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Report to Congressional Requesters

September 2000

FEDERAL LANDS

Agencies Need to Assess the Impact of Personal Watercraft and Snowmobile Use

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United States General Accounting Office
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Resources, Community, and
Economic Development Division

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September 15, 2000

The Honorable Bruce F. Vento
The Honorable George Miller
House of Representatives

Many of our national parks, forests, wildlife refuges, and other federal lands are a potential source of recreational opportunities for the estimated 14 million adults who used a personal watercraft or snowmobile in 1999. However, the recreational use of these vehicles is often criticized as causing damage to plants, wildlife, and other resources, as well as creating safety problems and conflicts with other visitors to federal lands. Determining the extent to which these vehicles should be allowed to operate on these lands is a contentious and challenging issue faced by federal land managers.

Although this issue draws considerable attention, relatively little reliable information has been assembled about the extent to which personal watercraft and snowmobiles are used on federal lands, the process by which decisions about their use are made, or the extent of monitoring being done in areas where their use is allowed. As a result, you asked us to provide more information on these matters. We focused our work on the four major federal land management agencies—the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service in the Department of the Interior, and the Forest Service in the Department of Agriculture. Collectively, these agencies manage about 95 percent of all federal lands. As agreed with your offices, we addressed the following questions:

- To what extent are personal watercraft and snowmobiles used in federal units managed by these agencies?
- What are the bases for agency decisions to authorize or prohibit the use of these vehicles?
- In federal units where their use is allowed, do restrictions exist on operations, and how are these restrictions enforced?
- To what extent have these federal agencies assessed the impact of such use?

To respond to these questions, we asked managers from each of nearly 1,200 federal units within the four agencies to answer a questionnaire.

These units include the lands and waters in such areas as national parks and monuments, national forests and recreation areas, wildlife refuges, and grasslands. Managers from more than 85 percent of these units responded. The questionnaire asked, among other things, about whether lands or bodies of water in their unit had the capacity for personal watercraft or snowmobile use;[1] if so, whether prohibitions or restrictions were in place; and what information, if any, was available on the impacts of recreational use of these vehicles. The resulting information, while not inclusive of every unit, is nonetheless more comprehensive than any other information available. Appendix I describes our scope and methodology in more detail; appendix II contains agency-by-agency responses to our questionnaire.

Results in Brief

In fiscal year 1999, personal watercraft, snowmobiles, or both were used for recreation in 475 of the 1,018 (47 percent) federal units that responded to our questionnaire. This rate varies by agency, from 31 percent of the units managed by the National Park Service to 82 percent of the units managed by the Forest Service. Personal watercraft are used in more federal units than are snowmobiles. Although personal watercraft and snowmobile users constitute a relatively small portion of total visitors to most units, during some seasons they may represent a significant portion of the total number of visitors to some units. For example, in Yellowstone National Park, snowmobile users make up more than 43 percent of the park's winter visitors.

Several factors determine whether personal watercraft or snowmobile use is permitted in a particular federal unit, including specific provisions in law and an agency's regulations and policies. Specific provisions in federal law prohibit the use of these vehicles in some locations, such as wilderness areas, and specifically authorize their use in others, such as national recreation areas. If no laws specifically prohibit or authorize use, the federal agency responsible for managing the land and water makes such a determination, generally on a unit-by-unit basis. Regulations and policies for these use determinations differ substantially among the four agencies. The National Park Service and the Fish and Wildlife Service generally

[1] In our questionnaire, we defined "capacity for use" as follows: for snowmobiles, it means having suitable terrain and sufficient snow depth in an average year to operate these vehicles within a federal unit; for personal watercraft, it means any water on or adjacent to the lands administered by the federal unit that support or could potentially support their use.

disallow the recreational use of these vehicles unless it can be demonstrated that no harm would be likely to result to the unit's resources and environment. In contrast, the Forest Service and the Bureau of Land Management generally allow their use unless the unit manager clearly demonstrates potential harm. Finally, in certain cases, federal agencies defer, primarily to states, the decision about whether or not to allow personal watercraft or snowmobile use in all or part of an individual federal unit. In other cases, a state may have some authority to make this decision, such as through an easement or right-of-way agreement.

Approval for recreational use of personal watercraft or snowmobiles on federal lands generally comes with restrictions. For example, use might be limited to certain times or areas, and operators might have to meet certain age requirements or observe certain speed limits. In most cases the restrictions come from state laws and regulations that have been adopted by the federal agency or an individual unit. In many cases, enforcement actions are a shared responsibility among federal, state, and local officials. Even with this shared responsibility, however, a significant number of federal units reported that a personnel shortage limited enforcement activity.

Managers of individual federal units often do not have any information on the impacts of personal watercraft and snowmobiles on their unit's resources and environment. A variety of laws and executive orders authorize the federal land management agencies to monitor the impact of using recreational vehicles on natural resources, safety, and other users of federal lands and waters. However, about 60 percent of the federal units that have use reported that they have not collected information on the effects of that use. In addition, of the remaining 40 percent of the units that have collected such information, about half said the information was not adequate for determining how personal watercraft and snowmobile use should be managed. Agency officials generally attributed this lack of information to the low priority the agencies have given to monitoring the effects of these vehicles. According to officials of all four agencies, monitoring has received a low priority because, historically, only a few units have experienced intensive use of these vehicles.

We are making recommendations to the Secretaries of the Interior and of Agriculture that, where personal watercraft and snowmobile use occurs, the four agencies monitor what impact, if any, these vehicles are having and use that information in making future decisions on whether to continue to allow this use, and if so, how that use should be managed.

Background

In 1999, an estimated 10 million adults used a personal watercraft and an estimated 4 million adults used a snowmobile in the United States. Personal watercraft—often called by such names as jet ski and waverunner—are high-performance watercraft operated by a person sitting, standing, or kneeling on the vessel rather than sitting within the confines of a hull. (See fig. 1.) The watercraft are highly maneuverable and are often used to perform stunt-like maneuvers. Some personal watercraft are capable of speeds exceeding 60 miles per hour.

Figure 1: A Personal Watercraft

Source: Courtesy of the Personal Watercraft Industry Association.

Snowmobiles allow users to travel across the snow into remote areas; some are capable of speeds exceeding 80 miles per hour. (See fig. 2.)

Figure 2: A Snowmobile

Source: GAO.

Millions of personal watercraft and snowmobiles are available annually for recreational use in the United States, often on the parks, forests, ranges, and other lands held by the federal government. Most of these lands are managed by one of four agencies—the Bureau of Land Management, the Fish and Wildlife Service, the National Park Service, and the Forest Service. Combined, the 629 million acres they manage represent about 27 percent of the nation's total area. Each agency manages at least 80 million acres of land, and each agency has a unique management responsibility for preserving and protecting the land. (See table 1.)

Table 1: Responsibilities of Four Federal Land Management Agencies

	Agency			
	Bureau of Land Management	**Fish and Wildlife Service**	**National Park Service**	**Forest Service**
Number of acres managed	264 million	93 million	80 million	192 million
Management responsibilities	Manage multiple uses[a] of federal lands in 11 western states and Alaska, including grasslands, forests, deserts, high mountains, and arctic tundra.	Preserve and enhance fish, wildlife, plants, and their habitats, primarily in national wildlife refuges.	Preserve and protect national parks, recreation areas, battlefields, historic sites, monuments, and preserves.	Manage multiple uses[a] of the national forests and grasslands.

[a]Multiple uses include recreation; mining; timber harvesting; livestock grazing; water; and protecting fish, wildlife, and their habitats.

Source: GAO's presentation of information from the agencies cited.

The use of personal watercraft and snowmobiles has raised concerns about their impacts on the environment, public safety, and conflicts with other users. For example, according to studies by the Environmental Protection Agency and other federal and state agencies, both types of vehicles discharge up to 25 to 30 percent of their fuel (a combination of oil and gas containing numerous toxic compounds) unburned into the environment. Other studies have shown that the rapid movement and noise from these vehicles stresses wildlife. For example, researchers at the Fish and Wildlife Service's Great White Heron National Wildlife Refuge in the Florida Keys noted that disturbances by personal watercraft contributed to the poor reproductive success of nesting ospreys. Concerns have also been raised about the safety record of both personal watercraft and snowmobiles. For example, while personal watercraft make up less than 10 percent of the motorized boating vessels registered in the United States, they constitute approximately 40 percent of the vessels involved in accidents.[2] Furthermore, on average, over 13,000 people are treated in emergency rooms for snowmobile injuries each year.[3] In addition, some federal units have reported that the use of personal watercraft and snowmobiles has caused conflicts with other users of federal lands. For example, at the Deschutes National Forest in Oregon, Forest Service officials noted that a

[2]*Boating Statistics—1997*, U.S. Coast Guard (June 1999).

[3]*Hazard Sketch: Snowmobiles*, U.S. Consumer Product Safety Commission (Nov. 1997).

dramatic increase in both snowmobile use and nonmotorized uses, such as cross-country skiing and snowshoeing, created a conflict between these users for access to forest trails.

According to industry representatives, personal watercraft and snowmobiles currently being manufactured meet existing noise standards and either meet existing air quality standards or are only small contributors to air pollution nationwide. These representatives noted that manufacturers are also attempting to further address pollution and noise concerns through technological developments in engine design—producing more efficient, cleaner, and quieter machines. Furthermore, according to industry representatives, manufacturers are promoting safer vehicle operation. For example, representatives of the Personal Watercraft Industry Association said the association is promoting safety standards, including a minimum age requirement of 16 years old to operate personal watercraft. Similarly, the International Snowmobile Manufacturers Association has led campaigns to educate users on the safe operation of snowmobiles. In addition, both associations support buffer zones and/or trail designs that help to protect sensitive environmental areas and wildlife.

Nearly Half of the Federal Units Report Recreational Use of Personal Watercraft or Snowmobiles

Of the 1,018 federal units that responded to our survey, 475 units, or about 47 percent, reported the recreational use of personal watercraft, snowmobiles, or both during fiscal year 1999. The extent to which units reported this use varied considerably from agency to agency and from unit to unit. More units reported the use of personal watercraft than of snowmobiles. While personal watercraft or snowmobile users are generally a small portion of the total visitors to the units, in some cases, they are significant users during particular seasons.

Extent of Use Varies by Agency and Type of Vehicle

Forest Service units reported the greatest use of personal watercraft and snowmobiles during fiscal year 1999, and National Park Service units reported the least use. (See table 2.) About 82 percent of all Forest Service units reported the use of personal watercraft, snowmobiles, or both, compared with 31 percent of National Park Service units. The recreational use at units within the Bureau of Land Management and the Fish and Wildlife Service was in between these levels. Overall, more units reported personal watercraft use than snowmobile use. Also, the two agencies with a multiple-use mandate, the Bureau of Land Management and the Forest Service, had greater use of these vehicles than the National Park Service and the Fish and Wildlife Service, which have a preservation and protection

mandate. In all, 196 units had only personal watercraft use, 133 units had only snowmobile use, and 146 units had both.

Table 2: Extent of Use, by Agency and Vehicle Type, Fiscal Year 1999

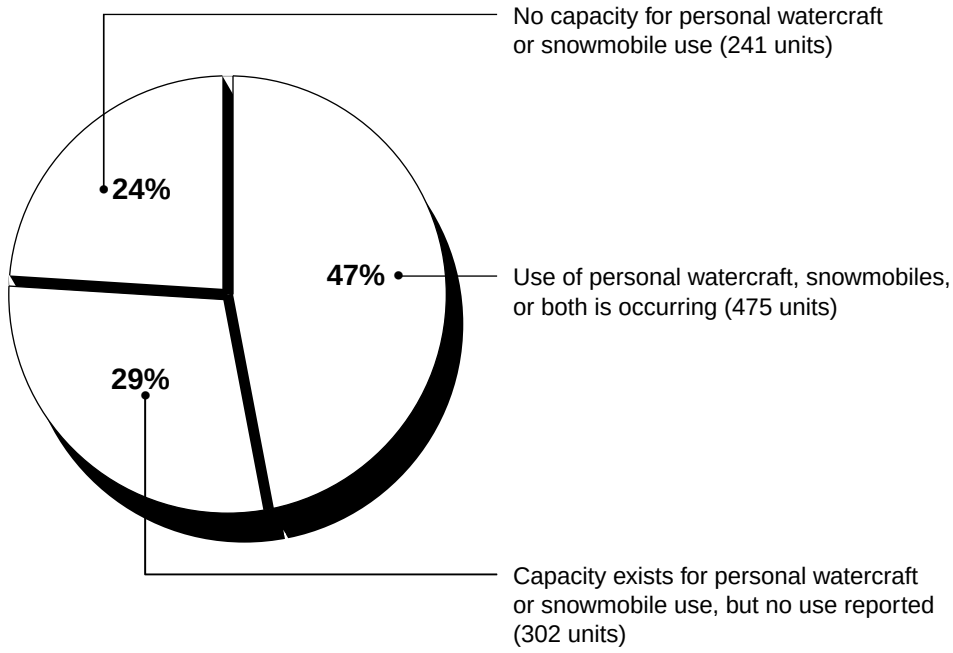
		Types of vehicle and number of units reporting use[a]				
Agency	**Units responding to survey**	**Personal watercraft only**	**Snowmobiles only**	**Both personal watercraft and snowmobiles**	**Total**	**Percentage of total units reporting use[a]**
Bureau of Land Management	103	23	21	35	79	77
Fish and Wildlife Service	419	93	49	16	158	38
National Park Service[b]	328	52	37	12	101	31
Forest Service	168	28	26	83	137	82
Total	**1,018**	**196**	**133**	**146**	**475**	**47**

[a]In our questionnaire, use was defined as use that occurred both where the agency did and did not have the authority to regulate or control use.

[b]National Park Service officials noted that the number of units reporting use of snowmobiles exceeded the number of parks where use is authorized by the Park Service's regulations for a number of reasons, including use on nonfederal lands such as county and state roads located within a unit. Furthermore, in the case of personal watercraft, National Park Service officials noted that the units reported use that occurred prior to the Park Service's April 2000 regulation that prohibited, pending further evaluation, personal watercraft in all but 21 parks.

According to our survey results, about one-fourth of the federal units lacked the capacity for use of personal watercraft or snowmobiles. For example, some units within the National Park Service are historic sites, such as Independence National Historic Park in downtown Philadelphia—locations that do not have water for operating personal watercraft or land for snowmobiling. Even forests or parks with extensive amounts of terrain might not have the capacity for use because they do not contain adequate bodies of water or because they do not receive enough snow. In all, of the 1,018 federal units that responded to our questionnaire, 241 units, or about 24 percent, did not have capacity for either type of use. (See fig. 3.) By comparison, 302 units, or 29 percent, reported that although they had capacity for use, use either was prohibited or was not reported.

Figure 3: Distribution of Use or Capacity Among the 1,018 Federal Units



Users Tend to Be a Small Percentage of Total Visitors

For those federal units that reported information on the amount of personal watercraft or snowmobile use that was occurring, most reported that users were a relatively small number of the unit's total number of visitors. In total nationwide, personal watercraft and snowmobile users were less than 2 percent of the total visitors to federal units.

Because many federal units did not provide information about how much personal watercraft or snowmobile use occurred, we cannot reliably report which units received the greatest amount of use. Specifically, among the 475 units reporting some personal watercraft or snowmobile use in fiscal year 1999, only 214, or about 45 percent, provided estimates or actual numbers on the amount of use that was occurring. However, some units clearly see more use than others, and several observations can be made about some of the sites that provided information. Specifically:

- In some units, the use of personal watercraft can occur year round. For example, the Bureau of Land Management's Lake Havasu Field Office in

Arizona reported that this was the case for nearly 18 percent of its visitors. Also, the Fish and Wildlife Service's Imperial National Wildlife Refuge in Arizona reported that 33 percent of its visitors used personal watercraft during 12 months of the year. In other federal units, however, personal watercraft use makes up only a small percentage of visitors. At the Mt. Baker National Forest, for example, out of an estimated 1.5 million summertime visitors, the unit reported that only 250 visitors used a personal watercraft.

- In some units, snowmobile use was a significant part of wintertime recreational activity. The Dixie National Forest in Utah, for example, reported that snowmobile users constituted 70 percent of its 3.3 million visitors during the winter of 1999. In addition, during the same period at Yellowstone National Park, snowmobile users were 43 percent of the park's 124,000 winter visitors. However, at other units, seasonal snowmobile use is quite small. For example, at Acadia National Park in Maine, the unit reported that only about 50 of its almost 50,000 winter visitors used a snowmobile.

Overall, personal watercraft and snowmobile users were less than 2 percent of the total visitors at the vast majority of federal units reporting usage data.

Decisions on Allowing Recreational Use Are Affected by Laws, Agency Regulations and Policies, and the Authority Regulating the Land

Allowing the recreational use of personal watercraft or snowmobiles in a particular federal unit depends on several factors, including specific provisions of various laws, and the regulations and policies of the agency managing the land. In certain cases, the federal agencies defer, primarily to states, the decision about whether or not to allow personal watercraft or snowmobile use in all or part of an individual federal unit. In other cases, a state may have some authority to make this decision, such as through an easement or right-of-way agreement.

Provisions in Federal Law Specifically Authorize Use in Some Areas and Prohibit Use in Others

Through various provisions in laws, the Congress has specifically authorized or prohibited the operation of personal watercraft and/or snowmobiles in some individual federal units or special areas within units. For example:

- In designating the 23,100-acre Allegheny National Recreation Area within the Allegheny National Forest in northwestern Pennsylvania in

1984, the Congress determined that the Secretary of Agriculture should manage portions of the Allegheny Reservoir—a 27-mile long, human-made impoundment on the New York State border—for the use of motorized and nonmotorized boats. Personal watercraft use is allowed on this reservoir, which is considered the centerpiece of developed recreation in the Allegheny National Forest.

- In authorizing the Secretary of the Interior to establish Voyageurs National Park in Minnesota in 1971, the Congress authorized the Secretary, when planning for the development of the park, to include appropriate provisions for winter sports, including the use of snowmobiles. The 55-mile long park borders the Canadian province of Ontario and contains over 30 lakes and 900 islands that are reached primarily over ice and snow in winter. Over 70,000 of the park's 218,000 acres are open to the use of snowmobiles; more of the park's area is available for this use than in any other unit in the National Park System in the lower 48 states.
- The Alaska National Interest Lands Conservation Act provides for the use of snowmobiles and motorboats in certain federal units in Alaska for traditional activities (e.g., subsistence hunting) and for travel to and from villages and homesites.

In addition to unit-by-unit designations, the Congress has prohibited motorized vehicles in certain types of lands, such as wilderness areas. In the Wilderness Act of 1964, for example, the Congress generally prohibited the use of all motorized vehicles in congressionally designated wilderness areas. The four agencies collectively manage over 100 million acres of federally designated wilderness areas.

Agency Regulations and Policies for Determining Use Vary

When no laws specifically authorize or prohibit the use of personal watercraft and snowmobiles, the federal agencies determine whether the lands and waters they manage are open or closed to such use—generally on a unit-by-unit basis. The regulations and policies that guide these decisions vary greatly among the agencies according to each agency's legislative mandate.

The National Park Service and the Fish and Wildlife Service—whose primary mission is to preserve and protect the resources they manage—generally prohibit these vehicles unless it can be clearly demonstrated that they will not cause harm and/or their use is consistent with the purposes of the unit. For example, the National Park Service's regulations on personal watercraft, effective April 2000, ban them from all areas of the National

Park System except in 21 parks where they are specifically allowed, pending evaluations of resource impacts and user conflicts, as well as site-specific rulemaking. Concerning snowmobiles, the National Park Service's regulations generally prohibit them in all units of the National Park System except in areas that have been designated as open to their use in special regulations and when that use is consistent with the park's objectives and safety and resource considerations. In April 2000, the Assistant Secretary for Fish, Wildlife, and Parks announced that the National Park Service would take additional steps to significantly curtail the use of snowmobiles in the national parks. As part of this effort, the National Park Service is preparing new snowmobile regulations that would allow limited use to continue in some of the 45 units that currently have special regulations for snowmobiles. However, the proposed regulations would prohibit the use of snowmobiles in all other parks, with few exceptions. For the Fish and Wildlife Service, by law, all refuges are closed to all recreational uses, including personal watercraft and snowmobile use, until such use is determined to be compatible with the purposes of each individual refuge as well as with the wildlife conservation mission of the National Wildlife Refuge System. The Fish and Wildlife Service is currently developing a new policy on the appropriate uses of its refuges that will address the use of personal watercraft and snowmobiles. The agency expects to issue the policy for public comment this fall.

In contrast, the Forest Service and the Bureau of Land Management, with their mandate to manage land and water for multiple uses, generally allow the recreational use of these vehicles unless harm or potential harm is clearly demonstrated. Concerning snowmobiles, the Forest Service's regulations generally allow snowmobiles unless individual units determine that their use causes "considerable adverse effects" to resources (soil, water, vegetation, fish, or wildlife) or other visitors. The Bureau of Land Management's regulations require individual units to designate all lands managed by the Bureau as open, limited, or closed to off-road vehicles, including snowmobiles, after considering resource protection issues, visitor safety, and minimizing conflict among various uses. According to the Group Manager of Recreation at the Bureau of Land Management, individual units have rarely designated areas specifically for snowmobile use. Instead, the units typically allow visitors to use snowmobiles unless very high levels of use are found to impair resources or cause user conflicts. According to agency officials, both agencies typically consider water bodies open to personal watercraft use, until the agency or another entity—such as a state—determines otherwise. Currently, the Forest Service has no plans to change its policies on personal watercraft and

snowmobile use, which direct its unit managers to make these decisions through the forest planning process. While the Bureau of Land Management is developing a new national strategy to manage off-highway vehicle use, Bureau officials have not yet determined if the new strategy will address personal watercraft or snowmobiles.

Personal Watercraft and Snowmobile Use Is Prohibited in a Significant Number of Federal Units

As a result of either provisions in law or specific use determinations, survey respondents reported that 367 of the 777 units, or 47 percent, with capacity for use have prohibited recreational use of personal watercraft, or snowmobiles, or both. (See table 3.) The most common reasons cited for prohibiting personal watercraft and snowmobiles was that their use was inconsistent or incompatible with a unit's purpose. For example, at Cape Hatteras National Seashore, in addition to concerns about the impact of personal watercraft on wildlife, water pollution, and safety, the park's superintendent found that the use of personal watercraft conflicted with the majority of other long-standing uses of the park, such as surf fishing, bird watching, and appreciating the natural shore. The superintendent found that the noise personal watercraft created was inconsistent with the "primitive wilderness" intent of the seashore, as provided for by the Congress when the park was established. As a result, in May 1999, the park superintendent banned personal watercraft in this park.

Other reasons cited for prohibiting personal watercraft and snowmobile use included the protection of wildlife and plants, such as endangered or threatened species. The Endangered Species Act prohibits taking (i.e., killing, harming, or harassing) any federally listed species. For example, the Colville National Forest in Washington State and the Panhandle National Forests in Idaho contain a recovery zone for the federally listed endangered woodland caribou. After the caribou herd was twice displaced by snowmobiles, the Forest Service closed portions of this habitat to snowmobile use in order to protect the caribou and its habitat from harm.

Table 3: Total Prohibitions of Use by Agency and Vehicle Type

		Type of vehicle and number of units reporting total prohibitions				
Agency	**Units with capacity**	**Personal watercraft only**	**Snowmobiles only**	**Both personal watercraft and snowmobiles**	**Total**	**Percentage of units with capacity reporting total prohibitions[a]**
Bureau of Land Management	90	2	0	0	2	2
Fish and Wildlife Service	350	127	37	56	220	63
National Park Service	182	66	33	13	112	62
Forest Service	155	28	4	1	33	21
Total	**777**	**223**	**74**	**70**	**367**	**47**

[a]Agencies may not have clear authority to prohibit use in all areas of their units where the capacity for use exists.

Managers of Federal Units Report They Lack Clear Authority to Control Some Use

According to our survey results, in many cases entities other than the federal land management agencies determine whether personal watercraft or snowmobiles can be used in federal units. Units reported that the federal agency lacks clear authority to allow or disallow use in part or all of 300 of the 475 units (or 63 percent) that reported use of personal watercraft and/or snowmobiles. Lack of authority was more common for personal watercraft than for snowmobiles.

Table 4: Units Reporting Lack of Authority to Control Use

		Units reporting lack of authority				
Agency	**Units with use**	**Personal watercraft only**	**Snowmobiles only**	**Both personal watercraft and snowmobiles**	**Total**	**Percentage of units with use reporting lack of authority**
Bureau of Land Management	79	48	5	6	59	75
Fish and Wildlife Service	158	74	11	24	109	69
National Park Service	101	28	11	4	43	43
Forest Service	137	67	3	19	89	65
Total	**475**	**217**	**30**	**53**	**300**	**63**

As shown in table 4, over half of the units with use reported they lacked authority to prohibit personal watercraft use in bodies of water that are located entirely or partially within a federal unit. This was most common for the Bureau of Land Management, the Forest Service, and the Fish and Wildlife Service. Officials at these agencies said that, under certain laws, such as the Submerged Lands Act, authority to decide how the surface of certain bodies of water could be used often rests with other entities, primarily states. For example, the Ten Thousand Islands National Wildlife Refuge includes many islands off the Florida coast, but the Fish and Wildlife Service controls use of only the islands, not the surrounding state-owned waters. For snowmobiles, almost one-third of units reported a lack of authority for determining their use for some or all the lands within a unit. The Fish and Wildlife Service units, which most frequently reported this, cited instances in which they cannot control use to include lands managed through easements—such as for state or county roads—or lands leased or obtained through other agreements.[4]

Operations Often Restricted, but Enforcement Is Limited

In about one-half of the 475 federal units where the recreational use of personal watercraft or snowmobiles occurred, the operation of these vehicles is restricted in some manner. These restrictions include, among other things, speed limits, minimum age requirements for operation, and licensing requirements. Although federal land management agencies impose operating restrictions, each agency or its individual units have, in most cases, adopted state operating restrictions. In addition, other federal agencies have authority to set safety or environmental standards for the vehicles, such as the pollution limits set by the Environmental Protection Agency for personal watercraft. Enforcement of these restrictions is generally a shared responsibility among federal, state, and local law enforcement officials. However, many unit managers reported insufficient personnel to adequately enforce restrictions.

[4]In certain cases, the federal land management agencies may be able to control the use of personal watercraft and snowmobiles on nonfederal lands and waters. Federal courts have upheld the federal government's regulation of activities on nonfederal land and waters when reasonably necessary to protect federal property. See for example, *Stupak-Thrall v. United States*, 70 F.3d 881 (6th Cir. 1995).

Restrictions Come From Federal, State, and Local Entities

A number of units reported operating restrictions for both types of vehicles. In units where personal watercraft use occurred, about one-half of the units reported some form of restrictions. The most frequent restrictions for personal watercraft included (1) minimum age requirements for operators, (2) confinement of use to certain areas within the unit, and (3) prohibitions on use during certain hours. Where snowmobile use occurs, almost 60 percent of the units reported restrictions. The restrictions mentioned most frequently included (1) noise restrictions, such as limits on the volume of noise a machine can emit as measured in decibels, (2) operator license and certification requirements, and (3) speed limits on use in some areas of the unit. See appendix II for more detailed information on personal watercraft and snowmobile restrictions.

States, rather than federal agencies, were cited most frequently by units as the source of restrictions on the operation of personal watercraft and snowmobiles. The National Park Service and the Fish and Wildlife Service adopt state laws concerning personal watercraft use. While the Bureau of Land Management and the Forest Service have no nationwide federal restrictions specific to personal watercraft operations, some individual units have established site-specific restrictions. These two agencies generally defer to states on restricting personal watercraft use. All four of the federal land management agencies adopt applicable state laws for snowmobile operation.

In addition, the Environmental Protection Agency has authority to limit the environmental pollution generated by personal watercraft and snowmobiles. For example, the agency has set air emission standards for personal watercraft that require manufacturers to reduce some air emissions from new engines by up to 75 percent. The Environmental Protection Agency is also in the process of proposing air emission standards for snowmobiles. According to officials at the Environmental Protection Agency, regulation of water pollution from personal watercraft and snowmobiles, like regulation of other nonpoint source water pollution, is generally a state responsibility. The agency does, however, set management measures for marina operations in approximately 30 coastal states. These measures include fueling station requirements and no wake zones to reduce water pollution generated by personal watercraft and other motorized boats. States must implement these or equally stringent management measures in order to receive a designated portion of the federal funds available for state water pollution programs. While the Environmental Protection Agency formerly had a role in regulating noise

emissions from both vehicles, the closure of its Office of Noise Control and Abatement in 1982 left those responsibilities primarily to state and local governments, according to an official at the agency. In addition, the National Park Service has set noise standards for its parks. The agency prohibits snowmobiles that make "excessive noise" according to the age of the vehicle and the noise emitted at full throttle.

The Coast Guard also has authority to restrict the operation of personal watercraft. According to a Coast Guard official, the agency sets safety standards for the operation of personal watercraft that apply to all waters subject to the jurisdiction of the United States. These requirements, according to Coast Guard officials, relate mostly to various safety issues, such as the carriage and use of life jackets, speed limits, and setting design safety standards for personal watercraft.

Multiple Jurisdictions Enforce Restrictions, but Shortage of Enforcement Personnel Exists

Enforcement of operating restrictions varies depending on the type of jurisdiction that exists within the federal unit. In many cases, enforcement is a responsibility shared among the federal units, states, and in some cases, local governments. This occurs because authority for setting restrictions is retained by the three levels of government. In a few instances, primarily among the National Park Service's units, unit managers may have exclusive jurisdiction—that is, state and local laws do not apply within the unit, and only the federal government can establish and enforce federal laws within the boundaries of the unit.

No matter who had enforcement authority, between two-thirds and three-quarters of the units responding to our questionnaire indicated that the number of law enforcement personnel at the federal, state, and local levels is not adequate for enforcing existing restrictions on personal watercraft or snowmobile use. For units with personal watercraft use, 68 percent reported inadequate law enforcement personnel. For units with snowmobile use, 74 percent cited inadequate law enforcement personnel. For example, the Shoshone National Forest in Wyoming has only two Forest Service law enforcement officers to cover 2.2 million acres of forest, including hundreds of square miles of wilderness. As a result, even though snowmobile users trespass into wilderness areas, enforcing such snowmobile restrictions is nearly impossible, according to Forest Service officials.

Agencies Have Done Little to Assess the Impacts of Recreational Use on Their Units' Resources

About 60 percent of the units that have recreational use of personal watercraft and/or snowmobiles reported that the units have not collected any information on the impacts of that use. In addition, of the remaining 40 percent of the units whose respondents said such information has been collected, about half reported the information was less than adequate to determine how personal watercraft and snowmobile use should be managed. The limited amount of information on the impacts of these vehicles is reflective of the low priority that these agencies have given to monitoring the effects of the recreational use of these vehicles. This has occurred largely because, in the past, only a few federal units had high levels of use. However, increasing numbers of personal watercraft and recent technological changes that allow snowmobiles to travel to more remote and environmentally sensitive areas have raised concerns that these vehicles' use results in adverse environmental impacts, safety concerns, and conflicts with other users.

Agencies Have Authority to Assess the Impacts of Personal Watercraft and Snowmobile Use

In general, the federal land management agencies are responsible for managing federal lands and waters so that allowed activities do not adversely affect natural resources and the environment. Concerning the use of recreation vehicles, Executive Order 11644 specifically requires each agency to (1) designate areas as open or closed to off-highway vehicles, including snowmobiles, in order to protect the resources of the federal lands, promote safety, and minimize conflict among the various users; (2) monitor the effects of use on lands under its jurisdiction, once use is allowed; and (3) amend or rescind any area designation on the basis of the information gathered. Furthermore, Executive Order 11989 requires each agency to close areas to use when they determine that use causes, or will cause, considerable adverse effects on the soil, vegetation, wildlife, habitat, or cultural or historic resources.

Monitoring requirements for personal watercraft are not as clear. According to officials at the four agencies, the executive orders do not apply specifically to personal watercraft. However, under enabling legislation and land-use planning and environmental legislation, each agency has the authority to assess the condition of the resources it manages and to monitor activities that may have an adverse effect on natural resources and the environment.

The type or amount of information needed to adequately monitor the impact of the use of snowmobiles or personal watercraft is not specifically

defined. Concerning snowmobiles, the executive orders do not define what monitoring is required once use is permitted. For personal watercraft, monitoring requirements are even less defined, because agency officials reported that the executive orders do not apply. Units responding to our questionnaire identified a wide range of information on the impact of personal watercraft and snowmobile use on natural resources and the environment. The information ranged from complex site-specific scientific studies to reviews of general studies on their use at other locations, to staff recording personal observations on the impact of their use. According to agency officials, managers of the individual units are best suited to determine how much information is needed to make informed decisions on the use of personal watercraft and snowmobiles.

Units Report Limited Assessment of the Impacts of Personal Watercraft and Snowmobile Use

Nearly 60 percent (or 264 of 475) of the units that had personal watercraft and/or snowmobile use reported that they had collected no information on the impacts of this use on the unit's resources and environment. This lack of information occurred more frequently among units with personal watercraft use (about 73 percent) than units with snowmobile use (about 52 percent). Without such information, the agencies are not in compliance with Executive Orders 11644 and 11989 concerning snowmobiles and, concerning personal watercraft, they have no assurance that they are fulfilling their responsibilities to protect their units' resources and environment from adverse impacts.

Only about 40 percent of the units (211 of 475) with recreational use of personal watercraft or snowmobiles reported having some information on the effects of that use. (See table 5.) Specifically, 64 units reported that they had either site-specific studies or information from studies conducted elsewhere to assess the potential impacts of use at their individual units, and 147 units reported that staff had observed and recorded some information on personal watercraft or snowmobile impacts. Among the agencies, the Forest Service and the National Park Service had the greatest percentage of their units with use collecting some information—approximately 58 and 54 percent, respectively. However, even when units reported having such information, about half (45 percent for units with personal watercraft use and 52 percent for units with snowmobile use) said their information was inadequate for determining how to manage the use of these vehicles. For example, each winter, an estimated 330,000 visitors to the Pike and San Isabel National Forest in Colorado use snowmobiles. In the past, the unit's recreation manager has relied on snowmobile studies performed at other locations to assess the impact of their use in this forest.

However, in 1998, the Canadian lynx was reintroduced to this and five other national forests in Colorado. As a result, the recreation manager believes that studies performed at other locations will not be sufficient to assess the impact of snowmobiles on the lynx, currently listed as a threatened species. According to the manager, the forest lacks important site-specific information on such issues as the impact of snowmobile operations and related snow compaction on the lynx's habitat, feeding patterns, and competitor species.

Table 5: Information on Impacts, by Agency and by Type of Information

		Units reporting some information collected			
Agency	**Units with use**	**Studies at the unit or elsewhere**	**Personal observations only**	**Total**	**Percentage of units reporting some information collected**
Bureau of Land Management	79	4	20	24	30
Fish and Wildlife Service	158	9	43	52	33
National Park Service	101	25	30	55	54
Forest Service	137	26	54	80	58
Total	**475**	**64**	**147**	**211**	**44**

For units that indicated that a site-specific study had been conducted for the unit or that studies done elsewhere were used to assess potential impacts at the unit, our questionnaire asked them to provide citations (title, author, date) for each of these studies. A list of all the studies identified by the four agencies is contained in appendix III. Among the four agencies, the National Park Service, particularly Yellowstone National Park, identified the vast majority of these studies. The National Park Service has also summarized much of this information[5] and used, or is using it, to develop its regulations that place greater limitations on where personal watercraft and snowmobiles can be used and that require monitoring of impacts where use is allowed.

[5]Some of the summary reports prepared by the National Park Service include: *Water Quality Concerns Related to Personal Watercraft Usage*, May 1999; *Air Quality Concerns Related to Snowmobile Usage in National Parks*, Feb. 2000; *Potential Water Quality Concerns Related to Snowmobile Usage*, Aug. 1999; and *Effects of Snowmobiles on Wildlife*, Nov. 1999.

Agencies Have Not Made Collecting Impact Information a Priority

Officials from all four land management agencies said they have not conducted more studies or monitored the use of these vehicles largely because they lack adequate resources or expertise. The limited resources allocated for this effort reflect the low priority the agencies have given to monitoring the effects of the recreational use of these vehicles. According to agency officials, this has occurred largely because, historically, few federal units experienced high levels of use of these vehicles. However, in the past decade the number of these vehicles has increased, as has their ability to reach remote and environmentally sensitive areas. For example, in 1987, according to industry estimates, about 92,700 personal watercraft were in use in the United States. By 1998, this number had increased to 1.1 million. According to industry estimates, the number of snowmobiles in use has increased from approximately 1 million in 1987 to more than 1.4 million in 1998. In addition, the technology for snowmobiles has changed in recent years, dramatically increasing their range and access to remote and high-altitude terrain, areas that were largely inaccessible to older snowmobiles. Although specific data on the amount of recreational use on federal lands are not available, agency officials said they believed use had generally increased in the past 10 years.

The following provides examples of the low priority that the four land management agencies have assigned to monitoring the effects of personal watercraft and snowmobile use:

- The Park Service's April 2000 final rule banning the use of personal watercraft in some of its units states, "Over the years, [National Park Service] areas have been impacted with new, and what often prove to be controversial, recreational activities. These recreational activities tend to gain a foothold in [National Park Service] areas in their infancy, before a full evaluation of the possible impacts and ramifications that expanded use will have on the area can be initiated, completed, and considered. Personal watercraft use fits this category." Concerning the agency's monitoring of snowmobiles, in May 2000, the Assistant Secretary for Fish, Wildlife, and Parks at the Department of the Interior stated, "Over the past two decades, the National Park Service has neglected to consistently apply or enforce its own national snowmobile regulations, or to adhere to the requirements of existing executive orders regarding off-road vehicle use, including snowmobiles." This included not assessing the impacts of snowmobiles before allowing their use and not monitoring those impacts once use was allowed.
- The Bureau of Land Management's Group Manager for Recreation told us that most of the agency's units have not monitored the use or effects

of these vehicles because of resource constraints. Specifically, the Bureau of Land Management does not have enough individuals "on the ground" to do that work. For example, both personal watercraft and snowmobile use has been increasing at the Little Snake Field Office in Colorado. According to the unit manager, such use is having a negative impact on wildlife and other visitors, such as hikers and cross-country skiers. However, because the unit has only two outdoor recreation staff to manage 1.3 million acres, it has not been able to conduct any studies or specifically monitor the impacts of vehicle use.

- Fish and Wildlife Service and Forest Service officials have expressed similar concerns about limited resources to fund research studies or monitoring. In addition, Fish and Wildlife Service officials voiced concern that the agency lacks sufficient staff at most of its units to design monitoring programs for the use of these vehicles on the lands and waters they manage.
- Bureau of Land Management and Forest Service officials also said that they have given a higher priority to monitoring impacts of other off-highway vehicles, such as all-terrain vehicles and motorcycles. In their opinion, these vehicles generally cause more observable damage to soil and water and receive more public attention than personal watercraft or snowmobiles.

Of the four agencies, the National Park Service has recently made monitoring the impacts of vehicle use a higher priority. In the case of personal watercraft, the agency has allowed their use only in selected parks pending an evaluation of resource and other impacts, and in the case of snowmobiles, the agency has reiterated the need to comply with the executive orders, including monitoring of vehicle use. In addition, in a May 2000 memorandum to all units, the Forest Service's Deputy Chief of the National Forest System reiterated agency policy concerning the need to adequately monitor off-highway vehicle use, including snowmobiles, to ensure public safety and prevent environmental degradation.

Existing Impact Information Has Identified Adverse Effects

When federal land management agencies and others have completed studies on the impact of personal watercraft and snowmobile use, the results have raised concerns about their adverse effect on the environment, public safety, and conflicts with other users. For example:

- In May 1999, the National Park Service's Cape Hatteras National Seashore in North Carolina banned the use of personal watercraft within the unit. The prohibition was based on staff observations and a

review of 112 studies from other locations on the impact of pleasure boats and personal watercraft. In evaluating this information, the park superintendent found that personal watercraft were already altering major uses of the park and that conflicts between personal watercraft users and commercial and recreational fishermen were well documented. Also, the superintendent found that personal watercraft noise pollution significantly diminished the enjoyment of such traditional uses of the seashore as beach walking, swimming, bird watching, surfing, and windsurfing. Other concerns were raised about the effects of personal watercraft use on the seashore's natural, aesthetic, scenic, and cultural values and the high hydrocarbon emissions from these vehicles into the air and water. The superintendent concluded that, if left unchecked, the growth of personal watercraft use would severely alter the unit's traditional use patterns.

- As part of a court-ordered winter-use planning effort at Yellowstone and Grand Teton National Parks, the National Park Service is completing a comprehensive environmental impact statement addressing all types of winter use in these parks, including snowmobiles.[6] For the impact statement, the National Park Service has analyzed much of the available information on the impacts of snowmobiles on the parks' resources and other values. These studies were conducted at the two parks and elsewhere and were completed by the National Park Service and others. As a result, the agency found that the use of snowmobiles has had significant adverse effects, including increasing the levels of air and noise pollution, disturbing wildlife, and conflicting with visitors' solitude. For example, a National Park Service study reported that although cars outnumber snowmobiles 16 to 1 in Yellowstone National Park in the winter, snowmobiles generate between 68 and 90 percent of all hydrocarbons and 35 to 69 percent of all carbon monoxide released in the park. Furthermore, other studies conducted or reviewed by the agency showed that a snowmobile's rapid movements stress native wildlife during winter—the time of highest wildlife mortality. Agency studies also showed that during the winter the noise from snowmobiles has a major impact on the natural quiet in the park. For example, on two heavily traveled trails in Yellowstone, one of which is a major route to Old Faithful, it was reported that a visitor would hear a snowmobile more than 50 percent of the time.

[6] *Winter Use Plan Draft Environmental Impact Statement for the Yellowstone and Grand Teton National Parks and John D. Rockefeller, Jr., Memorial Parkway,* National Park Service (July 1999).

- In a 1992 management agreement, the Fish and Wildlife Service and the state of Florida prohibited the use of personal watercraft within specified areas of water surrounding the Key West, Great White Heron, and National Key Deer wildlife refuges. According to the Fish and Wildlife Service, this prohibition was based on general scientific literature relevant to the potential impacts of human activity on wildlife and one Fish and Wildlife Service biologist's observations of birds fleeing their nests in response to the use of personal watercraft. The agency concluded that personal watercraft had made previously inaccessible areas and wildlife in those areas susceptible to adverse impacts, thus threatening the ability of the refuges to achieve their primary purpose—the protection of wildlife. The management agreement between the Fish and Wildlife Service and the state of Florida also identified conflicts between personal watercraft and other uses of the refuges, such as shallow water fishing, as a problem.

Information on safety-related impacts from the use of personal watercraft and snowmobiles has also been collected. For example, a 1998 study by the National Transportation Safety Board, citing data from the Coast Guard, found that personal watercraft used in 1996 were only 7.5 percent of state-registered recreational boats, yet they accounted for 36 percent of the reported recreational boating accidents and more than 41 percent of the persons injured in recreational boating accidents. In addition, although the number of recreational boating fatalities has declined, the number of personal watercraft fatalities has increased. From 1990 through 1996, for example, recreational boating fatalities (including personal watercraft) declined 18 percent, while personal watercraft fatalities increased over 200 percent. For snowmobiles, a 1997 study by the U.S. Consumer Product Safety Commission found that from 1990 through 1996, over 9,000 users were treated in hospital emergency rooms, and from 1993 through 1995, 333 fatalities resulted from snowmobile use.

Conclusions

Among the four major federal land management agencies, the National Park Service has done the most to control the use of personal watercraft and snowmobiles within its units. Recently, the National Park Service has issued stricter policies on where personal watercraft and snowmobiles can and cannot be used within its units. Also, the National Park Service, concerning both vehicles, and the Forest Service, for snowmobiles, have recently emphasized that existing executive orders, regulations, and laws require the monitoring of these vehicles' impacts where use is allowed. However, each of the four land management agencies has continued to

allow the use of these vehicles in many of its units with little or no information on the effects, if any, these vehicles are having on its units' resources and environment. While we recognize that the agencies have limited resources, in our opinion, it is difficult to properly manage the use of these vehicles if units have no or inadequate information on their impact. Furthermore, without such information, these agencies are not in compliance with the monitoring requirements of existing executive orders concerning snowmobiles and, concerning personal watercraft, are not assured that they are fulfilling their responsibility to protect the lands and waters they manage from adverse impacts. Because the type and extent of information needed to adequately monitor the use of these vehicles is not clearly defined in existing executive orders, regulations, and laws, federal land management agencies have the flexibility to design monitoring requirements that fit the needs of their individual units. These requirements can range from detailed scientific studies on some issues such as vehicle emissions—whose results could be applied to all units—to individual staff observations. However, it is essential that each agency and its unit managers have enough information to make knowledgeable decisions about the recreational use of these vehicles.

Recommendations

We recommend that the Secretaries of the Interior and of Agriculture ensure that, where snowmobile and personal watercraft use occurs on federal lands, agencies under their jurisdiction monitor such use to determine what impact, if any, these recreational vehicles are having on natural resources, public safety, and the visiting public. This monitoring should be designed to provide sufficient information to make knowledgeable decisions on the impact of these vehicles in individual units. We further recommend that once this information is collected, it be used in any future decisions on whether personal watercraft and snowmobiles are to be allowed on federal lands and waters, and if so, how their use should be managed.

Agency Comments and Our Evaluation

We provided copies of a draft of this report to the Department of the Interior and the Department of Agriculture for their review and comment. We received letters commenting on the report from the Department of the Interior, including comments from the National Park Service, the Bureau of Land Management, the Fish and Wildlife Service, and the U.S. Geological Survey, and from the Department of Agriculture's Forest Service.

The Department of the Interior generally agreed with the report's findings and recommendations. The Bureau of Land Management, however, expressed concern that the report's discussion of federal authority to control or restrict the use of personal watercraft was confusing. Furthermore, the Bureau was concerned that our survey questions on this issue were unclear, which could result in data that do not accurately reflect their field office managers' knowledge concerning such authorities. We acknowledge that the issue of authority to control or restrict the use of personal watercraft within federal units is complex, and we revised the report to help clarify this issue. Concerning the clarity of the questions on authority in our questionnaire, we worked extensively with Bureau officials to design a clear survey instrument. To ensure that the questions were understood, we pretested the questionnaire at units of each agency surveyed. We also designed the questionnaire so that if a respondent had a question, that person could immediately send us an electronic message to clarify the issue. Furthermore, we established a dedicated telephone number that unit managers could call if they needed personal assistance in completing the questionnaire. We believe the resulting questions were straightforward and that our report accurately presents the responses of the Bureau's field managers.

The Bureau of Land Management also expressed concern about what it perceived as an inconsistency in the number of Bureau responses to various questions, which it believes casts a shadow over the reliability of the data. As often occurs in surveys, Bureau field managers did not respond to every question. As a result, the number of Bureau respondents to each question varied. However, the differences among the number of responses to each question in our questionnaire are acceptable for a survey of this type and do not affect the quality of the responses.

In commenting on the draft report, the Fish and Wildlife Service used the report's data to conclude that most of its units are in compliance with executive orders for managing off-road vehicles. While we agree that some of the Service's units are in compliance with the executive orders, we do not agree that only a few of the Service's units are out of compliance. For example, the Service believes that all of its responding units that stated they lack authority to control the use of recreational vehicles should not be considered out of compliance with the executive orders. However, only a small percentage of these units said their lack of authority applied to both vehicles and in all areas of the unit. As a result, most of the units that the Service considered in compliance because of lack of authority actually do

have authority to regulate and control the use of at least one of these vehicles in at least some portion of their unit.

The Fish and Wildlife Service also emphasized that it has a myriad of legal responsibilities under various laws and regulations and is limited in what it can do to monitor the impact of recreational vehicle use by finite fiscal resources. However, the Service stated that it intends to issue a Director's Order by December 31, 2000, that will require all units in the National Wildlife Refuge System that have the authority to control personal watercraft and snowmobile use to prohibit such use unless or until a monitoring program is in place.

The National Park Service had no specific comments and generally agreed with the report. The U.S. Geological Survey suggested a technical clarification to the report that we incorporated.

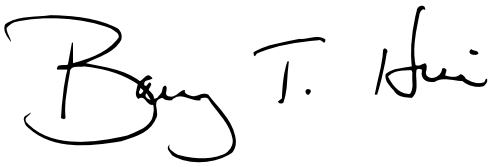
The Department of Agriculture's Forest Service suggested language to clarify our discussion of factors affecting the decision to allow the use of personal watercraft and snowmobiles in federal units, which we incorporated into the report as appropriate.

The Department of the Interior's written comments and our detailed response to them are in appendix IV of this report, and the Department of Agriculture's written comments are in appendix V.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to the Honorable Bruce Babbitt, Secretary of the Interior; the Honorable Dan Glickman, Secretary of Agriculture; the Honorable Robert Stanton, Director, National Park Service; the Honorable Tom Fry, Director, Bureau of Land Management; the Honorable Jamie Rappaport Clark, Director, Fish and Wildlife Service; the Honorable Mike Dombeck, Chief, Forest Service; the Honorable Jacob J. Lew, Director, Office of Management and Budget; and other interested parties. We will also make copies available to others upon request.

If you or your staff have any questions about this report, please contact me at (202) 512-8021. Key contributors to this report are listed in appendix VI.

Barry T. Hill



Associate Director, Energy,
Resources, and Science Issues

Objectives, Scope, and Methodology

At the request of Representatives Bruce F. Vento and George Miller, we reviewed the recreational use of personal watercraft and snowmobiles in our nation's parks, forests, wildlife refuges, and other federal lands. Specifically, we agreed to determine (1) the extent to which these vehicles are used in federal units managed by the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service within the Department of the Interior and the Department of Agriculture's Forest Service; (2) what are the bases for agency decisions to authorize or prohibit the use of these vehicles; (3) where these vehicles are allowed, what restrictions exist on their operation, and how these restrictions are enforced; and (4) to what extent these agencies have assessed the impact of such use.

To respond to the request, we developed an automated questionnaire that we posted on GAO's website. We sent e-mail messages to managers of 1,191 Bureau of Land Management, Fish and Wildlife Service, National Park Service, and Forest Service units asking them to access and fill out the questionnaire providing us with information about personal watercraft and snowmobile use on the lands and waters that they administer. Specifically, we asked for responses from each unit manager at 120 field offices managed by the Bureau of Land Management; 523 wildlife refuges managed by the Fish and Wildlife Service; 372 national parks, seashores, recreation areas, battlefields, historic sites, monuments, and preserves managed by the National Park Service; and 176 national forests and grasslands managed by the Forest Service. We did not ask all of the agencies' units to participate because, according to officials at each agency, some types of their units—such as fish hatcheries and technology centers—were known not to have the recreational use of personal watercraft or snowmobiles.

In addition, we met with headquarters and individual unit officials from the Bureau of Land Management, Fish and Wildlife Service, National Park Service, and Forest Service to discuss their oversight of personal watercraft and snowmobile use on the lands and waters they administer. Specifically, we visited with unit officials at the Bureau of Land Management's Medford District Office in Oregon and Coos Bay District Office in Oregon, the National Park Service's Cape Hatteras National Seashore in North Carolina, Olympic National Park in Washington, and Voyageurs National Park in Minnesota; and the Forest Service's Allegheny National Forest in Pennsylvania, Deschutes National Forest in Oregon, and Superior National Forest in Minnesota. At each location, we obtained, reviewed, and analyzed supporting documentation such as laws, regulations, executive orders, reports, and studies. We also met with

officials from the U.S. Environmental Protection Agency, the U.S. Coast Guard and the Council on Environmental Quality to obtain information on existing regulations used to control and direct personal watercraft and snowmobile use on federally administered lands and waters. Finally, we met with the California Air Resources Board, the National Association of State Boating Law Administrators, the Personal Watercraft Industry Association, the American Council of Snowmobile Associations, The Fund for Animals, Inc., the Bluewater Network, and the National Parks Conservation Association to gain a better understanding of the personal watercraft and snowmobile issues.

The questionnaire consisted of four sections of questions. Specifically:

- Section I asked for general information about each land management unit, such as its name and the number of visitor days the unit had during fiscal year 1999.
- Section II asked for information about bodies of water either on or directly adjacent to each unit's land that support or could potentially support personal watercraft use.
- Section III asked for information about units that have the capacity (adequate snowfall in an average year and suitable terrain) to support visitor use of snowmobiles.
- Section IV asked for information about the respondent and provided an opportunity for the respondent to make additional comments concerning any of the questions or on any topics not covered.

The entire questionnaire and the responses from the four agencies are provided in appendix II.

During our design of the survey, we conducted eight pretests with agency officials to ensure that they understood the questions and could easily access and complete the questionnaire via our website. After each pretest, necessary revisions were made to the questionnaire. Two pretests were administered to agency officials from each of the four land management agencies. Once completed, the electronic questionnaire was made available to all unit managers via GAO's website on the Internet.

To ensure security and data integrity, we provided each manager with a password that would allow him or her to access and complete a questionnaire for the management unit. No one else could access that questionnaire or edit its data. Also, after transmitting a completed questionnaire, the unit manager could not change any of the data.

We made the questionnaire accessible to unit managers from March 31 through June 9, 2000. We designed the questionnaire so that if a respondent had a question, that person could immediately send us an electronic message, and we would provide an answer. We also established a dedicated telephone number that unit managers could call if they needed personal assistance in completing the questionnaire. Table 6 shows the response rate we received.

Table 6: Response Rate for Personal Watercraft and Snowmobile Use Survey

Agency	Units	Responses received	Percentage
Bureau of Land Management	120	103	85.8
Fish and Wildlife Service	523	419	80.1
National Park Service	372	328	88.2
Forest Service	176	168	95.4
Total	**1,191**	**1,018**	**85.5**

Because of the time and cost to do so, we did not independently verify the data that the unit managers provided. However, we did ask the managers to identify the studies that document the types of environmental impacts associated with personal watercraft and snowmobile use on the lands and waters they administer.

To ensure the consistency and accuracy of our data, we conducted edit checks to verify that the appropriate questions on the questionnaire had been answered. For example, if a unit manager responded that the unit did not have capacity for snowmobile use, yet answered the questions pertaining to snowmobile use, we contacted the manager to determine the reason for the inconsistency. In addition, we reviewed each completed questionnaire to ensure that it included information for only one unit. For those that responded for more than one unit, we weighted the responses appropriately.

We conducted our review from May 1999 through August 2000 in accordance with generally accepted government auditing standards.

Survey Questions and Response

Section I – General Information

Note Regarding Scope of Survey: The scope of this survey is limited to recreational use of personal watercraft and snowmobiles. Also, some questions in the survey refer to "your agency's land." When considering "your agency's land," please include all land in your unit that your agency manages, including any land managed through an easement, lease, or other agreement. The scope of this survey does not include any land in your unit that is not managed by your agency. Finally, if you are responding for a national wildlife refuge, please note that this survey does not include waterfowl production areas (WPAs) or coordination areas.

1. Please identify your agency in the list below. (Answer and go to Question 2)

__ National Park Service **328**

__ U.S. Forest Service **168**

__ Bureau of Land Management **103**

__ U.S. Fish and Wildlife Service **419**

2. Enter the name of your National Park Service unit, U.S. Forest Service national forest/grassland, BLM field office/resource area, or FWS national wildlife refuge in the text box below. (Answer and go to Question 3)

3. How many states or territories does your unit cover? Answer and go to Question 4)

4. Which state(s) or territories does your unit cover? (Answer and go to Question 5)

5. In the space below, please indicate the total number of recreational visitors/visits (of all types) that your unit had during Federal Fiscal Year 1999 (Oct. 1, 1998 – Sept 30, 1999). (Answer and go to Question 6. If unable to answer, go to section II.)

Park Service only: Number of visitors:

N= 286	National Park Service
Range	10 to 22000000
Median	194549.00
Mean	936586.59

Other agencies: Number of visits:

	Fish & Wildlife Service N=310	Bureau of Land Management N= 65	Forest Service N= 131
Range	5 to 3600000	50 to 12000000	300 to 56494366
Median	28352.50	300000.00	2500000.00
Mean	101221.75	692043.81	4990999.89

6. How confident are you in the accuracy of the number of visitors/visits specified in Question 5? (Answer and go to Section II – Personal Watercraft)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Extremely confident	93	73	19		1
very confident	185	100	68	7	10
Moderately confident	265	73	119	29	44
Somewhat confident	162	21	82	19	40
Slightly or not confident	102	15	40	11	36
N=	807	282	328	66	131
No Answer	9	2	1	3	3

Section II - Personal Watercraft

Please use the following definition of Personal Watercraft (PWC) when answering questions in this section.

PWC refers to a vessel, usually less than 16 feet in length (measured from end to end over the deck excluding sheer) which uses an inboard, internal combustion engine powering a water jet pump as its primary source of propulsion. The vessel is intended to be operated by a person or persons sitting, standing or kneeling on the vessel, rather than within the confines of the hull. Commercial names for PWCs include Jet Ski, Sea Doo, and WaveRunner.

Exception to this definition: When providing information on state and county/local prohibitions or restrictions on PWCs, use the applicable state or county/local definition.

1. Are there any bodies of water on or directly adjacent to your agency's land that support or could potentially support PWC use? [*Regardless of current restrictions or prohibitions, and regardless of management authority,* include any body of water: (a) entirely or partially in your unit and directly adjacent to some portion of your agency's land, or (b) outside your unit, but directly adjacent to some portion of your agency's land.]

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 2)*	687	144	324	77	142
No *(Go to Section III)*	329	182	95	26	26
N=	1016	326	419	103	168
Missing	2	2			

2. You indicated that water on or adjacent to your agency's land supports, or could support, PWC use. Are there any of these bodies of water that are entirely or partially in your unit over which your agency has no authority to regulate or control PWC use?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 3)*	335	42	147	56	90
No *(Go to Question 5)*	304	99	152	12	41
N=	639	141	299	68	131
Don't know *(Go to Question 5)*	39	3	20	5	11

3. For about how many of these bodies of water that are entirely or partially in your unit does your agency have no authority to regulate or control PWC use? *(Answer then go to Question 4.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Almost none	27	5	13	4	5
Less than half	62	8	29	2	23
About Half	25	3	13	2	7
More than Half	16		6	1	9
Almost all	77	7	36	13	21
All	131	18	52	36	25
N=	338	41	149	58	90
Don't Know	4	1	2	1	

4. During federal FY 1999 (Oct. 1, 1998-Sept. 30, 1999), did PWC use occur on any of these bodies of water, that are entirely or partially in your unit, and over which your agency has no authority to regulate or control PWC use? *(Answer then go to Question 5.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes	228	26	78	49	75
No	52	11	37	2	2
N=	280	37	115	51	77
Don't Know	62	5	36	8	13

5. Is PWC use prohibited on all the bodies of water in your unit over which your agency has authority?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 6)*	293	79	183	2	29
No *(Go to Question 8)*	265	33	84	58	90
N=	558	112	267	60	119
N/A *(Go to Question 8)*	118	32	53	14	19

6. Does your unit prohibit PWC use, on all bodies of water over which your agency has authority, due to a PWC-specific national policy?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 12)*	124	55	68		1
No *(Go to Question 7)*	161	24	104	4	29
N=	285	79	172	4	30
N/A *(Go to Question 7)*	19	3	13		3

7. Consider all bodies of water in your unit over which your agency has authority. What are the reasons PWC use is prohibited on these bodies of water? *(Answer and go to Question 12)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
PWC-specific prohibition established by your unit for all of these waters N=	154	24	97	4	29
Yes	63	10	50		3
No	91	14	47	4	26
No Answer	11		11		
PWC-specific prohibition established by your unit for some of these waters N=	127	20	74	4	29
Yes	6		1	1	4
No	121	20	73	3	25
No Answer	32	3	29		
Prohibition or restriction on motorized boating established by your unit for all of these waters N=	156	23	101	4	28
Yes	90	11	66	1	12
No	66	12	35	3	16
No Answer	9		7		2
Prohibition or restriction on motorized boating established by your unit for some of these waters N=	125	20	73	4	28
Yes	47	5	25	2	15
No	78	15	48	2	13
No Answer	34	2	31		1
State boating regulations prohibit PWC use N=	134	22	79	4	29
Yes	14	1	3	2	8
No	120	21	76	2	21
No Answer	26		26		

County/local boating regulations prohibit PWC use N=	129	22	78	2	27
Yes	7	2	1		4
No	122	20	77	2	23
No Answer	30		27	1	2
Protection of Wilderness Area(s) N=	148	22	93	4	29
Yes	33	4	15	1	13
No	115	18	78	3	16
No Answer	13		13		
Protection of proposed Wilderness Area(s) or Wilderness Study Area(s) N=	145	22	91	4	28
Yes	15	6	4	1	4
No	130	16	87	3	24
No Answer	14		13		1
Protection of watershed(s) N=	141	21	92	3	25
Yes	27	6	16		5
No	114	15	76	3	20
No Answer	20	1	14	1	4
Protection of Wild and Scenic River(s) N=	143	22	92	3	26
Yes	14	2	8	1	3
No	129	20	84	2	23
No Answer	18		14	1	3
Protection of proposed Wild and Scenic River(s) N=	141	22	90	3	26
Yes	1				1
No	140	22	90	3	25
No Answer	18		14	1	3
Protection of species under the Endangered Species Act N=	148	22	96	2	28
Yes	44	4	36		4
No	104	18	60	2	24
No Answer	14	1	10	2	1
Protection of wildlife not listed under ESA N=	151	21	102	2	26
Yes	96	6	87		3
No	55	15	15	2	23
No Answer	12	1	6	2	3
Protection of plants not listed under ESA N=	147	21	98	2	26
Yes	56	3	51	1	1
No	91	18	47	1	25
No Answer	15	1	9	2	3
PWC use inconsistent or incompatible with purpose of unit N=	154	23	104	3	24
Yes	126	16	100	1	9
No	28	7	4	2	15
No Answer	10		4	1	5
Negative effect on air quality N=	119	21	69	3	26
Yes	18	7	11		
No	101	14	58	3	26
No Answer	41	1	36	1	3
Negative effect on water quality N=	123	21	75	2	25
Yes	49	8	34	1	6
No	74	13	41	1	19
No Answer	40	1	33	2	4
Excessive noise N=	137	22	87	3	25
Yes	88	14	66	1	7
No	49	8	21	2	18
No Answer	26		21	1	4

Excessive boating activity N=	130	20	81	3	26
Yes	57	4	45		8
No	73	16	36	3	18
No Answer	30	2	24	1	3
Disturbs natural setting N=	147	22	95	3	27
Yes	108	16	79	1	12
No	39	6	16	2	15
No Answer	15		12	1	2
Safety concerns N=	143	20	93	3	27
Yes	91	14	65	3	9
No	52	6	28		18
No Answer	19	2	14	1	2
Non-safety related conflicts with other visitors N=	140	22	88	3	27
Yes	91	15	61	2	13
No	49	7	27	1	14
No Answer	24		21	1	2
Insufficient resources to enforce regulations N=	128	20	80	3	25
Yes	39	3	32	1	3
No	89	17	48	2	22
No Answer	34	1	28	1	4
Other (textbox provided)					

8. Is PWC use prohibited on <u>any</u> bodies of water in your unit over which your agency has authority?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 9)*	114	13	28	12	61
No *Go to Question 10)*	159	19	62	45	33
N=	273	32	90	57	94
NA *(Go to Question 10)*	117	33	52	15	17

9. Consider all bodies of water in your unit over which your agency has authority. What are the reasons PWC use is prohibited on any of these bodies of water? *(Answer then go to Question 10.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
PWC-specific prohibition established by your unit N=	105	13	27	10	55
Yes	36	6	10	2	18
No	69	7	17	8	37
No Answer	1				1
Prohibition or restriction on motorized boating established by your unit N=	108	11	26	9	62
Yes	79	8	15	7	49
No	29	3	11	2	13
No Answer	3	1	1	1	
State boating regulations prohibit PWC use N=	93	10	23	8	52
Yes	22	1	2	4	15
No	71	9	21	4	37
No Answer	10	2	4	2	2

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
County/local boating regulations prohibit PWC use *N=*	89	10	23	7	49
Yes	9		2		7
No	80	10	21	7	42
No Answer	12	2	4	2	4
Protection of Wilderness Area(s) N=	96	9	25	8	54
Yes	40		1	1	38
No	56	9	24	7	16
No Answer	8	3	2	2	1
Protection of proposed Wilderness Area(s) or Wilderness Study Area(s) N=	91	9	26	8	48
Yes	9	1		2	6
No	82	8	26	6	42
No Answer	11	3	1	2	5
Protection of watershed(s) N=	92	9	26	8	49
Yes	14	1	4	2	7
No	78	8	22	6	42
No Answer	9	3	1	1	4
Protection of Wild and Scenic River(s) N=	95	10	26	7	52
Yes	22	3		3	16
No	73	7	26	4	36
No Answer	10	2	1	3	4
Protection of proposed Wild and Scenic River(s) N=	85	9	26	5	45
Yes	3			1	2
No	82	9	26	4	43
No Answer	15	3	1	3	8
Protection of species under the Endangered Species Act N=	91	9	26	7	49
Yes	22	3	12	1	6
No	69	6	14	6	43
No Answer	8	3	1	1	3
Protection of wildlife not listed under the ESA N=	91	12	26	8	45
Yes	30	6	18	2	4
No	61	6	8	6	41
No Answer	10	1	1	1	7
Protection of plants not listed under the ESA N=	85	9	25	8	43
Yes	18	3	13	1	1
No	67	6	12	7	42
No Answer	16	4	2	1	9
Negative effect on air quality N=	90	10	25	8	47
Yes	4	2	1		1
No	86	8	24	8	46
No Answer	10	2	2	1	5
Negative effect on water quality N=	89	9	25	7	48
Yes	19	4	7	2	6
No	70	5	18	5	42
No Answer	11	3	2	2	4
Excessive noise N=	91	10	26	8	47
Yes	32	5	12	4	11
No	59	5	14	4	36
No Answer	11	2	1	2	6
Excessive boating activity N=	91	10	25	9	47
Yes	17	3	8	2	4
No	74	7	17	7	43
No Answer	11	3	2	1	5

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Disturbs natural setting N=	97	13	26	9	49
Yes	45	8	14	5	18
No	52	5	12	4	31
No Answer	7		1	1	5
Safety concerns N=	105	12	26	9	58
Yes	58	9	13	4	32
No	47	3	13	5	26
No Answer	4	1	1		2
Non-safety related conflicts with other visitors N=	101	12	26	9	54
Yes	52	9	14	5	24
No	49	3	12	4	30
No Answer	8	1	1	1	5
Insufficient resources to enforce regulations N=	87	11	23	6	47
Yes	14	4	7	1	2
No	73	7	16	5	45
No Answer	14	1	4	3	6
Other (textbox provided)					

10. Where not prohibited, is PWC use restricted or controlled in any way by federal, state, and/or county/local laws or regulations on any bodies of water over which your agency has authority?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes (*Go to Question 11)*	139	19	37	27	56
No (*Go to Question 12)*	139	18	54	26	41
N=	278	37	91	53	97
NA (*Go to Question 12)*	106	28	47	18	13

11. What type of restrictions or controls are placed on PWC use on any bodies of water over which your agency has authority? *(Answer then go to Question 12)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Speed limit specific to PWCs other than slow/no wake zones N=	129	14	37	23	55
Yes	34	5	6	3	20
No	95	9	31	20	35
No Answer	17	4	5	4	4
Federal N=	17	2	3	1	11
State N=	35	4	5	5	21
County/local N=	11	2	2	1	6
PWC operation prohibited during any hours N=	129	16	38	22	53
Yes	52	11	18	3	20
No	77	5	20	19	33
No Answer	17	2	4	5	6
Federal N=	17	4	9		4
State N=	49	10	14	5	20
County/local N=	8	2		1	5

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Minimum age for PWC operation N=	123	16	35	23	49
Yes	90	15	28	14	33
No	33	1	7	9	16
No Answer	24	3	6	5	10
Federal N=	2	2			
State N=	88	12	27	14	35
County/local N=	8	1		3	4
Adult required on board for a minor to operate a PWC N=	104	15	27	18	44
Yes	47	8	16	7	16
No	57	7	11	11	28
No Answer	42	3	14	10	15
Federal N=	1	1			
State N=	53	11	15	8	19
County/local N=	5	1		1	3
PWC operation restricted within any area or zone N=	126	17	35	18	56
Yes	78	15	19	9	35
No	48	2	16	9	21
No Answer	19	2	5	9	3
Federal N=	44	10	10	3	21
State N=	46	6	9	5	26
County/local N=	15	3	3	3	6
Limitations imposed on wake jumping with PWCs N=	111	15	32	15	49
Yes	49	11	14	6	18
No	62	4	18	9	31
No Answer	35	4	9	12	10
Federal N=	4	2	1	1	
State N=	47	9	11	7	20
County/local N=	8			3	5
PWC rental operators required to provide any instruction or education in PWC operation N=	94	9	26	14	45
Yes	28	4	12	2	10
No	66	5	14	12	35
No Answer	50	9	15	13	13
Federal N=	3	1			2
State N=	28	2	11	4	11
County/local N=	4		1		3
Special education required for all PWC operators N=	103	14	31	14	44
Yes	11	4	5	2	
No	92	10	26	12	44
No Answer	43	5	10	13	15
Federal N=					
State N=	19	3	6	6	4
County/local N=	1		1		
Special education required for PWC operators of certain ages N=	102	14	29	14	45
Yes	34	9	15	3	7
No	68	5	14	11	38
No Answer	43	4	12	13	14
Federal N=					
State N=	35	9	14	5	7
County/local N=	1		1		

Special boating license required to operate a PWC N=	117	15	33	20	49
Yes	13	3	4	4	2
No	104	12	29	16	47
No Answer	27	3	8	6	10
Federal N=					
State N=	22	3	5	8	6
County/local N=	2	1			1
Maximum noise level specifically for PWCs N=	112	15	31	17	49
Yes	21	3	1	3	14
No	91	12	30	14	35
No Answer	32	3	10	10	9
Federal N=	8	2			6
State N=	27	3	3	5	16
County/local N=	3	1		1	1
Other restrictions (textbox provided)					

12. Consider all bodies of water in your unit over which your agency has authority to regulate or control PWC use. During federal FY 1999 (Oct. 1, 1998 - Sept. 30, 1999), did PWC use occur on any of these bodies of water? *(Answer then go to Question 13.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes	201	50	59	22	70
No	343	59	208	26	50
N=	544	109	267	48	120
Not applicable	139	35	53	29	22

13. Consider all bodies of water on or adjacent to your agency's land, regardless of your agency's authority to regulate or control PWC use. In federal FY 1999 (Oct. 1, 1998 – Sept. 30, 1999) during how many months did recreational visitors to your unit use PWCs at any level on these bodies of water? [1] *(Answer then go to Question 14.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
0 months	1		1		
1-3 months	51	10	18	5	18
4-6 months	163	25	49	29	60
7-9 months	63	12	28	11	12
10-12 months	66	14	27	7	18
N=	344	61	123	52	108
Unknown					

14. About how many recreational visitors or visits of all types did your unit have during the months that PWCs were used in federal FY 1999?

[1] We have grouped months together. Respondents had the choice of from 0 to 12 months and unknown.

	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Able to provide estimate *(Go to Question 15)* N=	69	106	23	64
Range	50 to 13000000	0 to 1900000	1 to 2924669	17 to 35000000
Median	442585.00	34000.00	163800.00	1322666.67
Mean	1085697.17	124723.05	481416.77	3130279.95
Unable to provide estimate *Go to question 16)* N=				

15. How confident are you in the accuracy of the above estimate? *(Answer then go to Question 16.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Extremely confident	55	15	38		2
very confident	54	26	24	3	1
Moderately confident	101	28	44	10	19
Somewhat confident	77	11	42	5	19
Slightly or not confident	62	10	16	8	28
N=	349	90	164	26	69
No Answer	14	3	5	2	4

16. You indicated that PWCs were used during _____ months in federal FY 1999. About how many recreational visitors to your unit used PWCs during those months?

	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Able to provide estimate *(Go to Question 17)* N=	33	46	18	38
Range	5 to 1200000	0 to 100000	1 to 625000	3 to 6445300
Median	500	425	325.00	500
Mean	99370.39	6982.00	75494.61	178040.45
Unable to provide estimate *Go to question 18)* N=				

17. How confident are you in the accuracy of the above number? *(Answer then go to Question 18)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Extremely confident N=	109	31	73	1	4
Very confident	73	19	41	7	6
Moderately confident	56	15	29	2	10
Somewhat confident	63	16	30	6	11
Slightly or not confident	55	10	19	7	19
N=	356	91	192	23	50
No Answer	27	5	5	6	11

18. Please indicate what type of information, if any, your unit has collected on the effect of PWCs on natural resources and the environment. *(Answer then go to Question 19. Note: Textboxes provided to list studies.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
A site-specific study or studies of PWC impacts in this unit have been conducted by your agency	9	1	3		5
A site-specific study or studies of PWC impacts in this unit have been conducted by another entity	5	1	1	2	1
A study or studies of PWC impacts at other locations have been reviewed and relied upon to assess potential impacts in your unit	43	22	19		2
Unit staff observation and record information on PWC impacts	96	25	45	4	22
No information on PWC impacts has been collected	538	102	250	71	115

19. How adequate is the information your unit has on PWC impacts for purposes of determining how PWC use should be managed in your unit? *(Answer then go to Question 20.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
More than adequate	86	28	36	6	16
Adequate	154	43	74	11	26
Less than adequate	226	28	112	20	66
N=	466	99	222	37	108
Not applicable	209	43	95	38	33

20. Consider all bodies of water in your unit over which your agency has authority to regulate or control PWC use. Overall, how adequate are the levels of law enforcement personnel at the federal, state, and county/local level to enforce existing rules and regulations related to PWC use on these bodies of water? *(Answer then go to Question 21.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Much more than adequate	14	5	6	2	1
More than adequate	23	6	13		4
Adequate	189	39	94	15	41
Less than adequate	198	43	98	16	41
Much less than adequate	105	22	53	8	22
N=	529	115	264	41	109
No answer	154	29	56	36	33

21. Overall, how adequate are current federal, state, and county/local regulations and restrictions for managing PWC use on these bodies of water? *(Answer then go to Question 22.)*

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Much more than adequate	16	4	8	2	2
More than adequate	45	14	15	3	13
Adequate	270	68	112	26	64
Less than adequate	143	18	82	11	32
Much less than adequate	67	10	43	5	9
N=	541	114	260	47	120
No answer	142	30	61	29	22

22. What changes, if any, are needed in current regulations or restrictions to improve management of PWC use on these bodies of water? (*Answer then go to Snowmobile Section.)*

Section III – Snowmobiles

Note regarding scope of survey: The scope of this section is limited to recreational use of snowmobiles in areas that your agency manages. When considering your responses, please include all areas (land and frozen water) in your unit that your agency manages, including any areas managed through an easement, lease, or other agreement. Finally, if you are responding for a national wildlife refuge, please note that this survey does not include waterfowl production areas (WPAs) or coordination areas.

1. Regardless of current restrictions or prohibitions, does your unit have the capability (adequate snowfall in an average year and suitable terrain) to support visitor use of snowmobiles in any areas that your agency manages?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 2)*	408	91	138	64	115
No *(Go to Section IV)*	605	233	280	39	53
N=	1013	324	418	103	168
Missing	5	4	1		

2. Are there any areas in your unit that your agency manages (including any areas managed through an easement, lease or other agreement) over which your agency has no authority to regulate or control snowmobile use?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 3)*	101	20	46	12	23
No *(Go to Question 5)*	299	71	89	47	92
N=	400	91	135	59	115
Don't know*(Go to Question 5)*	7		2	5	53

3. For about how much of the area in your unit that your agency manages, does your agency have no authority to regulate or control snowmobile use? (Answer and go to Question 4)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Almost none	34	10	9	2	13
Less than half	32	4	11	7	10
About Half	4	4			
More than Half	7	2	4	1	
Almost all	4	1	1	2	
All	22		22		
N=	103	21	47	12	23
Don't Know					

4. During federal FY 1999 (Oct. 1, 1998 – Sept. 30, 1999), did snowmobile use occur in any of these areas over which your agency has no authority to regulate or control snowmobile use?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Got to Question 5)*	70	12	29	10	19
No *(Go to Section IV)*	14	5	5	1	3
N=	84	17	34	11	22
Don't Know	19	4	13	1	1

5. Are snowmobiles prohibited from operating in all areas overwhich your agency has authority to regulate or control their use?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 6)*	144	46	93		5
No *(Go to Question 7)*	259	44	43	62	110
N=	403	90	136	62	115

6. What are the reasons that snowmobiles are prohibited from operating in all areas over which your agency has authority? (Answer and go to Question 11)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Snowmobile-specific prohibition established by your unit for all these areas N=	121	43	73		5
Yes	83	35	47		1
No	38	8	26		4
No Answer	24	2	22		
Snowmobile-specific prohibition established by your unit for some of these areas N=	82	29	48		5
Yes	11	4	4		3
No	71	25	44		2
No Answer	54	12	42		
Off-road/off-highway vehicle prohibition established by your unit for all of these areas N=	134	43	86		5
Yes	116	36	78		2
No	18	7	8		3
No Answer	9	1	8		
Off-road/off-highway vehicle prohibition established by your unit for some of these areas N=	76	25	46		5
Yes	10	1	5		4
No	66	24	41		1
No Answer	56	15	41		
Protection of Wilderness Area(s) N=	110	38	67		5
Yes	30	15	11		4
No	80	23	56		1
No Answer	27	5	22		
Protection of proposed Wilderness Area(s) or Wilderness Study Area(s) N=	104	35	64		5
Yes	19	12	6		1
No	85	23	58		4
No Answer	31	5	26		
Protection of watershed(s) N=	110	35	70		5
Yes	34	13	19		2
No	76	22	51		3
No Answer	28	6	22		
Protection of Wild and Scenic River(s) N=	104	31	68		5
Yes	3		3		
No	101	31	65		5
No Answer	31	9	22		
Protection of proposed Wild and Scenic River(s) N=	101	31	65		5
Yes					
No	101	31	65		5
No Answer	33	8	25		
Protection of species under the Endangered Species Act N=	108	34	70		4
Yes	35	10	23		2
No	73	24	47		2
No Answer	30	8	21		1
Protection of wildlife not listed under the ESA N=	112	34	73		5
Yes	84	19	62		3
No	28	15	11		2
No Answer	27	7	20		

Protection of plants not listed under the ESA N=	112	34	74		4
Yes	77	21	56		
No	35	13	18		4
No Answer	28	7	20		1
Snowmobile use inconsistent or incompatible with purpose of unit N=	134	46	84		4
Yes	130	44	83		3
No	4	2	1		1
No Answer	13	1	11		1
Negative effect on air quality N=	98	34	59		5
Yes	31	14	17		
No	67	20	42		5
No Answer	39	8	31		
Negative effect on water quality N=	95	29	61		5
Yes	27	7	19		1
No	68	22	42		4
No Answer	39	10	29		
Excessive noise N=	114	40	69		5
Yes	84	31	51		2
No	30	9	18		3
No Answer	30	5	25		
Disturbs the natural setting N=	117	43	69		5
Yes	96	38	56		2
No	21	5	13		3
No Answer	27	2	25		
Safety concerns N=	113	41	67		5
Yes	81	36	42		3
No	32	5	25		2
No Answer	29	3	26		
Non-safety related conflicts with other visitors N=					
Yes					
No					
No Answer					
Insufficient resources to enforce regulations N=	106	35	67		4
Yes	45	19	26		
No	61	16	41		4
No Answer	30	7	22		1
Other (textbox provided)					

7. Although allowed in this unit, are snowmobiles prohibited from operating in <u>any</u> areas over which your agency has authority to regulate or control their use?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes *(Go to Question 8)*	205	28	24	49	104
No *Go to Question 9)*	56	18	19	13	6
N=	261	46	43	62	110

8. What are the reasons that snowmobiles are prohibited from operating in <u>any</u> areas over which your agency has authority? (Answer and go to Question 9.)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Snowmobile-specific prohibition established by your unit N=	198	24	23	49	102
Yes	123	18	13	22	70
No	75	6	10	27	32
No Answer	4	1		1	2
Off-road/off-highway vehicle prohibition established by your unit N=	198	25	23	49	101
Yes	146	15	16	42	73
No	52	10	7	7	28
No Answer	2			1	1
Protection of Wilderness Area(s) N=	191	24	21	43	103
Yes	119	9	2	14	94
No	72	15	19	29	9
No Answer	7		2	5	
Protection of proposed Wilderness Area(s) or Wilderness Study Area(s) N=	184	22	21	47	94
Yes	67	10	1	32	24
No	117	12	20	15	70
No Answer	9	1	2	2	4
Protection of watershed(s) N=	180	21	21	43	95
Yes	37	3	3	9	22
No	143	18	18	34	73
No Answer	14	3	2	5	4
Protection of Wild and Scenic River(s) N=	174	23	21	41	89
Yes	21	3			18
No	153	20	21	41	71
No Answer	19	1	2	7	9
Protection of proposed Wild and Scenic River(s) N=	174	22	21	42	89
Yes	8	1			7
No	166	21	21	42	82
No Answer	19	2	2	6	9
Protection of species under the Endangered Species Act N=	182	21	20	44	97
Yes	64	6	3	9	46
No	118	15	17	35	51
No Answer	12	3	3	4	2
Protection of wildlife not listed under the ESA N=	191	20	22	47	102
Yes	125	12	18	28	67
No	66	8	4	19	35
No Answer	9	4	2	3	
Protection of plants not listed under ESA N=	179	19	21	45	94
Yes	52	12	15	8	17
No	127	7	6	37	77
No Answer	15	4	2	4	5
Negative effect on air quality N=	176	20	20	43	93
Yes	6	4	2		
No	170	16	18	43	93
No Answer	16	4	2	5	5
Negative effect on water quality N=	179	20	21	44	94
Yes	17	3	3	3	8
No	162	17	18	41	86
No Answer	14	4	2	4	4
Excessive noise N=	180	21	21	44	94
Yes	39	12	11	3	13
No	141	9	10	41	81
No Answer	14	4	2	4	4

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Disturbs natural setting N=	190	26	22	44	98
Yes	84	23	16	7	38
No	106	3	6	37	60
No Answer	6		2	3	1
Safety concerns N=	188	25	22	45	96
Yes	68	20	10	6	32
No	120	5	12	39	64
No Answer	9		2	3	4
Non-safety related conflicts with other visitors N=	183	24	21	44	94
Yes	80	20	6	5	49
No	103	4	15	39	45
No Answer	12	1	2	4	5
Insufficient resources to enforce regulations N=	173	20	21	46	86
Yes	26	5	7	6	8
No	147	15	14	40	78
No Answer	23	4	3	4	12
Other (textbox provided)					

9. Where not prohibited, is snowmobile use restricted or controlled in any way by federal, state, and/or county/local laws or regulations in any areas over which your agency has authority?

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes (*Go to Question 10)*	144	31	24	27	62
No (*Go to Question 11)*	108	14	19	33	42
N=	252	45	43	60	104

10. What types of restrictions or controls are placed on snowmobile use in areas over which your agency has authority? (Answer and go to Question 11.)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
All operators must have a drivers license N=	130	29	20	20	61
Yes	25	5	9	3	8
No	105	24	11	17	53
No Answer	20	1	3	8	8
Federal N=	4	2	1		1
State N=	41	5	10	4	22
County/local N=	2	1			1
All operators must have safety education/certification regardless of age N=	120	28	13	20	59
Yes	8	3			5
No	112	25	13	20	54
No Answer	29	2	10	8	9
Federal N=	1				1
State N=	23	4	4	2	13
County/local N=	1				1

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
All operators under a certain age must have safety education/certification N=	116	27	11	19	59
Yes	40	10	3	3	24
No	76	17	8	16	35
No Answer	32	3	11	9	9
Federal N=	2	1			1
State N=	47	12	3	3	29
County/local N=	1				1
All operators born after a certain date must have safety education /certification N=	110	25	10	19	56
Yes	12	1	1	1	9
No	98	24	9	18	47
No Answer	36	3	12	9	12
Federal N=	1				1
State N=	21	2	1	3	15
County/local N=	1				1
Minimum age for all operators regardless of supervision N=	116	27	16	15	58
Yes	44	14	8	3	19
No	72	13	8	12	39
No Answer	32	2	6	13	11
Federal N=	4	3			1
State N=	47	12	8	3	24
County/local N=	1				1
All operators under a certain age must have supervision N=	107	25	10	15	57
Yes	46	19	3	4	20
No	61	6	7	11	37
No Answer	39	4	12	12	11
Federal N=	11	9			2
State N=	45	15	3	3	24
County/local N=	1				1
Operators must have at least one or more of the following: driver's license or safety education /certificate or supervision N=	114	27	16	15	56
Yes	41	16	6	4	15
No	73	11	10	11	41
No Answer	32	3	6	13	10
Federal N=	6	4	1		1
State N=	42	11	7	3	21
County/local N=	3	2			1
Snowmobile rental operators required to provide any instruction or education in snowmobile operation N=	80	12	8	13	47
Yes	18	1	1	2	14
No	62	11	7	11	33
No Answer	68	18	14	15	21
Federal N=	8	1			7
State N=	14		2	1	11
County/local N=	1				1

Air quality restrictions N=	116	26	11	19	60
Yes	5			1	4
No	111	26	11	18	56
No Answer	32	4	11	9	8
Federal N=	2				2
State N=	9		1	1	7
County/local N=					
Noise restrictions N=	121	30	11	17	63
Yes	50	23	1	2	24
No	71	7	10	15	39
No Answer	28	1	11	11	5
Federal N=	23	19			4
State N=	34	5	2	1	26
County/local N=	3	1			2
Speed limit in all these areas N=	126	30	15	18	63
Yes	29	20	3		6
No	97	10	12	18	57
No Answer	23	1	7	10	5
Federal N=	21	16	1		4
State N=	19	6	3	1	9
County/local N=	4	3			1
Speed limit in some of these areas N=	108	18	16	17	57
Yes	46	6	9	5	26
No	62	12	7	12	31
No Answer	31	10	6	10	5
Federal N=	24	4	1	1	18
State N=	29	5	9		15
County/local N=	19	3	7	1	8
Confined to designated routes and /or frozen water surfaces in all these areas N=	130	28	17	26	59
Yes	33	18	7	1	7
No	97	10	10	25	52
No Answer	13	2	5	2	4
Federal N=	30	17	3	1	9
State N=	11	1	4		6
County/local N=	4	1	1		2
Confined to designated routes and /or frozen water surfaces in some of these areas N=	125	20	17	26	62
Yes	84	8	12	15	49
No	41	12	5	11	13
No Answer	17	9	4	2	2
Federal N=	59	7	10	10	32
State N=	19	2	8	2	7
County/local N=	13	1	6	2	4
Other restrictions (textbox provided)					

11. Consider all areas in your unit over which your agency has authority to regulate or control snowmobile use. During federal FY 1999 (Oct. 1, 1998 - Sept. 30, 1999), did snowmobile use occur on any of these areas? (Answer and go to question 12)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Yes	264	47	52	56	109
No	122	42	70	4	6
N=	386	89	122	60	115
Not applicable	20	2	15	3	

12. Consider all areas in your unit managed by your agency, regardless of your agency's authority to regulate or control snowmobile use. In federal FY 1999 (Oct. 1, 1998 – Sept. 30, 1999) during how many months did recreational visitors to your unit use snowmobiles at any level on these areas?[2] (Answer then go to Question 13.)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
0 months					
1-3 months	81	16	27	26	12
4-6 months	145	14	25	27	79
7-9 months	34	7	8	3	16
10-12 months					
N=	260	37	60	56	107
Unknown					

13. About how many recreational visitors or visits of all types did your unit have during the months that snowmobiles were used in federal FY 1999?

	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
% Able to provide estimate *(Go to Question 14)* N=	40	45	26	56
Range	2 to 2500000	2 to 400000	50 to 570000	10 to 190000000
Median	27826.00	1000.00	7500	375000.00
Mean	149639.48	17149.62	57921.04	4505272.45
% Unable to provide estimate *Go to question 15)* N=				

14. How confident are you in the accuracy of the above number? (Answer then go to Question 15.)

[2] We have grouped months together. Respondents had the choice of from 0 to 12 months or unknown.

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Extremely confident	28	12	13		3
very confident	23	16	5	2	
Moderately confident	51	14	14	5	18
Somewhat confident	60	8	23	12	17
Slightly or not confident	52	6	18	7	21
N=	214	56	73	26	59
No Answer	8	1	4		3

15. You indicated that snowmobiles were used during _____ months in federal FY 1999. About how many recreational visitors to your unit used snowmobiles in areas your agency manages during those months?

	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
% Able to provide estimate *(Go to Question 16)*	30	31	24	54
Range	5 to 53980	1 to 20000	50 to 100000	10 to 2344950
Median	550	50	2000.00	24002.00
Mean	5959.50	1903.32	13137.58	133538.91
% Unable to provide estimate *Go to question 17)*				

16. How confident are you in the accuracy of the above number? (Answer then go to Question 17)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Extremely confident	46	18	25		3
very confident	35	16	15	1	3
Moderately confident	49	16	13	5	15
Somewhat confident	61	9	18	11	23
Slightly or not confident	50	7	18	10	15
N=	241	66	89	27	59
No Answer	13	1	2	2	8

17. Please indicate what type of information, if any, your unit has collected on the effect of snowmobiles on natural resources and the environment. (Answer then go to Question 18. Note: Textboxes provided to list studies.)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
A site-specific study or studies of snowmobile impacts in this unit have been conducted by your agency	16	6		1	9
A site-specific study or studies of snowmobile impacts in this unit have been conducted by another entity	14	3		1	10
A study or studies of snowmobile impacts at other locations have been reviewed and relied upon to assess potential impacts in your unit	34	14	7	1	12
Unit staff have observed and recorded information on snowmobile impacts	123	23	15	17	68
No information on impacts has been collected.	255	54	116	44	41

18. How adequate is the information your unit has on snowmobile impacts for purposes of determining how snowmobile use should be managed in your unit? (Answer then go to Question 19.)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
More than adequate	30	10	9	4	7
Adequate	125	30	49	14	32
Less than adequate	166	28	44	28	66
N=	321	68	102	46	105
No answer	85	22	36	18	9

19. Consider all areas in your unit over which your agency has authority to regulate or control snowmobile use. Overall, how adequate are the levels of law enforcement personnel at the federal, state, and county/local level to enforce existing rules and regulations related to snowmobile use on these areas? (Answer then go to Question 20.)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Much more than adequate	6	3		2	1
More than adequate	12	6	1	1	4
Adequate	105	24	33	23	25
Less than adequate	171	40	55	23	53
Much less than adequate	89	14	33	11	31
N=	383	87	122	60	114
No answer	25	4	16	4	1

20. Over all how adequate are current federal, state, and county/local regulations and restrictions for managing snowmobile use on these areas? (Answer then go to Question 21.)

	Total	National Park Service	Fish & Wildlife Service	Bureau of Land Management	Forest Service
Much more than adequate N	5	1		3	1
More than adequate	25	12	4	3	6
Adequate	221	50	69	35	67
Less than adequate	98	18	41	13	26
Much less than adequate	32	5	16	3	8
N=	381	86	130	57	108
No answer	23	5	8	7	3

21. What changes, if any, are needed in current regulations or restrictions to improve management of snowmobile use on these areas? (Answer then go to Section.4.)

Section IV – Comments and Respondent Information

1. If you would like to make additional comments concerning any of the questions included in this questionnaire or comment on topics not covered, please use the textbox below for that purpose.

2. Please provide the following information so that we may contact you with follow-up questions if necessary.

Name:

Title:

Agency:

Phone:

E-mail:

Studies and Documents Identified by Federal Units About the Impacts of Personal Watercraft and Snowmobiles

The following list of studies and other documents were identified by the federal units that responded to our questionnaire as containing information on the effects of personal watercraft and/or snowmobiles on natural resources and the environment. According to the unit managers of these organizations, the studies are either (1) site-specific studies conducted by their organizations or (2) studies done by other entities that their organizations have reviewed and relied upon to assess the potential impacts of personal watercraft and/or snowmobiles. The citations, which have not been verified by GAO, are grouped by the identifying agency and listed in chronological order. They are presented as the agency provided the information, except for minor changes for editorial consistency. Some of the studies are old; others are unpublished documents, drafts, or works in progress.

Personal Watercraft

Fish and Wildlife Service

Fish and Wildlife Service. *Environmental Impact Assessment: Effect of Boating on Management of Ruby Lake National Wildlife Refuge*. Portland, OR.: June 1976.

Dahlgren, R. B. and C. E. Korschgen. *Human Disturbances of Waterfowl: An Annotated Bibliography*. Fish and Wildlife Service. Resource Publication 188, 1992.

Department of Interior. *Recreational Boating Disturbances of Natural Communities and Wildlife: An Annotated Bibliography*. National Biological Survey. Biological Report 22, May 1994.

Tahoe Research Group. *The Use of Two-Cycle Engine Watercraft on Lake Tahoe: Water Quality and Limnological Considerations*. Report to the Tahoe Regional Planning Agency, Lake Tahoe, CA: 1997.

Tahoe Regional Planning Agency. *Environmental Assessment for the Prohibition of Certain Two-Stroke Powered Watercraft*. Jan. 1999.

Forest Service

"Effects of Jet Boats on Salmon Eggs," *New Zealand Journal of Marine and Freshwater Research*, Vol. 9, No. 3, pp. 273-282.

Slone, Timothy D., K. Chillman, and G. Brown. *A Study of Boating Recreation on Cave Run Lake, Kentucky*. Department of Forestry, Southern Illinois University-Carbondale.

Vogel, James. *A Survey of Boaters at Laurel River Lake, Kentucky Daniel Boone National Forest*.

Sutherland and Ogle. *MDC Statewide Angler Surveys*. Missouri Department of Conservation, Fish and Wildlife Research Center, Columbia: 1975.

Bush, Jane. *Relative Physical Impacts of Jet Boats, Prop Boats, and Canoes in an Ozark Stream*. Dec. 1988.

National Forest Service. *Wild and Scenic Snake River Recreation Management Plan: Hells Canyon National Recreation Area*. Wallowa-Whitman National Forest: 1994.

National Forest Service. *Environmental Assessment for Pineview Reservoir Management and Facility Improvements*. Cache National Forest, Ogden Ranger District: 1998.

National Park Service

Ellison, L.N. and L. Cleary. "Effects of Human Disturbance on Breeding of Double-Crested Cormorants," *The Auk*. Vol. 95, No. 3, pp. 510-517 and Auk, Vol. 96, No.4, (1978), pp. 815-817.

Manuwal, D.A. "Effects of Man on Marine Birds: A Review," *Proceedings of 4th J.S. Wright Forestry Conference*, Purdue University, 1978, pp. 140-60.

Duffy, D.C. and L.N. Ellison. *Human Disturbance and Breeding Birds*. 1979.

Anderson, D.W. and J.O. Keith. "The Human Influence on Seabird Nesting Success: Conservation Implications," *Biological Conservation*. Vol. 18, No. 1 (1980), pp. 65-80.

Cairns, D. "Nesting Density, Habitat Structure, and Human Disturbance as Factors in Black Guillemot Reproduction," *Wilson Bulletin*. Vol. 92, No. 3 (1980), pp. 352-361.

Robertson, R.J. and N.J. Flood. "Effects of Recreational Use of Shorelines on Breeding Bird Populations," *Canada Field-Naturalist*. Vol. 94 (1980), pp. 131-138.

Burger, J. "Effects of Human Disturbance on Colonial Species, Particularly Gulls," *Colonial Waterbirds*. Vol. 4 (1981), pp. 28-36.

Galush, J.G. "Human Disturbance on Protection Island," *Pacific Seabird Group Bulletin*. Vol. 9, No. 2 (1982), p.77.

Drapeau, P. et al. "Effects of Human Disturbance on the Activity of the Double-Crested Cormorant [and] on the Reproduction of the Great Blue Heron in the Magdalu Islands, *Canada," Canada Field-Naturalist*. Vol. 98 (1984), pp. 219-222.

Burger, J. and J. Gall. "Factors Affecting Distribution of Gulls on Two New Jersey Coastal Bays," *Environmental Conservation* . Vol. 14 (1987), pp. 59-65.

Hockey, R.A.R. "The Influence of Coastal Utilization by Man on the Presumed Extinction of the Canarian Black Oystercatcher," *Biologial Conservation*. Vol. 39 (1987), pp. 49-62.

Mace, B. et al. *Emissions From Marine Engines With Water Contact in the Exhaust Stream*, Society of Automotive Engineers Paper 980681, 1988.

Bratton, S. *Responses of Wading Birds to Natural and Unnatural Disturbances in the Cumberland Island Sound*, NPS-CPSU Technical Report No. 53, 1989.

Snow, S. *A Review of Personal Watercraft and Their Potential Impact on the Natural Resources of the Everglades National Park*. National Park Service, 1988, rev. 1989.

Ballestero, Thomas P. *Impact of Motor Boats and Personal Watercraft on the Environment: Bibliography*. University of New Hampshire, Aug. 1990.

Goldman, L. "Regulatory Protection of Coastal Nongame Habitats," *Proceedings of the Coastal Nongame Workshop, Southeast Region, Gainesville, Florida*. Fish and Wildlife Service and Florida Game and Fresh Water Fish Commission, Sept. 10-12, 1991.

Rodgers, J.A. and H.T. Smith. "Minimum Buffer Zone Requirement to Protect Nesting Bird Colonies from Human Disturbance," *Proceedings of the Coastal Nongame Workshop, Southeast Region, Gainesville, Florida*.

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Management Agreement for *Submerged Lands Within Boundaries of the Key West and Great White Heron National Wildlife Refuges*. Fish and Wildlife Service and Florida Department of Natural Resources, Sept. 1992.

Kirby, J.S., C. Clee, and V. Seager. "Impact and Extent of Recreational Disturbance to Wader Roosts on the Dee Estuary," *Colonial Waterbirds*. Vol. 16, pp. 18-27.

Balk, L. et al. *Effects of Exhaust From Two-Stroke Outboard Engines on Fish*. Nordic Council of Ministers, Copenhagen, Denmark: 1994.

Lake Bronson State Park Personal Watercraft Noise Study. Minnesota Pollution Control Agency Noise Program, 1994.

Revelt, Jean Marie. *The Effects of Marine Engine Exhaust Emissions on Water Quality: Summary of Findings of Various Research Studies*, U.S. Environmental Protection Agency, Public Docket No. A-92-28, Nov. 1994.

Wagner, Kenneth, J. "Of Hammocks and Horsepower," *Lakeline Magazine*. June 1994.

Emissions of Two and Four Stroke Outboard Engines - I. Quantification of Gasses and VOCs?, Institute for Pflanzenbiologie, Limnologische Station, Universitat Zurich, Wat. Res. Vol. 29, No. 8 (1995).

Branch, C., J. Conn, and J. Annest. "Personal Watercraft-Related Injuries: A Growing Public Health Concern," *Journal of the American Medical Association*. Vol. 278, No. 8 (Aug. 27, 1997), p. 664.

Giesy, John P. Testimony at Tahoe Regional Planning Hearing on Boating Impact. Feb. 26, 1997.

Graefe, A.R. and J.S. Holland. "An Analysis of Recreational Use and Associated Impacts at Lake Mead National Recreation Area: A Social and Environmental Prespective." (unpublished manuscript), 1997.

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Proposed Regulations for Gasoline Spark-Ignition Marine Engines. June 11, 1998.

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National Transportation Safety Board. *Safety Study: Personal Watercraft Safety* (NTSB/SS-98/01). 1998.

National Park Service. *Summer 1998 Visitor Survey: Voyageurs National Park*. Visitor Service Project. University of Idaho.

Martin, Laurie C. *Caught in the Wake: The Environmental and Human Health Impacts of Personal Watercraft*. Issac Walton League of America, 1999.

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Rogers, J. "*Preliminary" Buffer Zones to Protect Wading and Loafing Waterbirds From Human Disturbance*. Florida Game and Freshwater Fish Commission. 1999.

Sherwood, Scott D. *Preliminary Results of Hydrocarbon Testing on Canandaigua Lake*. Canandaigua Lake Pure Waters, Ltd. Canandaigua, NY.: May 21-26, 1999.

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Snowmobiles

Bureau of Land Management

Garnet Range Winter Trails Management Plan and Environmental Assessment (MT074-05-12). Sept. 25, 1986.

Fish and Wildlife Service

"Comprehensive Conservation Plan and Final Environmental Impact Statement for Little Pend Oreille National Wildlife Refuge." Apr. 2000.

Forest Service

Final Environmental Impact Statement: Off-Road Vehicles. Allegheny National Forest.

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Comments From the Department of the Interior

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

AUG 2 3 2000

Mr. Barry T. Hill
Associate Director, Energy, Resources, And Science Issues
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Hill:

Thank you for providing the Department of the Interior the opportunity to review and comment on the draft GAO report entitled, "FEDERAL LANDS: Agencies Need to Assess the Impact of Personal Watercraft and Snowmobile Use," (GAO/RCED-00-243), which was distributed August 7, 2000.

In general we agree with the recommendations. However, we have concerns with some of the data presented in the draft report. The enclosure provides specific comments. To facilitate your evaluation, these comments have been broken out by bureau, as identified in the draft report (i.e., the Bureau of Land Management, the National Park Service, the U.S. Geological Survey, and the U.S. Fish and Wildlife Service).

Again, we appreciate the opportunity to comment and hope our comments will assist you in preparing the final report.

Sincerely,

Stephen C. Saunders

Acting Assistant Secretary for Fish
And Wildlife And Parks

Enclosure

Enclosure

U.S. General Accounting Office Draft Report -
FEDERAL LANDS: Agencies Need to Assess the Impact of Personal Watercraft and Snowmobile Use
(GAO/RCED-00-243)

Comment by U.S. Geological Survey

Page 67: Correct the reference regarding the report title to read:

> Water-quality assessment of the upper Snake River Basin, Idaho and western Wyoming –summary of aquatic biological data for surface water through 1992.

Comment by National Park Service

The NPS has no additional comments to make on the draft report. On July 26, 2000, representatives from the NPS met with representatives from GAO and discussed several concerns we had with the content of the report. Those concerns seem to have been adequately addressed and information deleted, added, or clarified as necessary. Generally, we agree with the report.

Comments by Bureau of Land Management

During the informal meeting to review the draft report, we provided comment to GAO on the general findings of the report. We find that GAO addressed most of the comments we raised at that time. We agree in general concept with the findings in the *Results in Brief* section that apply to our agency.

See comment 1.

However, we continue to find that the report is very disjointed in its discussion of Federal personal watercraft (PWC) restrictions vis-a-vis state and local restrictions. The report creates confusion with the reader as to exactly what PWC management and restriction authorities GAO is referring to in their narrative. In fact, we feel that many field office managers were not clear in their own mind exactly what the survey question was asking for (i.e., Federal authority or general authority to regulate PWC on the part of any jurisdiction). Therefore, the data may not accurately reflect the true knowledge of our field managers with regard to authority.

See comment 2.

Additionally, the data in the narrative and in some tables in the appendices are inconsistent with data in others. For example, on page 13 the report states that 367 of 777 units have prohibited use of PWC or snowmobiles, or both. The data does not go on to note that 90% of those reporting units are within the NPS or FWS systems. Another example, on page 35, the table for Question 1 shows 77 BLM "yes" answers and directs those respondents to Question 2. The table for Question 2 shows that 73 answers were provided. What happened to the four other "yes" answers? Similarly, on page 36, the table for Question 5 shows 2 "yes" answers for BLM and directs those respondents to Question 6. The table for Question 6 shows that 4 BLM managers

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responded. From where did the other 2 come? Once again, the table for Question 6 directed all "yes" respondents to Question 12. There were no BLM "yes" respondents to Question 6, and, thus, no one in BLM should have answered Question 12. Yet the table for Question 12 shows that 77 BLM managers responded. These types of discrepancies cast a shadow over the reliability of the data. We worked diligently with the GAO to design a clear survey instrument to deal with the complex differences in terminology between agencies in order to assure more reliable data. However, it appears that there was a lot of confusion as to how to answer questions on the part of our managers, and that we failed in making the instrument valuable.

We did not have adequate opportunity to review and analyze the data tables prior to this review. Our informal meeting to go over the report was mostly focused on the narrative, thus we are only now addressing these anomalies.

Comments by U.S. Fish and Wildlife Service

We extend our thanks for the opportunity to review the draft report, and send our appreciation for GAO's incorporation of nearly all our comments provided during the exit conference. In short, we generally agree that limited resources with which to conduct monitoring activities on the impacts of personal watercraft and snowmobile use on wildlife, the physical environment, and the safety and enjoyment of other visitors to Federal lands have resulted in a lack of reliable information upon which decisions about the occurrence of these recreational uses should be based.

See comment 3.

The exception to the statement regarding incorporation of comments is that the wording of the draft report could still leave the reader with the impression that the Federal agencies are deliberately recalcitrant in their responsibilities to conduct monitoring on the impacts of these uses. For example, in the section entitled "Agencies Have Done Little to Assess the Impacts of Use on Their Unit's Resources," the third sentence reads: "The limited amount of information on the impacts of these vehicles is reflective of the low priority that these agencies have given to monitoring the effects of the recreational use of these vehicles." [Emphasis added.] As we stated before, we have myriad legal responsibilities, such as implementation of the Americans with Disabilities Act and Occupational Safety and Health Administration regulations for employee safety, and finite fiscal resources with which to do so. The draft report does now note that limited Federal agency resources are an impediment to designing, implementing, and enforcing monitoring programs or use limitations, but does not clearly state that failure to fully comply with the executive orders on off-road vehicle use is not simply a matter of inappropriate prioritization on the part of the agencies, but rather an inability to stretch limited fiscal resources across the entire range of our responsibilities. This point did come across somewhat more clearly in the first sentence of "Agencies Have Not Made Collecting Impact Information a Priority."

-3-

A second point regards our overall compliance with the executive orders. As we do not have access to the raw data at this time, we will make some broad generalizations based upon the data included within the draft report. At the time of this report, we had 523 units with 419 (80 percent) responding to the survey (Table I.1). Of the 419 units responding, 350 (84 percent) reported the capacity for use (Table 3), while a subset of 158 (38 percent) actually reported one or both uses (Table 2). Of the 350 units with the capacity for use, 220 (63 percent) reported total prohibitions on one or both uses (Table 3). Of the 158 units actually reporting one or both uses, 109 (69 percent) reported that they did not have the legal authority to control the use (Table 4). Taken together, this means that a small minority of our units are not fully compliant with the requirements of the executive orders: of those units responding, 158 actually have use, but 109 do not have the authority to control this use, which leaves us with 49 units which have and allow use. Stated differently, collectively, this seems to indicate that the vast majority of our units are not subject to the monitoring requirements of the executive orders. Of the 419 units responding, 69 do not have the capacity for use (419 units responding - 350 units reporting capacity for use), 220 have total prohibitions on one or both uses (please note that many of the reasons for these prohibitions are exactly those concerns indicated in the executive orders - see questionnaire responses found in Appendix II - such as wildlife, plant, and air and water quality protection, public safety concerns, or resolution of user conflicts), and another 109 do not have the authority to control these uses. This leaves 419 units responding less 69 units without the capacity for use, less 220 with total prohibitions, less 109 without authority to control uses, or 21 units. While this simple subtraction does not make allowances for overlaps in the raw data (such as the fact that some of the 220 units with total prohibitions may prohibit one use, but not the other, *etc.*), it leaves us with a range of 21 to 49 (158 units reporting use - 109 units without the authority to control use) units potentially out of compliance with the executive orders. However, 52 of the 158 units actually reporting use (33 percent) reported that they were collecting some type of information on impacts (Table 5), although without the raw data it is difficult to determine if units allowing one or both uses are conducting this monitoring. It appears from the worked data that 21- 49 (5 - 12 percent) of the responding units may not be fully compliant with the executive orders on off-road vehicle use. In summary, this may indicate (again, we would need to analyze the raw data to confirm or refute this statement) that most units are compliant with the executive orders by either allowing one or both uses in conjunction with the requisite monitoring, or prohibiting one or both uses altogether.

See comment 4.

In terms of planned corrective action, we intend to issue a Director's Order by December 31, 2000 to all units of the National Wildlife Refuge System that currently allow one or both uses, and have the authority to control these uses, to prohibit these uses unless/until a monitoring program is in place which will assure protection of the unit's natural resources and compliance with the executive orders on off-road vehicle use. The Director's Order will provide interim policy until such time as our draft Appropriate Refuge Uses policy, which will address both personal watercraft and snowmobile use, is finalized.

We will also continue to review the numerical data in order to ensure that it is consistent.

GAO Comments

The following are GAO's comments on the Department of the Interior's letter dated August 23, 2000. While the Department generally agreed with the report's recommendations, agencies within the Department raised the following concerns about the discussion of personal watercraft restrictions and the presentation of questionnaire data.

1. The Bureau of Land Management was concerned that the report's discussion of the authority of the agency or other entities to control or restrict use of personal watercraft was confusing. We acknowledge that the issue of authority to control or restrict the use of personal watercraft within federal units is complex and we revised the report to help clarify the issue. The Bureau was also concerned that our survey questions on this issue were unclear which may result in data that do not accurately reflect their field office managers' knowledge concerning such authorities. While we believe our survey questions were straightforward and that our report accurately presents the responses of the Bureau's field managers, our data show that the issue of whether an agency has the authority to control or restrict use remains outstanding for some field managers. Specifically, in response to a question concerning what changes, if any, were needed to regulations or restrictions to improve management of personal watercraft use, several respondents, including Bureau of Land Management field managers, reported the need for clarification or changes in existing regulations to help them better understand their authority. For example, a respondent from one Bureau Field Office stated, "Our challenge is the murky legal issues involving navigability and the role of the state to regulate and/or enforce (personal watercraft use) on navigable rivers. Ideally, state legislation would deal with that issue. However, there has been little consensus developed that it is a problem that needs to be addressed."

2. The Bureau of Land Management expressed concern over what appeared to be inconsistent numbers of responses on some of the questions. As occurs with most surveys, some survey respondents did not answer every question in the survey. The tables in Appendix II summarize responses where a "Yes", "No", or other available answer was selected before continuing on to the next question, and do not include "nonresponses." For example, while 77 Bureau respondents provided a "Yes" answer on question 1, four of those respondents did not answer question 2 and simply continued on to the next question. Similarly, not all respondents who answered question 6 provided an answer to question 5 before moving forward in the survey.

3. The Fish and Wildlife Service commented that the report may give the impression that agencies are reluctant to fulfill their responsibilities to monitor the impact of snowmobile or personal watercraft use. We recognize that all four of the agencies have a variety of legislative or other program requirements, and that some require more attention than others. We believe the report fairly and accurately captures the reasons why monitoring is not occurring at many units managed by the agencies under review.

4. We agree with the Fish and Wildlife Service's conclusion that some percentage of their units that can support the use of recreational vehicles is in compliance with the executive orders. We also agree that some of the Service's units have already prohibited use of these vehicles out of concern for the issues raised by the executive orders. However, we do not agree that only a few of the Service's units are out of compliance with the executive orders. Specifically, the Service believes that 220 of its 419 responding units should not be considered out of compliance because these units stated that they have total prohibitions on the use of a recreation vehicle. The Service did not recognize that some of these units may have totally prohibited the use of one vehicle but still allowed the use of the other. The Service also contends that all 109 of its units that responded they lack authority to control the use of recreational vehicles should not be considered out of compliance. However, only a small percentage of these units reported lacking authority over both personal watercraft and snowmobiles and in all areas of their units. As a result, some of these units have authority over at least one of these vehicles and in at least some portion of their unit. Finally, as stated in our report, of those units that could be described as in compliance with the executive orders, because they collected some information about impacts, about half of these units stated that the information they collected was inadequate for determining how to manage the use of these vehicles.

Comments From the Department of Agriculture's Forest Service

United States Department of Agriculture | Forest Service | Washington Office | 14th & Independence SW
P.O. Box 96090
Washington, DC 20090-6090

File Code: 1420
Date: August 18, 2000

Mr. Jim Wells, Director
Energy, Resources, and Science Issues
Resources, Community, and Economic
Development Division
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Wells:

Thank you for the opportunity to review and comment on the draft report, "FEDERAL LANDS: Agencies Need to Assess the Impact of Personal Watercraft and Snowmobile Use" (GAO/RCED-00-243, code 141345).

Enclosed are the comments to the draft report. These comments include those of a general nature pertinent to the draft report as a whole, such as setting the context within which the review team was directed to operate, as well as specific comments addressing factual errors and/or misinterpretations.

If you have additional questions, please contact the Agency's External Audit Liaison, Linda Washington at (202) 205-3761.

Sincerely,

Vincette L. Goerl
VINCETTE L. GOERL
Chief Financial Officer
Deputy Chief, Office of Finance

Enclosure(s)

Caring for the Land and Serving People

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Comments on the September 2000 Draft Report
GAO/RCED-00-243, code 141345

Generally this is a much-improved document from the first draft reviewed at the exit conference. However, we believe that there are paragraphs that do not reflect the true nature of the policies that have been implemented. The Federal Government acquires legal rights to the land but not the State's legislative authority over the land. The Federal Government performs the functions delegated to it by the Constitution as the sovereign under the supremacy clause. Most National Forest System lands are under proprietorial jurisdiction or interest. This proprietorial interest best describe the policies surrounding snowmobile and watercraft.

Specifically:

Now on p. 5.

p3 - last sentence in first para - you have changed the wording from the previous draft, believe it was more accurate before. States or others cannot decide whether to allow PWC or OSV use without federal manager permission, unless the areas of use are under non-Federal jurisdiction such as road right-of-way etc. This might be clarified better, for example, "In many cases, Federal managers decide whether to allow personal watercraft or snowmobiles in all or part of an individual Federal unit based on existing state laws or regulations."

Now on pp. 5, 17, and 18.

p3, 2nd para(p16, 1st full para; p17, twice in top para) - it was suggested by our law enforcement person that the word "adopted" or "incorporated into Federal policy" be used.

Now on p. 8.

p6 - the multiple uses definition under Table 1 has lost some of the other uses, including recreation, from the previous version. This appears to be a typing error. Recommend those other uses be reinserted.

Now on p. 12.

p10 - last sentence - see p3 comment above

Now on pp. 14 and 15.

p13 - next to last sentence in 1st full para - ". . . which *allow* unit managers . . . " The 36 CFR 295 actually *directs* that "On National Forest System lands, the continuing land management planning process will be used . . . ," and the planning process has been delegated to unit managers (Forest Supervisors). So, recommend changing *allow* to "directs."

Now on p. 15.

p14 - para before Table 3 - good addition

Now on p. 16.

p15 - 1st sentence - . . . other than federal agency determine whether . . . can use a federal unit. See p3 comment above. If this is a statement of what managers believe, that should be made clear from a declarative statement of "fact."

Now on p. 19.

p18 - 2nd full para - good addition. Also in the example concerning Shoshone NF, recommend adding "Forest Service" so it reads "Shoshone National Forest has only two Forest Service law enforcement personnel (should be law enforcement officers) . . . " They would be the ones to be enforcing wilderness areas restrictions as that is a Federal violation, but other State or County officers should be available to assist in covering other violations occurring on the Forest under non-Federal laws.

Now on pp. 20 and 21.

p19/20 - last para/1st para - good addition

Now on p. 21.

p20 - rest of page - good changes

Now on p. 22.

p21 - Table 5 - good addition

Now on p. 23.

p23 - deleting last comment is a good idea

Now on p. 24.

p23 - last bullet - good addition

Now on p. 24.

p24 - comment on Forest Service May 2000 memo - good addition

Now on pp. 59 and 64.

p60/63 - delete "National" from Forest Service name. We are a nationwide agency, but we are either the USDA-Forest Service (USDA-FS) or the Forest Service.

GAO Contacts and Staff Acknowledgments

GAO Contacts

Barry T. Hill (202) 512-8021
Jim Wells, Jr. (202) 512-3841

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