

**REPORT OF THE
DEPARTMENT OF GAME AND INLAND FISHERIES**

**STUDY OF BOATING SAFETY
EDUCATION AND BOATING
SAFETY IN VIRGINIA**

**TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA**



HOUSE DOCUMENT NO. 27

**COMMONWEALTH OF VIRGINIA
RICHMOND
1998**



COMMONWEALTH of VIRGINIA

George Allen

Governor

Becky Norton Dunlop

Secretary of Natural Resources

Department of Game and Inland Fisheries

William L. Woodfin, Jr.

Director

December 9, 1997

TO: The Honorable George Allen, Governor of Virginia, and Members of the General Assembly

House Joint Resolution 557, adopted by the 1997 General Assembly, directed the Department of Game and Inland Fisheries to study boating education in Virginia. In conducting the study, the Department was required to examine the costs and benefits of instituting mandatory boating education in the Commonwealth. A study group of Department staff conducted the study. The group studied boating safety education and other boating safety issues. The boating community developed boating safety issues in focus group meetings held in four locations around the state. Boat owners and boating organizations were surveyed regarding the issues. Boating accidents were analyzed and boating laws of other states were reviewed. Recommendations were developed and reviewed with the boating community in four additional public meetings. We have the honor of submitting herewith the report on the study of boating safety education and boating safety in Virginia.

This study was conducted with the dedicated special revenues of the Department of Game and Inland Fisheries. Six-hundred-ninety-four hours of staff time were expended on the study. Costs of the study, including the staff salaries and costs of public meetings and surveys, totaled \$67,071. These costs were paid from the Boating Fund of the Game Protection Fund.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "W. L. Woodfin, Jr.", written over a large, stylized flourish.

William L. Woodfin, Jr.

Director

Department of Game and Inland Fisheries

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PREFACE

House Joint Resolution No. 557 of the 1997 session directed the Department of Game and Inland Fisheries to study boating education in Virginia, examining the costs and benefits of instituting mandatory boating education in the Commonwealth (Appendix A). Several other boating safety bills were also introduced in the 1997 session. Senate Bill 890 and House Bill 2695 would have established a minimum age of 14 to operate a motorboat. House Bill 2061 would have established a life jacket requirement for children under age 12 while in a motorboat. Though these bills did not pass, their introduction and discussion brought to light other boating safety issues. In response to HJR 557, the Department of Game and Inland Fisheries undertook a comprehensive study of these and several other boating safety issues of local and statewide interest.

A four-person work group within the Department conducted the study. Members of this group represented the areas of boating law enforcement, boating law administration, and boating safety education. This group conducted four focus group meetings in May 1996 in Richmond, Woodbridge, Virginia Beach, and at Smith Mountain Lake. The purpose of these meetings was to identify all the boating safety issues and concerns that should be studied. The study group designed a survey to obtain the views of the boating community on the various issues. Realizing there are people with an interest in boating who may not be boaters, the survey was also sent to various homeowner organizations located on Virginia waters, boating safety organizations, and local governments. Study recommendations were reviewed in October and November 1997 at public meetings held in the four locations mentioned above.

Each issue was addressed based on the results of the surveys, comments received from the public, reviews of boating safety laws in other states, boating accident statistics, and the expertise of boating officials within the Department. This report provides information and recommendations on each of the boating safety issues studied.

We wish to acknowledge the support and assistance provided for this study from the Institute for Environmental Negotiation of the University of Virginia, the Survey Research Laboratory of the Center for Public Service of Virginia Commonwealth University, and staff members Larry Hart, Charlie Sledd, Nancy Jamerson, Colonel Jeff Uerz, and Captain Rodger Rowe. We thank the many participants in the focus group meetings and those who wrote or called with their concerns for the valuable information they provided.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	
INTRODUCTION	1
METHODS	3
BOATING ACCIDENTS IN VIRGINIA	4
SURVEY RESULTS	6
RESULTS AND DISCUSSION	11
BOATING SAFETY	11
BOATING SAFETY EDUCATION	11
General Boating Safety Education	11
Motorboat Dealers, Salesmen, and Rental Agents	14
Renters and Lessees of Motorboats	14
OPERATOR LICENSING	15
LIFE JACKET REQUIREMENTS	16
Life Jacket Requirement for General Boating	16
Requirements for Those Being Towed	16
Manually Inflatable Life Jackets	16
Throwable Devices	17
OPERATOR AGE	17
SPEED LIMITS	17
NO WAKE DEFINITION	18
RESTRICTED OPERATION ZONES	19
SKIING	19
IMPROPER OPERATION	20
RECKLESS OPERATION	20
MORE ENFORCEMENT	21
GENERAL ASSEMBLY CONSIDERATIONS	23
APPENDIX A	25
HOUSE JOINT RESOLUTION 557	25
APPENDIX B	26
LIST OF ORGANIZATIONS RESPONDING TO BOATING SAFETY SURVEY ...	26
APPENDIX C	28
BOATING ACCIDENT RATES FOR STATES WITH MANDATORY EDUCATION OR LICENSING	28

EXECUTIVE SUMMARY

This report to the Governor and members of the General Assembly, as requested by HJR 557 from the 1997 Session of the General Assembly, identifies boating safety issues and concerns, and suggests actions for General Assembly consideration. Four focus group meetings were held across the state to identify boating safety issues and receive suggestions to address these issues. A random sample of 3,065 motorboat operators and 110 organizations and local governments with boating interests were then surveyed on these issues. Boating law administrators from other states and other boating safety officials were also consulted.

The objective of providing safer boating in Virginia can be achieved through programs related to voluntary safety education, effective laws dealing with the problem areas, and strict law enforcement.

Laws or changes in laws the General Assembly should consider include:

- Establishing an enhanced definition of reckless personal watercraft operation to include:
 - Weaving at high speed through congested vessels underway, stopped, moored, or at anchor.
 - Following unnecessarily close within the wake of a vessel towing a person or persons on water skis or other device.
 - Crossing between the tow boat and a person or persons on water skis or other device.
 - Jumping the wake of another vessel unnecessarily close to that vessel.
 - Following or crossing the path of another vessel unnecessarily close to the stern or bow of the other vessel.
 - Approaching at high speed unnecessarily close to another vessel or person in the water.
 - Steering a vessel toward any object or person and turning sharply in close proximity to spray or attempt to spray the object or person.
- Defining "no wake" since no definition now exists in the Code.
- Establishing statewide requirements for motorboats to slacken speed and control wakes near docks, piers, boathouses, boat ramps, swimmers, and downed skiers, kneeboarders, etc.
- Requiring those who rent personal watercraft to others to provide them instruction on boating safety and the handling characteristics of the boats they are renting.
- Requiring those in the business of selling, demonstrating, and renting motorboats to be familiar with the laws and safety considerations by requiring them to complete basic boating safety education.
- Establishing an incentive for education by requiring a minimum age for operating a motorboat, then exempting those younger than that age if they complete boating safety education.

This combination of laws dealing with unacceptable behaviors and irresponsible conduct, and education requirements and incentives, when coupled with good law enforcement, should result in safer and more enjoyable recreational boating in Virginia.

Mandatory boating safety education, while the main focus of this study, was not recommended for all motorboat operators. Such a program would be very costly, and lacked strong support from the boat owners. Short-term benefits could not be assured, since mandatory education requirements in other states had variable results when accident rates were evaluated. Approximately one-third of surveyed boaters had voluntarily taken boating safety education. Recommendations concerning a minimum age for operators, and requirements for renters of motorboats to receive instruction, could both be incentives for more people to take boating safety education. In each of these recommendations, those with boating safety education may be exempt from the requirement.

INTRODUCTION

Recreational boating safety is an issue nationwide. Safety issues are portrayed in the media as a growing concern due to the comparatively high accident rates associated with personal watercraft. Some states such as Alabama have implemented extensive legislation to deal with boating issues. Virginia, comparatively speaking, has few restrictions on boating. The emphasis on boating suddenly increased in 1997 when seven boating safety bills were before the General Assembly. This study attempted to address all the major issues surrounding recreational boating safety.

Despite the press and attention boating safety is receiving, it remains a comparatively safe recreational pursuit. The following numbers of deaths by cause were reported in Virginia Health Statistics for 1995, the most recent statistics published:

<u>Cause of Death</u>	<u>Number of Deaths in 1995</u>
Motor Vehicle Accidents	899
Suicide	809
Homicide	513
Alcohol Induced	342
Falls	338
Poisoning	330
Drug Induced	267
Suffocation	236
Fires	109
Drowning	93
Surgical and Medical Misadventures	87
Exposure	48
Aircraft Accidents	27
Machinery	24
Falling on a Projected Object	16
Water Transport (Boating)	15

Boating accident statistics maintained by the Department of Game and Inland Fisheries show that, except for personal watercraft accidents, the rate has remained fairly constant for the last ten years. When personal watercraft statistics are included, the accident rate increases substantially.

The Department has implemented a number of initiatives directed at personal watercraft operators. A television safety commercial was produced and aired in partnership with a major manufacturer of personal watercraft. A stick-on decal with personal watercraft legal requirements and safety considerations was produced and distributed to individuals and personal watercraft businesses. A safety video, information materials, and test were prepared and supplied to dealers statewide and a number of personal watercraft rental businesses on Smith

Mountain Lake and Lake Anna. A nationally approved personal watercraft safety education class was developed and continues to be taught across the state. These efforts, together with a general heightened awareness of personal watercraft safety issues, may be influencing the accident rate. The accident rate for registered personal watercraft declined in 1996. The Department's 1996 goal was no more than one accident per 200 personal watercraft. The rate for the previous two years was one in 165 and one in 167. In 1996, after intensive efforts to improve safety, the rate improved to one in 190. Additional improvement in 1997 is anticipated.

Though personal watercraft receive much attention, the focus group meetings brought forward many boating safety concerns that involved all types of boaters. Clearly a comprehensive review of a number of boating safety concerns was needed. Of all the concerns brought forward, only those issues with a direct relationship with boating safety were studied. Such concerns as noise and insurance requirements, while of concern to the boating public, were not deemed directly related to safety. This report provides information and actions the General Assembly may wish to consider on the safety issues.

METHODS

To determine the boating safety issues locally and statewide, focus group meetings were held in May 1997 in Richmond, Woodbridge, Virginia Beach, and at Smith Mountain Lake. Invited to these meetings were representatives from the nearby local governments, local governments in the area that bordered major bodies of water, boating organizations, marine patrols, waterfront homeowner associations, and others known to the Department to have an interest in boating safety. These meetings were facilitated by staff from the Institute of Environmental Negotiation at the University of Virginia. Issues identified by the General Assembly and department staff were reviewed at these meetings. Those in attendance were encouraged to bring forward other issues. The information from the meetings and written comments were organized, and the issue list prepared.

A survey was then prepared to provide information on these issues. The survey was conducted and results analyzed by the Survey Research Laboratory of the Center for Public Service at Virginia Commonwealth University. It was mailed to a random sample of 3,065 registered motorboat owners and documented boat owners. Motorboats used on public water must be either registered with the Department of Game and Inland Fisheries or documented with the U.S. Coast Guard. A number of the surveys were returned as undeliverable. Of the original surveys mailed, 2,882 were found to be eligible households. The survey was returned by 1,939 of these, resulting in a response rate of 67% and a sampling error of 2% at the 95% confidence level. This means that in 95 of 100 samples, the results should be no more than 2% above or below the figure presented.

The Department also mailed the survey to members or officers of 202 boating organizations and businesses, local governments, marine patrols, sportsman organizations, waterfront homeowner associations, and agencies with an interest in boating (Appendix B). The return rate was 55%. There are no levels of significance associated with this survey. It was not a random sample and no statistical reliability is associated with the results. The survey was conducted to provide an easy means for those organizations with an interest in boating to express views. The Department's survey was analyzed separately from the general boater survey.

Survey results, written comments, boating laws of other states, and information from individuals with expertise in various boating areas were used by department staff to formulate the recommendations in this report. Alternative resolutions to the issues that were considered included legislative, regulatory, local government or departmental actions, or no action. The study recommendations were reviewed with the public at four meetings in October and November 1997 held at the locations mentioned above.

Department staff relied heavily on the results of the survey of boater opinion to formulate recommended actions. However, as the boating safety agency for the Commonwealth, staff could not make all recommendations based on popular opinion. For this reason, recommendations do not always directly relate to survey results.

BOATING ACCIDENTS IN VIRGINIA

Most boating accidents happen when the most boats are on the water. This is evidenced by the greatest number of boating accidents occurring while cruising on a clear day with calm waters, light winds, and good visibility. Accidents happen most frequently when an open motorboat 16-26 feet long and operated by an individual 21-40 years old with more than 500 hours of boat operator experience collides with another vessel because the operator was going too fast. Speed as the leading cause of accidents is a recent change, beginning in 1996, and was brought about primarily from personal watercraft collisions. Before 1996 the leading cause of accidents was operator inexperience, operator inattention, or failure to maintain a proper lookout.

The leading cause of fatalities was drowning from failure to wear a life jacket. Eighty-nine fatalities since 1993 were researched. Seventy-four percent of these victims drowned because they were not wearing a life jacket when they fell overboard, were thrown overboard, the boat sank, or they were skiing without a life jacket. Ten percent of the fatalities occurred when the victim struck a fixed object or another boat, and 9% drowned even though they were wearing a life jacket.

Leading accident data in each category are provided below for accidents and fatalities:

Boating Accident and Fatality Data
Average for Five Years From January 1993 Through September 1997

	Leading	Second	Third	Fourth	Fifth
Activity at Time of Accident	Cruising (53%)	Skiing (10%)	Fishing (7%)	Maneuvering (6%)	Approaching Dock (6%)
Type of Accident	Collision Another Vessel (43%)	Hit a Fixed Object (9%)	Falls Overboard (7%)	Hit by Boat or Propeller (6%)	Capsizing (6%)
Cause of Accident	Excessive Speed (16%)	Operator Inexperience (15%)	No Lookout (15%)	Operator Inattention (12%)	Hazardous Water (8%)
Type of Vessel in Accident	Open Motorboat (47%)	Personal Watercraft (34%)	Cabin Motorboat (11%)	Rowboat (4%)	Sailboat (3%)
Size of Vessel in Accident (feet)	16-26 (50%)	0-15 (44%)	27-40 (5%)	41-65 (1%)	

	Leading	Second	Third	Fourth	Fifth
Operator Experience (hours)	Over 500 (34%)	0-20 (24%)	100-500 (21%)	20-100 (21%)	
Operator Age	21-40 (46%)	41-60 (28%)	11-20 (17%)	61 and over (7%)	0-10 (1%)
Cause of Fatality	Drowning Not Wearing Life Jacket (74%)	Striking Object or Boat (10%)	Drowning Wearing Life Jacket (9%)	Hit by Propeller (3%)	Hypothermia (2%)
Age of Victim	20-29 (23%)	40-49 (21%)	30-39 (15%)	50-59 (10%)	Over 70 (7%)

Note: Not all percentages total 100% since only the leading five entries are provided for each category.

SURVEY RESULTS

Eighty-two percent of the surveyed boat owners responded they thought boating on Virginia's waters was very safe or fairly safe. Sixty-nine percent of the respondents had been checked for safety equipment while out on a boat. In response to issues concerning insurance on boats raised at several focus group meetings, boaters were surveyed on liability insurance coverage. Seventy-one percent of the respondents said their boat was covered by liability insurance. Only 12% of those surveyed thought excessive noise detracted from their boating experience, and only 2% thought noise was the greatest detractor.

We specifically call the reader's attention to a survey finding that most (68%) of the responding boat owners prefer boating requirements of statewide application rather than local requirements. A diversity of local requirements makes compliance by the boater more difficult, especially since the jurisdictional boundaries often occur in the middle of a stream or river.

In the tables below, not all percentages total to 100% because not all respondents answered every question, and where response percentages scattered across an array of choices, only those choices receiving a high percentage of the responses were reported.

Question	Registered or Documented Owner Survey (1,939 respondents)	Boating Organizations Survey (110 respondents)
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Insurance

Is the boat you principally use covered by liability insurance?	YES 71% NO 27%	YES NA NO NA
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Statewide Laws or by Locality

Should boating safety laws generally apply more on a statewide basis (for uniformity) or more on a local basis (to meet the needs of the locality)?		
Statewide	68%	81%
Local	27%	19%

Question	Registered or Documented Owner Survey (1,939 respondents)	Boating Organizations Survey (110 respondents)
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Boating Safety Education

Have you ever taken a boating safety education class?	YES 36% NO 62%	YES NA NO NA
Should the law require that all people who operate motorboats complete six to eight hours of boating safety education?	YES 58% NO 40%	YES 86% NO 14%
Should those people who sell or demonstrate motorboats be required to successfully complete boating safety education?	YES 84% NO 12%	YES 94% NO 6%
Should those who rent motorboats to others be required to successfully complete boating safety education?	YES 83% NO 14%	YES 91% NO 8%
Should renters of motorboats be required to take boating safety education?	YES 79% NO 17%	YES 88% NO 12%

Operator Licensing

Should a license be required to operate a motorboat?	YES 38% NO 60%	YES 61% NO 39%
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Life Jackets

Please check the ONE scenario below that you believe should be the law concerning life jacket usage:		
For all those aboard a motorboat under 20 feet long any time it is underway?	22%	22%
Only for children under age 12 and while aboard motorboats under 20 feet long?	29%	43%
No requirement that life jackets be worn?	46%	35%

Question	Registered or Documented Owner Survey (1,939 respondents)	Boating Organizations Survey (110 respondents)
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Life Jackets (continued)

Should the wearing of life jackets be required by law for anyone being towed by a boat?	YES 88% NO 11%	YES 94% NO 6%
Should the new manually inflatable life jackets be allowed for:		
Skiing, kneeboarding, tubing, etc. while being towed?	YES 24% NO 68%	YES 18% NO 81%
Personal watercraft (jet ski) operation?	YES 25% NO 66%	YES 21% NO 78%
Children under age 12?	YES 19% NO 72%	YES 13% NO 86%
Except for personal watercraft, should motorboats under 16 feet in length be required to have a throwable lifesaving device?	YES 64% NO 33%	YES 65% NO 35%

Operator Age

Should there be a minimum age to operate any motorboat?	YES 81% NO 18%	YES 89% NO 11%
If so, what should minimum age be in years?		
Age 14	33%	34%
Age 16	40%	39%

Speed Limits

Should state waters have a maximum speed limit?	YES 58% NO 36%	YES 54% NO 46%
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Question	Registered or Documented Owner Survey (1,939 respondents)	Boating Organizations Survey (110 respondents)
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No Wake Definition

Would the definition of "no wake" be more understandable if it included the language "idle speed, no wake?"	YES 67% NO 28%	YES 74% NO 26%
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Exclusion Zones

Should there be a uniform statewide requirement that any of the following areas be "idle speed, no wake" or otherwise speed restricted:		
Near the shoreline?	YES 59% NO 36%	YES 64% NO 36%
Near docks, piers, boathouses, and other such manmade structures?	YES 77% NO 17%	YES 81% NO 19%
Near swimmers and downed skiers?	YES 81% NO 13%	YES 85% NO 15%
Near other boats?	YES 60% NO 33%	YES 53% NO 47%

Skiing

In addition to the boat operator, should an observer be required in any motorboat pulling a skier, kneeboarder, tuber, etc.?	YES 69% NO 26%	YES 67% NO 33%
Should the legal hours for skiing, kneeboarding, tubing, etc., be shortened to the period from sunrise to sunset only?	YES 56% NO 39%	YES 60% NO 40%

Question	Registered or Documented Owner Survey (1,939 respondents)	Boating Organizations Survey (110 respondents)
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Improper Operation

To aid boating law enforcement officials in policing inappropriate operation, should a new class of offense for "improper" operation be instituted that would be less than the current definition of reckless?	YES 65% NO 30%	YES 82% NO 18%
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Reckless Operation

Should the current definition of reckless operation be further defined to include (check all that apply):		
Operating in a manner to cause the boat to go airborne?	45%	52%
Following another boat or skier so close as to endanger them should they stop or go down?	76%	81%
Weaving through congested traffic?	65%	71%
Jumping the wake of another boat within 100 feet of the boat or a skier?	57%	66%

More Enforcement

Do you think boating would be safer:		
If there was a greater law enforcement presence on the waterways?	YES 62% NO 34%	YES 85% NO 15%
If there was stricter enforcement of existing laws?	YES 67% NO 29%	YES 87% NO 13%
If fines were increased or if mandatory incarceration was required for certain boating offenses?	YES 54% NO 41%	YES 68% NO 32%

RESULTS AND DISCUSSION

BOATING SAFETY

Virginia boaters do not consider the waters as unsafe. Eighty-two percent of the respondents to the general survey thought boating was very safe or fairly safe. Boating fatalities, when compared to the other types of unintentional deaths, supports the premise that boating in Virginia is a comparatively safe activity.

Safer boating could be achieved through changes in boater attitudes, behaviors, and conduct. These changes can be brought about in a number of ways. The three more obvious ways are though **education, legislation, and enforcement**. Education provides the boater with the knowledge of what is expected while operating on the water, and makes the boater more aware of what is needed to boat safely. Legislation sets expectation on behaviors and provides law enforcement the tools needed to change behaviors.

Legislation with enforcement can have a much faster impact on boating behaviors than education alone. Legislation can target the activities or behaviors that are causing problems. For example, the 1991 General Assembly mandated that personal watercraft operators must wear life jackets while operating. Public compliance was very good, and there has been only one personal watercraft death from drowning since this law was enacted. During the same period, drowning has been the major cause of death for other motorboat operators.

The threat of being caught and punished for violating laws is a deterrent for most people. Adequate enforcement of good laws will quickly change public behavior.

BOATING SAFETY EDUCATION

General Boating Safety Education

House Joint Resolution 557 calls on the Department to study boating education and examine the costs and benefits of instituting mandatory boating education. Mandatory education could be implemented in a number of ways. Mandatory education could apply to all boaters or segments of boaters. The costs for education for any of these groups is about \$55 per student. This estimate is based on the current cost of \$100 per student for voluntary boating safety education, an eight-hour class taught by volunteers to about 2,000 students per year, and an estimated reduction in cost based on a higher volume of students. Basic boating safety education is an eight-hour class that, if mandated, would be taught by paid instructors. Boating safety volunteer instructors only number between 500 and 600, and many more instructors would be required to provide this service. An estimated \$10 per student instructor fee is incorporated in the \$55 per student cost. The following table reflects the Department's estimate of the number of boaters of the various groups.

**Estimated Number of Students and One-time Costs for Mandatory Education
January 1, 1999**

Group	Number of Operators	Number of Students	Costs		
			Student Training	Startup	Total
Personal Watercraft Age- 14-15	2,280	1,710	\$94,100	\$13,700	\$107,800
Personal Watercraft Age 16 and over	74,120	52,450	\$2,884,800	\$419,600	\$3,304,400
Non-personal Watercraft Age 12-13	15,000	11,250	\$618,800	\$90,000	\$708,800
Non-personal Watercraft Age 14-15	15,500	11,630	\$639,700	\$93,000	\$732,700
Non-personal Watercraft Age 16 and over	469,060	328,760	\$18,081,800	\$2,630,100	\$20,711,900
TOTAL	575,960	405,800	\$22,319,200	\$3,246,400	\$25,565,600

Assumptions:

1. Costs of basic eight-hour boating safety education class per student \$55.00 in 1999, (based on \$100.00 per student cost in 1997, reduced due to increased volume of students; includes \$10.00 per student for paid instructor).
2. There are 3.82 operators per personal watercraft and 2.42 operators per all motorboats (based on 1997 Virginia Commonwealth University survey).
3. There will be 238,000 registered motorboats on January 1, 1999 of which 20,000 will be personal watercraft (On July 1, 1997 there were 231,649 registered motorboats of which 15,814 were personal watercraft)
4. The age structure of motorboat operators follows that of the general population. The figures used for these calculations came from 1990 census data.
5. 36% of boat owners (based on 1997 Virginia Commonwealth University survey) and 25% (estimate) of the other operators have already completed boating safety education. The number of students equals the number of operators less those already educated.

Assuming the educated boater is more aware of the rules and limitations associated with boating and is therefore a safer boater, the benefits of boating safety education requirements include safer boating, and the ability to focus on specific groups, such as personal watercraft operators or age classes.

The drawbacks of requiring boating safety education include making it more difficult for a segment of the population to enjoy the recreation of motorboat operation, possibly hurting watercraft sales and rentals, and the costs to address the new requirements. Additionally, selecting only portions of the boat operators may miss other groups that are responsible for accidents. For example, focusing education only on younger operators would miss the 21-40 year old operators, the group involved in the most accidents.

The general boating public was not overly supportive of requiring all motorboat operators to complete six to eight hours of boating safety education in order to operate (58% support). The boating organizations, homeowner organizations, and local governments were more supportive of this requirement (86%). The boat owner survey revealed 36% of the respondents had taken a boating safety class.

Accident rates among states with mandatory boating safety education varies widely, as do their education requirements (Appendix C). Of 19 mandatory education states (including Washington D.C.) reporting to a questionnaire mailed by the Department, eleven states had better accident rates than Virginia, but eight had rates below Virginia. Minnesota had the best of the reported rates, one accident per 4,864 registered boats per year. Their program began in 1975 for those age 12-17. Rhode Island was the state with the worst reported rate of one accident per 498 boats, but their education program is required only for personal watercraft operators under age 16. They had a comparatively good personal watercraft accident rate of one per 678. Maryland and New Jersey have programs that began in 1988 for operators born after 1972 and 1979 respectively, and have comparatively poorer overall accident rates of one in 699 (Maryland) and one in 614 (New Jersey). Accident rates do not appear closely tied in the short term to mandatory education requirements.

Instead of mandating education, the General Assembly may wish to provide incentives for operators to voluntarily complete basic boating safety education by requiring a minimum operator age of 16, then allowing those under age 16 to operate after successfully completing boating safety education. Requiring motorboat renters to receive instruction, but exempting those with boating safety education may be another incentive.

Mandatory boating safety education for all boaters is not recommended. Besides its apparent lack of popularity among the boaters, it would be costly. A \$55 fee for mandatory boating safety education would not be popular with boaters. Also, based on the accident rates from other states with mandatory education, there is no assurance accident rates would improve.

Motorboat Dealers, Salesmen, and Rental Agents

The surveys found strong support for requiring motorboat demonstrators, salesmen, and rental agents to complete boating safety education (over 80% in the general survey, and over 90% for the organizations).

The General Assembly should require licensed motorboat salesmen, and demonstrators and rental agents to complete a basic boating safety education class within six months, and those new to these professions to complete the education requirement within 60 days of assuming their duties. These individuals meet the boating public and provide boating information. They should be fully aware of boating safety requirements. They are often the first contact with a potential boater. If such legislation is enacted, a mechanism is needed to ensure compliance. While compliance can be tied to licensing for salesmen, no such mechanism exists for demonstrators and rental agents. The Watercraft Dealer Licensing Act would need an amendment to require motorboat demonstrators and rental agents to be licensed with the Department, similar to the existing requirements for salesmen.

Renters and Lessees of Motorboats

The surveys were supportive of requiring those who rent motorboats to receive boating safety education (79%). It is significant to note that those responding to the question about those who rent boats probably were not applying the response to themselves. The respondents in the general survey were boat owners, therefore, probably were not boat renters. This conclusion is supported by survey figures that showed only 58% of the general boaters (owners) favored mandatory education when it applied to themselves, yet 79% of these people favored mandatory education when it applied to those who rent boats (someone else). A requirement for renters to complete the full six to eight hour basic class may virtually eliminate the boat rental businesses in Virginia. For example, Connecticut has mandatory education for all boaters, with an additional 2.5 hours for operators of personal watercraft. The personal watercraft requirement was implemented in 1993. By 1996 the numbers of registered personal watercraft had become stagnant at about 4,500 units, while in Virginia, their number increased by 3,758 units between 1995 and 1996.

Several states require some type of instruction be provided by rental agents for those who rent boats. Florida requires livery operators to display safety information, and requires the lessee to sign a statement acknowledging receipt of instruction in the safe handling of the watercraft. New Jersey requires the lessor to instruct the lessee on the rules of the road, the meaning of proper lookout, safe speed and distance, handling characteristics of personal watercraft, equipment requirements, operating instructions for the vessel being rented, and operating under the influence. A statement signed by the lessee is also required. Alabama has a similar law.

The Department has a voluntary program that requires about 20 minutes of the renter's time to view a video, review handout materials, then take a 20-question test. Most personal

watercraft rental facilities on Smith Mountain Lake and one rental facility on Lake Anna have adopted this program. Many dealerships that sell personal watercraft have also adopted the program.

The General Assembly should require rental agents (lessors) to provide instruction to those renting personal watercraft (lessees), with content approved by the Director of the Department of Game and Inland Fisheries and according to requirements of the Director; require the lessee and the lessor to both sign a statement that instruction was received; and require the lessee to maintain in his immediate possession a copy of the agreement and present the same to any law enforcement officer upon request. The instruction would cover at a minimum, the basic laws governing operation, specific operating requirements of the vessel being rented, safety equipment requirements, and requirements in case of an accident. As an education incentive, or to facilitate those who frequently rent motorboats, an exemption may be applicable for those having completed an approved boating safety education class.

OPERATOR LICENSING

Five states require boating safety education and licensing. One state requires licensing without education, but based on examination. Licensing can serve several purposes. Licenses may be issued without any requirement for education or examination, and be used simply as evidence the operator does not have his operating privileges revoked or suspended. Licenses based on examination only indicates the operator successfully completed an examination related to boat operation. Licenses tied to education usually require examination, indicating the person attended the required education and passed an examination.

Alabama is the only state requiring licensing based solely on examination. It is administered through their Department of Public Safety (Virginia's Department of Motor Vehicles). They exempt those who have successfully completed boating safety education from the licensing examination requirements. This incentive has led to large increases in the numbers of people voluntarily taking boating safety education classes. Five other states require licensing and education (Appendix C). Accident rates cannot be tied solely to licensing in these states, since education is also required. Still, the accident rates in these states fall on either side of Virginia's rate.

The general boating public was opposed to requiring motorboat operators to be licensed (60% no). Boating organizations were slightly in favor of licensing (61% yes). The benefits of licensing are similar to those of education, since licensing would lead to boaters voluntarily taking a boating safety education class or participating in home study. Additionally, the costs would be much less than mandatory education and could be more easily borne by the boaters. Virginia's current cost for issuing a motor vehicle operator license is \$17.68. However, due to the strong opposition to licensing, implementing motorboat operator licensing in Virginia is not recommended.

LIFE JACKET REQUIREMENTS

The term "life jacket" is used in this report because the term is more descriptive than the more popularly used term "personal flotation device."

Life Jacket Requirement for General Boating

If there is one action the General Assembly could take to reduce boating fatalities, it would be to require everyone aboard a boat to wear a life jacket at all times. Seventy-five percent of the boating fatalities since 1993 resulted from drowning while not wearing a life jacket. However, the boating public did not strongly support requirements for people in boats to wear life jackets. About half the respondents said there should be no requirement for life jackets to be worn (46%), with the remainder rather evenly divided between a requirement for everyone in a boat under 20 feet to wear a life jacket while the boat is underway (22%), and a requirement for children under 12 years old to wear a life jacket at all times while in a boat less than 20 feet long (29%). While wearing a life jacket is the one action that would prevent most boating fatalities, the boater's lack of support for it indicates compliance may not be good. Wearing a life jacket is a personal decision and most boaters probably already know the benefits of doing so. Changes to this portion of the law are not recommended.

Requirements for Those Being Towed

Most respondents (88%) in the general survey said anyone being towed by a boat (skiing, kneeboarding, tubing, etc.) should be required to wear a life jacket. Current law exempts these people from life jacket requirements provided there is an observer in the boat in addition to the operator. The organizations felt even more strongly that this requirement should be in effect (93%). Sixty water skiing accidents have been reported in Virginia since 1993. In 23 of these accidents, the person being towed was not wearing a life jacket. With one exception, a life jacket would not have prevented the accident or lessened the injuries. Most skiing injuries are to the legs, arms, and hands. One kneeboarding victim drowned while not wearing a life jacket. Since accident statistics do not support requiring all persons being towed to wear a life jacket, changes to this portion of the law are not recommended.

Manually Inflatable Life Jackets

A new type of manually inflatable life jacket has recently been approved by the U.S. Coast Guard to meet life jacket requirements provided they are worn at all times the person is boating. Inflation of the life jacket is accomplished by a release from a small cylinder of compressed gas. The gas is released when a tab is pulled. Boaters were surveyed concerning the appropriateness of this type of life jacket in certain situations. The general boating public was opposed to allowing this life jacket to meet state requirements for those being towed by a boat (68%), for those operating personal watercraft (66%), and for children under age 12 (72%). Similarly, the boating organizations opposed the uses of these life jackets for these purposes. A

review of manufacturer recommendations on three models used as displays by the Department revealed they were not recommended for children under age 16. The Board of Game and Inland Fisheries has the authority through regulation to disallow manually inflatable life jackets for those being towed, those riding personal watercraft, and for children under age 16.

Throwable Devices

Survey respondents were asked about a requirement for all people riding in motorboats (as opposed to personal watercraft) to have on board a throwable lifesaving device. Currently this requirement applies only for motorboats 16 feet and longer. About two-thirds of each group responded in favor of this requirement. The Board of Game and Inland Fisheries has the authority through regulation to require all motorboats other than personal watercraft to carry a throwable lifesaving device.

OPERATOR AGE

Respondents were asked if there should be a minimum age for operating a motorboat. Most of the general boating public (81%), and the boating organizations (89%) thought there should be a minimum age. Respondents were then asked what the minimum age should be. Age 14 and age 16 were the predominant answers, though there was no clear favorite.

The General Assembly may wish to consider legislation that establishes a minimum operator age of 16 to operate a motorboat, exempting those under age 16 if they have successfully completed a basic boating education class, those operating commercial vessels pursuant to valid and legal commercial activity, those possessing a valid certification from another state, and those operating on waters where a motorboat registration is not required (i.e., private waters). The minimum age of 14 to operate a personal watercraft should be retained regardless of the education status of younger operators. This would mean youth between age 14 and 16 could operate personal watercraft only after they completed boating safety education. Though not supported by accident statistics (only 5% of the accidents since 1993 involved operators under the age of 16), such a requirement could be an incentive for youth to voluntarily take boating safety education.

SPEED LIMITS

Establishing a statewide maximum speed limit was not favored strongly by the general boating public (58%) or the boating organizations (54%). Part of the lack of support may come from equipment constraints that prevent most boat operators from reliably determining their speed. Many boats are not equipped with speedometers, and speedometers in many boats may not be reliable. It may be difficult for the average boater to comply with a maximum speed limit requirement.

Little information was found on effectiveness of speed limits on the water. Of Virginia's

bordering states, only Maryland and Washington, D.C. have speed limits on the water. These limits are set at six knots or six miles per hour for areas that would be called no wake zones in Virginia. Florida has a slightly higher speed limit of 25 to 30 miles per hour in manatee areas. In all cases, speed is enforced through use of radar guns.

Lake Chesdin in Chesterfield and Dinwiddie Counties has a maximum 45 miles per hour speed limit set by county ordinance. Chesterfield police enforced the limit. They found their hand-held radar units were unsatisfactory when used over water, and they no longer actively enforce the speed limit ordinance.

Establishment of statewide speed limits is not recommended.

NO WAKE DEFINITION

There is no definition of "no wake" in the Code of Virginia. Regulation 4 VAC 15-390-80 requires motorboat operators to slacken speed to the extent necessary to avoid endangering persons or property by the effect of the motorboat's wake. Many boat operators are not aware that "no wake" also requires them to slacken speed. Some small boat operators profess that they create smaller wakes by going fast and staying on plane. A survey question was developed to learn if boaters thought the definition could be improved. Most respondents (67%) thought the definition of no wake would be more understandable if the words "Idle Speed, No Wake" were used.

The states of Minnesota and Wisconsin successfully defended a challenge to their definition of no wake in United States District Court. Their definition is "operation of a motorboat at the slowest possible speed to maintain steerage." The complaint alleged that the definition failed to provide law enforcement officers with sufficient standards to prevent arbitrary and discriminatory enforcement. The Court concluded that "the language of the ordinance is sufficiently clear that the speculative danger of arbitrary enforcement does not render the ordinance void for vagueness." North Dakota has already adopted this wording, and the states of Hawaii and Delaware have almost identical wording. Many other states have similar language.

The General Assembly should define "no wake" since no current definition exists in the Code, and may want to consider further defining "no wake" to include operating at idle speed, meaning the motorboat to be in gear at idle throttle, or adapt wording from the Minnesota definition, since it has already been upheld in federal court.

To improve understanding, the Department can require new no wake markers to incorporate wording such as "Slow No Wake" or "Idle Speed, No Wake" with the final wording dependent on the actions of the General Assembly.

RESTRICTED OPERATION ZONES

Restricted operation zones (called exclusion zones in the survey) are those areas where special boat operation is required. Sometimes these are marked areas such as no wake zones or swimming areas, and sometimes these are of general application such as regulation 4 VAC 15-390-80 that requires all motorboat operators to slacken speed to the extent necessary to avoid endangering persons or property by the effect of the motorboat's wake when approaching or passing vessels underway or lying to or at anchor or made fast to the shore. Respondents were asked if there should be "idle speed, no wake" requirements of general application for certain situations. Respondents were most favorable to such restricted operation zones near docks, piers, boathouses, etc. (77%), and near swimmers, downed skiers, etc. (81%). They were generally supportive of restrictions near the shoreline (59%) and near other boats (60%). With one exception, the organizations (which included homeowner associations on reservoirs) had higher percentages in favor of these restricted operation zones, the one exception being near other boats (50%). When asked how close these restricted operation zones should be to the person or structure, the leading answer in each case was when within 50 feet.

The General Assembly should establish statewide requirements for motorboats to slacken speed and control wakes to avoid endangering persons or property by the motorboat, the skier, or the motorboat's wake when near docks, piers, boathouses, boat ramps, swimmers, and downed skiers. With support levels of only 60% or less, establishing statewide restrictions near other boats is not recommended. Localities can establish no wake zones to protect shorelines where necessary. They were given this authority by the 1997 General Assembly.

SKIING

Respondents were surveyed on skiing questions about requiring an observer to be onboard any time someone is being towed, and whether the legal hours for towing people should be shortened to the hours from sunrise until sunset. The general boating public and the organizations were slightly in favor of requiring an observer (69% and 61% in favor respectively), and shortening the hours for skiing to sunrise until sunset (56% and 60% respectively).

A review of Virginia boating accident statistics over five years revealed the average boat involved in a water skiing accident had 2.5 observers on board in addition to the operator. It appears mandating an observer would be of little benefit. Requiring an observer be onboard in addition to the operator when the boat is towing someone is not recommended.

The review of skiing, tubing, and kneeboarding accidents from 1993 through 1997 revealed not a single accident occurred in the half-hour periods just before sunrise or just after sunset. Shorter hours for skiing are not recommended.

IMPROPER OPERATION

Law enforcement officers can only cite individuals exhibiting the behaviors for reckless boat operation (endangering the life, limb, or property of any person), a Class 1 misdemeanor. The courts may then reduce the charge to improper operation, a Class 3 misdemeanor. Survey respondents were told that boating enforcement officials sometime witness boat operation that is considered improper, but does not meet the standards for reckless. They were then asked if a new class of offense for improper operation should be instituted to aid law enforcement officials in policing inappropriate operation. Most of the general boating public supported this new class of offense (65%) and an even greater percentage of the organizations (82%) supported this action.

A review of motor vehicle law revealed the improper operation offense may only be imposed by a court. To stay consistent, a new offense for improper operation is not recommended.

RECKLESS OPERATION

Reckless motorboat operation is now defined as operating "in a reckless manner so as to endanger the life, limb, or property of any person" (§29.1-738). Many of those surveyed in the general survey supported further and more definitive definitions for reckless operation. Seventy-six percent responded that the definition should include "following another boat or skier so close as to endanger them should they stop or go down," 65% favored adding the wording "weaving through congested traffic" and 57% favored adding "jumping the wake of another boat within 100 feet of the boat or a skier." They were not in favor of the wording "operating in a manner to cause the boat to go airborne" (44%). The organizations responded in like manner, with percentages generally five to nine percentage points higher.

Most complaints received by the Department and related to the objectionable operations listed in the survey, are on personal watercraft operators. Personal watercraft accident rates are out of proportion to their numbers in Virginia and across much of the country. For the three-year period 1994-96, Virginia's annual accident rate excluding personal watercraft was one accident per 1,975 registered motorboats. For that same period, the personal watercraft accident rate was one per 175 registered personal watercraft (Appendix C). Personal watercraft are involved in most of the complaints and many of the incidences of irresponsible operation observed by game wardens.

The General Assembly should further define reckless motorboat operation, in a separate section of the Code similar to what was done in the motor vehicle code, to include wording that would make it unlawful to maneuver a personal watercraft in such a manner as to potentially endanger life, limb or property, or create a public nuisance, including, but not limited to the following: weaving at high speed through congested vessels underway, stopped, moored or at anchor; following unnecessarily close within the wake of a vessel towing a person or persons on

water skis or other device; crossing between the tow boat and a person or persons on water skis or other device; jumping the wake of another vessel unnecessarily close to that vessel; following or crossing the path of another vessel unnecessarily close to the stern or bow of the other vessel; approaching at a high speed unnecessarily close to another vessel or person in the water; or steering a vessel toward any object or person and turning sharply in close proximity to spray or attempt to spray the object or person.

MORE ENFORCEMENT

Respondents to the general survey were slightly supportive of the supposition that more law enforcement presence on the waterways would make boating safer (62%), were slightly more supportive of the supposition that stricter enforcement would make boating safer (67%), and did not support higher fines as an effective way to make boating safer (54% opposed). Higher fines are not recommended.

On average, there are 1,400 registered boats per marine enforcement officer in the 50 states. Virginia is average, with 1,396 registered boats per game warden. Boating law enforcement efforts of the Department have increased annually for the last three years. An emphasis on boating safety enforcement will continue to be a high priority for the Department. Boating patrols will further increase with the hiring of 10 new game wardens in January 1998. These positions were approved by the 1997 General Assembly.

Boating laws are strictly enforced at this time. The support for stricter enforcement may reflect the boater's misunderstanding of the law. Boaters may be observing activities they think are unlawful with expectations that game wardens should be citing the operators. The call for stricter enforcement may be achieved should the General Assembly pass legislation making such activities unlawful, such as those mentioned under the Reckless Operation portion of this report.

GENERAL ASSEMBLY CONSIDERATIONS

The primary focus of this study is boating safety education. The purpose of education in this instance is to have more informed and educated boaters so boating will be safer in Virginia. This study suggests alternative ways to accomplish safer boating: education incentives, more definitive laws prohibiting the types of operation causing accidents, and strict enforcement of those new laws. These changes should bring about faster changes in unwanted behaviors than education alone. Recommendations and considerations for education and other issues follow:

1. **The General Assembly should further define reckless motorboat operation in a separate section of the Code** to include wording that would make it unlawful to maneuver a personal watercraft in such a manner as to potentially endanger life, limb or property, or create a public nuisance, including, but not limited to the following: weaving at high speed through congested vessels underway, stopped, moored or at anchor; following unnecessarily close within the wake of a vessel towing a person or persons on water skis or other device; crossing between the tow boat and a person or persons on water skis or other device; jumping the wake of another vessel unnecessarily close to that vessel; following or crossing the path of another vessel unnecessarily close to the stern or bow of the other vessel; approaching at a high speed unnecessarily close to another vessel or a person in the water; or steering a vessel toward any object or person and turning sharply in close proximity to spray or attempt to spray the object or person. (see page 22)

Personal watercraft accident rates are out of proportion to their numbers in Virginia and across much of the country. For the three-year period 1994-96, Virginia's annual boating accident rate excluding personal watercraft was one accident per 1,975 registered motorboats. For that same period, the personal watercraft accident rate was one per 175 registered personal watercraft. Personal watercraft are involved in most of the complaints and many of the incidences of irresponsible operation observed by game wardens.

2. **The General Assembly should define "no wake" since no current definition exists in the Code**, to include the wording "operating at idle speed" or adapt other wording that has been tested in the courts. Defining no wake will be especially important in light of recommendation number three. (see page 20)
3. **The General Assembly should establish statewide requirements for motorboats to slacken speed and control wakes to avoid endangering persons or property by the motorboat, the skier, or the motorboat's wake, when near docks, piers, boathouses, boat ramps, swimmers, and downed skiers, kneeboarders, tubers, etc.** Boat owners supported these restrictions with approval rates of 77-81%. Generating significant boat wakes near these structures subjects them and the boats at these facilities to damage, and may be dangerous to people on or near these structures. Requiring boaters to slow their

speed near swimmers, downed skiers, and others in the water affords everyone involved an additional measure of safety and a more enjoyable day on or in the water. (see page 21)

4. **The General Assembly should require rental agents to provide instruction to those renting personal watercraft.** About 80% of those surveyed supported this requirement, with 57% of them supporting a requirement for the full 6-8 hours boating safety class. The Department recommends a shortened version of instruction covering at a minimum, the basic laws governing operation, specific operating requirements of the vessel being rented, safety equipment requirements, and requirements in case of an accident. The Department already has an approximately 20-minute program incorporating a safety video and written materials that meets most of these requirements. This program is already in use at a number of boat rental businesses and dealerships. As an education incentive, or to assist those who frequently rent motorboats, an exemption may be applicable for those having completed a boating safety education class. (see page 16)
5. **The General Assembly should require motorboat salesmen, demonstrators, and rental agents to complete a basic boating safety education class** or show proof they have completed the class. Existing employees should complete the education within six months, and those new to these professions should complete the education requirement within 60 days of assuming their duties. These individuals meet the boating public and provide boating information. They should be fully aware of boating safety requirements. They are often the first contact with a potential boater. If such legislation is enacted, a mechanism is needed to ensure compliance. While compliance can be tied to licensing for salesmen, no such mechanism exists for demonstrators and rental agents. **The Watercraft Dealer Licensing Act would need an amendment to require motorboat demonstrators and rental agents to be licensed with the Department,** similar to the existing requirements for salesmen. The surveys found strong support for requiring motorboat demonstrators, salesmen, and rental agents to complete boating safety education (over 80% in the general survey, and over 90% for the organizations). (see page 15).
6. **The General Assembly may wish to consider legislation that establishes a minimum operator age of 16 to operate a motorboat,** exempting those under age 16 if they have successfully completed a basic boating education class, those operating commercial vessels pursuant to valid and legal commercial activity, those possessing a valid certification from another state, and those operating on waters where a motorboat registration is not required (i.e. private waters). The minimum age of 14 to operate a personal watercraft should be retained regardless of the education status of younger operators. This would mean youth between age 14 and 16 could operate personal watercraft only after they completed boating safety education. Most of the general boating public (81%), and the boating organizations (89%) thought there should be a minimum age. Age 14 and age 16 were the predominant choices. (see page 19)

7. **Changes to the life jacket requirements for general boating or water skiing are not recommended.** Accident statistics do not support the need for changes. However, if there is one action the General Assembly could take to reduce boating fatalities, it would be to require everyone aboard a boat to wear a life jacket at all times. Seventy-five percent of the boating fatalities result from drowning while not wearing a life jacket. (see page 18)
8. **Mandatory boating safety education for all boaters is not recommended** because it would be costly (estimated \$25,565,600 for 405,800 motorboat operators), lacked strong support from the boat owners, those states with mandatory education had widely varying boating accident rates, and it could have negative economic impacts to those in the boating business. Though boating safety education is beneficial to those who receive it, there are faster ways to improve safety on Virginia's waters such as those in considerations one through six of this report. Approximately one-third of boat owners have voluntarily taken boating safety education. Considerations one and four of this report could provide incentives for more people to voluntarily take boating safety education. (see page 13).
9. **Licensing of motorboat operators is not recommended** because the general boating public opposed licensing (60% no) and the boating accident rates in other states with licensing were widely variable, with some better and some worse than Virginia. (see page 17)
10. **Statewide maximum speed limits are not recommended** because their establishment was not strongly supported by boat owners (54% support), the effectiveness of maximum speed limits in other states could not be ascertained, and the speed limit on the one reservoir in Virginia with a maximum speed limit was found to be difficult to enforce. (see page 19)
11. **Establishment of a separate offense for improper operation is not recommended** to stay consistent with the motor vehicle code regarding improper operation. (see page 22)
12. **Statewide no wake zones near other boats or the shorelines are not recommended.** Support levels for these measures were only 60% or less. Localities can establish no wake zones to protect shorelines where necessary. They were given this authority by the 1997 General Assembly. The recommendations found in consideration number one of this report would resolve most of the concerns about boats approaching each other. (see page 21).

APPENDIX A

HOUSE JOINT RESOLUTION 557

1997 SESSION

971871464

HOUSE JOINT RESOLUTION NO.557
AMENDMENT IN THE NATURE OF A SUBSTITUTE
(Proposed by the Senate Committee on Rules
on February 17, 1997)
(Patron Prior to Substitute--Delegate Tata)

Requesting the Department of Game and Inland Fisheries to study boating education in Virginia.

WHEREAS, the Commonwealth of Virginia is committed to protecting the health and safety of all Virginians; and

WHEREAS, boating is a significant recreational activity which continues to increase annually, with approximately 230,000 recreational boats presently registered for operation on Virginia's waters; and

WHEREAS, popular new types of recreational vessels, such as personal watercraft, are being developed by the boating industry; and

WHEREAS, recreational boating accidents and fatalities continue to be a cause for concern within the recreational boating community; and

WHEREAS, providing boating safety education is one of the most important responsibilities of the Department of Game and Inland Fisheries;

WHEREAS, at least 18 states have implemented some form of mandatory boating education, with several of these states reporting a reduction in the number of boating accidents and fatalities; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Game and Inland Fisheries be requested to study boating education in Virginia. In conducting its study, the Department shall examine the costs and benefits of instituting mandatory boating education in the Commonwealth.

All agencies of the Commonwealth shall provide assistance to the Department, upon request.

The Department of Game and Inland Fisheries shall complete its work in time to submit its findings and recommendations to the Governor and the 1998 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

APPENDIX B

LIST OF ORGANIZATIONS RESPONDING TO BOATING SAFETY SURVEY

City Managers

Chesapeake
Hampton
Richmond
Suffolk
Virginia Beach

County Administrators

Accomack
Albemarle
Alleghany
Amelia
Botetourt
Appomattox
Arlington
Bath
Brunswick
Buchanan
Chesterfield
Craig
Dickenson
Dinwiddie
Essex
Fairfax
Cumberland
Floyd
Fluvanna
Franklin
Gloucester
Goochland
Isle of Wight
Hanover
Henrico
King William
Madison

James City
Lancaster
Middlesex
Montgomery
Orange
Page
New Kent
Northampton
Nottoway
Richmond
Prince George
Prince William
Pulaski
Rappahannock
Smyth
Tazewell
Warren
Wythe
Spotsylvania
Wise
York

Boating Businesses

Lake Anna Watercraft
Richmond Raft Company
Virginia Association of Marine Industries

Boating Organizations

Boating Advisory Committee
Central Virginia Boating Safety Coalition
Hampton Roads Boating Safety Coalition
Lake Chesdin Yacht Club
Lake Gaston Water Safety Council

Boating Organizations (Continued)

Smith Mountain Lake Boating
Association
Smith Mountain Lake Water Safety
Council
U.S. Coast Guard Auxiliary
U.S. Power Squadrons
Virginia Pilots Association
Virginia Professional Paddlesports
Association

Landowner Associations

Boschwood Shores Association
Cedar Keys Estates Association
High Point Property Owners Association
Lake Anna Civic Association
Long Island Estates Property Owners
Association
Smith Mountain Lake Association
Village East Home Owners Association
Waverly Property Owners Association

Marine Patrols

Chesapeake
Hampton
Henrico County
Newport News
Norfolk
Portsmouth
Virginia Beach

Sportsman Organizations

Bass Anglers Sportsman Society
Float Fishermen of Virginia
Smith Mountain Lake Striper Club
Virginia Wildlife Federation

Federal/State Agencies

Department of Conservation and
Recreation
Department of Motor Vehicles
George Washington and Jefferson
National Forests
U.S. Army Corps of Engineers, Philpott
Reservoir Project
U.S. Coast Guard

Others

Appomattox River Water Authority
Chesapeake Bay Foundation
Eastern Shore Watermen's Association
Friends of Claytor Lake
Independent Watermen's Association
Lake Anna Advisory Committee
Port of Richmond
Smith Mountain Lake Policy Advisory
Board
Smith Mountain Lake Rental Group
Upper River Watermen's Association
U.S. Automobile Association
Virginia Power

APPENDIX C

BOATING ACCIDENT RATES FOR STATES WITH MANDATORY EDUCATION OR LICENSING (Three-Year Average, 1994-96) (Rates Are Number of Registered Vessels Per Accident)

State (# boats)	Mandatory Education	Mandatory Licensing	Year Effective	Age Groups or Other Restrictions	Accident Rate All Motorboats	Rate Without Personal Watercraft	Personal Water- craft Rate
D.C. (2,400)	Yes	No	1977	All operators	181	187	22
Rhode Island (32,000)	Yes	No	No Data	Under age 16 for personal watercraft	498	488	678
Florida (730,000)	Yes	No	1996	Born after Sept. 1980 and more than 10 hp.	566	No Data	126
Utah (75,000)	Yes	No	1994	Ages 12-17 for personal watercraft	567	905	131
New Jersey (190,000)	Yes	Yes	1988	Born after 1979 and all personal watercraft	614	2,114	447
Maryland (190,000)	Yes	No	1988	Born after July 1972	699	836	539
Idaho (80,000)	Yes	No	1996	Personal watercraft only	786	No Data	No Data
Indiana (200,000)	Yes	Yes	1995	Over age 14 and more than 10 hp.	1,280	1,903	380
Virginia (224,000)	NO	NO	NONE	NA	1,356	1,975	175

State (# boats)	Mandatory Education	Mandatory Licensing	Year Effective	Age Groups or Other Restrictions	Accident Rate All Motorboats	Rate Without Personal Watercraft	Personal Water- craft Rate
Connecticut (100,000)	Yes	Yes	1993	All plus extra 2.5 hours for personal watercraft	1,362	1,435	585
Michigan (950,000)	Yes	No	1968	Ages 12-15 and more than 6 hp.	1,529	2,409	264
Delaware (40,000)	Yes	No	1993	Born after Jan. 1978	1,575	2,137	137
New York (450,000)	Yes	No	1960	Ages 10-18	1,658	2,114	447
Alabama (260,000)	No	Yes	1994	Over age 11	1,711	2,405	292
North Dakota (40,000)	Yes	Yes	1982	Ages 12-15 and more than 10 hp.	2,042	5,356	139
Illinois (370,000)	Yes	No	1978	Ages 11-17	2,239	No Data	No Data
Wisconsin (540,000)	Yes	No	1975	Ages 12-15	2,584	3,363	320
Pennsyl- vania (335,000)	Yes	No	1996	Ages 12-15 and more than 10 hp.	2,886	3,826	444
Texas (600,000)	Yes	No	1997	Born after Sept. 1984 and more than 10 hp.	3,506	5,663	780
Vermont (40,000)	Yes	No	1989	Born after Jan. 1974	3,686	No Data	No Data

State (# boats)	Mandatory Education	Mandatory Licensing	Year Effective	Age Groups or Other Restrictions	Accident Rate All Motorboats	Rate Without Personal Watercraft	Personal Water- craft Rate
Minnesota (750,000)	Yes	Yes	1975	Ages 12-17 and more than 25 hp.	4,864	6,333	489
South Carolina (360,000)	Yes	No	No Report	No Report	No Report	No Report	No Report

