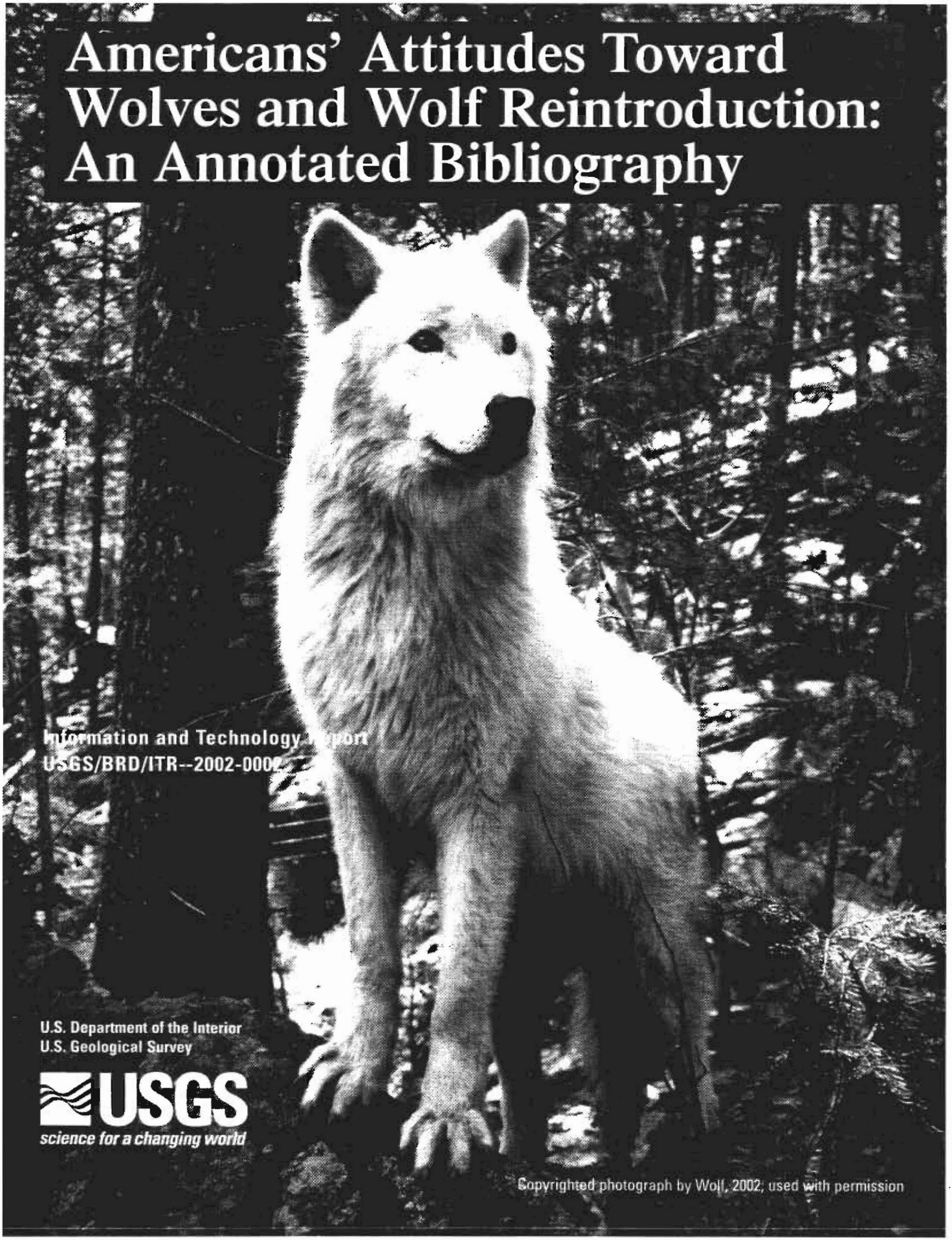
Americans' Attitudes Toward Wolves and Wolf Reintroduction: An Annotated Bibliography



Information and Technology Report
USGS/BRD/ITR--2002-0002

U.S. Department of the Interior
U.S. Geological Survey

USGS
science for a changing world

Copyrighted photograph by Wolf, 2002; used with permission

Shaman is a resident at the nonprofit Wolf sanctuary. For more information go to www.wolfsanctuary.net

To purchase this report, contact the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (call toll free 1-800-553-6847), or the Defense Technical Information Center, 8725 Kingman Rd., Suite 0944, Fort Belvoir, VA 22060-6218.

2002/0009 FORT
#949

Americans' Attitudes Toward Wolves and Wolf Reintroduction: An Annotated Bibliography

Information Technology Report
USGS/BRD/ITR--2002-0002
April 2002

By
Christine Browne-Nuñez
Jonathan G. Taylor

U.S. Department of the Interior
U.S. Geological Survey

Suggested citation:

Browne-Nuñez , C., and Taylor, J.G., 2002, Americans' attitudes toward wolves and wolf reintroduction: An annotated bibliography, Information Technology Report USGS/BRD/ITR--2002-0002. U.S. Government Printing Office, Denver, Colo, 15 p.

Contents

Page

Introduction 1

Annotated References (By Date)

1. Johnson, R.T., 1974, On the spoor of the big bad wolf: The Journal of Environmental Education, vol. 6, p. 7–39 3
2. Minn, B.P., 1977, Attitudes toward wolf reintroductions in Rocky Mountain National Park: Colorado State University, Fort Collins, Master's thesis 3
3. Llewellyn, L.G., 1978, Who speaks for the timber wolf?: Transactions of the Forty-third North American Wildlife and Natural Resources Conference, vol. 43, pp. 442–452 3
4. Hook, R.A., and Robinson, W.L., 1982, Attitudes of Michigan citizens toward predators, *in* Harrington, G.H., and Paquet, P.C., eds., Wolves in the world: Park Ridge, N.J.: Noyes, p. 382–394 3
5. Kellert, S.R., 1985, Public perceptions of predators, particularly the wolf and coyote: Biological Conservation, vol. 31, p. 167–189 4
6. McNaught, D.A., 1985, Park visitors' attitudes towards wolf recovery in Yellowstone National Park: University of Montana, Missoula, Master's thesis 4
7. Kellert, S.R., 1986, The public and the timber wolf in Minnesota, *in* McCabe, R.E., ed.: Transactions of North American Wildlife and Natural Resource Conference, vol. 51, p. 193–200 4
8. Bath, A.J., 1987a, Statewide survey of the Wyoming general public attitude towards wolf reintroduction in Yellowstone National Park: National Park Service, Mammoth, Wyo 4
9. Bath, A.J., 1987b, Countywide survey of the general public in Wyoming in counties around the park towards wolf reintroduction in Yellowstone National Park: Mammoth, Wyo, National Park Service 4
10. Bath, A.J., 1987c, Attitudes of various interest groups in Wyoming toward wolf reintroduction in Yellowstone National Park: University of Wyoming, Laramie, Master's thesis 5
11. Lenihan, M.L., 1987, Montanans ambivalent on wolves, The Montana Poll: Bureau of Business and Economic Research, School of Business Administration: University of Montana, Missoula, 6 p 5
12. McNaught, D.A., 1987, Wolves in Yellowstone?: Park visitors respond: Wildlife Society Bulletin, v. 15, p. 518–521 5
13. Biggs, J.R., 1988, Reintroduction of the Mexican wolf into New Mexico, an attitude survey: New Mexico State University, Las Cruces, Master's thesis 5
14. Bath, A.J., 1989, The public and wolf reintroduction in Yellowstone National Park: Society and Natural Resources, v. 2, p. 297–306. 6
15. Bath, A.J., and Buchanan, T., 1989, Attitudes of interest groups in Wyoming toward wolf restoration in Yellowstone National Park: Wildlife Society Bulletin, v. 17, p. 519–525 6
16. Fritts, S.H., and Paul, W.J., 1989, Interactions of wolves and dogs in Minnesota: Wildlife Society Bulletin, v. 17, p. 121–123 6
17. Tucker, P., and Pletscher, D.H., 1989, Attitudes of hunters and residents toward wolves in northwestern Montana: Wildlife Society Bulletin, v. 17, p. 509–514 6
18. Bath, A.J., and Phillips, C., 1990, Statewide surveys of Montana and Idaho resident attitudes toward wolf reintroduction in Yellowstone National Park, report submitted to Friends for Animals, National Wildlife Federation: U.S. Fish and Wildlife Service, National Park Service, 38 p 6
19. Johnson, T.B., 1990, Preliminary results of a public opinion survey of Arizona residents and interest groups about the Mexican wolf: Arizona Game and Fish Department report 7
20. Kellert, S.R., 1990, Public attitudes and beliefs about the wolf and its restoration in Michigan 7
21. Bath, A.J., 1991a, Public attitudes in Wyoming, Montana, and Idaho toward wolf reintroduction in Yellowstone National Park: Transactions of the Fifty-sixth North American Wildlife and Natural Resources Conference, p. 91–94 7
22. Bath, A.J., 1991b, Public attitudes about wolf restoration in Yellowstone National Park, *in* Keiter, R.B., and Boyce, M.S., eds., The greater Yellowstone ecosystem: New Haven, Conn, Yale University Press, p. 367–376 ... 7

Contents (continued)

Page

23. Kellert, S.R., 1991, Public views of wolf restoration in Michigan: Transactions of the North American Wildlife and Natural Resources Conference, v. 56, p. 152–161 8
24. Thompson, T., and Gasson, W., 1991, Attitudes of Wyoming residents on wolf reintroduction and related issues: Wyoming Game and Fish Department, Cheyenne, 43 p 8
25. Bath, A.J., 1992, Identification and documentation of public attitudes toward wolf reintroduction in Yellowstone National Park, *in* Varley, J.D., and Brewster, W.G., eds., Wolves for Yellowstone?: A report to the United States Congress, Research and analysis: National Park Service, Yellowstone National Park, Mammoth, Wyo, v. iv, p. 2.3–2.30 8
26. Eisenstein, W., 1992, Wolf reintroduction into Yellowstone National Park, an attitudinal survey analysis: Montana State University, Bozeman, Master's thesis 8
27. Freemuth, J., 1992, Public opinion on wolves in Idaho, results from the 1992 Idaho policy survey: Boise State University, Idaho, 3 p 9
28. Thompson, J.G., 1993, Addressing the human dimensions of wolf reintroduction, an example using estimates of livestock depredation and costs of compensation: Society and Natural Resources, v. 6, p. 165–179 9
29. U.S. Fish and Wildlife Service, 1993, Summary of public comments on the draft environmental impact statement for the reintroduction of gray wolves to Yellowstone National Park and central Idaho: U.S. Fish and Wildlife Service, Helena, Mont, 21 p 9
30. Manfredo, M.J., Bright, A.D., Pate, J., and Tishbein, G., 1994, Colorado residents' attitudes and perceptions toward reintroduction of the gray wolf (*Canis lupus*) into Colorado, Project Report No. 21: Project report for the U.S. Fish and Wildlife Service, Colorado State University, Human Dimensions in Natural Resources Unit, Ft. Collins 9
31. Miller, S.M., and McCollum, D.W., 1994, Alaska voters, Alaska hunters, and Alaska nonresident hunters, their characteristics and attitudes towards wildlife: Alaska Department of Fish and Game 9
32 Anderson, D.B., 1995, The Alaska Department of Fish and Game public opinion survey on predator control in game management, Unit 19D East: A report to the Alaska Board of Game 9
33. LaVine, K.P., 1995, The attitude of Utah residents toward gray wolves: Utah State University, Logan, unpublished Master's thesis 9
34. Mech, L.D., 1995, The challenge and opportunity of recovering wolf populations: Conservation Biology, v. 9, p. 270–278 10
35. Quintal, P.K.M., 1995, Public attitudes and beliefs about the red wolf and its recovery in North Carolina: North Carolina State University, Raleigh, Master's thesis 10
36. Responsive Management, 1995, New Mexico residents' opinions toward Mexican wolf reintroduction: Responsive Management, Harrisonburg, Va 10
37. Bright, A.D., and Manfredo, M.J., 1996, A conceptual model of attitudes toward natural resource issues, a case study of wolf reintroduction: Human Dimensions of Wildlife, v. 1, p. 1–21 10
38. Defenders of Wildlife, 1996, Fact sheet: America votes "Yes!" for wolves, *in* Ferris, B., ed.: Defenders of Wildlife, Washington, D.C. 11
39. Duffield, J.W., and Neher, C.J., 1996, Economics of wolf recovery in Yellowstone National Park, *in* Wadsworth, K.G., and McCabe, R.E., eds.: Transactions of the Sixty-first North American Wildlife and Natural Resources Conference, v. 61, p. 285–292 11
40. Mangun, W.R., Lucas, J.N., Whitehead, J.C., and Mangun, J.C., 1996, Valuing red wolf recovery efforts at Alligator River NWR: Measuring citizen support, *in* Fascione, N., and Cecil, M., eds., Wolves of America, Proceedings, Washington, D.C., Defenders of Wildlife, p. 165–171 11
41. Pate, J., Manfredo, M.J., Bright, A.D., and Tishbein, G., 1996, Coloradoans' attitudes toward reintroducing the gray wolf into Colorado: Wildlife Society Bulletin, v. 24, p. 421–428 11
42. Responsive Management, 1996, Public opinion on and attitudes toward the reintroduction of the eastern timber wolf to Adirondack Park, report for Defenders of Wildlife: Responsive Management, Harrisonburg, Va 11

Contents (continued)

Page

43. Rosen, W., 1996, Recovery of the red wolf in northeastern North Carolina and the Great Smoky Mountains National Park, an analysis of the social and economic impacts, *in* Fascione, N., and Cecil, M., eds, Wolves of America, Proceedings, Washington, D.C., Defenders of Wildlife, p. 172–177 12
44. Cromley, C., 1997, Preliminary assessment of attitudes and knowledge of Jackson Hole residents toward grizzly bears and wolves in Teton County, report submitted to Grand Teton National Park, National Elk Refuge: Northern Rockies Conservation Cooperative, Yale University 12
45. Defenders of Wildlife, 1997, Fact sheet, polls show support for wolf reintroduction in Olympic National Park, Seattle, conference features visiting wolves: contact Ken Goldman, Defenders of Wildlife, Washington, D.C. 12
46. Responsive Management, 1997, Public opinion of wolves and wolf management in the Greater Yellowstone area, report prepared for the Wyoming Game and Fish Department: Responsive Management, Harrisonburg, Va 12
47. Schoenecker, K.A., and Shaw, W.W., 1997, Attitudes toward a proposed reintroduction of Mexican gray wolves in Arizona: Human Dimensions of Wildlife, v. 2, p. 42–55 13
48. Wilson, M.A., 1997, The wolf in Yellowstone, science, symbol, or politics?, desconstructing the conflict between environmentalism and wise use: Society and Natural Resources, v. 10, p. 453–468 13
49. Kellert, S.R., 1999, The public and the wolf in Minnesota, a report of the International Wolf Center 13
50. Enck, J.W., and Brown, T.L., 2000, Preliminary assessment of social feasibility for reintroducing gray wolves to the Adirondack Park in northern New York: Human Dimensions Research Unit Publication 00-3, Department of Natural Resources, Cornell University, Ithaca, NY 13

Acknowledgments 14

Authors (Citation Numbers)

Anderson, D.B. (32)
Bath, A.J. (8, 9, 10, 14, 15, 18, 21, 22, 25)
Biggs, J.R. (13)
Buchanan, T. (15)
Bright, A.D. (30, 37, 41)
Brown, T.L. (50)
Cromley, C. (44)
Defenders of Wildlife (38, 45)
Duffield, J.W. (39)
Eisenstein, W. (26)
Enck, J.W. (50)
Freemuth, J. (27)
Fritts, S.H. (16)
Gasson, W. (24)
Hook. R.A. (4)
Johnson, R.T. (1)
Johnson, T.B. (19)
Kellert, S.R. (5, 7, 20, 23, 49)
LaVine, K.P. (33)
Lenihan, M.L. (11)
Llewellyn, L.G. (3)
Lucas, J. N. (40)
McCollum, D.W. (31)
McNaught, D.A. (6, 12)
Manfredo, M.J. (30, 37, 41)
Mangun, J.C. (40)
Mangun, W.R. (40)
Mech, L.D. (34)

Contents (concluded)

Miller, S.M. (31)
Minn, B.P. (2)
Neher, C.J. (39)
Pate, J. (30, 41)
Paul. W.J. (16)
Phillips, C. (18)
Pletscher, D.H. (17)
Quintal, P.K.M. (35)
Responsive Management (36, 42, 46)
Robinson, W.L. (4)
Rosen, W. (43)
Schoenecker, K.A. (47)
Shaw, W.W. (47)
Thompson, T. (24)
Thompson, J.G. (28)
Tishbein, G. (30, 41)
Tucker, P. (17)
U.S. Fish and Wildlife Service (29)
Whitehead, J.C. (40)
Wilson, M.A. (48)

Geographic Distribution (Citation Numbers)
Nationwide *(5, 34, 38)*
Intermountain West
Colorado (2, 30, 37, 41)
Idaho (18, 21, 27)
Montana (11, 17, 18, 21)
Utah (33)
Wyoming (8, 9, 10, 15, 18, 21, 24, 44, 46)
Yellowstone National Park (6, 8, 9, 10, 12, 14, 15, 18, 21, 22, 24, 25, 26, 28, 29, 39, 46, 48)
Northeast
New York (42, 50)
Northwest
Alaska (31, 32)
Washington (45)
Southeast
North Carolina (35, 40, 43)
Southwest
Arizona (19, 47)
New Mexico (13, 36)
Upper Midwest
Michigan (4, 20, 23)
Minnesota (1, 3, 7, 16, 49)

Americans' Attitudes Toward Wolves and Wolf Reintroduction: An Annotated Bibliography

By

Christine Browne-Nuñez[1] and Jonathan G. Taylor

U.S. Geological Survey
Midcontinent Ecological Science Center
4512 McMurry Avenue
Fort Collins, CO 80525-3400

Introduction

Prior to the arrival of European settlers, wolves ranged throughout most of North America as an integral part of the arid, temperate, and arctic ecosystem zones (Fig. 1). The gray wolf (*Canis lupus*) in particular, with its various subspecies, lived throughout most of what are today Canada, the United States, and Mexico. Red wolves (*Canis rufus*) were found in the southeastern United States. European settlers arrived in the New World with negative perceptions of the wolf based on fairy tales and religious beliefs. In addition to being regarded as a threat to personal safety, the wolf was also a threat to livestock. The perception of the wolf as an evil representative of wild nature and a beast meant by God for man to dominate led to large-scale wolf-eradication programs. Early eradication efforts were led by the colonies and later by state and federal government. By the middle of the twentieth century, wolves had been effectively removed from most of their former range in the lower 48 states, with only a few remaining animals located in northern Minnesota and Michigan.

Just as the wolf arrived at brink of extinction, changes began to appear in Americans' perceptions of the wolf. The wolf was no longer considered by all to be a menacing threat, but some started to see it as an integral part of ecosystems it inhabited. Books, television programs, and magazines offered this new perspective of the wolf. Their plight has captured the attention of Americans and the wolf has since become a symbol of the beauty of nature and conservation efforts.

The gray wolf was declared an endangered species in 1974 under the Endangered Species Act (ESA) of 1973, and the red wolf was listed in 1967 under provisions of the Endangered Species Preservation Act of 1966. Under the requirements of the ESA, the U.S. Fish and Wildlife Service initiated wolf recovery programs in several regions of the lower 48 United States. Today, through reintroduction and natural recolonization, gray wolves inhabit portions of Michigan, Minnesota, and Wisconsin; Idaho, Montana and Wyoming; and Arizona and New Mexico. Red wolves, after being completely eliminated in the wild, have been reintroduced into North Carolina and Tennessee.

As management strategies have been developed to reinstate wolves into their former range, social, economic, and political issues have become research concerns. Biologists, managers, and governmental officials recognize the importance of understanding the "human dimensions" of natural resource issues like wolf reintroduction. Understanding the beliefs and attitudes of the public regarding natural resource management issues is key to making decisions that are more responsive to the public and, therefore, increase the effectiveness of resource management decisions.

Attitude surveys are a common tool in human dimensions research. Survey results assist natural resource professionals in obtaining an improved, interdisciplinary understanding of how public perceptions and preferences can guide public representation and education. Several research studies have examined public attitudes toward wolves and their management throughout the United States in the last few decades. The bibliography, presented here, is an attempt to provide a comprehensive summary of the literature reporting these studies. The articles and reports annotated in this bibliography are listed chronologically, so the reader can gain an historical perspective of public attitudes toward wolves and their management. An index by author is also provided, as well as an index by

[1]Current address: 4235 NW 27th Terrace, Gainesville, FL 32605

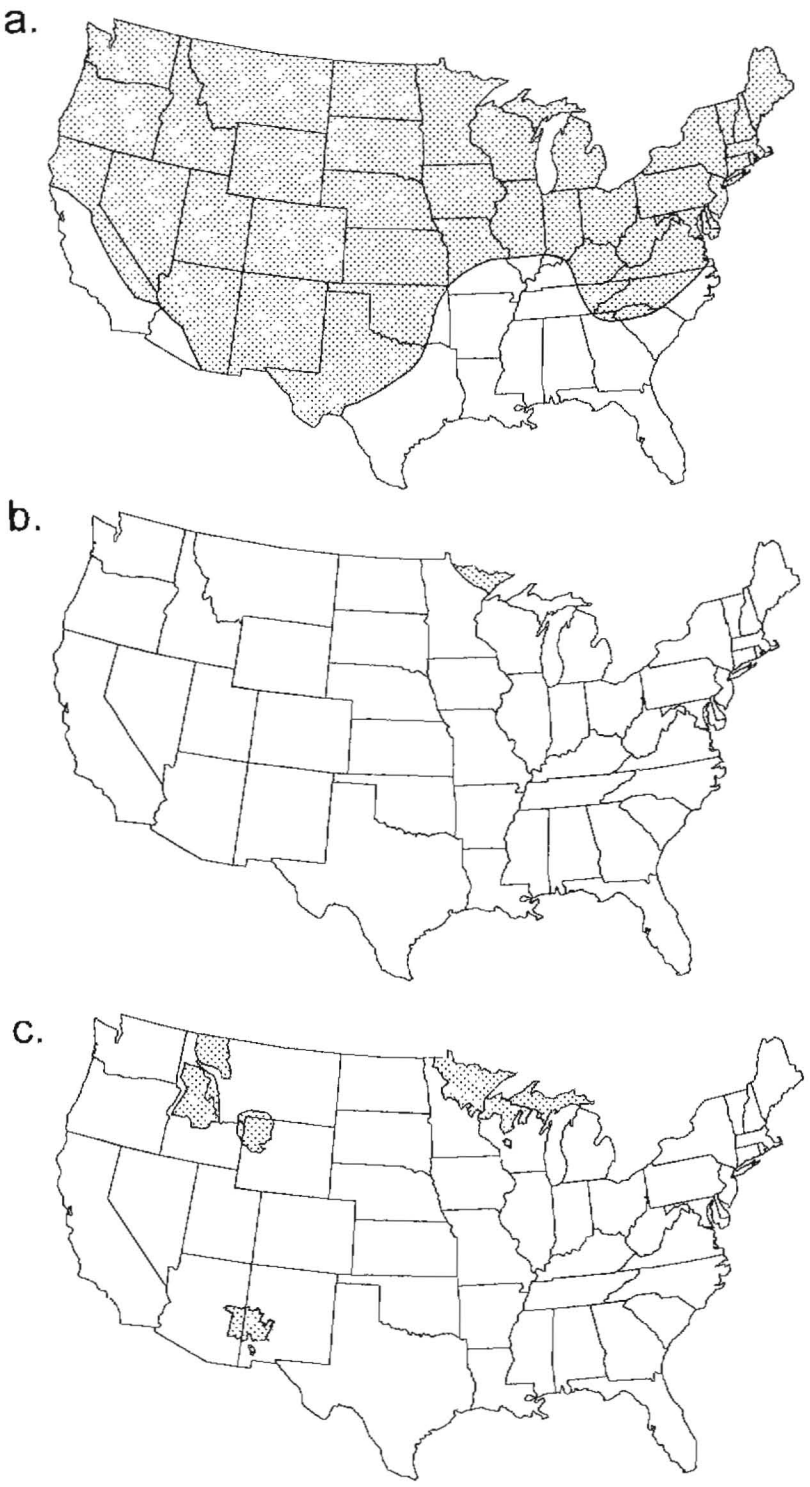


Fig. 1. Range of the Gray Wolf: (a) historically; (b) at time of listing under the Endangered Species Act (1974); and (c) currently (including recovery areas).

geographical region where the wolf-attitude research has been conducted.

Despite our efforts to be as comprehensive as possible in preparing this bibliography, we recognize that some studies may have been missed–especially studies that comprise the "gray literature." It is our hope that this compilation of the literature on American attitudes towards wolves will consolidate what is known in this field and help guide future research.

Annotated References

1. Johnson, R.T., 1974, On the spoor of the big bad wolf: The Journal of Environmental Education, vol. 6, p. 7–39.

In this paper, Johnson suggests that different forms of information on wolves are available to different age groups. Children read stories of the big, bad wolf during childhood, while adults receive factual information from books and television. This led Johnson to question the effects of conflicting information on attitude. The goals of the study were to determine if adults had moderated their view of the wolf, to determine if there were differences in attitude between men and women, and to determine if there were differences in attitude between adults and children. Visitors of the 1972 Minnesota State Fair were surveyed. Of the 1,692 individuals surveyed, most were from the Twin Cities area, but the sample represented all parts of the state. Johnson created four age groups: 'under 10,' '10–18,' '19–35,' and 'over 35.' Age was found to be the strongest variable in determining differences in attitude. Children under 10 were more likely to hold a negative attitude than other age groups. For example, children under 10 years of age were more likely to believe that wolves are a danger to humans. Johnson suggests that in addition to reading stories of the big, bad wolf, children should be exposed to factual information about wolves.

2. Minn, B.P., 1977, Attitudes toward wolf reintroductions in Rocky Mountain National Park: Colorado State University, Fort Collins, Master's thesis.

Visitors to Rocky Mountain National Park and residents living near the park were surveyed on their attitudes toward wolf reintroduction in the park. A significant majority (74%) of respondents were in favor of having wolves in the park. Most neighboring residents (72%) from adjacent towns, and 49% from outlying towns, approved of reintroduction. The only group with a majority of respondents against reintroduction was ranchers. There was very little association between demographics and attitude. The main influences on attitude appeared to be related to the respondent's confidence in the National Park Service to control released wolves. Top reasons given for supporting reintroduction included that wolves had been extirpated from the area and because wolves were considered to be an endangered species. Reasons given for opposing reintroduction included the possible harassment of wolves by people and the anticipated decline of game and non-game animals.

3. Llewellyn, L.G., 1978, Who speaks for the timber wolf?: Transactions of the Forty-third North American Wildlife and Natural Resources Conference, vol. 43, pp. 442–452.

This paper reports the results of content analysis of public comment letters regarding a proposed reclassification of the timber wolf in Minnesota from endangered to threatened. Of the 1,083 letters received by the Office of Endangered Species, U.S. Fish and Wildlife Service, approximately 700 were from Minnesota residents, while the remaining letters were from 38 other states and the District of Columbia. Over 90% of the letters from outside Minnesota expressed adamant opposition to the proposed reclassification. "A vast majority of [out-of-state] letters argued forcefully for the existence value of the timber wolf." Of the Minnesota sample, 23% favored retention of endangered status, 7% supported reclassification, and 70% supported complete declassification and return to state control. Most urban letter writers (78%) wanted the endangered classification to stay in place, while only 16% of rural residents took this position. Most supporters of declassification saw wolves as the major factor in the decline of deer and a serious threat to livestock. The most prominent attitudes among supporters of the endangered classification were ecologistic, moralistic, and naturalistic. The dominant attitude among those in support of complete declassification was utilitarian (out of concern for livestock). A negativistic attitude based on fear of the wolf was also prevalent among this group.

4. Hook, R.A., and Robinson, W.L., 1982, Attitudes of Michigan citizens toward predators, *in* Harrington, G.H., and Paquet, P.C., eds., Wolves in the world: Park Ridge, N.J.: Noyes, p. 382–394.

The major objectives of this study were to assess the extent of anti-predator attitudes of Michigan residents and to determine their underlying causes. The most important factors that contributed toward anti-wolf attitude was fear of the wolf, followed by negativistic attitudes toward all animals, and age, with older people having less favorable attitudes toward predators. Other factors contributing to negative attitudes toward predators included negative feelings toward the state Department of Natural Resources, lower education level,

a rural childhood, residency, and lower income. Although an anti-wolf sentiment is prevalent, a majority of Michigan residents were in favor of reintroduction.

5. Kellert, S.R., 1985, Public perceptions of predators, particularly the wolf and coyote: Biological Conservation, vol. 31, p. 167–189.

This paper investigates attitudes toward and knowledge of predators, chiefly the wolf and coyote. The data discussed in this paper was drawn from a national study of American attitudes and behaviors toward wildlife and natural habitats. Personal interviews (3,107) of a random sample of Americans comprised most of the sample with oversampling of over 600 respondents in the Rocky Mountain states and Alaska. Additionally, 388 mail surveys were completed by members of National Cattlemen, American Sheep Producers, and National Trapper associations. Out of 33 animals, the wolf and coyote were among the least liked. A positive attitude toward wolves and coyotes strongly correlated with general affection for animals and a desire to protect wildlife and natural habitats. Perceptions of the wolf vary among demographic groups. Among livestock producers, negative perceptions of wolves, coyotes, and predators, and support for predator population reductions and the use of poisons, were especially pronounced. Older respondents and those with less education and knowledge about wolves had more dislike of wolves than those under 25, the college educated, and those with more knowledge. When compared by region, Alaskans held the most favorable attitudes toward wolves, while respondents from the South held the least favorable attitudes.

6. McNaught, D.A., 1985, Park visitors' attitudes towards wolf recovery in Yellowstone National Park: University of Montana, Missoula, Master's thesis.

In a survey of Yellowstone National Park visitors, McNaught found that visitors favored reintroduction 3 to 1, and they believed 6 to 1 that "a presence of wolves would improve the Yellowstone experience." Support was based on a variety of ecological, aesthetic, and outdoor recreational reasons. Less support was found among older respondents and less educated individuals. There was stronger support among respondents from Wyoming, Idaho, and Montana than among those from other states.

7. Kellert, S.R., 1986, The public and the timber wolf in Minnesota, *in* McCabe, R.E., ed.: Transactions of North American Wildlife and Natural Resource Conference, vol. 51, p. 193–200.

Kellert examines public attitudes, knowledge, and behavior toward the timber wolf in Minnesota. Most respondents (except farmers) viewed the wolf in highly favorable and positive terms–most respondents expressed a strong appreciation for the wilderness and outdoor recreational values of the timber wolf, indicated a desire to see or hear a wolf in the wild, believed wolves are an important part of the Minnesota environment, and regarded wolves as a symbol of nature's wonder and beauty. Farmers, trappers, hunters, and residents of northern counties held higher utilitarian and dominionistic attitudes, while Twin Cities residents held higher moralistic and ecologistic attitudes. The general public had a somewhat limited factual understanding of the timber wolf. The lowest knowledge scores were found among Twin Cities residents, respondents with limited education, nonwhites, and females. Relatively high knowledge scores occurred among trappers, followed by hunters and higher-income respondents.

8. Bath, A.J., 1987a, Statewide survey of the Wyoming general public attitude towards wolf reintroduction in Yellowstone National Park: National Park Service, Mammoth, Wyo.

This study examined Wyoming residents' knowledge of, and attitudes toward wolves and the acceptability of wolf reintroduction. It found 47% of respondents liked wolves, 33% reported having no feeling for wolves, and 16% disliked wolves (=96%). A significant difference was found between statewide respondents and respondents living in the counties around the park. Residents in the counties around the park held a more negative attitude toward the wolf than the statewide respondents. Individuals who scored higher on the Duncan socio-economic status index, younger respondents, those living in urban areas, and respondents with higher knowledge scores held more positive attitudes than those lower on the socio-economic index, older respondents, rural residents, and those with lower knowledge scores. Knowledge scores indicated respondents did not have good knowledge of the wolf. It was found that 48.5% favored wolf reintroduction in Yellowstone National Park, 34.5% opposed it, and 17% had no opinion. A majority of residents living near the park opposed reintroduction, while a majority of the statewide sample was in favor of reintroduction. Residents' willingness to reintroduce wolves to Yellowstone National Park was explained mostly by attitude toward the wolf.

9. Bath, A.J., 1987b, Countywide survey of the general public in Wyoming in counties around the park towards wolf reintroduction in Yellowstone National Park: Mammoth, Wyo, National Park Service.

In a survey of residents of counties around Yellowstone National Park, it was found that 37% liked the wolf, 21% disliked the wolf, and 38% neither liked nor disliked the wolf. In comparing respondents in Bath's countywide survey to respondents in the statewide survey,

countywide respondents held a significantly more negative attitude. Age and occupation were significant predictors of attitude with older respondents having a more negative attitude and respondents with higher occupation scores having a more positive attitude. Most respondents (52%) opposed wolf reintroduction, while about 39% were in favor of reintroduction, and 10% had no opinion. There was a significant difference in willingness to accept reintroduction between statewide and countywide respondents, with respondents in the counties around the park less willing to support reintroduction. Attitude toward the wolf and knowledge of the wolf were the best predictors of support for reintroduction.

10. Bath, A.J., 1987c, Attitudes of various interest groups in Wyoming toward wolf reintroduction in Yellowstone National Park: University of Wyoming, Laramie, Master's thesis.

This thesis examines attitudes toward and knowledge of the wolf among members of three special interest groups: Wyoming Stock Growers Association, Defenders of Wildlife, and the Wyoming Wildlife Federation. Members of Defenders of Wildlife (93%) and the Wyoming Wildlife Federation (67%) had positive attitudes toward the wolf and Stock Growers members (68%) had negative attitudes. Ninety-one percent of members of the Wyoming Stock Growers Association were not in favor of wolf reintroduction in Yellowstone National Park; while 89% of Defenders of Wildlife members were in favor of wolf reintroduction, as were 67% of Wyoming Wildlife Federation members. Most members of the Wyoming Stock Growers Association agreed with the following statements, while the members of the wildlife groups disagreed: (1) "wolves reintroduced into Yellowstone National Park would cause more damage to livestock than wolves presently do in Minnesota"; (2) "if introduced wolves kill livestock, the problem wolf should be killed"; (3) "the monetary costs of reintroducing the wolf will exceed any benefits gained by having the wolf in the park"; (4) "because healthy populations of wolves exist in Canada and Alaska there is no need to have wolves in Yellowstone National Park"; (5) "wolves would deplete elk numbers to unacceptable levels in Yellowstone"; (6) "wolves would have a significant impact on big game hunting opportunities near Yellowstone"; and (7) "wolves would be a significant predator on the livestock industry around Yellowstone." Occupation, location of residence (urban/rural), knowledge, age, and sex were predictors of attitude. Members of Defenders of Wildlife were significantly more knowledgeable than the other two groups. Respondents with a positive attitude toward wolves, who lived further away from Yellowstone, and lived in urban areas, were more likely to support reintroduction.

11. Lenihan, M.L., 1987, Montanans ambivalent on wolves, The Montana Poll: Bureau of Business and Economic Research, School of Business Administration: University of Montana, Missoula, 6 p.

In a telephone survey of 408 Montana residents, 65% of respondents believed that wolves belong in the state; 78% of people living in the state's most populous counties agreed, while 54% of rural Montanans agree. Of those surveyed, 78% believed that "ranchers should be able to shoot wolves that attack livestock on their own property." About half (52%) of Montanans surveyed approved of reintroduction of wolves into areas of Montana, Idaho, and Yellowstone National Park, but 56% of those from rural counties did not approve. A majority (59%) believed that ranchers should be compensated for livestock lost. Lenihan found that the two most important rationales for support of wolf reintroduction were that the wolf is an important member of the ecological community (41%) and wolves were historically present (40%). The most important rationale for opposition was that livestock losses would be unacceptably high (57%).

12. McNaught, D.A., 1987, Wolves in Yellowstone?: Park visitors respond: Wildlife Society Bulletin, v. 15, p. 518–521.

In this study, 1,083 overnight visitors to Yellowstone National Park were surveyed during the summer of 1985 to find their attitudes toward wolves and their perceptions of the effects the return of wolves would have on the Yellowstone ecosystem and on human use of the park. Most respondents (74%) felt the presence of wolves would enhance the Yellowstone experience. Campers expressed stronger feelings in favor of wolves than those in lodges. Older respondents (65+) offered more anti-wolf responses than younger respondents. A larger proportion of college-educated respondents felt strongly that wolves would improve the Yellowstone experience than those without a college education.

13. Biggs, J.R., 1988, Reintroduction of the Mexican wolf into New Mexico, an attitude survey: New Mexico State University, Las Cruces, Master's thesis.

The purpose of this survey of New Mexico residents was to identify attitudes concerning the possible reintroduction of Mexican wolves into the state. Four groups (Albuquerque residents, state residents, Sierra Club members, and ranchers) were compared to determine if differences existed between groups in: (1) awareness of the reintroduction controversy; (2) attitude toward the proposed introduction; (3) attitudes toward wolves;

(4) knowledge of wolves; (5) support for compensation and control programs; and (6) attitudes toward endangered species. Demographics of the groups were also analyzed. All groups, except ranchers, were in favor of reintroduction and indicated a positive attitude toward the wolf. A majority of all groups supported financial compensation for ranchers who lose livestock to wolves. All groups except ranchers favored non-lethal control methods for wolves. Some association between attitude and demographics was found. Older respondents, those with lower incomes, and those with less education were most negative toward the wolf and were least in favor of reintroduction.

14. Bath, A.J., 1989, The public and wolf reintroduction in Yellowstone National Park: Society and Natural Resources, v. 2, p. 297–306.

This article examines the results of a study of public attitudes toward the wolf, knowledge of the wolf, and willingness to reintroduce the wolf into Yellowstone National Park. Data was collected from 1,026 respondents representing the Wyoming statewide general public, the public residing in the counties surrounding the park, the Wyoming Stock Growers Association, Wyoming members of the Defenders of Wildlife, and members of the Wyoming Wildlife Federation. Significantly different attitudes, knowledge scores, and willingness to reintroduce the animal were found among the groups. Members of the Defenders of Wildlife had the most positive mean attitude score and members of the Wyoming Stock Growers Association had the most negative score. Members of the Wyoming Wildlife Federation and Defenders of Wildlife had significantly higher knowledge scores than the other groups. Most members of Defenders of Wildlife (89%) were in favor of reintroduction, while most members of the Wyoming Stock Growers Association (91%) were against it (other groups were in between these two most extreme groups). For more detailed results, see Bath (1987a, 1987b, 1987c).

15. Bath, A.J., and Buchanan, T., 1989, Attitudes of interest groups in Wyoming toward wolf restoration in Yellowstone National Park: Wildlife Society Bulletin, v. 17, p. 519–525.

Attitudes of members of five groups were surveyed in Wyoming: the Wyoming Stock Growers Association, Wyoming member of Defenders of Wildlife, Wyoming Wildlife Federation, the statewide public, and counties near the proposed recovery area. They found that "extremes of the issues were defined by the members of the Wyoming Stock Growers Association and Defenders of Wildlife. Most members of the Wyoming Wildlife Federation and the statewide public had positive attitudes toward wolf restoration, although the public in counties surrounding the wolf-recovery site held more negative attitudes. See Bath (1987c and 1989) for more detailed results.

16. Fritts, S.H., and Paul, W.J., 1989, Interactions of wolves and dogs in Minnesota: Wildlife Society Bulletin, v. 17, p. 121–123.

This paper reports the relatively low occurrence of wolf depredation on domestic dogs in Minnesota. In a 9-year period, 54 dogs were reported wounded, killed, or missing. Dog owners exhibited far more emotional distress at the loss of a dog than when other types of domestic animals were killed. There was no compensation for dogs lost to wolves, as there is when livestock is lost. Many of the reports of wolf-dog interactions occurred in short time periods in the same areas, suggesting that wolves were actively seeking out dogs. The authors conclude that wolf attacks on dogs can be substantial locally and can produce anti-wolf reaction that could hamper wolf recovery.

17. Tucker, P., and Pletscher, D.H., 1989, Attitudes of hunters and residents toward wolves in northwestern Montana: Wildlife Society Bulletin, v. 17, p. 509–514.

Tucker and Pletscher surveyed hunters and residents of Flathead County (northwestern Montana), which is also home to wolves. They found 72% of the residents of the North Fork area and 58% of the hunters in Flathead County hoped that wolves would continue to inhabit the area and "should be allowed to spread beyond this area." Fear of the wolf was a factor for those with anti-wolf sentiment. The authors found that a substantial number of respondents had misconception about wolf predation on livestock. These individuals were less likely to support recovery efforts. Tucker and Pletscher concluded, "Support could dwindle if restrictions on recreation and commercial uses were introduced to promote recovery." They suggest education to address misconceptions about the wolf.

18. Bath, A.J., and Phillips, C., 1990, Statewide surveys of Montana and Idaho resident attitudes toward wolf reintroduction in Yellowstone National Park, report submitted to Friends for Animals, National Wildlife Federation: U.S. Fish and Wildlife Service, National Park Service, 38 p.

This study surveyed the Montana and Idaho general public regarding attitudes toward and knowledge of the wolf and willingness to reintroduce the wolf. While 45% of Montanans surveyed like the wolf, a relatively large percentage (33%) said they "neither liked or disliked" the wolf. The remaining 22% stated they disliked the animal. Idaho respondents held a significantly more

positive attitude toward the wolf than Montana respondents with 53% reporting a positive attitude, 35% a neutral attitude, and only 12% reporting a negative attitude. For Montanans, urban residents, those who were younger, those with a higher level of education, and those with a higher level of knowledge of the wolf were more likely to hold a positive attitude. For Idaho residents, younger individuals, urban residents, those with a higher knowledge score, and females were more likely to hold a positive attitude. On average respondents from both states answered fewer than 50% of knowledge questions correctly. Females, older respondents, and those with lower occupation scores (using Duncan's socioeconomic status index) tended to have lower knowledge scores. Most Idaho residents (56%) favored wolf reintroduction in Yellowstone National Park and less than half of Montana respondents (44%) supported this idea. While 40% of Montanans and 27% of Idaho residents were opposed, 16% of Montanans and 17% of Idaho residents held no opinion. It was noted that the primary reason for opposition among Idaho and Montana residents was the cost of the reintroduction program. Respondents were asked if they would change their minds if a variety of conditions were met (including financial compensation for livestock losses, keeping livestock losses under 1%, and keeping wolves in the park and surrounding wilderness areas); in spite of these changes, most respondents opposed to wolf reintroduction would not change their opinion.

19. Johnson, T.B., 1990, Preliminary results of a public opinion survey of Arizona residents and interest groups about the Mexican wolf: Arizona Game and Fish Department report.

This report describes a two-phase survey of Arizona residents' attitudes toward wolves. In Phase 1, conducted in 1988, 726 heads-of-households were polled statewide regarding awareness of the historical habitat of wolves in the state and attitudes toward wolves and reintroduction. The results indicated that 71% of respondents were unaware that wolves ever lived in Arizona and 61% approved of reintroduction (18% were opposed and 21% had no opinion). Approval for reintroduction varied for subgroups defined by age, with less than 50% of those over 55 years of age, and attitude toward wolves. In Phase 2, conducted in 1990, five interest groups were polled: Arizona Department of Fish & Game, hunters, Defenders of Wildlife, rural residents, and urban residents (Arizona Cattle Growers and Arizona Wool Producers declined to participate). A majority of each group responded positively to questions of seeing wolves in the wild and having wolves in the Southwest, Arizona, or the county of the respondent's residence. The strongest argument for reintroduction was that of preventing extinction (ranging from 60% of urban residents to 91% of members of Defenders of Wildlife). A majority of each group believed that most objections to reintroduction could be resolved (62% rural residents to 84% Defenders of Wildlife).

20. Kellert, S.R., 1990, Public attitudes and beliefs about the wolf and its restoration in Michigan.

This study of attitudes, knowledge, and behavior in relation to the wolf was conducted in Michigan in 1990. There were 639 respondents to the mail survey sent to the general public in the upper and lower peninsula and members of three special interest groups: hunters, trappers, and livestock producers. Livestock producers were the most likely of the special interest groups to hold negative attitudes toward the wolf. Lower Peninsula residents were more likely than Upper Peninsula residents to articulate feelings of fear and dislike. This was also true of the less educated, elderly, urban residents, and lower income respondents. A majority of respondents, except livestock producers, supported restoration (64% of Upper Peninsula residents, 57% Lower Peninsula residents, 76% of hunters, 66% of trappers, and 37% of livestock producers). This support was principally motivated by the existence, ecological, and cultural values of the wolf. The elderly and less educated were the least supportive of wolf reintroduction. Trappers obtained significantly higher knowledge scores than any other groups. Farmers had the second highest scores. Males scored higher than females. Supporters of restoration had somewhat lower knowledge levels than those opposed to restoration.

21. Bath, A.J., 1991a, Public attitudes in Wyoming, Montana, and Idaho toward wolf reintroduction in Yellowstone National Park: Transactions of the Fifty-sixth North American Wildlife and Natural Resources Conference, p. 91–94.

This research assessed the degree to which three variables–attitude toward the wolf, willingness to restore the wolf, and knowledge about the wolf–could be used to discriminate among three statewide samples of the general public. Idaho residents were found to have the most positive mean attitude score toward the wolf, and Montana residents had the least positive score. All groups received low mean knowledge scores. All three samples supported wolf restoration into Yellowstone National Park. See Bath (1992) for more detailed results.

22. Bath, A.J., 1991b, Public attitudes about wolf restoration in Yellowstone National Park, *in* Keiter, R.B., and Boyce, M.S., eds., The greater Yellowstone ecosystem: New Haven, Conn, Yale University Press, p. 367–376.

See Bath (1987a, 1987b, 1987c).

23. Kellert, S.R., 1991, Public views of wolf restoration in Michigan: Transactions of the North American Wildlife and Natural Resources Conference, v. 56, p. 152–161.

Kellert presents results from a mail survey completed by 639 Michigan residents on attitude, knowledge, and behaviors toward wolves, and the species' possible restoration to the state's Upper Peninsula. Considerable support occurred among all major sample groups (except farmers) for the restoration of the wolf. Deer hunters and trappers expressed the strongest support. Most respondents cited the wolf's existence and ecological values as the main reasons for support.

24. Thompson, T., and Gasson, W., 1991, Attitudes of Wyoming residents on wolf reintroduction and related issues: Wyoming Game and Fish Department, Cheyenne, 43 p.

In a statewide telephone survey of 804 Wyoming residents, Thompson and Gasson found that 44% of respondents were in favor of wolf reintroduction in Yellowstone, 34.5% were opposed, and the remaining 21.5% were undecided or had no opinion. This was very similar to Bath's (1987) findings, but differed in some respects. For example, Thompson and Gasson found that more than 30% of respondents (compared to 16% of Bath's respondents) would change their opposition to wolf restoration if wolves could be kept in the park and adjacent wilderness areas. Thompson and Gasson also found that 14% of those opposed to reintroduction of wolves (compared to 6% of Bath's respondents) would change their opinion if there were a compensation program for wolf restoration. Respondents from both studies agreed (58.5% and 57%, respectively) that wolves that kill livestock should be killed. The most common reasons given for support of reintroduction were that wolves are important members of the ecological community and wolves had an historical presence. The most common reason for opposition was the threat wolves pose to livestock.

25. Bath, A.J., 1992, Identification and documentation of public attitudes toward wolf reintroduction in Yellowstone National Park, *in* Varley, J.D., and Brewster, W.G., eds., Wolves for Yellowstone?: A report to the United States Congress, Research and analysis: National Park Service, Yellowstone National Park, Mammoth, Wyo, v. iv, p. 2.3–2.30.

The survey instrument used in this study of Montana and Idaho residents' attitudes toward wolf reintroduction in Yellowstone was the same used in Bath's (1987) survey of the Wyoming general public. A positive attitude toward the wolf was expressed in both states (Montana 45%, Idaho 53%). On a scale from 1 to 8, the Montana sample received a score of 3.05, indicating an attitude of "neither like nor dislike" of the wolf, while the Idaho sample scored 3.31, also indicating an attitude of "neither like nor dislike," although the Idaho score was significantly more positive than the Montana score. For the Montana sample, those with higher education levels held more positive attitudes. For the Idaho sample, males were more likely than females to hold a negative attitude toward wolves. In both samples, older respondents, those with lower knowledge scores, and rural residents held more negative attitudes. Knowledge scores for Montana and Idaho residents were low, with older respondents, females, and those with less education having lower knowledge scores. There was also a statistically significant relationship between occupation and knowledge. Most respondents were in favor of wolf reintroduction in Yellowstone (44% Montana, 56% Idaho). Idaho respondents had a significantly more positive response to wolf reintroduction than the Montana respondents. Respondents with positive attitudes toward the wolf and female respondents were more willing to accept reintroduction. Knowledge, education, age, occupation, distance from the park, and rural/urban variables were not significant predictors of willingness to accept reintroduction.

26. Eisenstein, W., 1992, Wolf reintroduction into Yellowstone National Park, an attitudinal survey analysis: Montana State University, Bozeman, Master's thesis.

The purpose of this paper was to describe the process that led to the wolf's demise in the lower 48 states and to determine the reasons for opposition to reintroduction of the wolf into Yellowstone National Park. Eisenstein conducted an attitudinal survey analysis of 52 stakeholders (ranchers or members of ranching organizations, politicians, and natural resource professionals) regarding wolf restoration in Yellowstone National Park. He was seeking detailed responses on concerns and issues, rather than quantifiable yes/no expressions of position. Thus, his thesis does not statistically analyze public opinion, but summarizes and presents a large amount of personal position and opinion. His conclusions include the following general statement about wolves: "The interviews revealed not only polarization, but gross misunderstandings and misconceptions concerning the wolf and the reintroduction program. It was clear that people still do believe in the horror stories of the wolf and 'Little Red Riding Hood.' Many respondents stated as fact that they know wolves kill people."

27. Freemuth, J., 1992, Public opinion on wolves in Idaho, results from the 1992 Idaho policy survey: Boise State University, Idaho, 3 p.

As part of a larger public policy survey, Idahoans were asked, "Do you favor or oppose having wolves in the wilderness and roadless areas of central Idaho?" Over 72% of respondents were in favor, 22% were opposed, and 5% did not know or had no opinion.

28. Thompson, J.G., 1993, Addressing the human dimensions of wolf reintroduction, an example using estimates of livestock depredation and costs of compensation: Society and Natural Resources, v. 6, p. 165–179.

The objective of this article was to suggest how social assessment, public participation, and conflict management could be used to resolve some of the human problems related to wolf reintroduction. Estimates of livestock depredation and related cost compensation were reviewed to illustrate how sociopolitical factors need to be better integrated into such assessments.

29. U.S. Fish and Wildlife Service, 1993, Summary of public comments on the draft environmental impact statement for the reintroduction of gray wolves to Yellowstone National Park and central Idaho: U.S. Fish and Wildlife Service, Helena, Mont, 21 p.

This analysis summarizes public comment on gray wolf reintroduction. All responses (>160,000) to the U.S. Fish and Wildlife Service's environmental impact statement were considered in the production of this summary, including letters, petitions, and hearing testimony. The degree of response from the public on this issue is likely one of the largest for any proposed federal action in the United States to date and indicates the strong interest people have in the management of wolves.

30. Manfredo, M.J., Bright, A.D., Pate, J., and Tishbein, G., 1994, Colorado residents' attitudes and perceptions toward reintroduction of the gray wolf (*Canis lupus*) into Colorado, Project Report No. 21: Project report for the U.S. Fish and Wildlife Service, Colorado State University, Human Dimensions in Natural Resources Unit, Ft. Collins.

In this study, a mail survey of 1,452 Coloradoans found a majority (71%) favored wolf reintroduction in Colorado. More east slope residents (74%) than west slope residents (65%) supported wolf reintroduction. Respondents supporting reintroduction were more likely to believe it would result in preservation of the wolf, balanced deer and elk populations, and a return to an earlier natural environment. Those favoring reintroduction were also more likely to have positive attitudes toward wolves and higher knowledge scores. Supporters were more likely to be younger, from larger communities, and perceive reintroduction as occurring at a greater distance from their home. Respondents against wolf reintroduction were more likely to believe it would result in loss of money for ranchers, wolf attacks on humans, more livestock depredation, and decreases in deer and elk populations.

31. Miller, S.M., and McCollum, D.W., 1994, Alaska voters, Alaska hunters, and Alaska nonresident hunters, their characteristics and attitudes towards wildlife: Alaska Department of Fish and Game.

This study conducted by the Alaska Department of Fish and Game obtained public opinion information in an effort to identify Alaskans' characteristics and attitudes toward wildlife. Included in the survey, which asked several questions related to wildlife, was one attitudinal question and one knowledge question related to wolves. In response to the statement, "I support killing wolves in some areas of Alaska to increase the numbers of moose and caribou," 47% of respondents agreed, 37% disagreed, and 16% were undecided. Males and hunters were more likely to agree with this statement than females and non-hunters. To the statement, "Wild wolves have never attacked humans in Alaska," 31% stated they believed this was true, 25% said it was false, and 44% said they didn't know or didn't respond.

32. Anderson, D.B., 1995, The Alaska Department of Fish and Game public opinion survey on predator control in game management, Unit 19D East: A report to the Alaska Board of Game.

This survey was carried out in six communities as a result of public concern for the declining moose population in an area where moose is an important food source. A mail survey was sent out in the largest community and in the other, smaller communities, personal interviews were conducted. The Alaska Board of Game determined that wolf populations in the area should be reduced to aid the recovery of the moose population. Most respondents (91%) agreed that the wolf population should be reduced to allow for moose population growth. There was strong support for each possible method of control. Almost 82% of respondents were in support of the use of ground-based methods and 83% supported the use of aerial methods. Only 43% were supportive of a combination of these methods.

33. LaVine, K.P., 1995, The attitude of Utah residents toward gray wolves: Utah State University, Logan, unpublished Master's thesis.

This thesis presents results from a 1994 state-wide survey of 708 individuals. The survey consisted of questions about wolves and their possible recovery in Utah, wolf management and compensation programs, educational opportunities, and knowledge about wolves. The sample was stratified into three intrastate regions: urban counties, northern rural counties, and southern rural counties. Each sample was divided into three groups and each group was provided varying amounts of information about wolves. The control group did not receive any information. A second group received a map of Utah with hypothetical wolf habitat. The third group received a map and a brochure of wolf ecology. Although all groups scored high on knowledge questions, the group given the most information had the highest scores. This group also had the least favorable attitude toward wolves. Another group surveyed in this study was public land permittees, most of whom use land for livestock grazing. This group did not receive any information. Findings from the control group, which was not given any information, were compared to findings of previous research on residents of Montana, Wyoming, and Idaho. Most Utah residents (51%) stated they liked wolves, but they were more polarized in their attitudes toward wolves than residents of Montana, Wyoming, and Idaho, and their opinions of the impacts of wolves were more extreme than those of Wyoming residents. Respondents from metropolitan counties expressed the strongest favorable attitudes toward wolves, more respondents in the southern rural counties expressed a negative attitude, and respondents in the northern rural counties were in between the two other groups. The control group was also compared with public land permittees. Permittees expressed extremely negative attitudes toward wolves and differed significantly from the general public. Hunters were more likely than nonhunters to dislike wolves.

34. Mech, L.D., 1995, The challenge and opportunity of recovering wolf populations: Conservation Biology, v. 9, p. 270–278.

This paper briefly covers the history of the wolf (distribution and persecution) and discusses its current status, including the dilemma of its management. The author states a major problem with wolf management is the increase of human-wolf conflicts (e.g., killing of livestock and pets) and the resulting anti-wolf sentiment. Several lethal techniques that have been used to control problem wolves are discussed. The pros and cons of management by zoning are discussed. Another dilemma of wolf management discussed here is wolf protectionism. Because of misconceptions about wolves and the activity of animal rights groups, wolf control is resisted by much of the public. The author suggests using education on wolf management issues to promote wolf recovery.

35. Quintal, P.K.M., 1995, Public attitudes and beliefs about the red wolf and its recovery in North Carolina: North Carolina State University, Raleigh, Master's thesis.

A telephone survey of 600 respondents regarding knowledge of and attitudes toward wolves and wolf reintroduction was conducted in five counties in North Carolina in 1995. The counties varied in human and wolf population sizes, with the counties with higher human populations having few or no wolves and vice versa. Thirty-six percent of respondents held pro-wolf attitudes, 15% held anti-wolf attitudes, and 49% were neutral. About 52% of respondents supported red wolf recovery, with its endangered status as the reason most often given for support (30% opposed, 18% no opinion). More educated respondents and those with higher knowledge scores were more likely to support recovery. Less than one-third opposed wolf recovery with fear, dislike, and potential loss of livestock as primary reasons given for opposition. Older respondents were more likely to be opposed to recovery than younger respondents. The author recommended public education so that more accurate information is available.

36. Responsive Management, 1995, New Mexico residents' opinions toward Mexican wolf reintroduction: Responsive Management, Harrisonburg, Va.

This report is a graphical presentation of the results (frequencies) of a 1995 telephone survey of 422 New Mexico residents (218 statewide and 204 in four counties nearest the proposed reintroduction site) regarding proposed wolf reintroduction. Most people stated they had heard of the proposed reintroduction and supported reintroduction into Arizona's Blue Range Primitive Area and the White Sands Missile Range. Statewide residents were more supportive and less opposed to reintroduction than regional residents. Residents from cities were less likely to strongly oppose reintroduction than residents from small towns or rural areas. Younger residents (18–44) were less likely to strongly oppose reintroduction than older residents. Concerns over reintroduction held by most people included wolves killing livestock and possible restrictions placed on private property. Most people did not have concerns about wolves harming humans or pets, or wolves reducing deer and elk populations. Most people supported compensating ranchers for livestock killed by wolves. A majority of respondents felt wolves held existence value.

37. Bright, A.D., and Manfredo, M.J., 1996, A conceptual model of attitudes toward natural resource

issues, a case study of wolf reintroduction: Human Dimensions of Wildlife, v. 1, p. 1–21.

The main objective of this study was to test a conceptual model of attitudes and the factors that form its basis using a case study of wolf reintroduction in Colorado. Attitude toward wolf reintroduction was a strong predictor of intention to support or oppose reintroducing wolves. Findings further indicated that attitudes toward wolf reintroduction were based less on knowledge and beliefs about wolves and wolf reintroduction than on values and emotions surrounding the issue (i.e., symbolic existence beliefs and the extent to which respondents felt positive emotional responses to wolf reintroduction were positively related to positive attitudes, while negative emotions were similarly related to negative attitudes). Additionally, it was found that attitudes toward reintroduction better predicted intention to support or oppose reintroduction for those respondents who placed higher importance on the issue than those who did not.

38. Defenders of Wildlife, 1996, Fact sheet: America votes "Yes!" for wolves, *in* Ferris, B., ed.: Defenders of Wildlife, Washington, D.C.

This brief summary of national and regional public opinion surveys shows that most Americans favor wolf reintroduction. Out of 1,500 respondents to an NBC Dateline poll, less than 11% of respondents were opposed to reintroduction. The primary reasons given for support were the ecological and cultural values associated with wolves (i.e., historical presence and role in the ecosystem). A top reason given for opposition is belief that reintroduction will lead to losses of livestock.

39. Duffield, J.W., and Neher, C.J., 1996, Economics of wolf recovery in Yellowstone National Park, *in* Wadsworth, K.G., and McCabe, R.E., eds.: Transactions of the Sixty-first North American Wildlife and Natural Resources Conference, v. 61, p. 285–292.

This study examined the issue of whether wolf recovery in Yellowstone National Park was in the public interest. Two economic criteria were examined: changes in net social benefits and regional economic impacts. This study also estimated negative existence values and a measure of expected losses from reduced hunting opportunity for park visitors opposed to wolf recovery. The basic finding was that the net social benefits to wolf recovery are large and positive, on the order of $110 million for a 20-year time horizon and a 5% real discount rate. Regional net economic impacts are also positive and on the order of $43 million a year because increased nonresident tourism expenditure due to the presence of wolves in the park far outweigh possible reduced nonresident hunting expenditures and reduced livestock exports.

40. Mangun, W.R., Lucas, J.N., Whitehead, J.C., and Mangun, J.C., 1996, Valuing red wolf recovery efforts at Alligator River NWR: Measuring citizen support, *in* Fascione, N., and Cecil, M., eds., Wolves of America, Proceedings, Washington, D.C., Defenders of Wildlife, p. 165–171.

This paper presents the results of a pilot survey of 68 adults living near the Alligator River National Wildlife Refuge in North Carolina, site of the red wolf species recovery program. The purpose of the study was to assess public knowledge and support for the continuation of the recovery program and assess the economic value of the program using a measure of willingness to pay. A majority (58%) of respondents believed the recovery program to be a success, with 12% considering it a failure. Eighty percent of respondents believed the program to be at least somewhat important. Respondents were asked how much they would be willing to contribute to a 'Red Wolf Recovery Trust Fund.' Results suggested that respondents over 50 were willing to pay less than other respondents. More educated respondents and those who felt the reintroduction program was effective in preventing extinction were willing to pay more than other respondents.

41. Pate, J., Manfredo, M.J., Bright, A.D., and Tishbein, G., 1996, Coloradoans' attitudes toward reintroducing the gray wolf into Colorado: Wildlife Society Bulletin, v. 24, p. 421–428.

Results of a mail survey of Colorado residents showed strong support for reintroducing wolves into Colorado, as well as generally positive attitudes toward wolves. Respondents in densely populated areas were more supportive than those in predominantly rural areas. See Manfredo et al. (1994) for more detailed results.

42. Responsive Management, 1996, Public opinion on and attitudes toward the reintroduction of the eastern timber wolf to Adirondack Park, report for Defenders of Wildlife: Responsive Management, Harrisonburg, Va.

In 1996, residents of New England, New York, and Adirondack Park were surveyed regarding wolf reintroduction to Adirondack Park. Support was high among all three groups (ranging from 76% to 85%). Residents of Adirondack Park were slightly less likely to support wolf reintroduction than the other two groups. In the Park group, hunters were more likely to be strongly opposed than non-hunters, and opposition increased with age. Top reasons given for supporting reintroduction were "wolves are part of the ecosystem," "to save them

from extinction," and "wolves were here before us." The top reason given for opposing reintroduction was "wolves are dangerous to humans." Other reasons given were "wolves are dangerous to livestock," "wolves would kill other wildlife," and "the Park has changed too much." Most Park residents (56%) disagreed that wolves would enhance tourism in the area, while residents of the other two areas tended to agree that tourism would be boosted. Most respondents in each group (ranging from 80% to 89%) agreed that it was "important to me personally" to have wolves in the area, although Park residents (17%) were more likely to disagree. Respondents were asked if specific issues related to reintroduction were of concern to them. A majority of respondents believed possible harm to pets and livestock was a concern. Safety, restrictions on property rights, and wolves reducing deer populations were also concerns. New York residents were most concerned about safety while park residents were more coneerned about the other three issues.

43. Rosen, W., 1996, Recovery of the red wolf in northeastern North Carolina and the Great Smoky Mountains National Park, an analysis of the social and economic impacts, *in* Fascione, N., and Cecil, M., eds, Wolves of America, Proceedings, Washington, D.C., Defenders of Wildlife, p. 172–177.

This paper reports the results of a 1995 study of the socio-economic impacts of red wolf recovery in northeastern North Carolina and Great Smoky Mountains National Park. The survey was carried out in the two recovery states, North Carolina and Tennessee, and six neighboring states: Alabama, Georgia, Kentucky, Ohio, South Carolina, and Virginia. Three topics were examined: (1) attitudes and knowledge about red wolves and red wolf recovery; (2) the potential impact of the recovery effort on regional economies; and (3) contingent valuation estimates of the social benefits of the recovery effort. Most respondents were not knowledgeable about red wolves or wolf recovery. Respondents aged 20–29 were least knowledgeable, and respondents 60 or older were more knowledgeable. About 75% of respondents favored recovery in Northeast North Carolina, and 79% were in support of recovery in the park. About 71% of respondents indicated they were interested in visiting one of the recovery regions, and they would be less likely to visit if the red wolf was removed from the wild. It was anticipated that the availability of wolf activities would increase tourism in the recovery areas. About 60% of respondents reported a willingness to pay at least $5 per year for wolf recovery.

44. Cromley, C., 1997, Preliminary assessment of attitudes and knowledge of Jackson Hole residents toward grizzly bears and wolves in Teton County, report submitted to Grand Teton National Park, National Elk Refuge: Northern Rockies Conservation Cooperative, Yale University.

This study investigated the knowledge and attitudes of people living and working in Teton County, Wyoming toward the management of grizzly bears and wolves and other resources such as timber and livestock. The study surveyed ranchers, concessionaires, business owners, and the general public in Jackson, Wyoming. Respondents generally held positive attitudes toward grizzly bears and wolves, but held more positive attitudes toward grizzly bears. A majority of respondents supported wolf reintroduction (32% opposed). Primary reasons given for favoring reintroduction were the wolf's ecological role and its right to exist. Respondents disagreed most with recreational and extractive reasons for reintroducing wolves, including hunting and tourism. A majority of respondents strongly disagreed that wolves that prey on elk should be killed. Most respondents believed that state agencies should have major control over managing wolves and grizzly bears in Wyoming.

45. Defenders of Wildlife, 1997, Fact sheet, polls show support for wolf reintroduction in Olympic National Park, Seattle, conference features visiting wolves: contact Ken Goldman, Defenders of Wildlife, Washington, D.C.

A Seattle-based polling company conducted this study that is reported in this Defenders of Wildlife fact sheet. A telephone survey was conducted of 800 Washington residents living near Olympic National Park, including 400 registered voters of Puget Sound counties, 350 registered voters in Olympic Peninsula counties, and 50 interviews with individuals from areas identified as inhabited mostly by Native Americans in the Olympic Peninsula. It found that a majority (62%) of Washington state residents would support reintroduction of wolves in Olympic National Park. (26% were opposed and 16% were undecided). Support for reintroduction increased after discussion of the concerns and benefits.

46. Responsive Management, 1997, Public opinion of wolves and wolf management in the Greater Yellowstone area, report prepared for the Wyoming Game and Fish Department: Responsive Management, Harrisonburg, Va.

Wyoming residents were surveyed in 1997 regarding their knowledge and attitudes regarding wolves in Yellowstone National Park. Respondents listed drawbacks and benefits to having wolves in Yellowstone. The drawback most commonly given was the danger wolves pose to livestock (58% of respondents). Other drawbacks included danger to humans and wolves reducing big game populations. Twenty-four percent of respondents

said there were no drawbacks. When asked to list benefits of having wolves, the most common response given (34% of respondents) was that there are no benefits. Other responses included "wolves are an important part of the ecology," "they had an historical presence," and "they regulate big game." Most respondents (73%) said they acquired their knowledge of the wolf in Yellowstone from the newspaper. Other sources included television (53%), family and friends (22%), radio (20%), magazines (12%), the ranching industry (7%), and the Wyoming Game and Fish Department (6%). There was a split in opinion on wolves outside the park, 46% supported and 43% opposed. Hunters and those who make a living from the use of natural resources were more likely to be strongly opposed. Support was higher among younger age groups. Reasons for opposition included the danger to livestock, humans, and pets, the possible reduction of big game populations, and the cost. Reasons for support were wolves are an important part of the ecology, their historical presence, their endangered status, and their ability to regulate big game populations. Most respondents wanted the state agency (Wyoming Game and Fish Department) to be involved in wolf management, supported hunting of wolves as a management action, and supported compensation for ranchers.

47. Schoenecker, K.A., and Shaw, W.W., 1997, Attitudes toward a proposed reintroduction of Mexican gray wolves in Arizona: Human Dimensions of Wildlife, v. 2, p. 42–55.

This study polled 130 residents of households in and around a potential reintroduction site in Greenlee County, Arizona. It was found that 22% supported reintroduction, 58% opposed reintroduction, and 20% were undecided. Reasons most often given for opposing reintroduction were related to ranching and human safety. Of those who opposed reintroduction, 48% said reintroduction would have no impact on their lifestyle or business. Over half of those in favor of reintroduction believed wolves are integral to the ecosystem and belong in the wild. Almost one-third said wolves were native and should be returned. The authors suggested education to inform the public of wolf behavior and provisions for management of problem wolves in order to decrease the resistance to reintroduction.

48. Wilson, M.A., 1997, The wolf in Yellowstone, science, symbol, or politics?, desconstructing the conflict between environmentalism and wise use: Society and Natural Resources, v. 10, p. 453–468.

This paper suggests that "the controversy over wolf reintroduction is not really about wolves, it is all about social control" – the future of the West. The struggle between the wise use lobby and environmentalists is posited to be rooted in three issues: (1) differential access to social power; (2) conflicting ideas about private property; and (3) fundamentally divergent beliefs about humankind's proper relationship with the natural environment.

49. Kellert, S.R., 1999, The public and the wolf in Minnesota, a report of the International Wolf Center.

This report presents findings from a 1999 telephone survey of 525 Minnesota residents (residents of northern Minnesota, the rest of Minnesota, and farmers) regarding attitudes, knowledge, and behaviors toward gray wolves in Minnesota. Results show that the Minnesota public values the wolf; with over 70% believing the animal symbolizes the beauty in nature. The primary reason given for having wolves in Minnesota is so future generations could enjoy the species. A large proportion of the sample valued the ecological role of wolves, their importance for scientific study, and their moral right to exist, with non-northern residents more likely to name these views. The general public expressed more affection and ethical concern for wolves than did livestock producers, although there was no statistical difference found between sample groups in levels of dislike of wolves. Most respondents stated they would not be afraid to live near wolves, although farmers were not as likely to make this claim. Farmers were more in favor of delisting wolves in Minnesota than the general public. Farmers were more knowledgeable about wolves than the general public. Variations in attitudes toward and knowledge of the wolf were explained by demographic characteristics. Suburban and urban residents, those with a college education, and younger respondents tended to view the wolf more positively. Compared to the 1985 study conducted by the author, this study revealed an overall increase in positive perception of the wolf.

50. Enck, J.W., and Brown, T.L., 2000, Preliminary assessment of social feasibility for reintroducing gray wolves to the Adirondack Park in northern New York: Human Dimensions Research Unit Publication 00-3, Department of Natural Resources, Cornell University, Ithaca, NY.

Findings of a 1999 social feasibility analysis of wolf reintroduction are presented in the report. The study had four objectives, one being to assess attitudes toward wolves and their reintroduction and determine factors affecting those attitudes. Two surveys were conducted: a mail survey of 422 households within Adirondack Park and a statewide telephone survey of 501 New York households. Adirondack residents were split almost evenly in their approval of wolf restoration to the Adirondacks. A higher proportion of the statewide

sample (60%) than the Adirondack sample (42%) was in favor of restoration. A combination of six variables explained most of the variance in attitudes toward reintroduction, including attitudes toward wolves, perceptions of possible restoration impacts, and knowledge of wolves. Factors affecting attitude toward reintroduction varied by the level of importance respondents placed on the issues. The strongest predictor was attitude toward wolves. Knowledge about wolves was found to be relatively low. A subsample was given a wolf fact sheet. Knowledge scores improved among this group but had no influence on attitudes toward wolves or wolf restoration, or perceptions about possible impacts of restoration. Adirondack residents were most concerned about possible government restrictions on private lands, wolves killing pets and livestock, people killing wolves, and wolves decreasing the deer population.

Acknowledgments

We would like to thank the many people who assisted us in acquiring the literature. We are grateful to Stephen Kellert, Alistair Bath, Walter Eisenstein, Kate Schoenecker, and Responsive Management for sending us their work. We would also like to thank Mary Jane Dodson and Liz Lucke at the USGS MESC library for their assistance in the literature search. Finally, we would like to thank Natalie Sexton and Kate Schoenecker for their editorial comments.

REPORT DOCUMENTATION PAGE	Form approved OMB No. 0704-0188

Public reporting burden for this collection is estimated to average 1 hour per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503

1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	April 2002	Information and Technology Report (Final)

4. TITLE AND SUBTITLE	5. FUNDING NUMBERS
American Attitudes Toward Wolves and Wolf Reintroduction: An Annotated Bibliography	
6. AUTHOR(S) Browne-Nuñez, C., and J. G. Taylor	31050
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESSES U.S. Department of the Interior U.S. Geological Survey Biological Resources Division	8. PERFORMING ORGANIZATION REPORT NUMBER USGS/BRD/ITR--2002-0002
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESSES USGS - Midcontinent Ecological Science Center 4512 McMurry Avenue Fort Collins, CO 80525-3400	10. SPONSORING, MONITORING AGENCY REPORT NUMBER N/A

11. SUPPLEMENTARY NOTES
Prepared as part of a cooperative agreement between the USGS Social, Economic, and Institutional Analysis Section (SEIAS) and Grand Teton National Park.

12a. DISTRIBUTION/AVAILABILITY STATEMENT	12b. DISTRIBUTION CODE
Available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (1-800-553-6847 or 703-487-4650). Available to registered users from the Defense Technical Information Center, Attn: Help Desk, 8725 Kingman Road, Suite 0944, Fort Belvoir, VA 22060-6218 (1-800-225-3842 or 703-767-9050).	

13. ABSTRACT (Maximum 200 words)

During the period 1974–2000, 50 reports were published in peer-reviewed journals and in theses and dissertations concerning public attitudes and preferences toward wolves and their reinstatement into previously occupied habitat in the continental U.S. This publication provides annotated synopses of these 50 reports, arranged chronologically, but also cross-referenced by authors and by geographic area. In general, Americans favor reinstatement of wolf populations except for those people who perceive them to be a direct threat to their livelihood.

14. SUBJECT TERMS (Keywords)	15. NUMBER OF PAGES
Acceptance, attitudes, human dimensions, recolonization or reintroduction, wolves.	15 pp
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

Midcontinent Ecological Science Center

Production Staff

Leader, Information Management Project	Jennifer Shoemaker
Office Automation Assistant	Dora E. Medellin

NOTE: Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Government.

U.S. Department of the Interior
U.S. Geological Survey

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This responsibility includes fostering the sound use of our lands and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities.

USGS
science for a changing world

Printed on recycled paper