

SUMMARY OF RESEARCH ACTIVITIES WITHIN THE NATIONAL PARK SERVICE AREAS COOPERATING WITH THE U.W.-N.P.S. RESEARCH CENTER, 1983.

Badlands National Monument

- II. Studies Supported With National Park Service Funds.
- A. Prairie dog dispersal and habitat preference in Badlands National Park.
Richard M. Hansen, Colorado State University, Fort Collins and Daniel W. Uresk, U.S. Forest Service, Rapid City, SD.
Additional Source of Support: U.S. Forest Service.
Initiated 1981.
Completion 1984.

Devils Tower National Monument

- III. Studies Supported By University And Allied Funding Sources.
- A. Grasses of Wyoming.
G. Hallsten, Q. Skinner and A. Beetle, University of Wyoming.
Source of Support: University of Wyoming and Agricultural Exp. Station.
Initiated 1982.
Completion 1984.

Fort Laramie National Historic Site

- III. Studies Supported By University And Allied Funding Sources.
- A. Grasses of Wyoming.
G. Hallsten, Q. Skinner and A. Beetle, University of Wyoming.
Source of Support: University of Wyoming and Agricultural Exp. Station.
Initiated 1982.
Completion 1984.

Fossil Butte National Monument

- II. Studies Supported With National Park Service Funds.
 - A. Paleoenvironments and paleoecology of the Eocene Green River Formation.
Paul Buchheim, Loma Linda University, Loma Linda, CA.
Additional Source of Support: University of Wyoming.
Initiated 1981.
Completion 1983.

- III. Studies Supported By University And Allied Funding Sources.
 - A. Grasses of Wyoming.
G. Hallsten, Q. Skinner and A. Beetle, University of Wyoming.
Source of Support: University of Wyoming and Agricultural Exp. Station.
Initiated 1982.
Completion 1984.

Glacier National Park

- I. Studies Conducted By Park Personnel.
 - A. Glacier National Park Landsat based resource information system.
Carl H. Key.
Initiated 1981.
Ongoing.

- II. Studies Supported By National Park Service Funds.
 - A. Grizzly bear population studies.
Cliff Martinka
Initiated 1967.
Ongoing.

 - B. Aquatic ecosystem inventory.
Leo F. Marnell.
Initiated 1979.
Ongoing.

 - C. Cutthroat trout genetics studies.
Leo F. Marnell.
Initiated 1977.
Ongoing.

 - D. Bear repellents and deterrents.
Charles Jonkel and Bart O'Gara, University of Montana, Missoula.

Initiated 1981.
Completion 1983.

III. Studies Supported By University And Allied Funding Sources.

- A. Snow algae.
Ronald Hoham, Colgate University, Hamilton, NY.
Source of Support: ?.
Initiated 1980.
Completion ?.

IV. Studies Supported By Funds From Other Sources.

- A. Wolf ecology.
Robert Ream.
Source of Support: ?.
Initiated 1978.
Ongoing.
- B. Breeding bird survey.
Steve Gniadek.
Source of Support: ?.
Initiated 1980.
Ongoing.
- C. Butterflies of Montana.
Steve Kohler.
Source of Support: ?.
Initiated 1971.
Completion ? (75% complete in 1980).
- D. Flathead River Basin study.
Joe Huston.
Source of Support: ?.
Initiated 1976.
Completion ? (15% complete in 1980).
- E. Geology of Glacier National Park.
Robert Earhart.
Source of Support: ?.
Initiated 1979.
Ongoing.
- F. Benthic invertebrates in natural and regulated waters.
Sue Appert.
Source of Support: ?.
Initiated 1979.
Completion (50% complete in 1980).
- G. High altitude entomology of Glacier National Park.
J. Gordon Edwards.

- Source of Support: ?.
Initiated 1947.
Ongoing.
- H. Glaciologic investigations of Sperry Glacier.
Charles Dalby.
Source of Support: ?.
Initiated 1974.
Ongoing.
- I. Border Station water chemistry.
Jack Stanford, Yellow Bay Biological Station, Kalispell, MT.
Source of Support: ?.
Initiated ?.
Ongoing.

Grand Teton National Park

- I. Studies Conducted By Park Personnel.
- A. Ecological effects and biotic succession following the 1974 Waterfalls Canyon fire.
William J. Barmore, Jr., Research Biologist
Initiated 1974.
Ongoing. Measured in 1975, 1976, 1977 and 1983.
- B. Snake River cutthroat trout investigations.
Pete Hayden, Aquatic Biologist
Initiated 1964.
Ongoing.
- II. Studies Supported With National Park Service Funds.
- A. Bald eagle nesting and banding study.
Robert Eng, Montana State University, Bozeman.
Initiated 1979.
Ongoing.
- III. Studies Supported By Universities And Allied Funding Sources.
- A. Parasites of ungulates in the Jackson Hole area: scarabaeoid beetles acting on lungworm, Dictyocaulus hadweni, larvae in feces.
Robert C. Bergstrom, University of Wyoming, Laramie.
Source of Support: University of Wyoming.
Initiated 1976.
Ongoing.
- B. A survey of alpine lakes in Grand Teton National Park.
Michael Parker, University of Wyoming, Laramie.

Source of Support: University of Wyoming.
Initiated 1982.
Completion 1984.

- C. Composition, abundance and distribution of littoral macrophytes in Jackson Lake Wyoming, Grand Teton National Park.
Michael Parker, University of Wyoming, Laramie.
Source of Support: University of Wyoming.
Initiated 1983.
Completion 1985.
- D. Mushrooms of Grand Teton and Yellowstone National Parks.
Kent H. McKnight, Agricultural Research Service, Beltsville, MD.
Source of Support: University of Wyoming and Agricultural Research Service.
Initiated 1967.
Ongoing.
- E. Bird population in a cottonwood community.
Kenneth L. Diem, University of Wyoming, Laramie.
Source of Support: University of Wyoming.
Initiated 1980.
Ongoing.
- F. Grasses of Wyoming.
G. Hallsten, Q. Skinner and A. Beetle, University of Wyoming.
Source of Support: University of Wyoming and Agricultural Exp. Station.
Initiated 1982.
Completion 1984.

IV. Studies Supported By Funds From Other Sources.

- A. Effects of environmental variables on some physiological responses in Microtus montanus under natural conditions.
Aelita Pinter, University of New Orleans L.A.
Source of Support: Private funds.
Initiated 1969.
Ongoing.
- B. Quantity and quality of elk winter range and minimal wintering requirements of elk.
Bruce Smith, Management Biologist, National Elk Refuge.
Source of Support: U.S. Fish and Wildlife Service.
Initiated 1977-78.
Completion 1983.
- C. Winter ecology and migration of the Gros Ventre Buttes mule deer herd, Jackson Hole, Wyoming
T. Campbell, Biota Research and Consulting, Inc., and T. Clark, Idaho State University, Pocatello.

Source of Support: Boone and Crockett Club, Idaho State University, Spring Creek Ranch, and Biota Research and Consulting, Inc.

Initiated 1979.

Ongoing.

- D. Social ecology of free-ranging coyotes.
M. Bekoff and M. Wells, University of Colorado, Boulder.
Source of Support: National Science Foundation.
Initiated 1980.
Completion 1983.
- E. Badger predatory strategies and social organization in Jackson Hole, Wyoming.
Steve Minta, University of California, Davis.
Source of Support: ?
Initiated 1982.
Completion 1984.
- F. Summer distribution and migration of elk that winter on the National Elk Refuge.
Bruce Smith, Management Biologist, National Elk Refuge.
Source of Support: U.S. Fish and Wildlife Service.
Initiated 1978.
Ongoing.
- G. Social interactions, movements and activity in otters.
Joseph G. Hall, San Francisco State University.
Source of Support: Private funds.
Initiated 1982.
Ongoing.
- H. Chronology of neogene sedimentary rocks in Jackson Hole, Wyoming.
Douglas W. Burbank, University of Southern California, Los Angeles.
Source of Support: National Science Foundation.
Initiated 1983.
Completion 1986.
- I. Life history strategies of the Montane Vole, Microtus montanus.
Frederick J. Jannett, Jr., Science Museum of Minnesota, St. Paul.
Source of Support: Science Museum of Minnesota.
Initiated 1978.
Ongoing.

V. Publications.

- A. Greater Yellowstone Ecosystem Bald Eagle Working Team. 1983. A bald eagle management plan for the Greater Yellowstone Ecosystem. Wyoming Game and Fish Department, Cheyenne,

Wyoming 84 p.

- B. McCoy, J. W. and R. R. Stermitz. 1983. Alkaloids from Castilleja miniata and Penstemon whippleanus, two host species for the plume moth, Amblyptilia (Platyptilia) pica. J. Natural Products 46(6):902-907.
- C. Roells, J. E. and G. T. Auble. 1983. Resource development and management in Jackson Hole, Wyoming. Pages 303-311 in Laurenroth, W. K., G. V. Skogerboe, and M. Flug, eds. Developments in environmental modeling. 5: Analysis of ecological systems: state-of-the-art in ecological modeling. Elsevier Science, New York.
- D. Sauer, J. R. and M. S. Boyce. 1983. Density dependence and survival of elk in northwestern Wyoming. J. Wildl. Manage. 47(1):31-37.
- E. Spence, J. R. and R. J. Shaw. 1983. Observations on alpine vegetation near Schoolroom Glacier, Teton Range, Wyoming. Great Basin Nat. 43(3):483-491.
- F. Taylor, D., K. McDermott, J. Little, J. Wells and M. Blaser. 1983. Campylobacter enteritis from untreated water in the Rocky Mountains. Annals of Internal Medicine 99:38-40.
- G. Whitfield, M. B. 1983. Bighorn sheep history, distributions, and habitat relationships in the Teton Mountain Range, Wyoming. M.S. Thesis, Idaho State University, Pocatello, 244 p.

Wind Cave National Park

- I. Studies Conducted By Park Personnel.
 - A. Natural mortality of elk and bison in Wind Cave National Park. Park Research Biologist and other members of Park staff. Initiated 1977. Ongoing.
 - B. The effect of ungulates on abundance and distribution of trees and shrubs. Park Research Biologist and other members of Park staff. Initiated 1977. Ongoing.
 - C. The effect of grazing by bison and elk on prairie plant communities. Park Research Biologist.

- Initiated 1981.
Completion 1983-84.
- D. Predator activities on black-tailed prairie dog towns.
Park Research Biologist.
Initiated 1981.
Ongoing.
- II. Studies Supported With National Park Service Funds.
- A. The effect of fire on bird and small mammal communities in the grasslands of Wind Cave National Park.
Norman Sloan, Michigan Tech. University, Houghton.
Initiated 1980.
Completion 1983.
- III. Studies Supported By Universities And Allied Funding Sources.
- A. Social behavior of prairie dogs.
John Hoogland, Princeton University, Princeton, NJ.
Source of Support: National Science Foundation.
Initiated 1979.
Completion 1982-83.
- B. The role of natural herbivores in selection of grazing adapted plants.
Beth Painter, Colorado State University, Fort Collins.
Source of Support: National Science Foundation.
Initiated 1981.
Completion 1982-83.
- C. Distribution and ecology of C_3 and C_4 grasses in Wind Cave National Park.
Steve Archer, Colorado State University, Fort Collins.
Source of Support: National Science Foundation.
Initiated 1981.
Completion 1982-83.

Yellowstone National Park

- I. Studies Conducted By Park Personnel.
- A. Plant ecology studies.
Don G. Despain.
Initiated 1968.
Ongoing.
- B. Bison ecology studies.
Mary Meagher.

- Initiated 1969.
Ongoing.
- C. Animal ecology studies.
Mary Meagher.
Initiated 1980.
Ongoing.
- D. Study of thermal features in Yellowstone National Park.
Roderick A. Hutchinson.
Initiated 1974.
Ongoing.
- E. Gypsy Moth detection.
J. Sweaney, National Park Service
Initiated 1983.
Completion ?.
- II. Studies Supported With National Park Service Funds.
- A. Substrate characterization of retrogressive oligotrophy in
Yellowstone Lake.
J. Kaster, J. V. Klump and D. N. Edgington, University of
Wisconsin.
Source of Support: National Park Service and Center for Great
Lakes studies.
Initiated 1983.
Completion 1984.
- B. Identification of sensitive air pollution receptors in YNP.
S. Eversman, Montana State University.
Source of Support: NPS contract.
Initiated 1982.
Completion 1983.
- C. An evaluation of the natural radioactivity in selected plants, soil
and water samples in central YNP.
R. Lewis, University of Wyoming.
Source of Support: Wyoming Game and Fish and National Park
Service.
Initiated 1979.
Completion 1985.
- D. Characterization of soils in YNP.
L. Bartelli and C. Trettin, Michigan Tech. University.
Source of Support: National Park Service and Michigan Tech.
University.
Initiated 1980.
Completion 1983.

- III. Studies Supported By Universities And Allied Funding Sources.
- A. White pelican reproduction in the Molly Islands breeding colony, Yellowstone National Park.
Kenneth L. Diem, University of Wyoming, Laramie.
Source of Support: University of Wyoming.
Initiated 1978.
Ongoing.
 - B. Ecological studies on parasites of the Gibbon elk herd.
David E. Worley, Montana State University, Bozeman and R. C. Bergstrom, University of Wyoming.
Source of Support: Montana State University and University of Wyoming.
Initiated 1978.
Ongoing.
 - C. Aversive repellent tests, bears.
C. Jonkel, University of Montana.
Source of Support: University of Montana.
Initiated ?.
Completion ?.
 - D. Biology of thermal spring systems in western North America.
Samuel D. Rushforth and Jack D. Brotherson, Brigham Young University, Provo, UT.
Source of Support: Brigham Young University.
Initiated 1981.
Completion 1986.
 - E. Study of Yellowstone and Lost Creek tuffs.
Tammy Wolcott, University of Calgary, Alberta, Canada.
Source of Support: University of Calgary.
Initiated 1981.
Ongoing.
 - F. The Miridae (Insecta: Hemiptera) associated with coniferous trees (with special emphasis on Pinus contorta).
John D. Lattin, Oregon State University, Corvallis.
Source of Support: Oregon State University and National Science Foundation.
Initiated 1978.
Completion 1983.
 - G. Research of fluoride effects in wildlife and vegetation.
James L. Shupe, H. B. Peterson and A. E. Olson, Utah State University, Logan.
Source of Support: Utah Agriculture Experiment Station, U.S. Department of Energy and private industry.
Initiated 1956.
Completion 1986.

- H. Relationship between reserve design and mammal presence and extirpation.
W. Newmark, University of Michigan.
Source of Support: University of Michigan.
Initiated 1983.
Completion ?.
- I. Intraspecific competition in American Bison cows in late winter.
A. Rutbert, University of Washington.
Source of Support: University of Washington.
Initiated 1983.
Completion ?.
- J. Yellowstone Lake: An analysis of patterns in productivity.
W. H. Romme and D. H. Knight, Fort Lewis College and University of Wyoming.
Source of Support: Fort Lewis College and University of Wyoming.
Initiated 1982.
Completion 1983.
- K. Distribution of Shore Bugs and Brine Flies at Sylvan Springs, YNP.
V. Resh and M. Barnby, University of California.
Source of Support: University of California.
Initiated 1983.
Completion ?.
- L. Aquatic invertebrates of YNP.
G. Roemhild, Montana State University.
Source of Support: Montana State University.
Initiated 1983.
Completion ?.
- M. Mountain Pine Beetle infestation: Cycling and succession in lodgepole pine forest.
W. H. Romme, Fort Lewis College, J. B. Yavitt, D. H. Knight, University of Wyoming and J. Fedders, Eastern Kentucky University.
Source of Support: University of Wyoming and Eastern Kentucky University.
Initiated 1982.
Completion 1984.
- N. Herbarium collection.
R. Athey, Memphis State/Vnderbilt University.
Source of Support: ?.
Initiated 1983.
Completion ?.
- O. Biosystematic study of rocky mountain populations of Sisyrinchium (Iridaceae).
A. Cholewa, University of Idaho.

- Source of Support: University of Idaho.
Initiated 1983.
Completion ?.
- P. Grasses of Wyoming.
G. Hallsten, Q. Skinner and A. Beetle, University of Wyoming
Source of Support: University of Wyoming and Agricultural Exp. Station.
Initiated 1982.
Completion 1984.
- Q. Aspects of the natural history of the Sagebrush Lizard.
G. Carpenter and D. Duvall, University of Wyoming.
Source of Support: University of Wyoming.
Initiated 1983.
Completion ?.
- R. Population genetic structure in the Iguanid Lizard Sceloporus graciosus and its implications for the stasipatric speciation hypothesis.
J. Sites and P. thompson, Brigham Young University.
Source of Support: Brigham Young University, National Geographic and National Science Foundation.
Initiated 1983.
Completion ?.
- S. Analysis of natural microbial populations by Ribosomal RNA cloning and sequencing.
N. Pace, Nat'l Jewish Hosp. and Research Center, and University of Colorado School of Medicine.
Source of Support: Nat'l Jewish Hospital, University of Colorado USPHS.
Initiated 1983.
Completion ?.
- T. Biochemical and ecological studies of extremely thermophilic bacteria.
R. Ramaley, University of Nebraska.
Source of Support: University of Nebraska.
Initiated 1981.
Completion ?.
- U. Petrology of pleistocene and recent travertine, Yellowstone National Park, WY, and Gardiner, MT.
V. Pursell, University of Texas.
Source of Support: University of Texas Geological Society of America.
Initiated ?.
Completion ?.

- V. Small mammal ecology following natural fire (Fan Creek Fire).
R. E. Moore and J. Alley, Montana State University.
Source of Support: Montana State University.
Initiated 1983.
Completion ?.
- W. Trace element analysis of obsidian from YNP: Southern Plains Archeological Project.
T. Baugh and F. Nelson, University of Oklahoma and Brigham Young University.
Source of Support: University of Oklahoma.
Initiated 1983.
Completion ?.
- X. Ecology and physiology of photosynthetic microorganisms.
R. Castenholz, University of Oregon.
Source of Support: National Science Foundation and University of Oregon.
Initiated 1983.
Completion ?.
- Y. Cellobiase production in thermophilic bacteria and fungi.
J. Von Ashlefeldt, J. Mattoon and K. Andrews, University of Colorado.
Source of Support: University of Colorado.
Initiated 1983.
Completion ?.
- Z. Ecology of hot springs microbial mats.
D. Ward, N. Revsbech, T. Tayne, K. Anderson and M. Bateson, Montana State University.
Source of Support: National Science Foundation and Montana State University.
Initiated 1983.
Completion ?.
- A¹. Ecology and characterization of bacterial nitrogen fixation in thermal springs.
C. Wickstrom, Kent State University.
Source of Support: National Science Foundation and Kent State University.
Initiated 1983.
Completion ?.
- B¹. Community position and pattern along a continuous thermal gradient; physical vs. biological constraints.
R. Riegert, University of Georgia.
Source of Support: National Science Foundation and University of Georgia.
Initiated 1983.
Completion ?.

- C¹. Analysis of anoxic microbial activities in thermal springs.
J. G. Zeikus, F. S. Lupton and S. Goodwin, University of Wisconsin.
Source of Support: Department of Energy and University of Wisconsin.
Initiated 1983.
Completion ?.
- D¹. Elemental and isotopic compositions of noble gases from Yellowstone thermal features.
M. Kennedy, J. Reynolds, S. Smith and M. Lynch, University of California.
Source of Support: Department of Energy and University of California.
Initiated 1983.
Completion ?.
- E¹. Early precambrian evolution of the Southern Beartooth Mountains.
C. Montgomery, Northern Illinois University.
Source of Support: National Science Foundation and Northern Illinois University.
Initiated 1983.
Completion ?.
- F¹. Petrology and geochemistry of mixed lava in YNP.
R. Guy and A. K. Sinha, Virginia Poly Instit. and State University.
Source of Support: Chevron, National Science Foundation and Virginia Poly Instit. and State University.
Initiated: 1983.
Completion ?.
- IV. Studies Supported By Funds From Other Sources.
- A. Pleistocene events in the Yellowstone area.
John M. Good, National Park Service.
Source of Support: Private funds.
Initiated 1981.
Completion 1983.
- B. Petrology of the Yellowstone Plateau volcanic field.
R. L. Christiansen, U.S. Geological Survey, Menlo Park, CA.
Source of Support: United States Geological Survey.
Initiated 1974.
Ongoing.
- C. Remote monitoring of geothermal features.
Irving Friedman and Daniel Norton, U.S. Geological Survey, Denver, CO.
Source of Support: United States Geological Survey.
Initiated 1980.
Completion 1991.

- D. Multiphase fluid flow in geothermal systems.
Susan Werner Kieffer, U.S. Geological Survey, Flagstaff, AZ.
Source of Support: U.S. Geological Survey.
Initiated 1976.
Completion ?.
- E. A theory for volcanic action in certain Absaroka volcanoes.
G. A. Miller.
Source of Support: Private funds.
Initiated 1979.
Completion 1983.
- F. Seismograph sensing.
Andrew M. Pitt. U.S. Geological Survey, Menlo Park, CA.
Source of Support: U.S. Geological Survey.
Initiated 1978.
Ongoing.
- G. Biology of trout in thermally enriched environment - Firehole River.
Samuel Luoma, U.S. Geological Service.
Source of Support: U.S. Geological Service.
Initiated 1975.
Ongoing.
- H. Isolation and characterization of fermentative anaerobes and aerobes from thermal areas.
Thomas Ng, Michael E. Himmel and K. Andrews, Solar Energy Research Institute.
Source of Support: U.S. Department of Energy.
Initiated 1980.
Ongoing.
- I. Status of critical plant species.
Mark R. Stromberg and Robert Lichvar, The Nature Conservancy, Cheyenne, WY.
Source of Support: Wyoming Natural Heritage Program.
Initiated 1979.
Ongoing.
- J. Ecology of Gallatin elk and range relationships.
Graham Taylor, Montana Department of Fish, Wildlife and Parks.
Source of Support: Montana Department of Fish, Wildlife and Parks.
Initiated 1959.
Ongoing.
- K. Basic stream and lake inventory-all waters of Yellowstone National Park.
U.S. Fish and Wildlife Service, Yellowstone National Park.
Source of Support: U.S. Fish and Wildlife Service.

- Initiated 1965.
Ongoing.
- L. Classifying butterflies of Yellowstone.
Jeffrey R. Saffle, University of Utah, Salt Lake City.
Source of Support: ?.
Initiated ?.
Completion ?.
- M. Relative digestibility of Artemesia tridentata subspecies and Artemesia nova by elk, deer and domestic sheep and preference by elk and deer on Gardiner hunting district.
Karl Striby, Montana State University, Bozeman.
Source of Support: ?.
Initiated ?.
Completion ?.
- N. Ecology of thermal dragonfly populations.
R. G. Wiegert and A. G. Chalmers, University of Georgia, Athens.
Source of Support: ?.
Initiated 1979.
Completion 1983.
- O. Population, status, and ecology of grizzly bears in Yellowstone National Park and vicinity.
R. R. Knight, Interagency Grizzly Bear Study, Montana State University, Bozeman.
Source of Support: Multi-agency.
Initiated 1973.
Ongoing.
- P. Mushrooms of Grand Teton and Yellowstone National Parks.
Kent McKnight, Mycology Laboratory, U.S. Department of Agriculture, Beltsville, MD., Kimball Harper, Brigham Young University and Meinhardt Moser, University of Innsbruck.
Source of Support: U.S. Department of Agriculture and University of Wyoming, Brigham Young University and University of Innsbruck.
Initiated 1980.
Ongoing.
- Q. Bryophytes of selected regions of Yellowstone National Park.
D. H. Norris and David Nakamura, Humboldt State University, Arcata, CA.
Source of Support: ?.
Initiated 1980.
Completion ?.
- R. Effects of hiker and horse trampling on tree growth in Northern Rockies.
DeAna Lynn Nasseth, Baylor University, Waco, TX.

Source of Support: ?.
Initiated 1980.
Completion ?.

- S. Study of clays representing ore forming environments.
Mike Palin, New Mexico Tech. University, Socorro.
Source of Support: U.S. Office of Surface Mining.
Initiated 1981.
Ongoing.
- T. Evaluation of lithospheric structure, seismicity, crustal deformation and possible magma sources at Yellowstone.
Robert B. Smith, University of Utah, Salt Lake City.
Source of Support: U.S. Geological Survey.
Initiated 1960.
Ongoing.
- U. Stream gauging to monitor heat and mass flux of hot springs system.
J. M. Thompson and R. O. Fournier, U.S. Geological Survey, Menlo Park, CA.
Source of Support: U.S. Geological Survey.
Initiated 1960.
Ongoing.
- V. Study of water and steam from hot springs and vents.
Alfred Truesdell, and Richard Makdisi, U.S. Geological Survey, Menlo Park, CA.
Source of Support: U.S. Geological Survey.
Initiated 1981.
Ongoing.
- W. Ecology and population abundance of cutthroat trout in the Yellowstone River, Yellowstone National Park.
Jack Griffith and Daniel J. Shill, Idaho State University, Pocatello.
Source of Support: U.S. Fish and Wildlife Service.
Initiated 1981.
Completion 1983.
- X. Bacterial content of soil from abandoned dumpsites.
Ray Poulin, University of Maine, Orono.
Source of Support: Personal funds.
Initiated 1981.
Completion 1983.
- Y. Study of native undisturbed vegetation in Cooke City area.
Ray W. Brown.
Source of Support: Intermountain Forest and Range Experiment Station, U.S. Forest Service.
Initiated ?.
Completion ?.

- Z. Hybridization and genetic deformity of high altitude vascular flora.
William J. Humphrey, Plant Taxonomy Division, Project Blue-snow.
Source of Support: ?.
Initiated ?.
Completion ?.
- A¹ Stable isotopic composition of bacteria and algae that inhabit thermal areas.
Marilyn F. Estep, Carnegie Institution, Washington, D.C.
Source of Support: Carnegie Institution.
Initiated 1981.
Completion 1983.
- B¹ Obtain waters low in natural tritium for purposes of ground-water dating of oil shale related waters from Utah.
McDonald Wrenn, University of Utah, Salt Lake City.
Source of Support: ?.
Initiated 1981.
Completion ?.
- C¹ Thermal measurements and chemical analysis of water within Black Sand, Norris, and Mud Volcano Geyser Basins.
Donald Wumek and Thomas Gill, Oakland Community College, Auburn Heights, MI.
Source of Support: ?.
Initiated 1979.
Completion 1983.
- D¹ Depositional environments of Yellowstone fossil forests at Specimen Ridge.
Richard F. Uretich, University of Massachusetts, Amherst.
Source of Support: ?.
Initiated 1981.
Ongoing.
- E¹. Upper Yellowstone bighorn sheep study.
L. Irby and K. Keating, Montana State University.
Source of Support: Montana Department of FW&P and North American Foundation for wild sheep.
Initiated 1983.
Completion ?.
- F¹. Energy expenditure of elk and deer in snow.
C. Robbins, Washington State University.
Source of Support: U.S. Forest Service.
Initiated 1983.
Completion ?.
- G¹. Interagency grizzly bear study.
L. Roop, Wyoming Game and Fish.
Source of Support: U.S. Fish and Wildlife Service.

- Initiated ?.
Completion ?.
- H¹. Fish population survey—Robinson and Little Robinson Creeks.
R. Spateholts, Idaho Fish and Game.
Source of Support: Idaho Fish and Game.
Initiated 1983.
Completion ?.
- I¹. Breeding bird survey.
D. Bystrak, U.S. Fish and Wildlife Service.
Source of Support: U.S. Fish and Wildlife Service.
Initiated ?.
Completion ?.
- J¹. Status of critical bird species.
S. Findholdt, Wyoming Natural Heritage Program.
Source of Support: Wyoming Natural Heritage Program.
Initiated ?.
Completion ?.
- K¹. Postfire timber damage in the Northern Rocky Mountain/Inter-
mountain Region.
D. Peterson, USDA - Forest Service.
Source of Support: U.S. Forest Service.
Initiated 1983.
Completion ?.
- L¹. Impact of forest fire on the nutrient influx into Heart Lake, YNP.
R. Stottlemeyer, Michigan Tech. University.
Source of Support: Man and the Biosphere.
Initiated 1983.
Completion ?.
- M¹. Biological control of mosquitos with mermithid nematode parasites.
L. Nielsen, S. Dickson and L. Hanson, University of Utah.
Source of Support: Nat'l Institute of Health.
Initiated 1983.
Completion ?.
- N¹. Hybridization and genetic deformity of high altitude vascular flora.
W. Humphrey, ?.
Source of Support: ?.
Initiated 1983.
Completion ?.
- O¹. Preliminary survey of plants in Bechler Area and Pitchstone
Plateau.
D. Lindsay, ?.
Source of Support: ?.

- Initiated 1983.
Completion ?.
- P¹. Class and environmental relationships of wetland vegetation in central YNP.
D. Mattson and F. Johnson, University of Idaho.
Source of Support: ?.
Initiated 1983.
Completion ?.
- Q¹. Microorganisms from alkaline thermal springs and pools as potential tools in biomass conversion.
K. Andrews and K. Grohman, Colorado College.
Source of Support: SERL.
Initiated 1983.
Completion ?.
- R¹. N₂ fixation in rhodospirillaceae.
M. Madigan, Southern Illinois University.
Source of Support: USDA.
Initiated 1983.
Completion ?.
- S¹. Isolation of extreme thermophilic bacteria.
S. Mainzer, Corning Glass Works.
Source of Support: Corning Glass Works.
Initiated 1983.
Completion ?.
- T¹. Isolation of organisms responsible for leaching metal ions from minerals.
J. Wolfram and B. Breckenridge, EG&G, Idaho.
Source of Support: Dept. of Energy Genentech, Inc.
Initiated 1983.
Completion ?.
- U¹. Rocky Mountain acidification study.
J. H. Gibson, Colorado State Univ., C. Schofield, Cornell Univ., J. Galloway, Univ. of Virginia, Wm. McFee, Purdue Univ., and R. Johnson, Colorado State Univ.
Source of Support: U.S. Fish and Wildlife Service.
Initiated 1983.
Completion ?.
- V¹. Hydrogen release from active faults.
C. Rocken and R. Wah, University of Colorado.
Source of Support: ?.
Initiated 1983.
Completion ?.

- W¹. Elec geophysical studies, Upper Boundary Creek area of YNP.
D. B. Hoover, U.S. Geological Survey.
Source of Support: U.S. Geological Survey.
Initiated 1983.
Completion ?.
- X¹. Calcite Springs hydrothermal system.
D. Foley, Univ. of Utah Research Institute.
Source of Support: ?.
Initiated 1983.
Completion ?.
- Y¹. Active and fossil geothermal systems.
D. White, U.S. Geological Survey.
Source of Support: U.S. Geological Survey.
Initiated 1983.
Completion ?.
- Z¹. Mafic inclusions in 2.7 billion year granite rock, Northern
Yellowstone.
C. Casella, Northern Illinois University.
Source of Support: ?.
Initiated 1983.
Completion ?.
- A¹¹. Dendrochronology in the Yellowstone Fossil.
A. Chadwick and M. Arct, Loma Linda University.
Source of Support: ?.
Initiated 1983.
Completion ?.
- B¹¹. Volcanology and petrology of Lake Cenozoic magmatic systems.
R. Christiansen and W. Hildreth, U.S. Geological Survey.
Source of Support: U.S. Geological Survey.
Initiated 1983.
Completion ?.
- C¹¹. Comparative study of cenozoic volcanogenic rocks in YNP and
Japan and for development of exploration model of geothermal
resources in Japan.
T. Ohguchi, Research Institute of Underground Research, Akita
Univ.
Source of Support: ?.
Initiated 1983.
Completion ?.
- D¹¹. Evolution of magma chemistry in the Absaroka Volcanics.
J. Stout, University of Minnesota.
Source of Support: McKenna Foundation.
Initiated 1983.
Completion ?.

- E¹¹. Depositional setting, diagenesis, and petroleum potential of the Permian Shedhorn Sandstone, S.W. Montana and N.W. YNP.
J. Thornburg, University of Colorado.
Source of Support: ARCO Exploration Co.
Initiated 1983.
Completion ?.
- F¹¹. Physical processes in large silicic magma systems.
D. Dzurisin, U.S. Geological Survey.
Source of Support: U.S. Geological Survey.
Initiated 1983.
Completion ?.
- G¹¹. A study of Yellowstone caldera using tiltmeters.
J. Levine and C. Meertens, University of Colorado.
Source of Support: Air Force Geophysics.
Initiated 1983.
Completion ?.
- H¹¹. Multi-year visitor services study: Assessment of current interpretation; mapping of visitor use of same: Evaluation of effectiveness.
G. Machlis, University of Idaho.
Source of Support: USS Arizona Natural History.
Initiated 1983.
Completion ?.