivalent Private Lodging	$ / Night @ # Nights	Total Private Value	Savings to Researchers
CCRLC Residence researchers	$8@268	$2144	Local motels	$80@178 (268/1.5)	$14,240	$12,096
CCRLC Residence students	$3@407	$1221	Local motels	$80@407	$32,560	$31,339
RV site	0@6	0	Private RV site	$28@6	$ 168	$ 168
Total	$5@681	$3365			$46,968	$ 43,603

Other savings to researchers:

CCRLC residence provides dishes, cookware, stove, microwave, refrigerator, washing facilities (with soap), and some storage. The computer lab also provides work stations with internet access for those researchers who are signed up as volunteers.

Partnerships

- *Number and variety of partners (see table below)*

CCRLC Partners - 2005

Name of partner	Level (national, regional, state, local)	Focus (research, education, restoration of historic structures, etc.)	Type (Formal or Informal)
USGS Northern Rocky Mountain Science Center	regional	research	informal
Rocky Mountain Cooperative Ecosystem Studies Unit	regional	research, education, technical support	formal
Northern Rocky Mountains Exotic Plant Management	regional	research, education, technical support	informal

Team			
National Center for Landscape Fire Analysis	national	research, technical support	informal
Salish-Kootenai College	state	research, education	formal
Rocky Mountain Inventory & Monitoring Network	regional	research, technical support	informal
The Transboundary Policy Planning and Management Program	regional, international	research, education	informal
Big Sky Institute	regional	research, education	informal
Miistakis Institute for the Rockies	regional	research, education, technical support	informal
Aldo Leopold Wilderness Research Institute	national	research, education, technical support	informal
Environmental Protection Agency Climate Friendly Parks Program	national	education, technical support	formal
Crown of the Continent Managers Partnership	regional	education, technical support	informal
Flathead Lake Biological Research Station	regional	research, education	informal
Upper Midwest Aerospace Consortium	regional	research, education, technical support	informal
Crown of the Continent Ecosystem Education Consortium	regional	education	informal
Avian Science Center	national	research, education	formal
Center for Agricultural, Resource and Environmental Systems	regional	research, education, technical support	informal
Flathead National Forest	regional	education	formal
Lolo National Forest	regional	education	formal
The Glacier Fund	local	research, education, technical support	formal
The Glacier Institute	local	education	informal
National Parks Conservation Association Glacier Field Office	regional	research, education	informal
Waterton Lakes National	international	research, education, technical	informal

Park		support	
Blackfeet Tribal Historical Preservation Office	International	research, education	informal
Land Resources and Environmental Science Department, Montana State University	regional	research	informal

- *Value to Partners: quotes*

"The Research Learning Center provides the staff and facilities that make park-based research a reality for more students. Access to the facilities and resources of the Glacier National Park Research Learning Center has made it possible to fund graduate research on Park cultural resources. In addition, the Research Learning Center has been a leader in making connections between the university and sister management agencies in Canada and the US."

Dr. Len Broberg, Co-Director, The Transboundary Policy Planning and Management Program, University of Montana

"The Crown of the Continent Research Learning Center has provided an extremely valuable resource for our staff and partners. The focus of the Center on research facilitation and the delivery and application of science to management nicely complements the strengths of the Leopold Institute and other Forest Service research programs in the northern Rockies. We consider the Learning Center to be an important partner in carrying out our mission."

David Parsons, Director, Aldo Leopold Wilderness Research Institute

"Researchers are often critically deficient in the ability to convey scientific knowledge in accessible ways that appeal to human needs and values. Working with the Research Learning Center, we have been able to develop more powerful and meaningful messages that tap into the aesthetic and emotional qualities of key research issues. This opens the door to wider audiences and effectively transfers scientific knowledge to society as well as underscoring its fundamental importance."

Daniel Fagre, USGS Research Scientist, Glacier Field Station

Accomplishments:

- *GPRA goals the CCRLC is helping to reach*

  Ib3a-GLAC. Vital Sign,
  Ib3b-GLAC. Vital Signs,
  Ia1B-GLAC Exotic Plant Species,
  Ia2A-GLAC Threatened and Endangered Species,
  Ib2E Ethnographic Resources Baseline,
  Ib2B Cultural Landscape Inventory,
  IIb1-GLAC. Visitor Understanding and Appreciation,
  IIb1X-GLAC. Educational Programs

- *Quantity and type of research being facilitated*

  Level of RLC involvement: The level at which RLC staff and/or facilities are involved in research being conducted at the parks varies greatly. This is also something that is evolving over time. Beginning FY 2006, the CCRLC Director will co-coordinate research permits in Glacier with the current research coordinator. We expect this to have a significant impact on the ability of the RLC to support researcher needs. We use the following to generalize the level of RLC involvement in the table below.

  1=little or superficial involvement (e.g. communicate with researchers about projects via phone or email or at professional or in-park meetings)
  2=moderate involvement (e.g. provide short term housing, participate in scientific meetings/workshops on research topic, facilitate communication of research results to managers or public)
  3=significant involvement (e.g. provide long term housing – several weeks to months, provide computer access, actively solicit projects, co-write research proposals, focused effort to communicate research results to managers or the public)

a) RPRS records the CCRLC helped to facilitate		
Permit number - active	**Title/description**	**Level of RLC involvement**
GLAC-2005-SCI-0022	Alpine atmospheric deposition	1
GLAC-2005-SCI-0080	Zoonotic diseases of wildlife	2
GLAC-2005-SCI-009	Climate variability in mountain protected areas	3
GLAC-2005-SCI-0064	Social research on Going-to-the-Sun Road rehabilitation mitigation	1
GLAC-2005-SCI-0075	Glacier-climate interaction model	2

GLAC-2005-SCI-0073	Black-backed woodpeckers & birds in burned areas	3
GLAC-2005-SCI-0047	Preybase for lynx: snowshoe hares	1
GLAC-2005-SCI-0039	Mycobacteria in different environments	2
GLAC-2005-SCI-0108	Late Holocene droughts of the west in north america	3
GLAC-2005-SCI-082	Black-backed woodpecker populations	3
GLAC-2005-SCI-0002	Effects of wildfire on water quality	2
GLAC-2005-SCI-0040	Status and trends of amphibian populations	2
GLAC-2005-SCI-0079	Rocky mountain capshell in Lost Lake	2
GLAC-2005-SCI-0007	Long-term recovery of subalpine vegetation from trampling	3
GLAC-2004-SCI-0006	Evaluation of bull trout populations	2
GLAC-2002-SCI-0019	Bighorn sheep ecology and conservation	2
GLAC-2003-SCI-0013	Northern divide grizzly bear DNA project	3
GLAC-2003-SCI-0005	Western airborne contaminants assessment	1
GLAC-2004-SCI-0019	Climate impacts on low elevation forests	2
GLAC-2005-SCI-0057	Identify sites for Whitebark pine restoration	2
GLAC-2004-SCI-0029	Assess deposition-sensitive surface waters in high elevation lakes	2
GLAC-2004-SCI-0120	Predict channel evolution response to wildfire	2
GLAC-2004-SCI-0152	Western mountain initiative – climate variability and change	2
GLAC-2003-SCI-0018	Emergent properties of river floodplains	3
Permit number – recently expired	**Title/description**	**Level of RLC involvement**
GLAC-2004-SCI-0063	Monitoring Black Swifts in Montana	2
GLAC-2002-SCI-0016	Vegetation mapping of Glacier NP	2
GLAC-2001-SCI-0013	Climate variability in mountain protected areas	3
GLAC-2004-SCI-0007	Going-to-the-Sun road stream survey	2
GLAC-2004-SCI-0015	Harlequin duck banding	2
GLAC-2004-SCI-0038	Culturally scarred tree study	2
b) Other non-RPRS research		
	Title/description	**Level of RLC involvement**
	Oral History of the Cultural Significance of Chief Mountain	3

- Research vignette(s):

Ethnographic study on the Cultural Significance of Chief Mountain
Mountain landscapes of Waterton-Glacier International Peace Park contain significant cultural and natural resources. Indigenous use of the landscape goes back for millennia and involves many tribes, including Salish-Kootenai and Blackfeet tribes in Montana and Blood, Siksika, and Peigan tribes in Canada. One of the most prominent landscape features is the massif of Chief Mountain, which lies half in Glacier National Park, half in the Blackfeet Reservation, and just over 7km from the international border. Named "Ninastakis" by the Blackfeet, the mountain is a place of great spiritual power and is an active vision quest site. But it has also become a popular climbing destination for non-natives who disrupt traditional activities and desecrate the landscape. The cultural significance of Chief Mountain is being documented primarily through oral histories. The project is collaborative with Waterton Lakes National Park in Alberta, Canada and the tribes of the Blackfoot Confederacy in the US and Canada. Results will inform resource management, interpretation, and will contribute to initiating a listing of Chief Mountain in the National Historic Registry.

Effects of 2003 fires on fire-dependent bird species
Fire is the most important agent of natural disturbance in the northern Rocky Mountains, exemplified by the 2003 fires that encompassed 19% of the forested area of Glacier National Park. The fires, composed of low, moderate, and high severity areas, occurred in all forest types. Burned forests provide prime habitat for 12 bird species. Black-backed Woodpecker, a Species of Special Concern in Montana, nests in unlogged, burned forests for the first 5 years after a fire. Not all burns are equally suitable for Black-backed Woodpeckers and other post-fire specialists and we do not know why. Forest cover type and fire severity undoubtedly affect habitat suitability but the relationships are unknown. The fires of 2003 offer a unique opportunity to better understand the needs of fire-dependent species. This study will provide critical information to park managers so they can make informed decisions on management-ignited fires, fire-use fires, and suppression actions.

Understanding the biocomplexity of wild river floodplains
Natural flood plains are among the most biologically complex and productive landscapes on Earth, providing valuable ecological and economic services. With increasing human population along river corridors, flood plains are rapidly being degraded or lost altogether. North America has lost about 50% of its original wetland cover. Natural flood plains are now among the most threatened landscapes worldwide. The Nyack flood plain, which is on the Middle Fork of the Flathead River in Glacier National Park, is on one of the world's few remaining wild rivers and represents a unique environment for research and education. The research conducted at this Biocomplexity site is demonstrating the unique properties of natural flood plains and this information is now serving as a baseline for restoring rivers elsewhere. Results inform management of recreational activities and efforts are underway to communicate the importance of the area to park visitors and local citizens.

- *Quality of research being facilitated: number of publications from research with examples*

  We have no metric for this. The CCRLC has only been up and running for 3 years and this is not yet long enough to track publications from research we have been involved in. It is something we will track in future years but publications in any given year will always be related to past rather than current fiscal year research being conducted in the parks.

- *Ability to move research results to managers for their incorporation into decisions: 3 vignettes*

  Glacier National Park Fire Atlas
  Fire managers are required to input, update, and maintain fire information in multiple local and national databases. This information is also integrated into various decision support models. Several inefficiencies exist in the current data infrastructure. The National Center for Landscape Fire Analysis (NCLFA) has designed and developed a local geodatabase, using MS Access, which reduces redundancy and allows fire managers to directly enter fire start information in to a GIS format. Fire managers began using the tool in spring 2005 and are currently collaborating with the NCLFA to incorporate other features into the program, such as the ability to model fire history and integrate other data sets (e.g. vegetation, weather, fuels) and define their relationship with fire history. The project is funded through the National Center for Landscape Fire Analysis at the University of Montana.

  Predicting the invasion of exotic plants in Glacier's backcountry
  Guy Trudeau, a Master of Science student at Universite Paul Cezanne in Marseille, France volunteered to work with Glacier National Park biologists on natural resource management projects during March – September 2005. Guy was recruited through the CCRLC and was housed at the residence during his stay as he completed his MS thesis project. Working closely with the Northern Rockies Exotic Plant Management Team (NR-EPMT) and Dr. Bruce Maxwell at Montana State University (MSU), he used known relationships between the presence of highly invasive plant species and various environmental parameters to predict their occurrence in wilderness areas. Dr. Maxwell and others at MSU have developed this modeling approach for areas in Yellowstone National Park and they worked closely with Guy in the overall design, development of monitoring methods, and data analysis to adapt the model to Glacier's terrain. Guy's results can be used by the NR-EPMT to target specific areas to monitor for weed invasion in the nearly 1 million acres of Glacier's backcountry. Guy delivered his results via a presentation and a report that will be available in the library at the park. Guy also met with park staff throughout the summer to learn about how NPS resource managers use scientific information toward effective management decisions.

Grizzly bear brain anatomy gives clues for reducing bear-human interactions
Research results on the anatomy of a grizzly bear brain was presented to Glacier National Park staff and management in August 2005. Students from Oberlin College in Ohio are conducting neuro-imaging of bear's central nervous system to determine what sensory areas are most emphasized. Magnetic resonance images (MRI) along with computerized tomography (CAT scans) of the brains of grizzly and black bears, as well as the skulls of cave bears, have been studied. This is the first ever process to map the bear brain and has demonstrated the olfactory area, or sense of smell, in bears is paramount and is much more developed than their sight ability. This information can help bear managers better inform the public about how to establish presence when in bear territory and reduce bear-human interactions.

- *Number of graduate students learning through their research projects (see table below)*

Students doing research on projects facilitated or supported through the CCRLC - 2005

Degree Being Sought	Number of students	Fields of Research	Research Topics	Types of Products
Post Masters	1	Geosciences	Survey of paleontological resources in Glacier NP	NPS published report
Masters	3	Wildlife Ecology; Resources Management; Conservation Biology	(1)Comparison of bear management from Glacier NP, USA to Abruzzo National Park, Italy; (2)Modeling the presence of backcountry weeds in Glacier NP; (3)Impact of non-native lake trout on long-toed salamanders	Masters Thesis
Bachelors: capstone	1	Resources Management	Communicating cultural & natural resource information to a non-science audience	Web pages
Bachelors	3	Neuroscience	Public presentation of research on the neuro-anatomical atlas of the bear brain	Honors project
PhD	4	Hydrology; Geography; Wildlife Biology; Paleoclimatology	(1)Fire Effects on Water Quality; (2)Environmental constraints on Alpine Tree Line; (3)Black-backed Woodpeckers population response to recent burns; (4)Western Mountain Initiative: Climate	PhD Dissertation

			impacts on low elevation forests	

- *Communication of research results (see table below)*

Communicating Research Results

Type of Product or Event	Audience P=public T=Teachers or students M= Mgmt or Staff S=scientists or professionals	Title of Product/Event	Program Objective	Number of Scientists Involved or Contributing	Type of Recipients, Benefactors, or Participants	Number of Recipients, Benefactors, or Participants (% signed as volunteers) Note estimates w/ an *	Length of Event (hours)	Total Contact (# of participants x hours)
Citizen Science and Staff Training	P, M	Common Loon Study	Informational, decision making	2	Public, park staff	58 78%	76	4408
Conference	M	Crown Managers Partnership Annual Forum: Managing exotic plants in a transboundary regions	Informational, decision making, updates on progress	18	Local, state, provincial, tribal, and international civic leaders; land managers and staff	80	16	1280
Conference	P, M	Waterton-Glacier Science & History Conference	Informational	17	Local & International visitors, park staff and managers	135	8	1080
3-Research Seminars	P, M, S	(1)Neuro-anatomy of the bear brain with emphasis on olefaction; (2)Alpine Veg. Trampling Recovery of Glacier Lily;	Informational, decision making	3	Park and other agency managers & staff; Public; volunteers; scientists	130 *5%	1	130

		(3)Paleontology of Glacier NP						
Research Seminar	M, S	Comparison of bear management in Glacier NP and Abruzzo NP, Italy	Informational	3	Park managers & staff, scientists	22 *3%	1	22
Research Seminar	M, S	Modeling the presence of backcountry weeds in Glacier NP	Informational	1	Park managers & staff; scientists	10	1	10
Teacher Workshop	T	Grant Kohrs Ranch Teacher Workshop	Educational Training	2	Local school teachers K-7, Park staff	16 13%	24	384
7-One-page bulletins	M	Resource Bulletins (different aspects of climate change, fire, invasives)	Interpretive training; Informational	4	Park interpretive and resource staff	80	30 min each = 3.5	280
Notebook of reference materials	M	Fire Information Notebook	Incorporation into interpretive talks and walks; Informational	1	Park interpretive staff	80	3	240
5-Presentations at professional meetings	M, S	(1)GWS: CCRLC Overview (2)GWS: Fire in the Crown workshop at Glacier; (3) NCSE: climate change in national parks; (4) Cooper Ornithological Society – science communication to support resource stewardship (5) International Biosphere Reserve Conference - Management	Informational overview, policy	3	National & International government agency staffs; scientists	30 30 120 40 80	.33 .33 .25 .33 .25	9.9 9.9 30 9.9 20

		concerns about climate change impacts in GNP						
Resource talk	T,M,P	3 Events: "Birds & Fire Ecology"	(1)Incorporation into interpretive talks & walks; (2) Educating students; (3) Educating park staff & public	1	1) Park staff interpreters; 2) K-12 Students; 3) Local & international visitors, park staff	55	1	55
Written article	P	Current research in Waterton-Glacier International Peace Park	Educating Public	1	Local & International visitors	1,477,000	.25	369,250
Roundtable discussion	M	CCRLC Roundtable	Updates on progress	5	National & International Park Service Managers & staff	30	3	90
Total						1.48M	138.24	377,309

- *Science Communication: 3 vignettes*

Fire information notebook for interpreters at Glacier National Park

Sallie Hejl and Susan Sindt of the CCRLC created a fire notebook for interpreters and public contact personnel to use in creating evening programs, leading interpretive hikes in burned forests, and answering questions in visitor centers. The fire information notebook includes international, national, and park-specific information on fire behavior, fire history, fire ecology, and fire management and policy. Throughout the notebook, are definitions, descriptions, facts, answers to frequently asked questions, resource management perspectives, and information about current research projects. The information emphasizes the latest research for understanding current and historic roles of fire (including Native American use of fire) in Waterton-Glacier International Peace Park. Also highlighted are references, including websites, books, articles, and reports, that interpreters can access for more information and a section exists with activities for educators to use in K-12 classrooms. The

final section enumerates human interest facts and stories about fire. The project was funded by the Interagency Joint Fire Science Program.

Resource Bulletins for Park Interpreters

In order to provide seasonal and year-round interpreters with up-to-date information on park research, the CCRLC is producing a series of Resource Bulletins on a range of topics. Aimed primarily at the park's interpretive staff, these one-page descriptions of current scientific knowledge about park resources will provide seasonal employees with a reference library to support their interactions with the 2 million visitors who visit the park annually. The effort began in summer 2004 with Kristy Segal, an ecology student from Montana State University, who completed a two-month internship at the park to explore topics and develop a template for the bulletins. Kristy completed 11 drafts of 1-page bulletins that describe, in plain language, current research topics under investigation in the park that are of key importance to park managers. Topics include climate change forcing and impacts to park resources, biodiversity, threatened and endangered species, fire frequency and ecology, invasive plants, and the relationship between fire and invasives. Included in each bulletin are references for further reading and park contacts for more information. Bulletins will be updated annually by CCRLC staff and new ones will be created each year.

Tehabi Intern creates cultural and natural resource storyboards for Glacier's public web site

Garrett Boarts worked as a summer intern at Glacier National Park through the Tehabi Program at Utah State University. Garrett developed the first storyboards for an interactive web page on the cultural and natural resources of Glacier National Park in collaboration with CCRLC Resource Education Specialist, Sallie Hejl, and staff in Glacier's Divisions of Interpretation & Education and Science & Resources Management. To create the stories, Garrett interviewed park specialists; wrote text; selected photos and sound recordings; created videos interviewing park specialists; and designed the storyboards for the web page. The overriding goal of the project is to present accurate information about park resources in a manner accessible and interesting to the general public. Garrett strived to use the photos, videos, and sound recordings to excite the viewer about Glacier National Park and capture some of the experience of being here, while providing resource information. Interwoven into the "cool facts" about Glacier are up-to-date research results and pertinent resource management issues. The project is part of a larger effort to reach virtual visitors to the park as well as inform those who are planning future visits in person. The project was funded by the Rocky Mountain CESU.

- *How research is engaging local communities and schools: 3 Vignettes*

Waterton-Glacier Science and History Conference

Waterton-Glacier International Peace Park held its 2nd Annual Science and History Conference on Thursday, August 18, at the Lake McDonald Lodge Auditorium, from 8:30 a.m. until 4:30 p.m. The conference was free of charge and open to the public; 135 people attended. The conference featured 14 presentations from investigators of ongoing or recently completed research projects in Glacier and Waterton Lakes National Parks. The 20-minute presentations covered a wide variety of topics including bear research, climate change and avalanche prediction, paleoclimate studies, fisheries and floodplain dynamics, wildlife and fire ecology studies, and historical and cultural research projects. Speakers presented their topics in non-technical ways making the conference appropriate for anyone wishing to learn about natural and cultural resource work at the park. The conference was organized by the CCRLC Director and refreshments were provided during morning and afternoon breaks courtesy of the Glacier Natural History Association.

Grant-Kohrs Ranch/Crown of the Continent Research Learning Center teacher workshop

Sallie Hejl, Resource Education Specialist for the CCRLC, collaborated with the staff at Grant-Kohrs Ranch National Historic Site to develop and hold a workshop for elementary school teachers on the natural and cultural resources at Grant-Kohrs Ranch. The three-day workshop provided teachers with an advanced understanding of a variety of natural resource topics and how they relate to Grant-Kohrs Ranch NHS, the state of Montana, and western U.S. ranching heritage. NPS natural resource specialists, a cultural resource specialist, education specialists, two research scientists, and a retired high school biology teacher gave lectures and led field activities describing the establishment of the ranch, the history of ranching in the area, grazing practices, noxious weeds, vegetation communities, history of the Clark Fork watershed, contemporary issues associated with water and riparian communities, and the ecology and management of riparian and grassland birds. A notebook of lesson plans and ideas for other classroom activities were offered to the teachers. Teachers also created their own lesson plans based upon what they learned during this course. Teachers were able to receive graduate credit from the University of Montana. The workshop was funded by Rocky Mountain CESU.

Citizen Scientists seek information on Common Loons in Glacier National Park

Sallie Hejl and Therese Hartman of the CCRLC piloted a citizen science and staff training program to monitor the health of Common Loons in Glacier National Park. The program was highly successful and engaged 46 volunteers in summer 2005 for a total of nearly 2000 volunteer hours. Citizen scientists were trained on international, national, and park-specific concerns about Common Loons, potential threats to population health, breeding biology, methods for how to sample loons without disturbing

them, and species identification for safety concersn. The volunteers then visited 45 priority lakes throughout the summer in the park to help determine the number of adult Loons and their nesting success in the park. In addition, 33 citizen scientists and 16 park staff participated in Glacier Loon Day, an annual event that took place on July 16, 2005 to survey Glacier's lakes. Results from the study determined Glacier had a total 45 adult loons, 19 pairs, and 7 chicks in 5 broods on priority lakes in summer 2005. The program complemented state and national efforts to understand loon populations and contributed to knowledge needed by park wildlife biologists and managers. Partners included Flathead Audubon Society, Montana Loon Society, Montana Common Loon Working Group, and Montana's Department of Fish, Wildlife, and Parks. The project was funded by RM-CESU.

If known:

Statistics for the completed year:

NPS priority research Projects completed __4_____
externally identified research projects completed __2____
backlogged projects started __unknown___
management actions improved by RLC activity ___unknown ____
research projects that resulted in information that can be used across the park boundary __18__
research projects that resulted in information that can be used by other parks __10__
of visitors that have had their experience enhanced by RLC activities _unknown

Impacts to Accomplishments

(Added in 2005 guidance by ADNRSS for all Reports to Congress – describe how NPS or other issues impacted success of FY 2005, e.g. late appropriations, travel cuts, etc)

Travel cuts and non-authorization of foreign travel hindered the ability to interact with international partners. We have three international designations, one of which is an International Peace Park with our Canadian neighbors. Trip requests to attend meetings in Canada are difficult to acquire in a timely manner. Visits to the University of Calgary, which is a research partner, could not be approved, nor were trips to visit cultural sites in Canada that have bearing on current projects. We are also a Biosphere Reserve and a World Heritage Site but were not approved to travel to international meetings to represent our park in this context, regardless of whether the travel would be charged to NPS funds. This is an impediment to research and managerial partnerships that involve comparing issues across protected areas, nations, and continents and is in direct obstruction to shared knowledge, understanding, and peace among nations.

Plans

- Focus for the future next year or beyond: priorities/issues for FY06 in research, education, admin of CCRLC

1. create a wet lab space for researchers to use
2. help park to develop parkwide educational strategy and define RLC educational directives within that strategy
3. help park to develop a research strategy that frames resource information needs in a broader, researchable context

- areas for future improvement
  Improve communication with park staff and partners.

- Tell of any plans to work with other programs funded by the NRC (i.e., Across the Challenge)
  See Collaboration across the challenge section near beginning of document.

Provide Images

Images [as high a resolution as possible – send Judy a CD or post to FTP site]
Captions required for each image

Can delay submittal of the cumulative funding until Spring 2006:
Funding to Date (totals) _____ - _____ (fill in years covered)
Same as table above, but cumulative.