

THE SNOWMOBILE

by JOHN W. HETHERINGTON, *Vice President for Marketing, Ski-Doo Division, Bombardier, Ltd., Montreal, Quebec, Canada.*

ABSTRACT. As use of the snowmobile has increased—nearly 1½ million now in use—the development and maintenance of snowmobile use areas has become a concern. A study made by Bombardier, Ltd., calls attention to safety problems, costs, trail design and maintenance, sign systems, rules and aids for snowmobilers, safety patrols and other services, and safeguards for the environment.

THE NUMBER of people who spend their time in the out-of-doors increases dramatically each year. It has been estimated that the American public will enjoy some 186 million recreation-days in 1971. Unfortunately, as the number of people who are turning to the out-of-doors increases—in 1970 nearly 400 million people spent their leisure time automobiling, camping, hunting, boating, and snowmobiling—the amount of natural resources remains the same; but with careful planning, more recreational areas can be developed, making our natural resources more productive.

It is up to people in the recreation industry to assist in developing methods whereby these millions of people can make the most efficient use of the available land. Governments at all levels will have to continue to invest in more recreational facilities. But they need to have all the necessary information to get the most for the dollars that they invest. And the problem must definitely be approached with an eye toward the protection of the environment. In this way, the concerns of all people, outdoorsmen, environmentalists, conservationists, sportsmen, will be taken into consideration.

Up until last winter there was little factual information about the development and maintenance of snowmobile use areas. In an effort to develop this information, Bombardier Limited undertook an extensive survey of snowmobile use areas.

THE BOMBARDIER STUDY

During the winter of 1971, Bombardier conducted a qualitative sampling of approximately 50 snowmobile use areas throughout the North American snowbelt. To achieve a representative geographic sample, the leading snowmobile manufacturer asked each of its 14 distributors to submit 5 to 10 use areas in his particular territory. Snowmobile associations and park organizations also were consulted.

Previously, Bombardier had conducted a mail survey to gather information about snowmobile rental operations. The returns were so few and the data so sketchy that no accurate conclusions could be made. Use area operators were generally an unsophisticated group of people who kept no records and had little detailed information about snowmobile facilities. However, it was discovered that there was a great demand for facts on snowmobile trail areas.

and rental operations, as the few people who did respond to the initial Bombardier survey all asked to be sent the findings when they were produced.

It became evident that some organization would have to go into the field and gather the information firsthand. To do the research, Bombardier selected three outdoor writers who had extensive snowmobile experience.

All were qualified photographers, which proved extremely beneficial because, once again, detailed information was difficult to obtain. Their photographic records contributed greatly to the study. They used a specially designed two-page form to obtain specific information. From 15 January to 15 April, they conducted interviews with the people involved in developing and maintaining each area.

Because many areas are really not a specific place of business, the researchers had to seek out and talk to snowmobile club members and officers, park and recreational area personnel, resort owners, and snowmobile dealers. To gage the economic impact of snowmobiling in these areas, the team of researchers also spoke with restaurant and motel owners, service station operators, and chamber of commerce people, and confirmed the fact that snowmobile use centers are a definite financial boon to any community.

To achieve a true cross-section, the researchers visited areas in all sections of the United States and Canadian snowbelts. Although many aspects of trail development are universal, they found that each region has its own unique problems and requirements. The wide open spaces of the western United States contrast greatly with the heavily wooded areas of Michigan, Quebec, or New York.

Not only was the study structured to include samples from a broad geographic base, but every conceivable type of use area also was sought out. Included were visits to nine state and six national forest land use areas, as well as five areas developed by cities or townships. Fourteen trail networks visited were developed by snowmobile clubs; 11 were privately run enterprises. Two areas of corporation-owned

land open to the public were surveyed, as were three golf courses. Some systems ran rental operations in conjunction with the trails. As on ski areas, some trails were for expert snowmobilers, some for beginners.

SAFETY PROBLEM

Bombardier undertook this project for three reasons. First, snowmobiling in a well-maintained and controlled use area can eliminate many of the safety problems that confront the industry today. Bombardier has been studying the safety problem for the past 4 years in cooperation with the National and Canada Safety Councils. Investigations show that a majority of snowmobile-related fatalities occur on roads and highways. Snowmobiles are designed as off-road vehicles, and should not be operated on the road. In most states and provinces it is against the law to use them on roads.

Nevertheless, people are driving their sleds on roadways and are dying because of it.

Why do people disregard the facts and continue to operate snowmobiles in dangerous situations? It is largely because there are not enough suitably designed use areas available for the snowmobiling public.

Safety problems arise from irresponsible operation in the wrong locale and are not inherent in the machines themselves. Many of the accidents, injuries, and fatalities can be eliminated through the development of well-designed trail facilities, which would put machine operators in a controlled use situation and thus would foster safe enjoyment of this family sport.

ENVIRONMENTAL PROBLEM

The second reason for this study is that snowmobiling has been severely criticized recently by some environmentalists. Part of this criticism is justified, some is not; and much of it lies somewhere in the middle—in other words, no documented conclusions can be drawn because the problem has never been thoroughly and objectively researched.

Environmental problems that do exist can be controlled by developing trail areas designed with environmental safeguards in mind. Trails can and should be routed so that the noise of the machines will not bother local residents. They should be constructed away from areas where wildlife winters and where plant life might be affected. Use areas should be developed so that they blend in naturally with the terrain.

Finally, Bombardier undertook this study because snowmobiling has mushroomed into unbelievable proportions in slightly more than a decade. Last year the industry produced 563,000 snowmobiles, and about 500,000 were sold at retail. The number of machines now in use is 1,400,000 and should exceed 2 million by the end of next year. In many areas of North America where machine registration is high, snowmobilers are finding that the space where they can enjoy their sport seems to become more limited each year.

What are the specifics of use-area development? Let's take a look at what the study uncovered and what Bombardier recommends should be included in acceptable use areas.

The first concern to any use area, of course, is financing. How much will it cost to develop snowmobile trails? In most cases studied, the development of the trail system itself was very inexpensive. A majority of successful trail systems utilize some type of trails already in existence, such as old logging roads, unplowed or unused highways, abandoned railroad rights-of-way, bridle paths, or hiking trails. Over 80 percent of the use areas sampled rely heavily upon old logging roads, which created a good natural trail system that took on a spider-web effect.

If already existing trails or roads of one type or another are used without the construction of any new trails, development costs will be minimal. Almost every trail system built on already existing trails does not even list a development cost figure in its books. In most cases volunteer workers, using chain saws, etc. to clear brush and stumps from the trail, needed only 2 or 3 days to prepare an area.

COST FACTORS

The Bombardier study showed that the other cost factors to consider in the development of the trails involve the building of bridges over land or water hazards, the clearing of new or connecting trails, and the erection of barriers around dangerous or sensitive areas. Labor costs for clearing the trails and preparing them for snowmobiling, and the cost of clearing equipment, were provided on a volunteer basis in the majority of instances. In much of the snowbelt there still remain thousands of miles of trails that with a little effort can be made ideal for snowmobile use. Some funds will have to be spent on building access trails and linking together available use areas. In the future we must be ready to make the necessary investment in the heavy equipment that will be required to develop trails from scratch.

Remember that at this point we are not talking about maintenance, signing, restaurants, or any associated facilities.

From the areas that did keep an accurate record of the cost of trail development, it has been determined that the cost ranges between \$100 and \$150 for each mile of trail constructed, depending on the type of terrain, equipment, and amount of manpower required.

The report covers a few new trail systems that were developed with the help of landscape architects, environmental experts, and park supervisors. These individuals were able to design interesting trail systems by using topographical and aerial maps. These people also can give advice when already existing trails need to be altered to make them acceptable for snowmobile use because of safety or environmental considerations. Most of these people, especially if they were snowmobilers themselves, volunteered their time.

These then are the types of trails found available:

A system on public land financed by snowmobile registration fees—some enlightened governments have taken definite steps to develop the public land under their jurisdiction.

A system on private or public lands informally developed by snowmobile clubs.

Networks on the property of large corporations such as paper companies or land developers.

Regulated areas set up by local businessmen on private land with use fees or rental machines.

A system on private land for the use of patrons of a lodge, hotel, or resort.

These last two types are the most tightly controlled of all use areas.

Through the survey it was found that a minimum depth of 3 inches of snow is recommended for snowmobile operation. Good trail systems are designed with definite destinations or routes in mind, showing points of scenic or historical interest. The topography was varied to keep the rider interested and on the trail. The most popular trails connect towns, scenic lookouts, or restaurants and give a purpose to snowmobile trips.

TRAIL DESIGN

To get the maximum return from available land, trails should be designed for multiple use such as snowmobiling in the winter and trailbiking, horseback riding, and hiking in the summer. Trails should not conflict with other winter sports like cross-country skiing or snowshoeing. Not only is this unsafe; it also infringes on the rights of others. Bombardier also advocates the concept of sensible zoning of areas where no vehicular traffic is permitted. These wilderness areas should be respected by all those concerned.

The study indicates that trails should be at least 10 feet wide and run in only one direction. Bombardier found that even some very wide trails had dangerous spots at sharp curves if they ran in both directions. To eliminate possible head-on collisions, one-way trails should be the rule. On some extremely wide trails, the construction of a median in the center was found to be an effective means of dividing a trail.

Width of trails may have to vary because of the terrain, but situations where a snowmobile must attempt to squeeze between two trees or other fixed objects should be avoided. Also, if trails are 10 feet wide, trail maintenance will become easier

because efficient maintenance vehicles are at least 7 feet wide.

Though the trail systems visited varied in length from 4 miles to 500 miles, the average and suggested trail length is 50 miles. The most popular system is the spider web, which in most cases fits perfectly into the pattern of old logging roads that were utilized for the trails. Small looped trails within a larger system provide suitable length for all types of riders. For instance, in a system where the longest trail is 50 miles, shorter trails of 1, 5, 10, and 25 miles within the longest trail are ideal. The important thing is to make certain that a snowmobiler can easily return to his starting point. The best areas have a sign-in, sign-out system set up at the start of all trails in order to keep track of how many people are out on the trail.

Some areas also identify trails according to their difficulty, specifying certain trails for beginners and others for intermediates or experts.

SIGN SYSTEM

The Bombardier study also deals with the problem of adequate trail signs. Although a uniform sign system has been developed, almost every trail area visited has designed its own signing system. Bombardier encourages the utilization of the standardized, international signing system developed by the International Snowmobile Congress and the United States Bureau of Outdoor Recreation.

Signs should be posted in such a manner that they do not detract from the natural beauty of an area. At the same time, however, directional arrows and reassurance markers should be used in quantities adequate enough to do the job. Most areas occasionally used helpful mileage signs, as well as signs noting various points of interest along the trail. The safest systems have stop signs posted at trail intersections and public highways.

Markers should be erected to denote hazardous or sensitive areas. Areas that snowmobilers should stay away from can be effectively marked off with bright plastic flags or snow fences.

The Bombardier survey shows that it is very easy to stray off a trail when riding over a stretch of open land, and that finding the place where the trail goes back into the forest can be quite difficult. Make sure trails are identified over long open stretches.

Though to the uninitiated, banked curves may be considered safer than flat curves, area operators interviewed believe that banking curves encourages high speeds, while flat curves will result in a reduction of speed. The study shows that banked curves should be used only to protect snowmobilers from a sudden drop in terrain or a fixed or hidden object. Trails running adjacent to a sudden drop in terrain, such as a deep valley or a cliff, should be avoided, as trails tend to get drifted over and side-hilling on a snowmobile becomes difficult. If rerouting is impractical, the construction of a fence or other barrier between the trail and the drop will minimize this problem.

RULES & AIDS

Snowmobilers should not go out on the trail alone. The study found that the better use areas enforce a "buddy-system" rule. Required check-ins and check-outs are advisable. Both of these rules will cut down the number of lost or stranded snowmobilers.

Safety instructions should be made available to all snowmobilers in the form of booklets. Practical instruction for the beginning snowmobiler is a must, especially in rental operations. Bombardier has distributed nearly 2 million of its safety booklet, "Play Safe," which was produced in cooperation with the National and Canada Safety Councils. "Play Safe" is available free from Ski-Doo dealers, distributors, and both Safety Councils.

The best trail systems have maps posted along trail routes, showing the snowmobiler where he is and where he is going. Maps also should be distributed by regional tourist offices, clubs, and local governments. With 65 percent of all snowmobiles sold in rural areas, the development and distribution of trail maps is essential to the future of this industry. More and more metropolitan dwellers are beginning to enjoy the

sport of snowmobiling. Unlike their country cousins, they are not familiar with convenient places to run their machines. Recognizing this fact, many snowmobile distributors and dealers have taken the lead and have produced their own trail and use-area maps.

Twenty-five percent of the use areas contacted in the study have organized trail patrols. The best examples cover every mile of trail in the system at least once a day. Safety patrols should not only service machine breakdowns, help stranded snowmobilers, and give medical aid in emergencies, but also they should serve as the area's police force, stopping, warning, and even expelling snowmobilers who are breaking the area's rules.

Associated facilities that make a trail system more attractive to snowmobilers include adequate parking space for use-area size. This is extremely important. Many areas reported that people were unloading their machines on the side of roads—a definite safety hazard. It does not do much good to have 100 miles of trails that only a handful of people can get to. Space should permit the loading and unloading of snowmobiles from trailers. County governments should be called on to keep roadways and parking areas well plowed. Picnic areas, restroom facilities, warming huts, and litter cans are some basic services that greatly enhance any area.

Lodges and restaurants are found at most privately run resort-oriented areas. In many cases this type of facility is, of course, not feasible. But even a simple snack bar arrangement can be a great service to the snowmobiler while at the same time providing an excellent source of income for the use area. Gas, oil, and repair services also are suggested.

Although not generally the rule, some private areas charge a fee for using the trails, and several also have rental machines. The fee for a snowmobiler with his own machine varied greatly according to the available facilities, but an average was \$10 a day. Most private areas operating to make a profit from their trail system offer machines for rental at an average cost of

between \$7 and \$10 per hour. Special full-day rates also are available. They range from \$25 to \$40 a day.

TRAIL MAINTENANCE

Most areas have solved the insurance-liability problem by requiring a signed waiver of responsibility from anyone using the trail system or renting a machine. Renters also are responsible for machine damage. Local laws and insurance situations should be investigated by anyone operating a use area.

The biggest problem, found universally throughout the use areas visited in the Bombardier study, is trail maintenance. This is where the largest amounts of time, money, and effort are spent on every use area. Maintenance equipment must be purchased; personnel must be hired. Moguls and bare spots must be groomed regularly if area operators wish to have snowmobilers return.

One problem in trail maintenance has been simply a lack of equipment available to do the job. Crude attempts were made, and people come up with some pretty inventive measures; but most were inefficient and just not acceptable. This past winter, Bombardier began to produce what it hopes will be the solution to the trail-grooming

problem—the Skidozer 200. This unit was designed specifically for trail maintenance.

Only the more sophisticated areas or the ones in business for their own financial gain have detailed records of development and maintenance costs. Volunteer man-hours accounted for over 85 percent of all trail maintenance and construction. The survey does reveal that it costs approximately \$100 per mile per season to maintain trails. This figure is based on every mile of trail being groomed at least once every other day. The money goes toward operators' salaries, machine depreciation, and maintenance of equipment. Use fees, gas and oil services, and restaurants help offset maintenance costs. Volunteer man-hours and machinery will also lower this cost.

More needs to be done to encourage use-area development throughout the snow-belt. Economically these trails systems are a boon to the communities in which they are located. Virtually every area contacted emphasized a new economic prosperity as an outgrowth of snowmobile activity. But this is not the only consideration.

Trails are needed to insure safety, to safeguard the environment, to protect the rights of non-snowmobilers, and to give those people who enjoy the thrill of an afternoon's ride across a snow-white trail a change to use their machines in a properly constructed and maintained area.

