



Summer 1963

Wilderness Perception and Use: The Example of the Boundary Waters Canoe Area

Robert C. Lucas

Recommended Citation

Robert C. Lucas, *Wilderness Perception and Use: The Example of the Boundary Waters Canoe Area*, 3 NAT. RES. J. 394 (1963).

Available at: <https://digitalrepository.unm.edu/nrj/vol3/iss3/4>

This Article is brought to you for free and open access by the Law Journals at UNM Digital Repository. It has been accepted for inclusion in Natural Resources Journal by an authorized editor of UNM Digital Repository. For more information, please contact disc@unm.edu.

WILDERNESS PERCEPTION AND USE: THE EXAMPLE OF THE BOUNDARY WATERS CANOE AREA

ROBERT C. LUCAS*

A. Wilderness as a Resource

For centuries North American wilderness was viewed only as land to be developed—cleared and farmed, mined, or logged. The wilderness was a challenge. If the challenge was met, material benefits could be drawn from the former wilderness. Now, however, many people in the United States and Canada see wilderness as a resource in its own right. These people oppose conventional development of the remaining wilderness and argue that such areas have greater utility in their wilderness state. Groups such as the Sierra Club, the Wilderness Society, and the Quetico Foundation present this argument forcefully and seek to influence resource management in the direction of wilderness preservation.

Changing ideas provided the impetus for the re-evaluation of wilderness, and economic conditions made the shift possible. The late 18th and the 19th centuries constituted a period of major reinterpretation of the resources of scenic wildlands. Before that time, Americans seldom wrote of nature or scenery with aesthetic appreciation.¹ For example, William Bradford described the New England wilderness as hideous and desolate.² European ideas, particularly Romanticism and a growing scientific interest in nature, influenced American writers such as Bryant, Emerson, Thoreau, Irving, and Muir, and they along with painters began to portray scenery as an object of beauty.³

Besides the new attitude towards the natural scene, the almost complete conquest of the wilderness gave a certain scarcity value to the remnant.⁴ The status of the frontier movement, as a national epic, encouraged keeping some wilderness as a symbol of the frontier and as a setting for re-experiencing its

* Economic Geographer and Project Leader of Forest Recreation Research, Lake States Forest Experiment Station, USDA, Forest Service, St. Paul, Minn. I gratefully acknowledge the stimulation and guidance of John R. Borchert, Department of Geography, University of Minnesota, and Gilbert F. White, Department of Geography, University of Chicago.

This article is based on research conducted by the Lake States Forest Experiment Station.

1. Huth, *Nature and the American* 2-9 (1957).

2. Nash, *The American Wilderness in Historical Perspective*, 6 *Forest History* 3 (1963).

3. Huth, *op. cit.* *supra* note 1 at 10-53.

4. Leopold, *A Sand County Almanac* 188-94 (1949).

challenge.⁵ Finally, the general mastery of the more productive portion of the original wilderness reduced the incentive to develop the remainder. The agricultural frontier, in fact, has retreated as production of agricultural crops has risen, although mining, logging, and highways continue to spread.

B. The Wilderness Resource

"Wilderness" is difficult to define precisely.⁶ The Wilderness Bill states: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain."⁷

The most easily defined wilderness is that area officially established by law or administrative declaration. The largest acreage of such established wilderness is located in the National Forests of the United States. In 1961 this consisted of eighty-three areas and over 14 million acres, which is about eight per cent of the National Forest System.⁸ This acreage has been stable since the late 1930's.⁹ The areas are roadless and closed to timber cutting. Other uses, such as grazing or water impoundments, are more restricted than on other National Forest areas.

The National Park Service in the United States has no specific wilderness areas. All land under its jurisdiction which is located away from roads or other developments is considered wilderness and is closed to logging, grazing, and usually to hunting.¹⁰ The National Park Service recently classified sixty-six of its areas as scenic-scientific parks and monuments, in contrast to more purely historical sites.¹¹ These sixty-six locations included over 22 million acres. About 7 million acres were considered wilderness in the study conducted by the Wildland Research Center under a strict definition¹² (a definition that excluded 2 million acres of established National Forest Wilderness). Like the National Forest Wilderness, National Park Wilderness appears to be holding its own in acreage.

5. Nash, *op. cit. supra* note 2, at 10-11. For an interesting criticism of this view see Lowenthal, *Not Every Prospect Pleases—What Is Our Criterion for Scenic Beauty?*, 12 *Landscape* 19 (Winter, 1962-1963).

6. Wildland Research Center, Univ. of Calif., *Wilderness and Recreation* 16-26 (Outdoor Recreation Resources Rev. Comm'n Study Rep. No. 3, 1962).

7. There have been a series of wilderness bills. S. 174, 87th Cong., 1st Sess. (1961), is quoted here.

8. USDA, Forest Service, *Wilderness* 5 (1961).

9. USDA, Forest Service, *The National Forest System and Outdoor Recreation* 52 (Prepared for the Outdoor Recreation Resources Rev. Comm'n, 1960).

10. Wildland Research Center, Univ. of Calif., *op. cit. supra* note 6, at 4.

11. USDI, National Park Service, *The National Park Wilderness* 17 (no date).

12. Wildland Research Center, Univ. of Calif., *op. cit. supra* note 6, at 40, 50-51.

A few state areas are established as wilderness. The largest is the Adirondack Forest Preserve in New York; however, it includes a good deal of inter-mixed private land.¹³

Informal or unreserved wilderness is also important but more difficult to define or measure. The Wildland Research Center considered that almost 9 million acres of unreserved land met wilderness standards, compared with over 19 million acres of established wilderness.¹⁴ This area is probably declining because of lack of formal designation, and because it often surrounds established areas and thus is more accessible.

These wilderness areas have two main attributes. First, they are closed to recreationists using mechanized transportation including jeeps, motor scooters, airplanes (with a few exceptions), and motorboats (with more exceptions). Second, ecological conditions are relatively undisturbed although probably quite different from pre-white entry characteristics because of fire protection, exotic plants, diseases, animals, and recreation use, to name but a few influences.¹⁵

There is, however, another type of area, semi-wilderness, which provides a refuge from mechanized recreation but permits some logging and other uses. Established semi-wilderness is rare. The Boundary Waters Canoe Area of the Superior National Forest in northeastern Minnesota is the only example found in the United States. Its name prior to 1958, the Superior Roadless Area, suggested its character as a refuge for rugged recreation, but it was inaccurate because temporary logging roads, closed to the public, do exist there. Canada has several semi-wilderness areas. Both the Quetico and Algonquin Provincial Parks in Ontario are managed in this way. The Boundary Waters Canoe Area, which is the focus of this article, adjoins Quetico Provincial Park to the north; the two combined (often also including some of the surrounding land) are called the Quetico-Superior Area. These two semi-wilderness areas cover about 2 million acres (Figure 1).

This rarity of established semi-wilderness is surprising. Robert Marshall, who contributed greatly to the development of the National Forest Wilderness Areas and founded the Wilderness Society, called for semi-wilderness in 1933.¹⁶ The Outdoor Recreation Resources Review Commission,¹⁷ the Wild-

13. Thompson, *Politics in the Wilderness: New York's Adirondack Forest Preserve*, 6 Forest History 14 (1963).

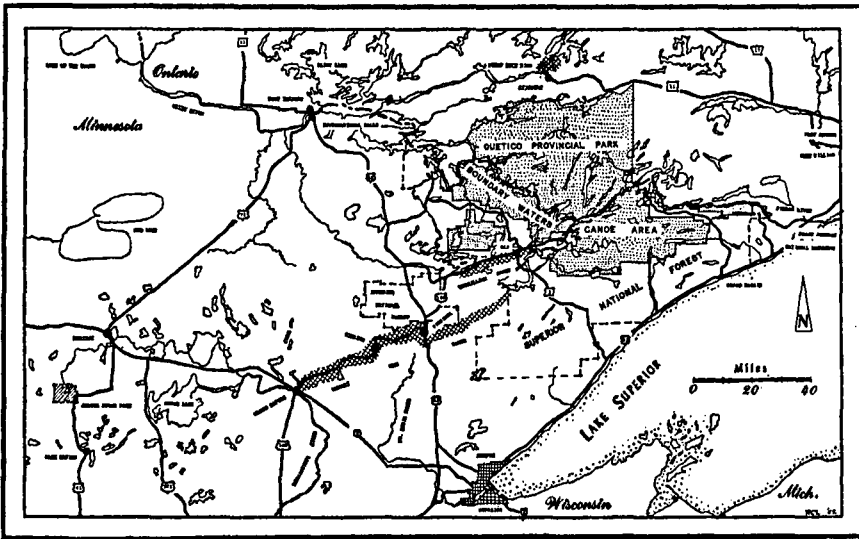
14. Wildland Research Center, Univ. of Calif., *op. cit. supra* note 6, at 50.

15. For a full discussion of the problem of defining and attaining "primitive America" see the Leopold Committee Report to the Secretary of the Interior, *Wildlife Management in the National Parks*, 69 Am. Forests 32, 61 (1963).

16. Marshall, *The Forest for Recreation*, A National Plan for American Forestry, S. Doc. No. 12, 73d Cong., 1st Sess., 473-76 (1933).

17. Outdoor Recreation Resources Rev. Comm'n, *Outdoor Recreation for America* 71 (1962).

Figure 1
THE REGIONAL SETTING OF THE QUETICO-SUPERIOR AREA



land Research Center,¹⁸ and a recent recreational planning monograph¹⁹ have repeated Marshall's plea. Informal semi-wilderness is probably shrinking fast. As recreation booms, improved public roads, public recreational facilities, resorts, and especially summer homes are spreading into many unreserved semi-wild areas.

C. Resource Use

A wilderness area serves a number of uses. It can be a setting for education and research, a protected watershed, and, simply by existing, a source of psychological satisfaction as a symbol in some natural philosophy. The main use, however, is for high-quality recreation, frequently with inspirational overtones. The Forest Service estimates there were 757,000 visits to established wilderness-type areas in 1961, out of a total of 102 million visits to the National Forests.²⁰ In 1960, 1,100,000 visits were estimated for National Park wilderness²¹ compared to 65 million for the entire National Park System, omitting the National Capital Parks.²² The Boundary Waters Canoe Area

18. Wildland Research Center, Univ. of Calif., *op. cit. supra* note 6, at 11, 303.

19. Carhart, *Planning for America's Wildlands* (1961).

20. USDA, Forest Service, Report of the Chief of the Forest Service, 1961, at 40 (1962).

21. Wildland Research Center, Univ. of Calif., *op. cit. supra* note 6, at 119-21.

22. USDI, National Park Service, *Public Use: National Parks and Related Areas*, table 2a (1960).

tallied 217,000 visits in 1961,²³ which is a very substantial proportion of all wilderness visits.²⁴

Use has generally been increasing somewhat faster for wilderness areas than for conventional recreation areas.²⁵ Visits to the Boundary Waters Canoe Area rose twelve per cent a year from 1946 to 1960 (before a change in estimation procedures sharply increased use figures); this is close to the national figure for wilderness visits. A tenfold increase in wilderness man-days has been projected for the year 2000, and an eightfold growth for the Boundary Waters Canoe Area.²⁶ This compares to a threefold increase projected to the same year for all outdoor recreation, and a fourfold projected expansion in general camping.²⁷

I

PERCEPTION OF THE WILDERNESS RESOURCE IN THE BOUNDARY WATERS CANOE AREA

For both public agencies and the visitors, three elements of environmental perception in the Boundary Waters Canoe Area will be considered: (1) the importance of the wilderness qualities relative to other potential uses, (2) the area considered to be wilderness, and (3) the essential characteristics of the wilderness—particularly the types of uses accepted.

The recreational visitors to the Canoe Area were studied in 1960 and 1961. A random sample distributed with equal probability over the entire area during the summer season was interviewed.²⁸ Almost 300 groups were questioned, and data were recorded on a formal questionnaire. A major part of the data collected dealt with wilderness resource perception.

The resource managers include the staff of the Superior National Forest, Regional and National Forest Service Officers, and to a limited extent state

23. USDA, Forest Service, Report of the Chief of the Forest Service, 1961, at 40 (1962).

24. The Forest Service's definition of a "visit" requires counting a person every time he enters the reporting area. Thus, a person camping or staying at a resort just outside a wilderness area and entering it every day for a week would technically produce seven visits.

25. Wildland Research Center, Univ. of Calif., *op. cit. supra* note 6, at 124.

26. *Id.* at 236.

27. Outdoor Recreation Resources Rev. Comm'n, *op. cit. supra* note 17, at 46.

28. The probability of a party of a given type, *e.g.*, resort guests, falling in the sample was equal everywhere. The probabilities were not equal between types—*e.g.*, between campers and canoeists—because of necessary differences in the way of contacting the different types. For example, each access point was sampled on six randomly chosen days, two weekend days for one hour each day, and four weekdays for 1¼ hours each day, and every returning party was interviewed during these times. Each campground was visited on one randomly selected weekend day and two weekdays, and one-half of the occupied campsites were randomly chosen for interviews.

and county officials. Although this group was not studied directly, the development of the policy of management for the area was studied. Based on this information and considerable informal contact with the National Forest staff, some inferences about resource managers' perception were drawn and are presented here.

A. The Resource Managers' Perception

The Superior National Forest was established in 1909 (the same year as Quetico Park). The area was viewed as conventional forest land, in need of roads and development, although there had been some earlier proposals for an international park.²⁹ After World War I an extensive road system was proposed, but a different picture of the resources of the area and its potential was presented by a young landscape architect in 1921. Arthur Carhart, employed by the Forest Service regional office, visited the area and stressed the value of the now unique forested land and undeveloped lakes and streams in a plan prospectus.³⁰ Basically he proposed the semi-wilderness management now practiced, combining logging with "the presentation of natural scenic beauties" along the waterways, and the exclusion of auto recreation.

The ideas in the Carhart proposal were taken up by private groups and gradually adopted by the Forest Service. The importance of the wilderness aspects of the area grew in the managers' view from minimal, or even negative, to dominance.

The area considered to be wilderness by the Forest Service has generally corresponded closely to the changing official boundary (Figure 1). This official area grew until 1939, contracted slightly in 1946, and has been stable since then. The map shown in Figure 1 is in front of the National Forest staff almost daily, and the boundary strongly affects their daily plans and activities.

The resource managers' view of appropriate uses in the Canoe Country has also changed. The decision to exclude public roads was made, unmade, and remade by the Forest Service and the Secretary of Agriculture in the 1920's. After 1926, the decision was firm.

Water impoundments were proposed on a large scale in 1925, weighed at the international level, and rejected in 1934. The International Joint Commission announced:

The boundary waters referred to in the Reference . . . are of matchless scenic beauty and of inestimable value from the recrea-

29. For a more complete history of the management policies see Lucas, *The Quetico-Superior Area: Recreational Use in Relation to Capacity* 70-111 (Unpublished thesis, Univ. of Minn., 1962).

30. Carhart, Preliminary Prospectus: An Outline Plan for the Recreational Development of the Superior National Forest (no date, 1921?).

tional and tourist viewpoints. The Commission fully sympathizes with the objects and desires of the State of Minnesota and the Quetico-Superior Council . . . that nothing should be done that might mar the beauty or disturb the wildlife of this last great wilderness of the United States.³¹

The Commission did state that under different conditions in the future some carefully controlled dams might be considered, but approval by each country would be a prerequisite. This appears to have been a meaningless concession to the development interests, because the Shipstead-Nolan Act prohibited water level alterations in the Minnesota portion of the Quetico-Superior.³² The area covered by this Act included almost all of the Canoe Area, plus a considerable amount of land outside the Area.

Another provision of the Shipstead-Nolan Act withdrew federally owned land from private entry (except for agriculture, which was virtually nonexistent), recognizing that more cabins and resorts were inappropriate in a wilderness environment.³³

A third provision of this 1930 law was specific protection of forests for 400 feet from the shores of navigable lakes and streams.³⁴ The Forest Service has also applied these restrictions to the small part of the Boundary Waters Canoe Area outside the area defined by the Shipstead-Nolan Act, supporting the statement that the map boundary defines "the wilderness" for the resource managers. In 1941 the Service established a zone closed to *all* logging covering the northern third of the area, and in 1948 the Service prohibited logging in even wider waterfront strips where topography would expose cutting to canoeists or boaters.³⁵

Air traffic to cabins and resorts and for fishing trips mounted after World War II, and after a prolonged and sharp controversy, airplanes (except for administration) were banned below 4,000 feet above sea level by order of President Truman in 1949.³⁶ The courts upheld the order.³⁷

In 1948 about fourteen per cent of the Boundary Waters Canoe Area was privately owned, and about forty-five resorts and one hundred cabins were located in the supposed wilderness.³⁸ The incongruity of this situation was recog-

31. International Joint Comm'n on the Rainy Lake Reference, Final Report 48 (1934).

32. 46 Stat. 1021 (1930), 16 U.S.C. § 577b (1958).

33. 46 Stat. 1021 (1930), 16 U.S.C. § 577a (1958).

34. 46 Stat. 1020-21 (1930), 16 U.S.C. § 577a (1958).

35. Superior Nat'l Forest, Plan of Management: Superior Roadless Areas 11-12, 14 (1948).

36. Exec. Order No. 10092, 14 Fed. Reg. 7637, 7681 (1949).

37. For a full discussion of the President's decision to issue this order and the subsequent cases see Andrews, *Wilderness Sanctuary* (Inter-Univ. Case Program No. 13, rev. ed. 1954).

38. From the files of the Superior Nat'l Forest, Duluth, Minn.

nized early. In 1926 it was decided that in the future no leases for resort or summer home sites would be granted on at least 1,000 square miles of National Forest land containing the best of the lakes and waterways.³⁹ The means to eliminate developments were limited, however, until 1948 when the Thye-Blatnik Act⁴⁰ was passed. This law authorized acquisition of developed property and appropriated money for purchases. The funds for acquisition have been increased several times and now total \$4,500,000. Only a few private properties now remain, and within the past year the federal government has resorted to condemnation, which will probably result in completing acquisition soon.

Motorboats in a wilderness canoe country have also been recognized by the managers of the resource as being inconsistent. The Forest Service has moved cautiously on this problem, perhaps because of the large number of boaters using the area but also because of uncertainty as to the extent of their legal jurisdiction over navigation, which is generally within Minnesota's authority.⁴¹ The policy is that motorboats "will be prohibited except where well established."⁴² No map of prohibited areas has ever been issued, so the restriction is toothless. Motorboats are being restricted somewhat, however, starting in 1963, under the Secretary of Agriculture's regulation number T-15, which prohibits leaving unattended trailers, boats, and other equipment on National Forest land. In the Boundary Waters Canoe Area this will stop the storage of boats over portages on many interior lakes and reduce the amount and area of boat use.

Quetico Provincial Park has generally similar policies, except that a lack of private land has eliminated the acquisition problem, and a small local population and an abundance of informal wilderness has reduced the controversy over the air ban and other restrictions in the park.

In summary, the resource managers have increased their evaluation of the relative importance of the wilderness qualities of the Canoe Country. The area considered wilderness was first vague, then was defined, gradually grew, and has been stable for twenty-five years. The standards of how a wilderness should be used if it is to be a wilderness have been defined more sharply, restricting more and more commodity and recreational uses other than canoeing in an undeveloped setting. These changes in evaluation were largely a reflection of national trends in thinking within forestry, the United States Forest

39. Jardine, The Policy of the Department of Agriculture in Relation to Road Building and Recreational Use of the Superior National Forest, Minnesota 1-2 (1926). Actually, the most popular section of the present Boundary Waters Canoe Area—northeast of Ely—was not a part of the National Forest until later.

40. 62 Stat. 568 (1948), as amended, 16 U.S.C. §§ 577c-h (1958).

41. Wildland Research Center, Univ. of Cal., *op. cit. supra* note 6, at 314.

42. Superior Nat'l Forest, *op. cit. supra* note 35, at 15.

Service, and the conservation organizations, some of whom took a particular interest in the Quetico-Superior. All of the administrators' attention so far has been on eliminating *inappropriate* uses; no policy prevents *excessive* use of a resource which has solitude and relatively unmodified physical conditions as major components, although the managers are aware of this problem and concerned about it.

B. The Recreationists' Perception

The visitors to the Canoe Country in 1960 differed markedly in their view of the resource, both among themselves and with the resource managers. They differed on all three counts: importance of wilderness, area of wilderness, and essential qualities of wilderness.⁴³ There was order, however, in the variation related to the type of recreational activity being pursued.

Wilderness was a major attraction for canoeists, important for roadside campers, but secondary for all other visitor types. Table I presents responses to the question: "Does this area have some characteristics that caused you to come here rather than some other vacation region in the United States or Canada? If yes, what characteristics?" ("This area" was defined for the respondents and included the Boundary Waters Canoe Area and its immediate periphery.)

It is interesting to note that the two classes of canoeists differed markedly in their view of the area's distinctive attractions. The paddlers viewed the

TABLE I
PER CENT OF PARTIES CITING CERTAIN QUALITIES AS
A BASIS FOR CHOICE OF THE AREA (SUMMER 1960)

Type of recreationist (and number)	Attractive qualities cited				
	None, vague, tautological	Wilderness*	Fishing	Scenery	Facilities
Canoeists (85)	6	71	29	28	6
Paddlers (64)	6	73	16	28	8
Motorized (21)	5	62	67	24	0
Day-use (9)	33	33	33	11	0
Auto campers (83)	8	51	30	31	13
Boat campers (23)	17	35	48	26	13
Resort guests (57)	12	39	42	42	9
Private cabin users (21)	38	10	14	33	0
Total (278)	12	49	33	32	9

* The six major types of recreationists (ignoring the subdivision of canoeists) differed significantly in the frequency of mention of wilderness attributes at the .995 level when tested by chi-square. The other qualities were not tested.

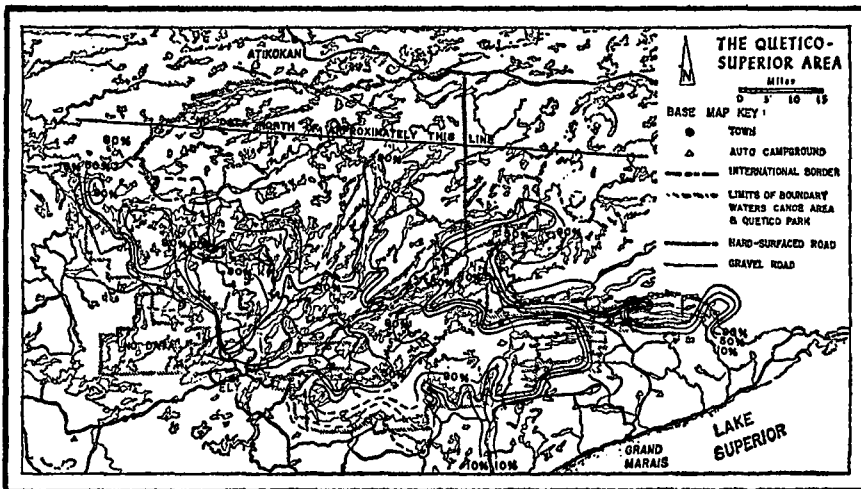
Note: All responses, sometimes three or four per party, were tabulated; therefore, the totals exceed 100 per cent.

43. For a general discussion of the internal, subjective definition of "wilderness" see Carhart, Planning for America's Wildlands 34-42 (1961).

area as a wilderness in which to travel and camp. The canoeists using outboard motors saw the area as a place to enjoy wilderness fishing. Similarly, the boat campers differed from the car campers. Previous research has contrasted the wilderness images of canoeists and campers, grouping these quite different sub-types of canoeists, and perhaps campers as well (the definition of a camper is unclear).⁴⁴

The area considered wilderness was estimated by asking each sample group, "Do you feel that you are in 'the wilderness' now? Where did the members of your group feel 'the wilderness' began?" "Wilderness" was not defined. Each group's route was also obtained and mapped. This made it possible to classify each lake or section of road visited by the group as wilderness or not-wilderness, in their terms. The aggregation of these classifications produced wilderness-perception maps for each user type, with isolines indicating the proportion of visitors considering that place as wilderness. Figure 2 shows this map for paddling canoeists. This was the most demanding group (and produced the most complex map). The paddlers' wilderness is smaller than the officially defined area, even if the 10-per cent isoline is taken as the limit. Only one

Figure 2
THE AREA CONSIDERED "WILDERNESS" BY THE PADDLING CANOEISTS



The isoline values are the per cent of parties visiting each area which described that area as being "in the wilderness." The broken portions of the isolines indicate that data were lacking and subjective estimates were made. The map is based on 1960 data.

44. Taves, Hathaway & Bultena, *Canoe Country Vacationers* (Univ. of Minn. Agri. Expt. Sta. Misc. Rep. No. 39, 1960); Bultena & Taves, *Changing Wilderness Images and Forestry Policy*, 59 J. Forestry 167-71 (1961).

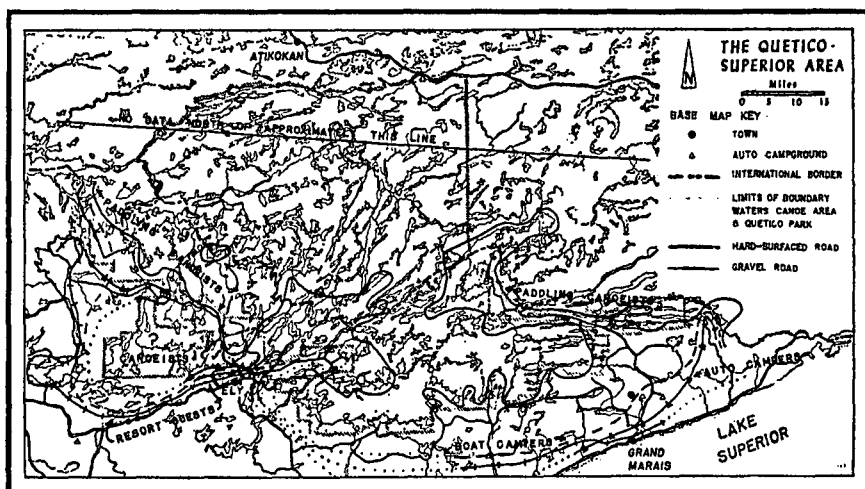
significant area, directly north of the town of Ely, was outside the official boundaries but inside the paddlers' wilderness. It should be pointed out that the location of the official boundary was not well known among the public.

A summary map was drawn (Figure 3) from the series of maps for each user type, taking only the 50-per cent isoline from each. All the groups except canoeists were quite similar in their areal perception of the wilderness. Whether people slept in beds in a resort, camped by their cars, often in a trailer, or bedded down on the ground on a rocky islet reached by a cruiser, they all entered their wilderness at about the same places. What all of these groups had in common was the use of boats rather than canoes. All of these boating groups saw the wilderness as much larger than the established area. The three separate official areas fused into one large wilderness. The 90-per cent isolines were also very similar for these boating classes, and approached the official boundary fairly closely.

The motor canoeist sample was too small for a satisfactory map, but the data suggest that such a map would be intermediate between the paddling canoeists and the motorboaters.

The views of the essential characteristics of these differing wildernesses can be inferred in part from the maps, and were also directly investigated in the

Figure 3
THE AREAS CONSIDERED "WILDERNESS" BY AT LEAST 50 PER CENT
OF THE VISITORS IN EACH OF THE FOUR MAJOR USER TYPES



The area in the interior—that is, away from the roads and generally to the north of the line for each user type—was rated as "wilderness" by 50 to 100 per cent of the visitors of that type reaching the area. The dotted portions of the lines indicate data were lacking, and subjective estimates have been made, based on 1960 data.

interviews. Again, the type of water transportation seems to account for a large part of the variation.

The paddlers' map shows that roads are almost never in "the wilderness." The effect of buildings was not directly tested, and since buildings and motorboats go together the two effects cannot be completely separated in interpreting the maps.

However, recreational use seems to affect the paddling canoeists' wilderness perception importantly. Heavily used areas were much less often considered wilderness. Moose Lake, located east of Ely and the most heavily used point, was considered non-wilderness by all twenty-three paddling canoeist groups that were sampled there. Total seasonal visitors for each location were estimated and the places were ranked accordingly. The locations were also ranked on the basis of the per cent of the paddling groups classing each location as wilderness. The Spearman rank correlation coefficient for the visitor and the wilderness ratings was $-.42$. This correlation seems fairly strong when it is considered that season-visitor totals are only a rough index of the number of other visitors observed by the sample parties on a given lake, particularly because of the variation in lake size. The absence of buildings where use was heavy did not raise the level of perceived wilderness.

The type of use encountered seemed even more important to paddlers. Comparable levels of use produced a higher level of perceived wilderness where boats were absent (about three times as high, generally). This antipathy for boats was also brought out in questions about the groups' reaction to meeting other types of groups. Of the paddling canoeists 61 per cent disliked meeting motorboats, 37 per cent were neutral, and only 2 per cent (one party) enjoyed meeting other boats. In contrast, only one group disliked meeting fellow paddlers.

Remoteness, surprisingly, did not have an identifiable relation to the paddlers' wilderness. Where use was comparable, lakes near access points were perceived as wilderness as often as those four or five portages away. This finding needs further substantiation, but it may have interesting implications for a policy establishing more small wild areas.

Logging appeared much less incompatible with wilderness recreation than crowding and conflicting types of recreation.⁴⁵ The area northeast of Ely was not generally considered wilderness by canoeists. This area is in the no-cut zone, but it is heavily used by canoeists and boaters. Lightly used, boat-free areas in the west and south-central portions of the Boundary Waters Canoe Area were being logged, but they were considered wilderness by almost all of

45. See Lucas, *Visitor Reaction to Timber Harvesting in the Boundary Waters Canoe Area* (USDA, Forest Service Res. Note LS-2, Lake States Forest Expt. Sta., 1963).

the sample parties there. These samples were small, of course, because of light use.

The hypothesis that use was light because people were avoiding the logging areas cannot be definitely rejected at this point, but it appears unlikely. Only 30 percent of the sample even knew logging was permitted. This compares to 28 per cent of the Wildland Research Center's smaller sample.⁴⁶ Only 8 per cent of the canoeist sample reported noticing any signs of logging, and only half of these objected to what they observed. Low local relief and lack of travel off water routes appear to make the restricted timber harvest policy quite effective. However, public opinion appears strongly opposed to the idea of logging. The Wildland Research Center found 75 per cent of their sample (91 per cent of the sample were canoeists) opposed to timber cutting.⁴⁷

The motorboaters were not as demanding in wilderness standards as canoeists. Roads were accepted in their wilderness. Over half of the groups in each boating type entered their wilderness after passing the last town on the forest roads. Some of these roads are asphalt-paved, but they are relatively free of signs and buildings. Lakes with buildings were still considered wilderness by almost all motorboaters.

Motorboaters tolerated recreational use at high levels. Even on the most heavily used wilderness lake—Moose Lake east of Ely—58 per cent were in their wilderness and 79 per cent of the boaters reported they were not bothered by crowding at all. Only 7 per cent were "bothered quite a bit" by crowding. In contrast, at the same location, only 45 per cent of the paddling canoeists made no complaints about crowding, 29 per cent were "bothered quite a bit," and none considered Moose Lake to be wilderness.

The visitors using powerboats did not distinguish between the types of recreationists encountered. Boats and canoes were perceived essentially as one class, except that somewhat more motorboaters reported enjoying meeting paddlers, apparently as a touch of local color. Only 3 per cent of the boaters disliked meeting other boaters or motor canoeists. None objected to paddlers. Neutrality towards boats and motor canoes marked 73 per cent of the sample, and 55 per cent were neutral towards paddlers. One-fourth enjoyed meeting boats or canoes with motors, and 45 per cent enjoyed meeting the purists doing it the hard way—the paddlers.

Logging was observed by a slightly higher proportion of boaters than canoeists. This is probably because the question included a broader area than the Boundary Waters Canoe Area, and these groups tended to see and report logging trucks and other activities associated with logging outside the estab-

46. Wildland Research Center, Univ. of Calif., *Wilderness and Recreation* 153 (Outdoor Recreation Resources Rev. Comm'n Study Rep. No. 3, 1962).

47. *Id.* at 159.

lished area more often than canoeists. Of the boaters, 21 per cent observed logging but only 8 per cent were bothered by what they saw.

Resource perception has been differentiated on the basis of the type of recreation, particularly the type of transportation used. This, in effect, says that the choice of a boat or canoe reflects a cluster of present values and ideas. The stability of this relation over time is unknown; the effect of future technology is unforeseeable. The clusters of values are also unlikely to remain constant. Many questions remain to be answered—and some yet to be asked—about the development and meaning of outdoor recreational resources and the wilderness.⁴⁸

II

RESOURCE USE AS INFLUENCED BY PERCEPTION

Three rather different perceptions of the wilderness resource of the border lakes held by three groups (managers, canoeists, and boaters) have been presented in this article. To what extent do these perceptions influence the use of the resource by these three groups?

A. Resource Managers

Much of the influence of the land managers' view of the resource was reflected in the policies developed, and this has already been discussed.⁴⁹ However, there are a few other indications of the effect of their resource perception. The examples which come to mind all hinge on the perception of the boundary of the wilderness. I have suggested that the Forest Service thinks of the line on the map as the boundary. Indeed, the law requires them to do so in many ways, such as road building, logging, and private airplane travel. One result of this view is that the Forest Service has favored improving access roads to make it easier and pleasanter for people to reach the wilderness, which the Forest Service has assumed is the attraction and has considered to begin at the official boundary. But to many visitors these roads are located in their "wilderness": only 38 per cent of the sample groups thought that "straightening and blacktopping more roads" was "a good idea."

The same resource image may have contributed to the location of many boat accesses and campgrounds at the ends of the roads, as close to the wilderness as possible, while some large, attractive lakes outside the official wilderness area have no developments.

In a few cases in the past, this view of the resource may have contributed

48. See Burch & Taves, *Changing Functions of Recreation in Human Society*, Outdoor Recreation in the Upper Great Lakes Area 8-16 (USDA, Forest Service, Lake States Forest Expt. Sta. Paper No. 89, 1961).

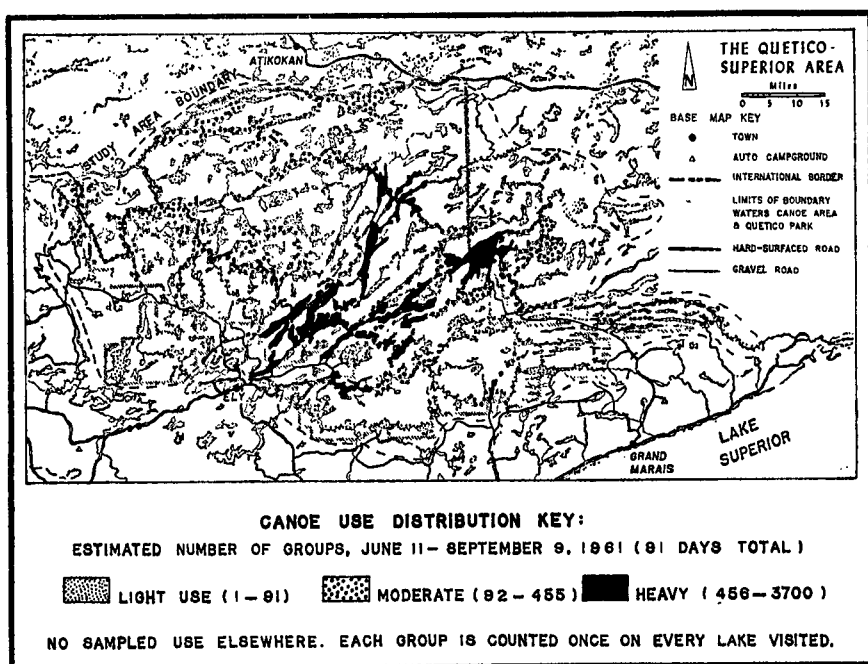
49. See text at 399-402, *supra*.

to decisions to bring access roads directly to lakes partially within the Boundary Waters, building past other lakes which are on canoe routes to the peripheral lakes, and thus reducing the effective size of the roadless area. This may have had some role in the construction of the last section of the Gunflint Trail many years ago, or of the road to the shores of Brule Lake after World War II. There seems to have been some reappraisal on this point, and plans to extend a road and make access easier on the Moose River have been set aside.

B. Recreationists

The canoeists used almost all of the area, penetrating to the core (Figure 4).⁵⁰ This was most true of the paddling canoeists and appears consistent with the high value they place on the wilderness attraction, their perception of a

Figure 4
THE DISTRIBUTION OF CANOE USE



50. The maps of use distribution are based upon estimates developed in a field survey in 1961 involving traffic counts, sample interviews, and business records. The procedures and details of estimates for all types of users are included in Lucas, *The Recreational Use of the Quetico-Superior Area* (Manuscript in preparation, 1963); Lucas, *op. cit.* *supra* note 29.

small wilderness located in the core, and their objection to crowding at a low level of use.

However, canoeists were heavily concentrated at one access point. Over half used Moose Lake, although there were more than fifty other possible starting points, at least twenty of them seemingly very attractive. This is not consistent with the objection to crowding. The basis for the popularity of Moose Lake appeared to be its location deep within the interior (the road to the lake is surrounded by the Boundary Waters Canoe Area) and its closeness to the main, central entry to Canada's Quetico Park. These aspects of the situation are all evident on the map, but new visitors learn of the heavy use only after the choice of route is made. Knowledge of alternative locations may be limited, but this was not studied.

Another element in the wilderness perception of many people apparently affects the distribution of use. That is the lure of the North and Canada. Thus, the separate portion of the Boundary Waters Canoe Area south of the road running north and west from Ely was almost unused.

The motor canoeists did not go as far as the paddlers. In most cases they apparently went just far enough to find their wilderness fishing.

The motorboaters, on the other hand, were concentrated around the periphery and on several large international border lakes with truck or tramway portages leading to them (Figure 5). Most of the core was unused. The attraction of the North was weak. This is consistent with boaters' greater interest in fishing and scenery than wilderness, their large wilderness, and their lack of concern with crowding.

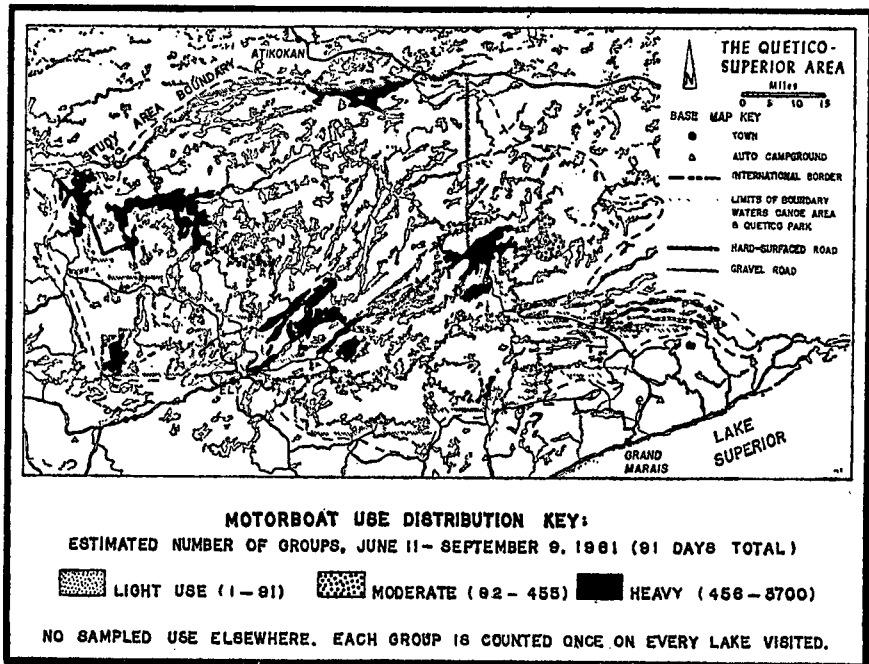
CONCLUSION

All resources are defined by human perception. This has been said more often than used as an organizing concept in research. The importance of resource perception is particularly obvious for recreational, scenic, and amenity resources because of the internal, personal, and subjective way such resources are used. Within the general class of amenity resources, the perception of wilderness resources is even more obviously necessary to understanding or action because of the prominence of the subjective aspect.

Despite the complete subjectivity of wilderness and the variation in its perception, neither the social scientist nor the land manager need throw up his hands in bewilderment. Empirical research in one wilderness-type area, the Boundary Waters Canoe Area, suggests that considerable order can be imposed even upon subjects as elusive as solitude and beauty.

This order in perception of the wilderness resource has implications for the management of the resource. The implications all suggest a more flexible concept of "the wilderness" by the resource managers, both in area and in content. There are two main wildernesses—the paddling canoeists', and the motor-

Figure 5
THE DISTRIBUTION OF MOTORBOAT USE



boaters'—with a smaller group of motor canoeists defining an intermediate wilderness. None corresponds closely to the official wilderness.

The differences between these wildernesses may provide a key to increasing the capacity of the area in order to provide high-quality recreation. The highest priority use by established policy is wilderness canoeing. The canoeists' wilderness is easily destroyed by heavy use, especially boat use. The boaters value wilderness much less highly and fishing more highly, accept heavy use, and are usually in their wilderness before they reach the areas used by the canoeists, or the canoeists' wilderness. It would seem that the canoeists' satisfaction could be raised, or kept high as visitors increase, without reducing the motorboaters' satisfaction by concentrating new access points, campgrounds, and resort or cabin site leases, and managing the fishing intensively in the band of forests and lakes away from the Boundary Waters Canoe Area but inside the wilderness for most boaters.⁵¹

The study also implies that a decision must be made between limiting the

51. This conclusion agrees with the suggested system of concentric zones of progressively less primitive character surrounding strict wilderness cores in Carhart, *Planning for America's Wildlands* (1961).

numbers using a wilderness and letting the wilderness as defined by the visitors vanish from overuse. This disappearance has already taken place in part of the Canoe Country for the more sensitive types of users, and use trends suggest that the wilderness will retreat farther in the future for all types of visitors if use is unlimited.

The same zoning approach might have value in western mountain wilderness-type areas. The paddling purist may have his counterpart in the "backpacker." The jeep or motorscooter may play the motorboat's role.

The wilderness perception framework for research may be useful in developing the semi-wilderness concept and applying it to different settings. Despite the apparent objection to the idea of semi-wilderness in the abstract in the Canoe Country, pragmatically the system seems quite successful. There may be critical points in all competing uses which correspond to breakpoints in wilderness perception by certain classes of recreationists. Empirical research within this theoretical system may identify these thresholds. Perhaps some wilderness should have pre-Columbian ecological conditions restored insofar as possible and use limited to a few backpackers, while other "wilderness" may only need to be a place where a family can pitch a tent by their car isolated from trailers, portable electric generators, and transistor radios. If research on wilderness perception can identify segments within this range which are characteristic of certain types of recreationists, it should be possible to increase both the amount and quality of wilderness recreation. Greater diversity in wilderness management will probably increase the complexity of administration, but growing use and changing perceptions may make more flexibility essential in the future. Guidelines will be needed.