▸ Introduction

Photo courtesy of CSU Long Beach Sailing Association

Hear that? The water is calling you!

The California Department of Parks and Recreation Division of Boating and Waterways (DBW) thanks you for taking the time to learn about the state's recreational boating rules.

This coursebook aims to provide the basics of boating safety to you, the boater on California's waterways. Accident prevention promotes confident and enjoyable experiences.

Learning how to protect the state's natural and cultural resources is also important. The 1,200 miles of Pacific Ocean coastline, thousands of miles of inland waterways and hundreds of lakes are the ancestral areas of California Native American Tribes. These majestic and unique waterways now used for recreation remain critically important to the Indigenous peoples of California today.

Whether boating within view of the Golden Gate Bridge or riding the raging flows of the Lower Kern River, it is important to recreate responsibly and value California's natural and cultural resources. Let's get started.

So many adventures—all a lot more fun for you and everyone else when you learn how to boat safely and confidently, and prevent accidents. This course will cover the basics to show you how.

Play It Safe

Almost one million pleasure craft are registered in California and more than four million boaters including human-powered boat owners. That's a lot of Californians having a lot of adventures.

Unfortunately, some boaters will get hurt and die. California boating accidents for the five-year period between 2016 and 2020 totaled 2,629 and caused 217 deaths. There were 1,244 injuries reported beyond first aid, and over $23 million in reported property damage.

The good news—boaters can prevent many of these accidents by learning safety and using common sense.

WHAT YOU'LL LEARN

This course will teach you:

- Personal safety
- Basic boating guidelines
- Boating law and rules of the road
- Basic operation of a variety of vessels
- Accident prevention and rescue

You'll also develop the skills and knowledge to make the most of your adventure on California's waterways.

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Photo courtesy of the National Safe Boating Council

▸ Chapter 1

Personal Safety

You're the most important part of safe boating. To be safe—and to make sure the people who boat with you are safe—you must think clearly, be polite to other boaters, and be ready for any dangers so you can prevent accidents. You need to know the information in this chapter whenever you play, live or work near the water.

OBJECTIVES

You will learn:

- How to keep from getting hurt by harsh weather, such as hot sun, heavy storms and freezing water
- How alcohol and drugs can make it dangerous to operate a boat
- How to use different types of Personal Flotation Devices (PFDs), such as life jackets

PERSONAL SAFETY

Learn to Swim and Float

You should learn how to swim and handle a boat so you can be safe in the water. These skills will help save yourself and others from danger. You should be able to swim at least 100 yards. And you should be able to tread water for five minutes. If you don't know how, or want to be a better swimmer, call your local recreation and aquatic centers for swimming lessons.

Things That Can Affect Your Judgment, Health and Safety

There are many natural stressors that make boating unsafe. They include strong wind, high waves, boat motion, loud noises, and the heat and glare of the sun. Drugs and alcohol also affect your judgment, health and safety.

All of these stressors can:

- Make you tired.
- Make you slow to act in case of danger.
- Put you in danger from many things, including bad sunburn and boat crashes.

Here's how you can limit the effects of stressors:

- Avoid boating during a storm.
- Drink water.
- Eat energy foods, such as fruit or energy bars.
- Get a lot of rest and take many breaks.
- Wear sunglasses, sunscreen, a hat and proper clothing.

Wind and Waves

Wind and waves can cause motion sickness, which can make you sweat, get dizzy, get sick to your stomach—and even make you throw up. These will all affect your judgment and ability to act in any situation. You can reduce your chances of getting motion sickness by getting a good night's sleep, drinking a lot of water, and taking motion sickness medicine. (You can find these medicines over the counter at drug and grocery stores. Please read the label for directions carefully.)

Temperature

Very low and high temperatures not only affect your judgment, but can also lead to serious injury or illness. Heat exhaustion and heat stroke occur in high temperatures. Cold water shock leading to hypothermia occurs when the core body temperature drops below normal. It's important to remember that even on warm days, sudden contact of the skin with cold water – even water up to 77 degrees – can quickly lead to cold water shock and a loss of movement,

which can be fatal. At the other extreme, when temperatures are high, heat exhaustion can lead to heat stroke and be life threatening especially to the very young and very old if left untreated.

Heat Exhaustion

Excessive sun exposure and dehydration can lead to fatigue, which can lead to fatal misjudgments on the water.

- Early symptoms of heat exhaustion include weakness, pale skin, headache and heavy sweating. If the victim is not treated, the skin may become hot and bright red. The victim may become delirious or disoriented, followed by a loss of consciousness (heat stroke).
- Left without treatment, a victim of heat exhaustion will stop sweating and then lose consciousness or suffer heat stroke. Treat heat stroke as a medical emergency and call for help.
- Prevent heat exhaustion by avoiding prolonged direct exposure to heat and sun. To reverse heat exhaustion, move the victim to a cooler location, cool off with damp cloths and be sure to drink lots of water to stay hydrated. Avoid diuretics such as caffeinated sodas, coffee, tea or alcohol as these drinks are dehydrating.

Cold Water Immersion and Cold Water Shock Prevention

Cold water immersion is associated with significant medical emergencies: cold water shock; near drowning; and hypothermia. Boaters' chances of surviving cold water immersion depend on a number of variables. They must control their breathing, retain body heat, have sufficient flotation to keep heads above water, and have timely rescue by themselves or others.

Sudden contact with cold water can cause involuntary gasping while under water, which can lead to panic, start the drowning process, and even trigger cardiac arrest and temporary paralysis. Cold water entering the ear canal can cause vertigo and disorientation, which may lead confused swimmers to venture deeper into the water. Cold water reduces body heat 25 to 30 times faster than air of the same temperature and causes impairment that can lead to fatalities.

- Do not intentionally enter water that is too cold. The average body temperature is 98.6 degrees Fahrenheit. The average pool temperature is 84 to 86 degrees. Snowmelt causes some California rivers to run at temperatures between 30 and 40 degrees even during the summer.
- Control your breathing to avoid gasping water into your lungs. Just half a cup of water in the lungs can drown a person.
- Don't panic if you fall into the water. Stay afloat with the help of a life jacket, regain control of your breathing and keep your head above the water in view of rescuers. Look for ways to increase buoyancy.
- If you can't get out of the water, keep your head up and curl into a ball or huddle together with everyone facing inwards to stay afloat and keep warm. This is known as HELP, or Heat Escape lessening Positions.

HELP POSITIONS

REMEMBER

Life jackets can keep you warm and help save your energy. If you are not wearing your life jacket, your expected survival time is a lot less.

- Before going out on the water, make sure everyone is wearing a properly fitted life jacket with an attached whistle that works when wet.

Know the Stages of Cold Water Shock and Critical Responses

- Cold water shock: You have one minute to adjust to the shock response. Remember, control your breathing and don't panic.
- Meaningful activity: You have about 10 minutes of effective movement, so first assess your situation, locate other party members, attempt self-rescue, and perform emergency communication and signaling.
- Useful consciousness: You have one hour in cold water before becoming hypothermic and unconscious to focus on heat loss prevention (HELP); increasing buoyancy and using a communication device such as an emergency locator beacon, waterproof marine VHF radio, cell phone in a waterproof case, whistle, mirror or small flares.
- Hypothermia: After one hour of cold water immersion, the body core cooling leads to loss of consciousness from hypothermia.

Post-Rescue Collapse

- After rescue, someone who has been immersed in cold water is still in danger from "post-rescue collapse." As blood pressure drops, inhaled water can damage the lungs. Cardiac arrest or arrhythmia can develop as cold blood is released from arms and legs into the body core.
- It is vital to treat the victim gently and get immediate medical care.

WEBSITE

For more information on the 1-10-1 Principle of cold water immersion and hypothermia, visit:

ColdwaterBootCampUSA.org

The best way to avoid the effects of cold water immersion is to wear a life jacket at all times when boating. This can keep your head above water if you capsize or fall overboard, giving you precious minutes to get back on the vessel. If you cannot rescue yourself, a life jacket can give you some protection and extend the time you can survive until someone rescues you.

This chart shows how long someone may survive at various water temperatures.

EXPECTED SURVIVAL TIME IN COLD WATER		
If the water temperature is... degrees F	**Exhaustion or unconsciousness in...**	**Expected survival time is...**
32.5° F	Under 15 minutes	Under 15 to 45 minutes
32.5 to 40° F	15 to 30 minutes	30 to 90 minutes
40 to 50° F	30 to 60 minutes	1 to 3 hours
50 to 60° F	1 to 2 hours	1 to 6 hours
60 to 70° F	2 to 7 hours	2 to 40 hours
70 to 80° F	3 to 12 hours	3 hours to indefinitely
over 80° F	indefinitely	indefinitely

QUESTION

Where do you usually go boating, or where would you like to go? Check out the water temperatures listed on this page and then refer to the Expected Survival chart. If you fell overboard and lost your boat, how long could you expect to survive?

Water Temperature

Here are the ***estimated*** daytime water temperatures for several California locations.

The Ocean: Year-round temperatures from approximately Santa Barbara northward range from the high 40s to mid 50s. South of Santa Barbara, summer temperatures can reach mid 70s and winter temperatures will range in the high 50s to low 60s.

ESTIMATED DAYTIME TEMPERATURES IN RIVERS AND LAKES					
Location		**Time of Year**	**Approximate Temperature**	**Time of Year**	**Approximate Temperature**
Valley Rivers	Northern California	Spring	67° F	Summer	79° F
	Southern California	Spring	70° F	Summer	85° F
Mountain Rivers		Spring	47° F	Summer	73° F
Mountain Lakes		Spring	40° F	Summer	65° F
Valley Lakes		Spring	57° F	Summer	70° F

These are approximate temperatures.

First Aid Training

In addition to learning about cold water shock and heat exhaustion, it is important to learn first aid. It is highly recommended that boaters receive training in basic first aid and CPR. The best place to contact for a class near you is your local American Red Cross office. Check the Internet at www.red-cross.org for a class near you.

Noise Levels

What is too much noise?

Noise from poorly muffled or unmuffled motors is not only annoying—it keeps boat operators from hearing voices, signals and danger warnings. If you're around a loud noise for a long time, the noise can make you tired and lower your reaction time.

The next time you go boating, be polite to others. Reduce the noise level, especially when you're in crowded waterways, or near residential areas. Courtesy counts. Remember, your actions reflect on all boaters.

REVIEW QUESTIONS: PERSONAL SAFETY

Answer these questions by circling **T** for true or **F** for false.

1. The ability to swim and float is basic to personal safety on the water. . . . . T F
2. You don't need sunscreen and sunglasses when you're boating, because it is cooler on the water than on the land . . . . . T F
3. Weakness and heavy sweating are early symptoms of heat exhaustion . . . . . T F
4. Symptoms within the first minutes of cold water immersion include being unable to walk and losing consciousness . . . . . T F
5. Drinking fluids, such as caffeinated sodas and tea, is the best way to prevent heat exhaustion . . . . . T F
6. Long exposure to loud noise from your boat's engine can be a stress factor . . . . . T F

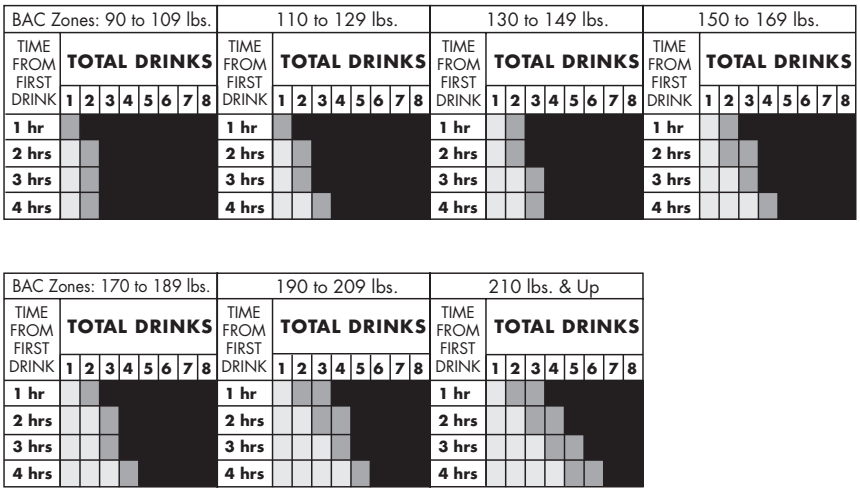
Turn to page 100 for correct answers.

Alcohol and Drugs

Drinking alcohol and using other drugs while boating causes many boating accidents. Using alcohol or drugs by themselves can impair your judgment and reasoning ability, increase fatigue and reduce your ability to respond/react to dangerous incidents. The effects of sun, wind, waves, vibration and noise are added stressors when under the influence. Drunken passengers lose their balance and can easily fall overboard, swim near the propeller, lean over the side or stand up in small vessels, causing a capsize.

This chart will help you understand how drinking alcohol can affect you, depending on how much you weigh. It's important to note that any level of alcohol in people under the age of 21 is against the law.

ALCOHOL CONSUMPTION CHART



Shadings in the charts above mean:

- (.01% – .04%) May be DUI – Definitely DUI if under 21 yrs. old.
- (.05% – .07%) Likely DUI – Definitely DUI if under 21 yrs. old.
- (.08% and Up) Definitely DUI.

DON'T DRINK AND DRIVE!

REMEMBER

In California, it is against the law for anyone to operate a recreational boat or motor vehicle with a blood alcohol concentration of 0.08 percent or more.

People under the age of 21 can be convicted of operating a boat or motor vehicle with a blood alcohol concentration of 0.01 percent or higher and can be fined up to $100 for a first offense.

REMEMBER

Drinking alcoholic beverages will not prevent cold water shock. Alcohol opens tiny blood vessels in your body and brings more blood to the surface of the skin, giving you a false sense of warmth. Actually, the increased blood flow near the skin's surface increases the loss of body heat.

REVIEW QUESTIONS: ALCOHOL AND DRUGS

Answer these questions by circling **T** for true or **F** for false.

1. Alcohol makes the effects of motion and temperature worse . . . . . T F
2. It is against the law for an 18-year-old person to operate a vessel or vehicle with a blood alcohol level of 0.01 percent . . . . . T F
3. A person 32 years old and weighing 140 pounds would be able to have three drinks over a two-hour period and not be legally drunk . . . . . T F

Turn to page 100 for correct answers.

REMEMBER

The clothing you are wearing and the items you may be carrying will affect how well your life jacket keeps you afloat.

TAKE NOTE

Every person on board a personal watercraft (PWC) and any person being towed behind a vessel must wear a Coast Guard-approved life jacket for those activities. (For exceptions, see *Water Skiing*.)

SAFETY EQUIPMENT

You must have safety equipment to operate any boat or vessel safely. Some safety equipment is required by law, while other equipment is strongly recommended. In this chapter, we will cover the most important piece of equipment for personal safety—the personal flotation device (PFD), which most often means a life jacket. In Chapters 2, 3, and 4, we will cover equipment for general boating safety and for specific vessels.

Life Jackets

The most important piece of equipment for safe boating and general water safety is a U.S. Coast Guard–approved life jacket which can be a throwable or wearable device. Most boating deaths happen when people don't wear life jackets and drown. Boat operators must be alert to changing boating conditions and should tell all passengers to wear their life jackets, especially in dangerous conditions—such as heavy boat traffic, severe weather or dangerous water conditions.

Today's life jackets are colorful, comfortable and easy to wear. Wearing a life jacket is important, no matter how well you swim or operate a boat. You never know when your boat may overturn or when you may fall overboard. Once you are in the water, it is very difficult for even the most athletic and coordinated individuals to put on a life jacket while trying to stay afloat.

When using a life jacket, make sure it fits well and is well maintained so it works properly.

A life jacket should keep you afloat until help comes—so make sure it's the right one for your weight and chest size. To choose the correct life jacket:

- ***Check*** the type of boating you will do.
- ***Check*** the type of activities you will do.
- ***Check*** the clothing you will most likely wear.
- ***Check*** for Coast Guard-approved use instructions on the label.

To make sure that you have chosen the right life jacket for yourself:

- Check for a snug fit. Adjust straps and buckles to ensure a proper fit that does not restrict your breathing. If someone lifts your life jacket by the shoulder straps, the jacket should not cover your ears. Readjust the straps and buckles, and if it still doesn't pass the lift test, try a different size.
- Check how well your life jacket keeps you afloat by relaxing on your back in safe, shallow water and tilting your head back. To stay safe, your properly fitted life jacket should keep your chin and mouth out of the water, and allow you to breathe easily. If your life jacket doesn't turn you face up in the water, you may want to replace it with one that does.

Photo courtesy of the National Safe Boating Council

Are you operating a boat less than 16 feet long, or a canoe or a kayak of any length? Then you must follow these rules:

- A Coast Guard-approved life jacket in serviceable condition and of a type and size appropriate for the conditions and the activity being engaged in must be carried for each person on board. If stored, these life jackets must be readily available (easy to get to), and you must show passengers where the life jackets and other safety equipment are stored.
- Under California state law, it is an infraction, punishable by a fine of up to $250, to operate a recreational vessel of any length unless *every child under 13 years of age on board is wearing a Coast Guard-approved life jacket* in serviceable condition and of a type and size appropriate for the conditions and the activity while the boat is underway. The law does not apply to: (1) the operator of a sailboat on which every child under age 13 is restrained by a harness tethered to the sailboat; (2) the operator of a vessel on which every child under age 13 is in an enclosed cabin; or on a vessel engaged in an emergency rescue situation.
- Everyone on a personal watercraft and anyone being towed behind a vessel must wear a Coast Guard-approved appropriate type of life jacket for the activity as stated on the label. (For exceptions, see *Water Skiing*.)
- Anyone using an underwater maneuvering device is exempt from wearing a life jacket. An underwater maneuvering device is any towed or self-powered device designed for underwater use that a person can pilot through diving, turning and surfacing moves.

For a boat 16 feet or longer, you must also follow these rules:

- The same requirements as above and one immediately accessible (easy-to-reach) Coast Guard-approved throwable device—such as a ring, cushion or horseshoe buoy for each boat.

SOME THINGS TO REMEMBER:

To make sure that your life jackets remain in good serviceable condition:

- Do not alter the life jackets. An altered life jacket no longer meets legal requirements and may not save your life.
- Do not place heavy objects on life jackets during storage.
- Do not use life jackets as kneeling pads, boat fenders, or seat cushions because they lose buoyancy when they're crushed.
- Let life jackets air-dry thoroughly before putting them away.
- Always store your life jackets in a well-ventilated place, out of direct sunlight.
- Never dry your life jackets by a direct heat source, such as a dryer, heater, or radiator.
- Before wearing, check life jackets for signs of wear and age. Look for rips or tears, mildew, loose or missing straps, frayed webbing, broken zippers or buckles, and hardened stuffing. A life jacket with any of these problems must be destroyed.
- According to the U.S. Coast Guard a life jacket is no longer in serviceable condition if the straps and/or zippers or fasteners do not work

RECOMMENDATION

All passengers are **encouraged to wear** a Coast Guard-approved, properly fitted, life jacket when on a moving boat. For added safety, attach a whistle to each life jacket.

PRECAUTION

Boat operators first should make sure everyone aboard wears a life jacket in stormy weather/rough water conditions.

WEBSITES

To learn more about life jackets, visit **www.BoatCalifornia.com**

WHAT KIND OF LIFE JACKET SHOULD YOU WEAR?

Regardless of the "Type" shown on a flotation device, ALL life jackets shall be used in accordance with the Coast Guard approval statement on the life jacket label and the manufacturer's instructions.

TYPE I

▶ **Type I Off-Shore Life Jacket** (Minimum buoyancy: 22 pounds)

Inflatable and Inherently Buoyant Types

Where to use:	Open, rough, or remote water, where rescue may be slow in coming. Although it's permitted, a Type I life jacket may be too bulky to allow you to paddle.
Advantages:	Floats best. Turns most unconscious wearers face-up in the water. Highly visible color.
Disadvantages:	Bulky.
Sizes:	Only two sizes to fit most children and adults.

TYPE II

▶ **Type II Near-Shore Buoyant Vest** (Minimum buoyancy: 15.5 pounds)

Inflatable and Inherently Buoyant Types

Where to use:	Good for calm, inland water, or where you have a good chance of a fast rescue.
Advantages:	Turns many, but not all, unconscious wearers face-up in water. Less bulky, more comfortable than Type I.
Disadvantages:	Not designed for long hours in rough water. Will not turn some unconscious wearers face-up in the water.
Sizes:	Infant, child-small, child-medium, adult.

TYPE III

▶ **Type III Flotation Aid** (Minimum buoyancy: 15.5 pounds)

Inflatable and Inherently Buoyant Types

Where to use:	Good for calm, inland water or where you have a good chance of fast rescue.
Advantages:	Generally the most comfortable for continuous wear because of the freedom of movement for activities such as personal watercraft, water skiing, paddling, small boat sailing and fishing.
Disadvantages:	Not for extended use in rough water. Will not turn most unconscious wearers face up.
Sizes:	Many individual sizes from child-small to adult.

▶ Type IV Throwable Device

Where to use: Good for calm, inland water with heavy boat traffic, where help is always nearby.

Advantages: Can be thrown to someone. Good back-up to wearable life jacket.

Disadvantages: Not for unconscious persons. Not for non-swimmers or children. Not good for many hours in rough water.

Kinds: Cushions, rings and horseshoe buoys.

▶ Type V Special-Use Device

Where to use: Required to be worn for special uses or conditions.

Advantages: Made for specific activities. Varieties include sailboarding and rafting vests, deck suits, work vests, hybrid life jackets and others.

Disadvantages: See label for limited use.

INFLATABLE AND HYBRID DEVICES

Combine inherently buoyant material with an inflatable bladder

Where to use: Coast Guard-approved inflatable life jackets are authorized for use on recreational vessels for persons 16 years of age and older and must be worn at all times to meet carriage requirements of one life jacket for every person on board unless the label states that it is a Coast Guard-approved flotation device to be carried.

Advantages: Comfortable. Least bulky of all types. High flotation when inflated. Good for continuous wear. Equal to either Type I, II or III performance, as noted on the label. Choice between manual (pull) and oral inflation systems. Turns most unconscious wearers face-up in the water after inflation.

Disadvantages: May not adequately float some wearers unless partially inflated. Requires correct use and regular checks and maintenance of the inflation system. Only some brands are Coast Guard-approved. **Not recommended for non-swimmers** and not intended for use while water skiing or on personal watercraft.

Kinds: Proper use of inflatable life jackets, including appropriate age limits, vary by manufacturer. Please carefully review the label for Coast Guard approval and proper use before purchasing an inflatable life jacket. Hybrid life jackets are available in adult and child sizes.

TYPE IV

TYPE V

INFLATABLE/HYBRID

LIFE JACKET LABELS ARE CHANGING

Did you know there is a new life jacket label? The old Type I, II, III, IV and V labels are being phased out. You may be seeing a new label on the inside of life jackets with a performance level icon with numbers 50, 70, 100 and 150 (newton measurement scale) like the one shown on this page. The new label DOES NOT make life jackets with the old label obsolete.

Lower numbers offer more mobility, comfort, and style with good flotation, and are intended for near shore (calm water) activities. Higher level numbers offers greater flotation, turning, and stability in the water, and are for offshore activities (greater time to rescue). There are areas where you may be boating near shore when rescue is hours away, and a higher level is needed.

Turnability: The arrow symbol indicates if the life jacket will turn an unconscious wearer face up. Always test before use.

Warnings: The triangle and round icons show the wearer that some life jackets are not approved for specific water activities such as water skiing, tubing, personal watercraft (PWC), wakeboarding or whitewater paddling.

You can continue to use your life jacket with the older label if it is in serviceable, good condition and appropriate for your activity.

TURNABILITY

WARNINGS

REVIEW QUESTIONS: LIFE JACKETS

Answer these questions by circling **T** for true or **F** for false.

1. Although life jackets come in different styles, there is no difference in their capacity to save a person. . . . T F
2. For added safety, it's a good idea to attach a whistle to your life jacket. . . . . T F
3. The nice thing about life jackets is that one size fits all. . . . . T F
4. You should always check your life jacket for signs of wear or age before using it . . . . . T F
5. All passengers should wear Coast Guard-approved, properly fitted life jackets under the following conditions: in rough seas, more than three miles off shore, riding on any boat underway, when the wearer is not a good swimmer . . . . . T F

Turn to page 100 for correct answers.

HOMELAND SECURITY

As a recreational boater, you have an important role to play in helping to keep our waterways safe and secure. Our waterways can present opportunities for unlawful or dangerous activities. The Coast Guard and other emergency responders ask you to increase your level of awareness of your surroundings anytime you are on or near the water. Take note of suspicious activities going on around you as you boat, fish or paddle so you can quickly alert local authorities in time to prevent a dangerous situation from occurring.

Specific Ways You Can Help:

- Keep your distance from all military, cruise-line or commercial shipping vessels! Do not approach within 100 yards. Slow to minimum speed within 500 yards of any large U.S. naval vessel, including any U.S. military or military supply vessel over 100 feet. Violators of the Naval Vessel Protection Zone face up to six years in prison and a $250,000 fine, not to mention a quick and severe response. Approaching certain other commercial vessels may result in an immediate boarding, so keep well away of shipping or cruise-line traffic.
- Observe and avoid all security zones. Avoid port operation areas, especially those that involve military, cruise-line, or petroleum facilities. Observe and avoid other restricted areas near dams, power plants, etc. Violators will be seen as a threat, and will face a quick and severe response. For information in port areas, call 1-877-24WATCH or 1-877-249-2824, or check with local authorities.
- Do not stop or anchor beneath bridges or in the channel. If you do, then expect to be boarded by law enforcement officials.
- Keep a sharp eye out for anything that looks peculiar or out of the ordinary. Immediately report all activities that seem suspicious to local authorities, the Coast Guard, or port or marina security officials. Or call the National Response Center's Hotline at 1-800-424-8802. Do not approach or challenge those acting in a suspicious manner.
- Always secure and lock your boat when not on board. This includes while visiting marina restaurants or a friend's dock or other piers. Never leave your boat accessible to others. Always take the boat keys with you.
- When storing your boat, make sure it is secure and its engine is disabled. If it is on a trailer, make the trailer as immovable as possible.

Photo courtesy of the US Coast Guard

REMEMBER

To report suspicious activity:

Call the National Response Center at 1-877-24WATCH.

If there is immediate danger to life or property, call 911 or the U.S. Coast Guard on Channel 16.

Reporting Suspicious Activity:

According to the U.S. Coast Guard, recreational boaters are NOT expected to patrol any particular areas. Your expertise in recognizing suspicious activities of vessels and individuals comes from your knowledge of your local waterways. If you see a pattern of behavior such as the following, and it does not "feel" right, you should immediately notify law enforcement or marina/port officials:

- Suspicious/unusual activities near bridges or high security areas on or near the water.
- Persons photographing or creating diagrams of such things as the underside of bridges, the area around nuclear power plants, and waterfront facilities near military, cruise-line, or commercial vessels.
- Persons loitering for extended periods of time in waterfront areas.
- Persons renting or attempting to procure or "borrow" watercraft with little or no interest in learning about the boat or the water conditions.
- Suspicious vendors attempting to sell/deliver merchandise or drop off packages in waterfront areas.

Be alert and boat safely!

REVIEW QUESTIONS: HOMELAND SECURITY

Answer the following questions by circling **T** for true or **F** for false.

1. Recreational vessels are not restricted from approaching military vessels. . . . . .T F
2. Violators of the Naval Vessel Protection Zone can face up to six years in prison and a $250,000 fine. . .T F
3. Suspicious activities should be reported to local authorities, the Coast Guard, or port or marina security officials. . . . . .T F
4. Recreational boaters have no part in keeping our waterways safe and secure. . . . . T F

Turn to page 100 for correct answers.

CARBON MONOXIDE POISONING

Facts

Carbon monoxide (CO)is a potentially deadly gas produced any time a carbon-based fuel, such as gasoline, propane, charcoal or oil burns. Sources on your boat include gasoline engines, generators, cooking ranges, and space and water heaters. Cold or poorly tuned engines produce more carbon monoxide than warm, properly tuned engines.

Carbon monoxide is colorless, odorless and tasteless and mixes evenly with the air. It enters your bloodstream through the lungs and displaces the oxygen your body needs. Early symptoms of carbon monoxide poisoning—irritated eyes, headache, nausea, weakness and dizziness—are often confused with seasickness or intoxication. Prolonged exposure to low concentrations or very short exposure to high concentrations can lead to death.

Each year, boaters are injured or killed by carbon monoxide. Most incidents occur on older boats and within the cabin or other enclosed areas. Exhaust leaks, the leading cause of death by carbon monoxide, can allow carbon monoxide to migrate throughout the boat and into enclosed areas. Safety measures begin with the installation of a marine grade CO detector in a boat's living space. Operators should also open hatches and keep fresh air circulating throughout the boat to avoid exhaust fumes from reentering the aft part of the boat—the station wagon effect. Regular maintenance and proper boat operation can reduce the risk of injury from carbon monoxide.

REMEMBER

All carbon monoxide poisonings are preventable!

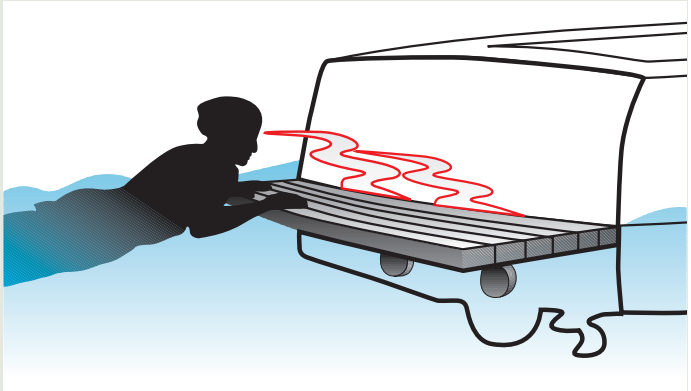
The best precaution against carbon monoxide poisoning is to keep fresh air flowing through the vessel.

WEBSITE

To learn more about carbon monoxide, visit **dbw.parks.ca.gov/COdanger**

AVOID THESE DEATH ZONES!

- **Swimming near or under the back deck or swim platform.** Carbon monoxide from exhaust pipes of inboard engines, outboard engines and generators build up inside and outside the boat in areas near exhaust vents.
- **STAY AWAY** from these exhaust vent areas and **DO NOT** swim in these areas when the motor or generator is operating. On calm days, wait at least 15 minutes after the motor or generator has been shut off before entering these areas.
- **NEVER** enter an enclosed area under a swim platform where exhaust is vented, not even for a second. It only takes one or two breaths of the air in this "death chamber" for it to be fatal.



Teak surfing, body surfing, or platform dragging, and water skiing within 20 feet of a moving watercraft can be fatal and is a violation of California law.

CO CHECKLIST (EVERY TRIP)

1. Educate all passengers about carbon monoxide poisoning.
2. Make sure all exhaust clamps are in place and secure.
3. Look for exhaust leaking from exhaust system components, indicated by rust and/or black streaking, water leaks, or corroded or cracked fittings.
4. Inspect rubber exhaust hoses for burned or cracked sections. All rubber hoses should be pliable and free of kinks.
5. Confirm that water flows from the exhaust outlet when the engines and generator are started.
6. Listen for any change in exhaust sound that could indicate an exhaust component failure.
7. Test the operation of each carbon monoxide detector by pressing the test button. Make sure the battery is installed properly and is in good condition. Never remove the battery unless replacing it with a new battery.
8. Always be aware that dangerous concentrations of carbon monoxide can accumulate while the boat is alongside other boats, such as around busy docks or rafting together, or when moored next to a seawall or within a boathouse.

REVIEW QUESTIONS: CARBON MONOXIDE POISONING

1. Choose the true statement:
   a. Teak surfing is not a dangerous activity.
   b. Passengers need not worry about carbon monoxide.
   c. Seasickness and intoxication are caused by carbon monoxide.
   d. All carbon monoxide poisonings are preventable.

2. Which of the following is a poison danger to boaters?
   a. Carbon Dioxide
   b. Carbon Monoxide
   c. Oxygen
   d. Propane

3. The leading cause of death by carbon monoxide is:
   a. Water skiing too close to the boat
   b. Regularly tuned engines
   c. Exhaust leaks
   d. Exhaust from another vessel

4. Early symptoms of carbon monoxide poisoning are:
   a. Fever, vomiting and ringing ears
   b. Headache, nausea and dizziness
   c. Diarrhea, fever and chills
   d. Red eyes, stomach ache and gasping for breath

Turn to page 100 for correct answers.

Boating Law, Navigational Rules and Navigational Aids

OK, now you know about personal safety. Before you operate any boat, you should also understand Boating Law and the Rules of Navigation.

Boating Law includes registering your vessel properly, and knowing and using the right safety equipment. The Rules of Navigation enable you to handle your vessel when other boats are around, and safely launch in harbors and other busy waterways that use aids to navigation (called ATONs). Know the rule and help prevent accidents.

OBJECTIVES

You will learn:

- General laws about operating a boat within the State of California
- Safety equipment required by law
- Navigational rules and navigational aids

KNOW THE LAW

Every boat owner and operator must know the law. Remember, if a law enforcement officer stops you, you have no excuse for not knowing the law. It is every boat operator's responsibility to be aware of boating law changes through continuing education.

BOATING LAW

California Law Governs

- Age of boat operators
- Environmental protection
- Required safety equipment
- Navigational rules and aids
- Boat ownership and registration
- California Boater Card education requirements

State boating law incorporates Federal Navigation Rules, including international and inland rules of navigation. The only other boating laws that apply are any rules specific to local waterways (which are limited to time-of-day restrictions, special-use areas, speed zones, or pollution and sanitation control).

The navigation rules contained in this course summarize basic navigation rules for which a boat operator is responsible on inland waterways. Additional and more in-depth rules apply regarding various types of waterways, such as International Waters and Western Rivers, and operation in relation to commercial vessels and other watercraft. It is the responsibility of a boat operator to know and follow all the navigation rules.

The Coast Guard enforces federal law on federal waters (which are coastal waters, waters subject to tidal influence, rivers and lakes that extend to more than one state). In California, most recreational boating law enforcement is done by county sheriff officers, police officers, park rangers and other land use agencies. These officers enforce state boating law, navigational regulations and local restrictions.

WEBSITE

Navigation Rules are available online from the U.S. Coast Guard at: **navcen.uscg.gov.**
Hard copies can be purchased from book sellers.

Officer Authority

Every peace officer of the state, city, county or harbor district is empowered to enforce general boating laws, navigation regulations, and local restrictions. Peace officers have the authority to stop and board any vessel where the peace officer has probable cause to believe that a violation of state law or regulations or local ordinance exists. The use of a distinctive blue light is reserved for law enforcement vessels.

Any vessel approaching, overtaking, being approached, or being overtaken by a moving law enforcement vessel operating with a siren or an illuminated blue light, shall immediately slow, safely alter its course, and proceed at a reduced speed until beyond the area of operation of the law enforcement vessel. Every vessel underway and lawfully ordered to stop by a peace officer or harbor policeman shall stop immediately and permit the peace officer or harbor police vessel to come alongside.

Peace officers can order the operator of an unsafe vessel to shore. A vessel can be ordered to the nearest safe moorage if an unsafe condition is found that cannot be corrected on the spot and the officer believes continued operation of the vessel could be hazardous.

REMEMBER

Under the law, no person shall operate a vessel, or manipulate water skis, an aquaplane, or similar device in a reckless or negligent manner, endangering life, limb or property.

Court-Ordered Boating Education

- Any person convicted of any moving violation in the Harbors and Navigation Code, the Federal Navigation Rules and regulations adopted by the California State Parks Division of Boating and Waterways (DBW) while operating a vessel, must be ordered by the court to **complete and pass** a boating safety course approved by DBW.
- Proof of completion and passage of the course must be submitted to the court within seven months of the time of the conviction.

California Boater Card Mandatory Education Requirement

Enacted in 2014, the mandatory education requirement is more commonly known as the California Boater Card program. It prohibits the operation of any motorized vessel in California without a valid DBW-issued Boater Card. This program is being phased in by age, and by 2025 all operators will be required to carry a California Boater Card when on state waters.

U.S. Coast Guard boating accident data shows that states with some form of boating safety education have fewer accidents and fatalities than states without any boater education requirements. In California, since implementing boating education requirements, accidents and fatalities have begun to decrease. In 2020, there were 629 recreational boating accidents reported and 39 fatalities compared with 724 reported accidents and 49 deaths in 2015. More boaters taking approved safety courses will benefit all California recreational boaters.

WEBSITE

To apply for a California Boater Card, or to see a list of approved courses, visit **CaliforniaBoaterCard.com** or scan the QR code.

TAKE NOTE

Making a false emergency report is against the law and it can keep law enforcement officers from responding to real emergencies.

WEBSITE

By 2025, all persons operating power vessels in California will be required to carry the California Boater Card. Some exemptions apply. For the complete age phase-in schedule visit: **CaliforniaBoaterCard.com**

False Search and Rescue Calls

Anyone who reports to a state or local agency that an emergency exists knowing that the report is false is guilty of a misdemeanor and may be punished by imprisonment in a county jail for up to one year, a fine up to $1,000, or by both imprisonment and fine. An emergency includes any condition that results in, or could result in, the response of a public official in an authorized emergency vehicle, vessel or aircraft.

It is a **felony** for anyone to falsely report to any state or government agency that an emergency exists when the reporter knows, or should know, that the response to the report is likely to cause death or great bodily injury to someone as a result of the false report.

Age of Operator in California

- A person must be 16 years of age or older to operate a vessel powered by a motor of more than 15 horsepower. **Exceptions**: There is no age limit to operate a sailboat under 30 feet long (if using wind as the main source of propulsion), or a dinghy used directly between a moored vessel and the shoreline or between two moored vessels.
- People 12 to 15 years of age may operate any vessel powered by a motor of more than 15-horsepower, if they're supervised on board by someone at least 18 years of age who is in possession of a California Boater Card as required by California law. (Harbors and Navigation Code 678.11.(B)2)

REVIEW QUESTIONS: BOATING LAW

Answer these questions by circling **T** for true or **F** for false.

1. The Coast Guard enforces the law on state and federal waters. . . . . T F
2. You are responsible for obeying boating laws you don't know. . . . . T F
3. The use of a blue light is reserved for law enforcement vessels. . . . . T F
4. Peace officers can order the operator of an unsafe vessel to shore. . . . . T F
5. A person convicted of any moving violation while operating a vessel must complete and pass a boating safety course. . . . . T F
6. There are no penalties for making a false emergency report. . . . . T F
7. A person must be at least 12 to operate a powerboat unsupervised. . . . . T F
8. By 2025 all boat operators must carry a valid California Boater Card when boating within the state. . . . . T F
9. A DBW-approved course must be passed in order to get a California Boater Card... . . . . T F

Turn to page 100 for correct answers.

REQUIRED SAFETY EQUIPMENT

Recreational vessels must carry specified safety equipment, which may vary according to the type of boat, the boat's power source, the boat's length, the place and time you're using it and the number of people aboard. Sailboats, canoes, rowboats, and inflatable rafts equipped with motors are considered motorboats and must be equipped as motorboats.

Fire Extinguishers

Does your boat have any one or more of the following?

- Inboard or stern-drive engine
- Closed compartments where portable fuel tanks may be stored
- Double-walled hulls that are not sealed or not completely filled with flotation material
- Enclosed living spaces
- Closed stowage compartments in which combustible or flammable materials may be stored
- Permanently installed fuel tanks

If you answered "yes" to any of the fire extinguisher questions:

Your boat must carry a Coast Guard-approved fire extinguisher in an easy-to-reach location.

Fire extinguishers are classified by letters and Roman numeral symbols. The letter indicates the type of fire the device is made to extinguish and the Roman numeral indicates the size of the extinguisher: The Coast Guard requires Type B extinguishers that are designed for flammable liquids such as gasoline, oil and grease fires. An extinguisher is suitable for marine use when it bears a label that either has: Coast Guard approval numbers, "Marine Type USCG" or both markings. Information stating that it is listed with Underwriters Laboratories (UL) and suitable for marine use must also be on the extinguisher. It must be of the type and size described in Table B. UL-listed extinguishers must bear a UL rating of 5-B or higher.

Note: All recently manufactured UL Marine Type 5, 10, and 20 extinguishers will bear both the UL and Coast Guard markings.

The Roman numerals after the letters, I and II, indicate the size of the extinguisher. A Class B-II extinguisher has four to five times more extinguishing material than a Class B-I extinguisher.

Remember: Boat operators should show all passengers where safety equipment is stored. Make sure your passengers know what to do in case of an emergency.

TAKE NOTE

Beginning April 2022, the U.S. Coast Guard (USCG) issued new regulations for fire extinguisher dates of manufacture and label classifications.

Fire extinguishers must not be more than 12 years old according to the date of manufacture stamped on the bottle. Boaters can find the manufacture date stamped into the bottom of the bottle or near the UL label. This may be two or four digits — if it is two, as in 06, that means 2006.

Additionally, while the new regulation does not change the type (USCG-rated) or quantity requirements for USCG-approved fire extinguishers aboard, it does specify the minimum Underwriter Laboratory (UL) classification of extinguishers to be carried aboard certain vessels — depending on the boat's model year.

Vessels model year 2018 or newer must carry fire extinguishers labeled as 5-B, 10-B or 20-B. The old labels of B-I or B-II only are no longer acceptable.

Vessels model year 2017 or older may keep serviceable extinguishers labeled B-I and B-II if they are less than 12 years old.

This is the result of phasing out older B-I and B-II labels for newer 5-B 10-B and 20-B extinguisher classifications. The number in this new rating refers to the size in square feet of the potential fire the device is suitable to extinguish and not the exact weight of the dry chemical inside the bottle. **See the tables on page 24.**

There are no changes to rechargeable or fixed-mount (i.e., engine room) extinguisher regulations.

USING A FIRE EXTINGUISHER

P - Pull pin

A - Aim at base of fire

S - Squeeze handle

S - Sweep side to side using short bursts, a half-second to 1 second each

How To Use a Fire Extinguisher

- All extinguishers must be readily accessible, preferably not stowed next to common fire sources. It is recommended that they be attached to the boat.
- Before using portable extinguishers, read the instructions.
- Never use a foam extinguisher on electrical fires, because these extinguishers contain water and you might be electrocuted.
- Never try an extinguisher to see if it works properly—the valves may not reseal and the extinguishing material may gradually leak.
- After using an extinguisher, recharge it before using it again. Check your fire extinguisher at least once every six months for the pressure level and signs of powder on the nozzle. If the extinguisher contains a dry chemical extinguishing material, turn the extinguisher end-to-end. If the chemical is packed, shake it or hit the bottom with your hand to loosen it.

WEBSITE

For more information about fire extinguishers, visit **dbw.parks.ca.gov/FireExtinguisher**

The following chart describes the required fire extinguisher type by boat size. It includes the newer UL-listed equivalents. Remember, disposable fire extinguishers must be replaced no later than 12 years from date of manufacture.

TABLE A – FIRE EXTINGUISHER REQUIREMENTS

Boat Length	Without fixed extinguishing system in machinery space	With fixed extinguishing system in machinery space
Less than 26 ft.	1 B-I, 5-B, or 10-B	None
26 ft. to under 40 ft.	2 B-I, 5-B, 10-B or 1 B-II or 20-B	1 B-I, 5-B, or 10-B
40 ft. to 65 ft.	3 B-I, 5-B, 10-B or 1 B-II, 20-B AND 1 B-I, 5-B or 10-B	2 B-I, 5-B, or 10-B or 1 B-II or 20-B

TABLE B – FIRE EXTINGUISHER CHARACTERISTICS

UL Listed extinguishers of the type and weight shown below may be selected to meet the type and size requirements for the corresponding Coast Guard classification (see Table A). For example, if a Coast Guard Type B, Size I extinguisher was required, a 2 lb. dry chemical extinguisher, 5-B would be one of the new equivalents. The following specifies only the minimum net agent weight. A larger extinguisher such as a 20-B would be acceptable.

Coast Guard Classes	UL-Listed Equivalent	Dry Chemical (lb.)	Carbon Dioxide (lb.)	Foam (gal.)
B-I	5-B	2	4	1.25
B-II	10-B	10	15	2.5

Sound Signal

All boats must carry some means of producing a sound signal, loud enough to be heard for at least half a mile.

You must use your sound signaling device:

- When meeting, crossing or overtaking another boat.
- During periods of reduced visibility, such as fog or a blind bend in the river or narrow channel.
- During an emergency, to attract attention.

Sound signaling devices come in many shapes and sizes. You can use:

- An air horn (hand held or mounted).
- An electric horn.
- A whistle.

In an emergency you can even use:

- A megaphone made from a rolled up chart.
- A metal pot to bang on.

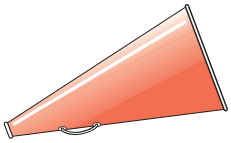
Vessels 40 feet or longer are required to carry a whistle and a bell to meet the sound signaling device requirements.

Radios such as VHF are commonly used to communicate between boats. They can be valuable tools for signaling other boats when you cross or overtake them.

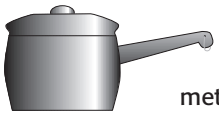
SOUND DEVICES

air horn

whistle



megaphone



metal pot

ALERT

When you come upon more than one vessel, you may not be able to signal your intention with horn signals. **You must take any action necessary to avoid a collision.**

WEBSITE

For more information on sound signals requirements, visit **dbw.parks.ca.gov/SafetyEquipment**

Boats less than 12 meters
(39 feet, 4 inches)

- Motorboats or sailboats using power: The lights shown in **Figure 1, 2** or **3** may be used.
- Sailboats using sails alone: The lights shown in **Figure 4, 5,** or **6** may be used.

Boats between 12 and 20 meters
(39 feet, 4 inches to 65 feet, 7 inches)

- Motorboats or sailboats using power: The lights shown in **Figure 1, 2** or **3** may be used.
- Sailboats using sails alone: The lights shown in **Figure 4, 5,** or **6** may be used.

Location of lights

Lights should be located as shown in the drawings. The masthead light (forward white light in **Figure 1**) must be at least one meter—39 inches—higher than the colored lights on a boat less than 40 feet long, and at least 8 feet above the gunwale on a boat between 40 and 65 feet long.

Exceptions

Motorboats or sailboats using power, built before Dec. 24, 1980: The lights shown in **Figure 1, 2** or **3** may be used. But the arrangement in **Figure 3** is not acceptable on a boat 40 feet or longer on international waters.

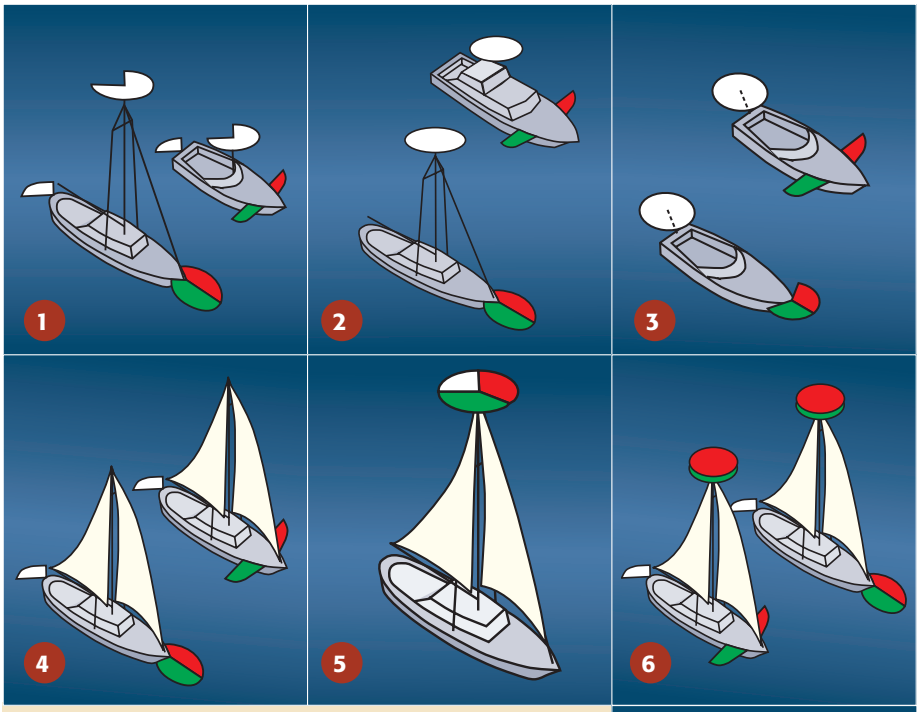
Taken from *Coast Guard Navigation Rules*

Lighting

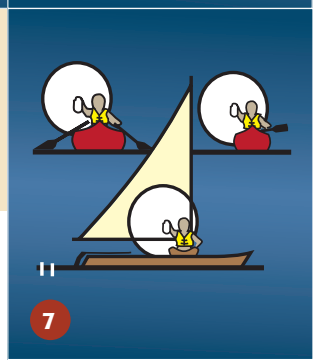
All moving boats must show navigation lights between sunset and sunrise, and at times when it's hard to see very far. Personal watercraft are prohibited from operating between sunset and sunrise even with proper navigation lights.

Navigation light requirements vary by vessel length and power source. In general, requirements are the same for inland and international rules. The chart shows the color, location and direction of the lights for recreational boats (or pleasure craft).

Nighttime Navigation



Row boats, paddle boats, and sailboats less than 7 meters (23 feet) in length, as in **Figure 7**, must have one all-round handheld electronic distress light ready to display in time to prevent a collision.



At night, motorboats less than 40 feet long may combine the masthead light and stern light into one all-round white light. When at anchor, boats must show one all-round white light at night. During the day, these boats must show day shapes. A day shape might be one black ball that is visible from the highest point of the vessel, which signals that the boat is at anchor.

Navigation Light Minimum Visibility Range (In Nautical Miles)

- Vessels Less than 40 feet: Sidelights – 1 nm; All other lights – 2 nm.
- Vessels Greater than 40 feet to 65 feet: Masthead light – 3 nm; All other lights – 2 nm.
- Vessels Greater than 65 feet to 164 feet: Masthead light – 5 nm; All other lights – 3 nm.

Visual Distress Signals (On Coastal Waters Only)

Be prepared to use Coast Guard-approved visual distress signals. They include:

- An orange flag printed with a black square and ball, for day use only.
- A flashlight or electronic distress light to signal SOS, for night use only.
- A red, hand-held flare, for day or night use.
- An orange smoke signal, for day use only.
- Red meteor flares, for day and night use.

The following boats do not have to carry night signal devices unless they are operating at night:

- Recreational boats less than 16 feet long.
- Boats propelled by hand, such as rowboats, canoes and kayaks.
- Open sailboats less than 26 feet long with no motors attached.
- Boats taking part in organized marine events.

On coastal waters, boats 16 feet or longer must carry three daytime signals and three nighttime signals. One orange flag may be substituted for three daytime signals, and one SOS distress light may be substituted for three nighttime signals.

Backfire Flame Arrestors

Does your boat need a backfire flame arrestor?

All motorboats with enclosed gasoline engines, except those with outboard engines, must have a backfire flame arrestor on each carburetor. The backfire flame arrestor is designed to safeguard against fire and explosion in the engine compartment, and must meet Coast Guard standards. The flame arrestor screen on each carburetor should be kept clean of any oil or gasoline deposits to prevent ignition of a fire. Check the flame arrestor periodically for damage.

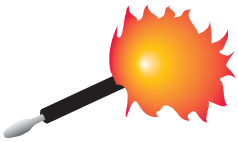
If your gasoline engine does not have a carburetor, it must have a reed valve assembly or an air and fuel induction system installed in accordance with Coast Guard standards.

VISUAL DISTRESS SIGNALS

orange flag

flashlight or electronic distress light

red flare*



orange smoke signal*

red meteor

* SAFETY NOTE: Red hand-held flares and orange smoke signals used to show distress, must be aimed (held) downwind over the side of the boat.

WEBSITE

For more information about visual distress signals, visit **dbw.parks.ca.gov/SafetyEquipment**

Noise Levels

You should never modify or disable your muffler or exhaust system, because it may increase the noise level or create a dangerous exhaust leak. To avoid breaking state and local noise laws and as a courtesy to those around you, make sure your boat is not too loud. In addition, you should be courteous to those around you. This is especially true where people are enjoying the shoreline, in congested areas, or near residential or camping areas.

California Boating Law prohibits operation of any motorboat with excessive noise levels in certain areas. These areas include the inland waters of California and ocean waters that are within one mile of the coastline of California. Excessive noise levels measured at a distance of 50 feet from the motorboat are described as:

1. For engines manufactured before January 1, 1993, a noise level of 90 dB(A) when subjected to the Society of Automotive Engineers Recommended Practice SAE J2005 (Stationary Sound Level Measurement Procedure for Pleasure Motorboats).
2. For engines manufactured on or after January 1, 1993, a noise level of 88 dB(A) when subjected to the Society of Automotive Engineers Recommended Practice SAE J2005 (Stationary Sound Level Measurement Procedure for Pleasure Motorboats).
3. A noise level of 75 dB(A) measured as specified in the Society of Automotive Engineers Recommended Practice SAE J1970 (Shoreline Sound Level Measurement procedure). However a measurement of noise level that is in compliance with this paragraph does not preclude the conducting of a test of noise levels under paragraph (1) or (2).

REMEMBER

A spark from the electrical or ignition systems can cause an explosion if gasoline fumes are present.

Boats built after July 31, 1980, having enclosed gasoline engines and fuel tank compartments, must have power-operated ventilation systems.

WEBSITE

To learn more about the need for ventilation, visit **dbw.parks.ca.gov/Exhaust**

Ventilation

Are all boats required to have a ventilation system?

Regulations require that all enclosed engine and fuel tank compartments on gasoline-powered boats be ventilated, because gasoline fumes can gather in the bilge —the lower inside areas of a boat's hull—and create a dangerous explosion and fire hazard.

You must have at least two ventilator ducts—one exhaust duct and one intake duct. Intake ducting must extend midway to the bilge, or at least below the carburetor air intake level. Exhaust ducting must extend from the lower bilge to cowls in the open air. Manufacturers must install exhaust blowers in engine compartments so gasoline fumes can escape before the engines start. These blowers should be turned on at least four minutes before the engine is started to make sure that any explosive fumes have been removed.

REVIEW QUESTIONS: SAFETY EQUIPMENT

Answer these questions by circling the letter next to the correct answer.

1. Type B fire extinguishers are recommended for:
   a. Flammable liquids
   b. Metallic fires
   c. Electrical fires
   d. Wood

2. Sounding a signal is required when:
   a. Overtaking, crossing and meeting another boat
   b. A boat is too small to be seen by larger boats
   c. Docking at night
   d. A boat does not have a hailer or megaphone aboard

3. All moving boats must have lighting:
   a. If the boat has a generator on board
   b. When operating at night or in foggy weather
   c. Before being launched
   d. When they are too small to be seen by larger boats

Turn to page 100 for correct answers.

ALCOHOL AND OPERATING A BOAT

Like driving under the influence in California, it is against the law to operate a recreational boat or water ski with a blood alcohol concentration (BAC) of 0.08 percent or more. Alcohol affects reaction time and impairs judgment. See Chapter 1 for more detailed information on boating and alcohol use.

CARBON MONOXIDE

Carbon monoxide can collect within, alongside or behind a boat in minutes in a variety of ways. See Chapter 1 for more detailed information on carbon monoxide poisoning.

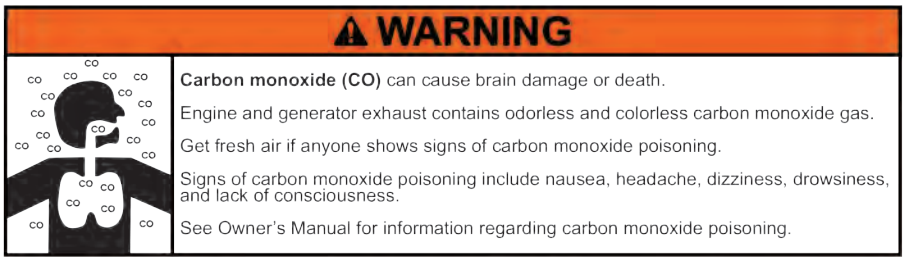
It is a violation of California law, punishable by a fine of up to $100, to operate a vessel's engine while a person is occupying or holding on to the swim platform, swim ladder or bodysurfing behind the motorized vessel. The law provides exceptions for briefly assisting with docking or departure, exiting or entering the vessel, or engaging in law enforcement or emergency rescue activity. However, there is no exception for body surfing behind the vessel at any time.

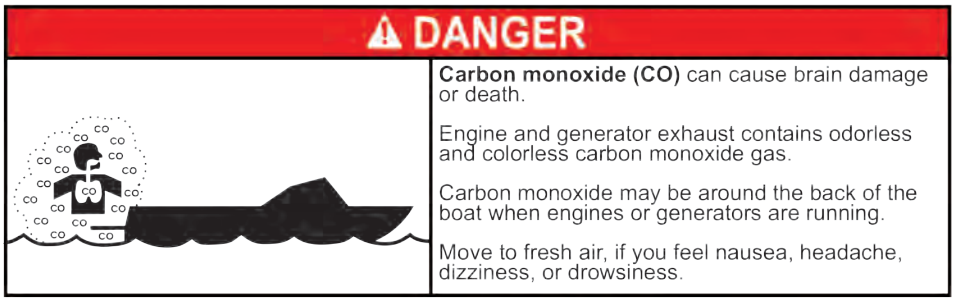
Carbon monoxide decals must be applied to motorized vessels when they are sold in California. A set of free decals is available from the Division of Boating and Waterways by calling 1-888-326-2822 or e-mail **pubinfo@dbw.ca.gov**.

CAUTION

Place the smaller "warning" decal on the interior of the vessel where it is immediately visible to the operator (near the helm).

Place the larger "danger" decal facing out on the exterior of the stern or transom of the vessel (near the swim platform) unless the vessel is inflatable and the decal would not adhere to the surface of the stern.





BOAT OWNERSHIP AND REGISTRATION

Hull Identification Number

The Hull Identification Number (HIN) identifies a vessel and protects the owner against theft.

The HIN is similar to a vehicle identification number on a car. Boats must have a HIN permanently attached to the transom on the starboard (right) side, above the waterline. Boats built since 1984 must also have the HIN permanently attached in a second, unexposed location. In addition, you should record the HIN and keep it in a safe place away from the boat.

Registering a Boat

In California, all undocumented motorboats must receive a registration number.

In California, all undocumented motorboats, as well as all sailboats more than eight feet in length, if used mostly on California waters must be registered and properly display the state-issued number. Registration can be obtained at any Department of Motor Vehicles (DMV) office. After giving the information and paying the required fees, the boat owner will be issued a Certificate of Number, a Certificate of Ownership and a pair of registration stickers. To register a boat with the state, you must possess and show a HIN.

If you own a boat that's registered in another state and it is used mainly in California, you may keep it in California for 60 days without having to register it at a California DMV office. After 60 days, though, your boat must be registered with the state.

Your certificate of number is required to be aboard your boat when it is under way. You will receive a citation if you are stopped by a law enforcement officer and do not have the current certificate of number with you. Boat registration must be renewed every two years. When you receive the new decals, remove the old ones and apply new decals as directed.

Have you added a small, electric motor to a paddlecraft or fishing float?

Small electric motors, sometimes called "trolling motors," can be attached to many types of vessels including kayaks, canoes, small inflatable fishing floats and even stand up paddleboards. When you attach and use these motors, your vessel, regardless of its former unregistered status, is now "motorized" and must be registered with the state and must properly display registration stickers and, when operated on inland waters, must also display Mussel Fee Paid stickers.

KNOW THE LAW

An undocumented vessel is a boat that does not possess a valid certificate of documentation issued by the Coast Guard.

YOU MUST HAVE

Your registration certificate is required to be aboard your boat when it is under way. You will receive a citation if you are stopped by a law enforcement officer and do not have the current registration certificate with you. Scan the QR code to visit the DMV Online Vessel Registration Web page.

REMEMBER

Personal watercraft are boats, not toys, and are subject to the same registration and equipment laws as recreational boats.

NOTE

Because of the size and shape of some models of personal watercraft or other boats, it may be difficult to apply registration numbers so that they're easy to see. If in doubt, check with local authorities for proper size and placement.

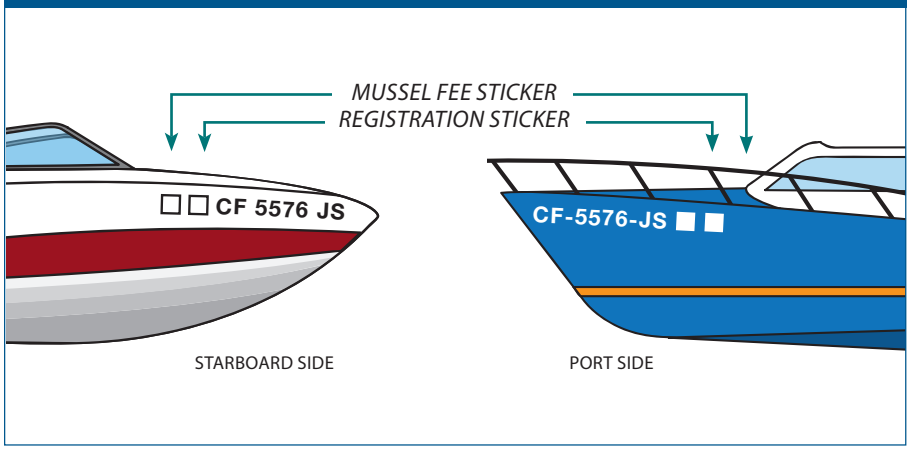
WEBSITE

Scan the QR code to visit the U.S. Coast Guard Vessel Documentation Web page.

Once registered, the boat registration numbers must be purchased and displayed properly.

- The figures must read left to right.
- They must be displayed on the forward half of the starboard (right) and port (left) sides of the boat.
- Numbers must be in plain, block letters.
- Numbers must be at least three inches high.
- Numbers must be light-colored on dark backgrounds—or dark-colored on light backgrounds—and must be easy to see, and as high above the waterline as possible.
- No number other than the number assigned can be displayed on the forward half of the vessel.
- Letters must be separated from the numbers by spaces or hyphens.
- Registration stickers must be displayed three inches away from the number and toward the rear of the boat.

CORRECT DISPLAY OF BOAT NUMBERS



Documenting a Boat

Californians can document their boats with the Coast Guard.

Larger boats meeting Coast Guard guidelines can be given a documentation number by the Coast Guard. Documentation is a form of national registration and is useful for boats taken into international waters or other countries. Documented vessels must have their name and hailing port printed on the stern, above the waterline. In California, a documented vessel may not be registered by the state. For more information about this process, contact the Coast Guard.

ENVIRONMENTAL LAWS

State and federal laws are designed to keep waterways cleaner and pollution free. These laws apply to all recreational boats, no matter what size.

Vessel Sewage (Human Waste)

Though it's against the law to dump untreated sewage into any navigable U.S. waters, some recreational boaters still discharge raw waste into coastal and inland waters. You might think that one person discharging human waste doesn't cause a problem. But with almost one million boats registered in California, and more than four million recreational boaters on the state's waterways, pollution from vessel sewage can be a huge problem.

Untreated sewage discharged from boats can spread disease, contaminate shellfish beds, and lower oxygen levels in water. Exposure to sewage-polluted water can result in gastroenteritis, hepatitis, dysentery and cholera. State law also prohibits dumping any human waste (treated or untreated) in a marina, yacht harbor, fresh water lake, or fresh water impoundment from any vessel tied to any dock, slip or wharf that has toilet facilities available for the use of people on the vessel.

The Coast Guard, a state or local peace officer who reasonably suspects that a vessel is discharging sewage in a prohibited area may board that vessel, if the owner or operator is aboard, to inspect the Marine Sanitation Device (MSD) for proper operation and place a dye tablet in the holding tank. The Coast Guard can issue fines of up to $2,000 for the illegal discharge of sewage.

One of DBW's goals is to eliminate overboard discharge of sewage through increased use of pumpout facilities, porta-potty dump stations and floating restrooms. You can help by:

- Never dumping raw sewage into California waters
- Using public toilets onshore before departing
- Using a pumpout facility to dispose of holding tank wastes.
- On small boats, using a porta-potty and dispose of wastes in an onshore dump station or toilet.
- Keeping the "Y" valve properly secured in the closed position when navigating inland waters or less than three miles offshore to prevent accidental discharge.
- Avoid holding tank disinfectants and deodorizers that contain chlorine compounds (including sodium hypochlorite), formaldehyde, paraformaldehyde, ammonium compounds, glutaraldehyde, paradichlorobenzene, or antimicrobials (such as Dowicil or Bronopol).

WEBSITES

For more information on marine sanitation devices and pumpout locations, scan the QR code or visit.

dbw.ca.gov/Pumpouts

For information on boating clean and green, visit.

BoatingCleanandGreen.com

Scan the QR code to download the free Pumpout Nav App for participating sewage pumpouts, dump stations and floating restrooms near you.

This logo identifies a sewage pumpout facility.

No Discharge Areas

It is illegal to release wastes, treated or not, into a federally designated No Discharge Area. Your MSD must be connected to a holding tank or secured to prevent all sewage discharges. California's No Discharge Areas are:

- El Dorado County: Lake Tahoe
- Los Angeles County: Avalon Bay Harbor
- Marin County: Richardson Bay
- Orange County: Dana Point Harbor; Huntington Harbor; Newport Bay (Upper and Lower); Sunset Bay
- Placer County: Lake Tahoe
- San Diego County: Mission Bay; Oceanside Harbor; San Diego Bay
- Ventura County: Channel Islands Harbor

CAUTION

If your boat is 26 feet or longer, it must display a Garbage Disposal Placard of at least 40 square inches (5" x 9") where crew and passengers can read it. The placard must be permanently attached and made of a durable material. Placards can be purchased at marine supply dealers. The placard tells the crew and passengers that it is illegal to dump garbage and trash overboard and describes fines and penalties.

Plastic

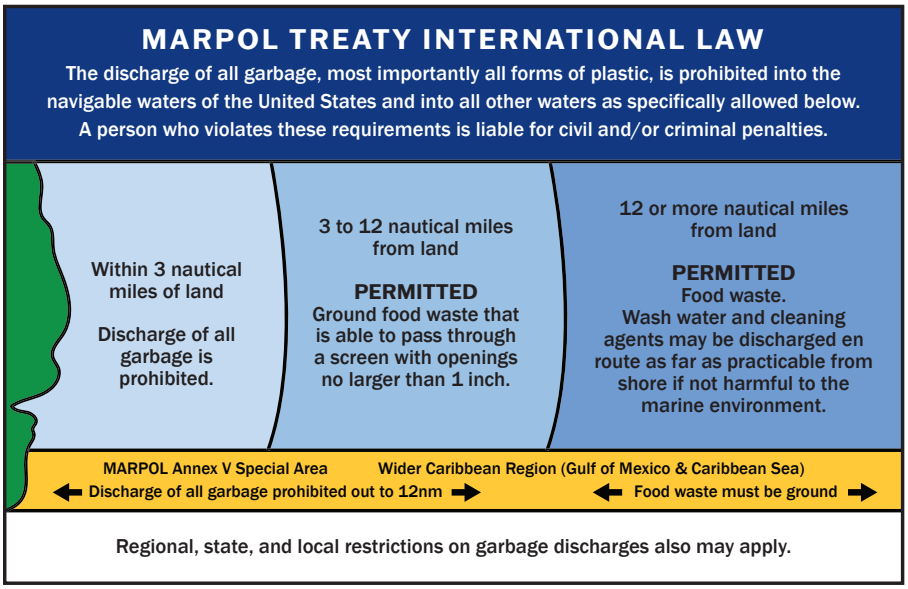
Pollution of the seas from garbage dumping is a global problem. The international treaty to prevent pollution from ships (MARPOL) attacks the plastic pollution problem. It is against Federal law to dump plastic trash into the ocean or into navigable waters of the United States. Regional, state or local regulations may further restrict dumping garbage.

Plastic does not easily decay, and it's dangerous to animal life. Thousands of animals die each year after becoming entangled in or eating plastic trash. It can also be a hazard to boats if caught in a propeller or water intake. The pollution laws apply to all boats regardless of size. Violations may result in civil penalties up to $25,000, a fine of up to $250,000 for an individual or up to $500,000 for an organization and/or a prison sentence of up to six years.

Although you'll find legal zones for discharging garbage, responsible boaters will not dump any garbage or waste into the water.

All U.S. vessels 40 feet or more in length and equipped with a galley and berthing must carry a written Waste Management Plan if the vessel operates beyond three miles from shore. The Waste Management Plan must designate the person in charge of carrying out the plan and describe procedures for collecting, processing, storing and properly disposing of garbage.

MARPOL PLACARD



MARPOL graphic courtesy of the U.S. Coast Guard Auxiliary.

OILY WASTE PLACARD

DISCHARGE OF OIL PROHIBITED

The Federal Water Pollution Control Act

prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States, or the waters of the contiguous zone, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States, if such discharge causes a film or discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial civil penalties and/or criminal sanctions, including fines and imprisonment.

Report all discharges to the National Response Center at 1-800-424-8802 or to your local U.S. Coast Guard office by phone or VHF radio, Channel 16.

Oil and Oily Waste

It is against the Federal Pollution Control Act to pump or discharge any kind of oil into navigable waters. Even a small amount of oil accidentally spilled can quickly spread over a large area. You are responsible for cleanup costs and for correcting any environmental damage caused by your fuel spill, under the California Oil Spill Prevention and Response Act of 1990.

Oil or oily waste may not purposely be drained into the bilge of a boat. All oily waste and other liquid pollutants must be kept in a container until properly disposed.

One pint of oil can create a slick covering about one acre. Wind, tides, temperature and the type of oil all affect how wide the slick spreads.

Packaging Material

It is illegal to discharge packaging material (called dunnage) in inland waters and waters within 25 miles of shore. Packaging material includes cardboard, Styrofoam, paper, plastic or any similar material.

CAUTION

If your boat is 26 feet or longer, it must display a 5-inch by 8-inch oily waste placard near the bilge pump control station. The placard must list the federal requirements.

REMEMBER

Federal and state law makes it illegal to discharge oil or oily waste into or upon navigable waters, and into zones next to the navigable waters, if the discharge causes a film or sheen upon, or discolors, the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial penalties.

TAKE NOTE

Recreational boaters must report ALL spills of oil and chemicals immediately to the National Response Center (800) 424-8802, California Office of Emergency Services (800) OILS911, and to the marina office. Recreational boaters should report any spill they witness to the numbers above.

TAKE NOTE

Restrictions on California's waterways, to prevent the spread of quagga and zebra mussels, are determined by county or local municipalities, and in some cases, the Department of Parks and Recreation. Boaters should check ahead to see whether boat inspections will be required.

Scan QR code for more information on quagga and zebra mussels.

Aquatic Invasive Species

Non-native aquatic species—plants, fish and animals—are invading California's coastal and inland waters. These pests can increase dramatically under the right conditions, displacing native species, clogging waterways, and impacting navigation and recreation. Once introduced, they are nearly impossible to eliminate. Aquatic invasive species such as Hydrilla, Egeria densa, water hyacinth, quagga and zebra mussels can be accidentally transported by recreational boaters when caught in propellers, intakes or attached to hulls. Controlling these species is a multi-million dollar problem in California.

You can help prevent the introduction and spread of non-native species from one body of water to another by cleaning, draining and drying your boat and by taking these steps:

- Avoid chopping vegetation with your boat's propeller.
- Inspect your boat and remove aquatic plants or animals before you leave the ramp area or take-out point.
- Inspect all exposed surfaces. Small mussels feel like sandpaper to the touch.
- Wash the hull of each watercraft thoroughly.
- Drain all water and dry all areas including lower outboard unit.
- Clean and dry all live-wells, and empty and dry any buckets.
- Dispose of all bait in the trash.
- Allow your boat to dry completely before traveling to another body of water.

Be sure to report new infestations of non-native aquatic species to the California Dept of Fish and Wildlife at 1-866-440-9530 or invasives@wildlife.ca.gov. Visit **dbw.parks.ca.gov/StopQZ.** A map of locations where quagga and zebra mussels have been found in California is available at wildlife.ca.gov/mussels.

DMV MUSSEL FEE

California registered recreational vessels using fresh water bodies within the state are required to display a "Mussel Fee Paid" sticker on the hull next to the current registration sticker. Paying the Mussel Fee does not entitle vessels to bypass inspections or fees for inspections conducted by individual reservoir owners or managers.

REVIEW QUESTIONS: ALCOHOL, BOAT REGISTRATION AND ENVIRONMENTAL LAWS

Answer these questions by circling the letter representing the correct answer.

1. The Hull Identification Number:
   a. Describes the size of the boat
   b. Is similar to a VIN on an automobile
   c. Indicates that the boat has safety equipment aboard
   d. Is the same as the owner's car license number

2. In California, registration numbers must be displayed by:
   a. Paddlecraft
   b. All boats, even if they do not have a motor
   c. All undocumented motorboats and sailboats more than 8 feet long
   d. Boats visiting California

3. California laws governing the consequences for drinking alcohol and operating a boat:
   a. Are the same for adults and minors
   b. Do not apply to minors
   c. Are less strict for persons under 21 years of age
   d. Are similar to those governing the operation of a vehicle on the road while under the influence of alcohol

4. The Coast Guard can issue a fine for dumping human waste up to:
   a. $1,000
   b. $2,000
   c. $5,000
   d. $10,000

Turn to page 100 for correct answers.

NAVIGATIONAL RULES

The main purpose of navigational rules is to prevent collisions and other avoidable accidents, such as grounding in poor visibility, injuring people in the water and damaging property.

The navigation rules of the road contained in this course summarize basic navigation rules for which a boat operator is responsible. Additional and more in-depth rules apply regarding various types of waterways and operation in relation to commercial vessels and other watercraft. It is the responsibility of a boat operator to know and follow all the navigation rules.

Boaters must follow the navigational rules under normal circumstances, but each boater is ultimately responsible for taking any action necessary to avoid immediate danger, even if it is a temporary departure from these rules. Such evasive actions fall under the "General Prudential Rule" of the Inland Navigation Rules.

Collisions happen when an operator is distracted. At all hours, all boat operators are legally required to maintain a proper lookout by all available means, including the help from other adults aboard the vessel. While boat operators have the primary responsibility for the safety of all persons on board the boat, passengers can watch for oncoming traffic and water hazards. In low visibility, placing a passenger lookout away from the engine noise, helps to hear other approaching vessels.

- Do not enter restricted areas and do not moor to buoys other than a specially marked mooring buoy.
- Never obstruct or anchor in a channel, launching area, or route, or interfere with the travel of other boats.
- Do not exceed 5 miles per hour within 100 feet of a swimmer, or 200 feet of a swimming beach, a swimming float, a diving platform, a lifeline, or a dock with boats tied to it.
- Whenever you are traveling through a narrow channel or coming around a bend where it's hard to see oncoming traffic, always keep to the right side.

REMEMBER

Even if you know the law, that's no guarantee that other boaters do. So, operate your boat with caution. Boat at a safe speed, and keep a safe distance from other boats and obstacles and always look out for hazards so you can avoid getting into an accident.

Boat-to-Boat Communication

You have three ways to communicate between vessels: Light signals, sound signals and radio. The most common method is radio, but you also need to know how to communicate using light and sound.

ALERT

Five short whistle blasts alert other boaters to a dangerous situation.

Safe Speed

On the water, as speed increases, the time to react decreases. The navigational rules require that every vessel shall at all times proceed at a safe speed in order that the operator will be able to take proper and effective action to avoid collision and be stopped within a distance appropriate to the situation. While traffic density is the number one factor to determine safe speed, other factors include: visibility, maneuverability, current, wind, sea state, depth, and at night, the presence of background light, such as, from shore lights or from back scatter of the vessel's own lights.

TAKE NOTE

A sailboat under sail power that overtakes a power vessel becomes the "give-way" vessel and is subject to overtaking rules.

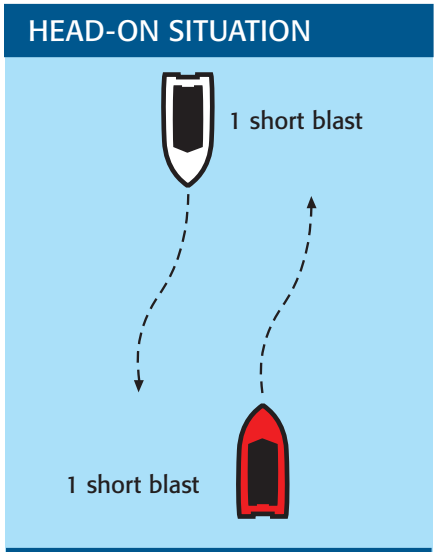
Collision Avoidance

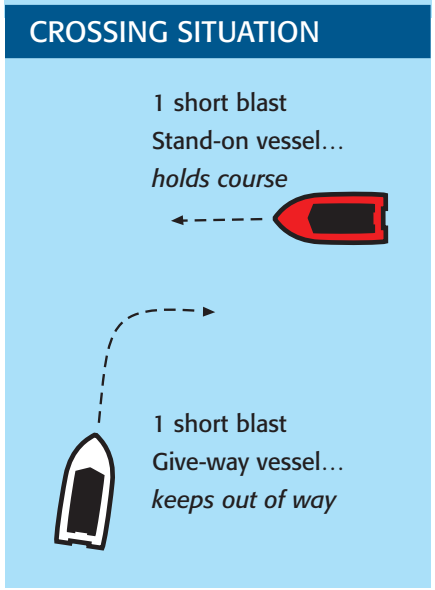
A boater must do whatever possible to avoid a collision. Maintaining a safe speed allows boaters to take proper and effective action to avoid collision. In poor visibility, radar equipment should be used if present and in working order. To avoid immediate dangers of navigation and collision, boaters are allowed to depart from the navigation rules.

Early and significant action should be taken to avoid collisions. Small changes in direction or speed may not be recognized by other boaters and should be avoided. If more time is needed to evaluate the situation, a vessel should slow down, stop or reverse propulsion.

Risk of collision exists if:

- An approaching vessel does not change its course or speed.
- A change of approach is not substantial enough.
- Approaching a very large vessel or tow at close range.



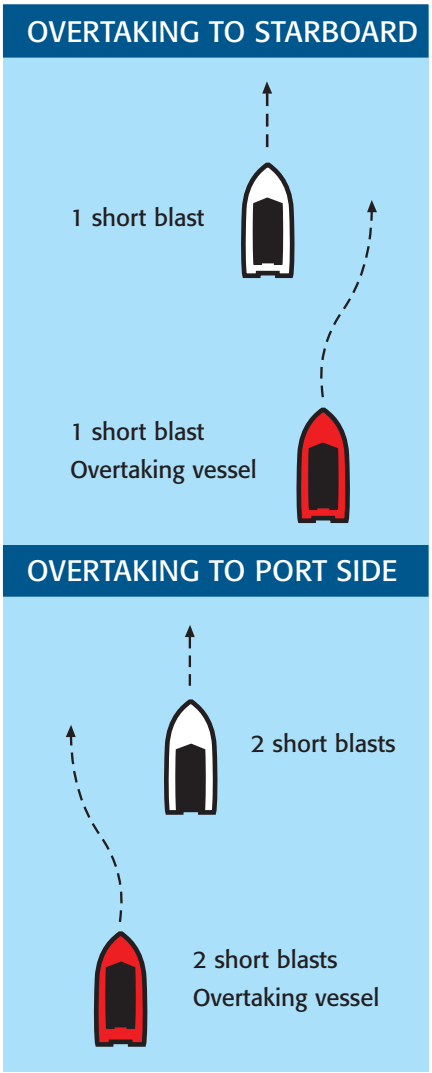


Meeting a Boat Head-On

- Signal your intention to pass port to port by sounding one short (1-second) blast of the horn.
- Signal your intention to pass starboard to starboard by sounding two short (1-second) blasts.
- When using a light signal at night, a 1-second light flash equals a 1-second sound blast.

Crossing Situation at Right Angles

- The boat on the right is the ***stand-on*** vessel—the other boat is the ***give-way*** vessel.
- The stand-on is the privileged vessel and must hold its course and speed.
- The give-way vessel must direct its course to starboard and pass the stand-on vessel astern. If necessary, the give-way vessel should slow, stop or reverse.
- You should ***never*** turn your vessel to port during a crossing situation. Doing so may result in a serious collision.



KNOW AND REMEMBER

On the road, drivers use lane lines and stoplights to stay safe. But boaters don't have lines or stop lights on the water, so they must be extra cautious. And, unlike motor vehicles on the road, boats don't have brakes. On the waterways, it's ***very important*** to follow the "rules of the road."

Overtaking a Boat To Starboard or Port Side

- The stand-on boat (the boat being overtaken) must maintain its course and speed.
- If the give-way boat wishes to overtake and pass on your port side, it must signal with two short (1 second) blasts.
- If the give-way boat wishes to overtake and pass on your starboard side, it must signal with one short (1 second) blast.
- To signal that the course ahead is not safe for passing, the stand-on vessel must signal for danger by sounding five or more short, rapid blasts.
- If you have doubts or there is danger of collision, give five or more short and rapid blasts to signal danger.

Approaching Other Boats

- Normally, powerboats should keep clear of sailboats and paddlecraft.
- Powerboats and sailboats must stay out of the way of vessels not under command and vessels engaged in fishing.
- Sailboats using auxiliary (backup) engines operate under the same rules as powerboats.
- Sailboats should keep out of the way of other sailboats to prevent the risk of collision.
- Sailboats and paddlecraft should not interfere with large vessels, other powerboats or "working" boats such as fishing vessels and dredges.
- Large, deep-draft vessels in narrow channels remain the stand-on vessels because they cannot maneuver easily and may have limited visibility. Avoid large ships by staying out of the way, remaining visible, maintaining a lookout, knowing the signals, anchoring in safe places and using the radio.
- Be especially alert if you are sailing in a deep-water channel or port, because a large ship can "steal your wind."
- Pulling a water skier in a heavy-use area means you need to be extra cautious.

Approaching a Blind Bend

- When your boat is approaching a blind bend, you should signal with one prolonged (4 to 6 seconds) blast.
- An oncoming boat should return the signal.
- Powerboats shall keep to the starboard (right) side of the bend or channel whenever it's safe or practical.

Poor and Restricted Visibility

Poor and restricted visibility may be caused by fog, mist, falling snow, heavy rainstorms, or even blowing sand or smoke. For all vessels not in sight of one another when navigating in or near and area of restricted visibility, the navigation rules require every vessel to slow to a minimum, safe speed according to the conditions present. You should navigate with extreme caution and take action to alter course in ample time to avoid collision. When underway in restricted visibility, you must sound a warning signal at least every two minutes.

- A powerboat should sound one prolonged blast every two minutes.
- A sailboat under sail should sound one prolonged blast, plus two short blasts, every two minutes.

TAKE NOTE

Use common sense, extra caution and boating skill when:

- Visibility is poor because of fog, rain, bright sun or other reasons.
- The operator of the oncoming boat is not following the standard rules of navigation or is operating the vessel recklessly.
- Operating your vessel in heavy-traffic areas.

REVIEW QUESTIONS: NAVIGATIONAL RULES

Define the following terms:

1. Stand-on vessel _____.
2. Give-way vessel _____.
3. Danger signal _____.

Answer the following questions by circling **T** for true or **F** for false.

4. In a head-to-head meeting situation, one short blast indicates your intention to pass port to port . . . . T F
5. When approaching a blind bend or when operating under poor visibility, no special precautions need to be taken . . . . . T F

Turn to page 100 for correct answers.

NAVIGATIONAL AIDS

Like streets and highways, California waterways have navigation signs that direct traffic. These navigation signs are called the U.S. Aids to Navigation System, or ATONs. The U.S. Aids to Navigation System include lateral navigation markers, non-lateral markers and safe water aids.

ATONs Help Boaters:

- Avoid problems
- Travel safely
- Navigate from one place to another
- Locate their positions

Non-Lateral Markers (State)

The Uniform State Waterways Marking System (USWMS) uses regulatory markers and informational aids to navigation mostly on lakes and other inland waterways, but may also be used on federal waters. As shown on this page, informational markers are identified by their white color with orange geometric shapes. These regulatory markers designate:

- **Boat exclusion areas:** A diamond shape with a centered cross designates areas that boats must stay away from, such as swim areas, dams or rapids. Wording may be placed outside the crossed diamond shape.
- **Danger:** An open-faced diamond identifies the nature of the danger, such as rock, wreck or shoal (shallow area). Wording may be posted inside the diamond shape.
- **Controlled area:** A circular shape designates a controlled area, and wording may identify the type of control, such as “5 mph,” “no wake” or “anchoring.” The warning may be placed inside the circle.
- **Information:** A square or a rectangle displays official information, such as directions and locations.
- **A white mooring buoy with a blue band:** The buoy may show a white reflector or light, and is for mooring only.
- **Inland waters obstruction mark:** A white buoy with black vertical stripes indicates an obstruction to navigation. To avoid the obstruction, do not pass between the buoy and the shore.

Buoys can be used to display regulatory markers. They may show a white light and may be lettered.

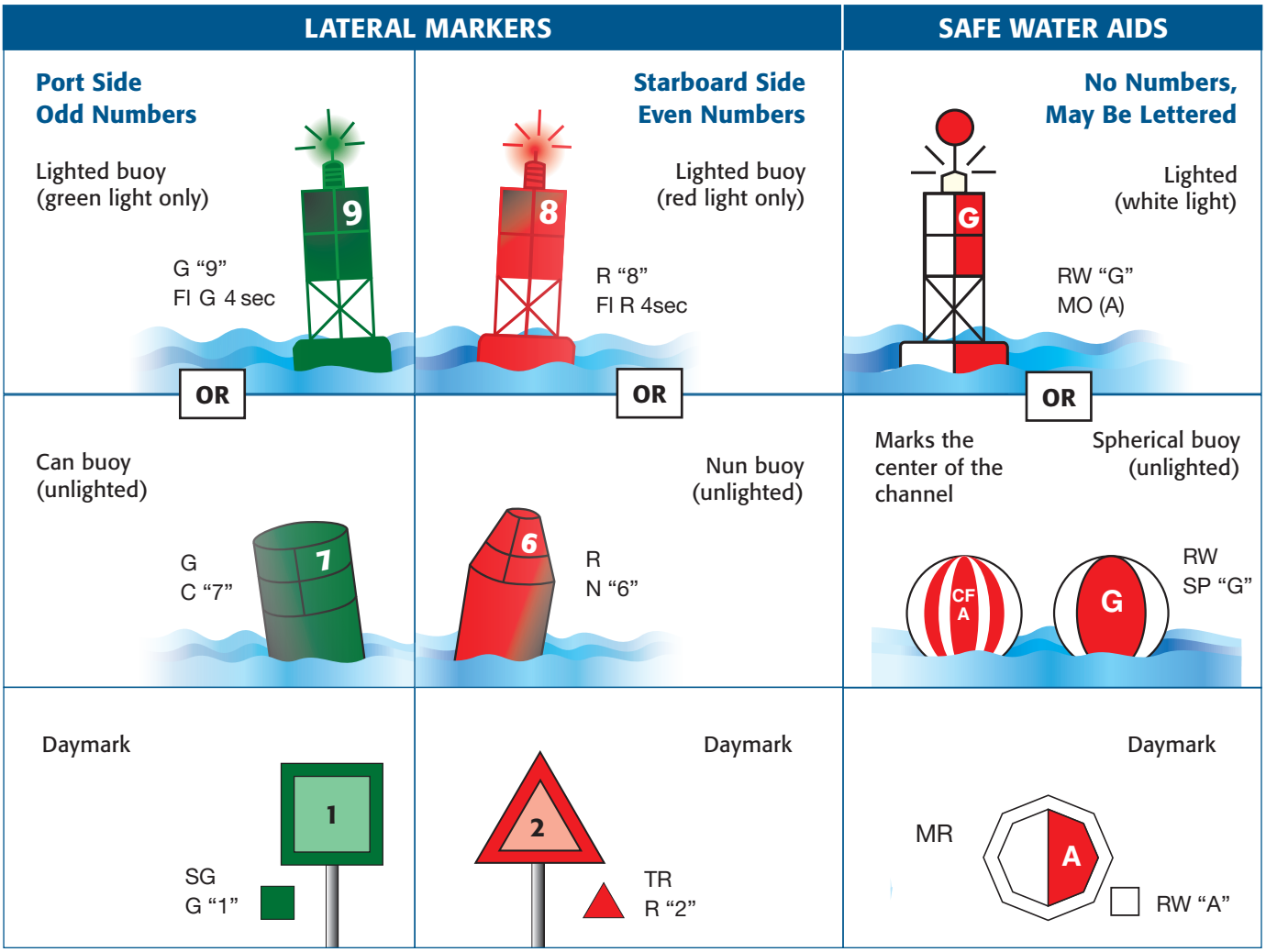
Lateral Markers and Safe Water Aids (Federal)

The lateral markers guide navigation on coastal waterways spanning more than one state.

The marking system includes:

- **Lateral aids** marking the sides of channels that boaters can see when entering from seaward. Port-side markers are green with odd numbers, and starboard-side markers are red with even numbers. They include red and green lighted buoys, red nun and green can buoys, and red and green daymarks.
  - » A green can buoy marks the left side of the channel when you're returning to port.
  - » A red nun buoy marks the right side of the channel when you're returning to port.
- **Safe water aids** mark mid-channels and fairways. These range markers are red and white, exhibit no numbers, but may be lettered. They include white-lighted buoys, spherical-unlighted buoys, and daymarks. Ships line up these markers to stay on course in mid-channel. In recent years, these markers have been equipped with radar reflectors so that large ships can navigate at night.
  - » A red-striped spherical buoy marks the center of the channel.

"Red, Right, Returning" is a saying to help you remember which side of a channel the red and green buoys are found. When you are returning from seaward to a port or harbor, the red buoys should be on your right side. This will ensure that you're in the middle of a designated shipping lane or channel.



REMEMBER

Consider tides and tidal currents when docking or mooring your boat, when traveling through inlets or narrow channels, and when under way.

TAKE NOTE

The local knowledge you get at a marina or bait shop can make your boating trip safer.

WEBSITES

For electronic navigational charts, visit the National Oceanic and Atmospheric Administration (NOAA) website **nauticalcharts.noaa.gov**

U.S. Power Squadrons and the Coast Guard Auxiliary offer courses on aids to navigation.

For information about the U.S. Power Squadrons, the course on aids to navigation or other courses, visit **americasboatingclub.org**

For information on the Coast Guard Auxiliary and their courses, visit **cgaux.org**

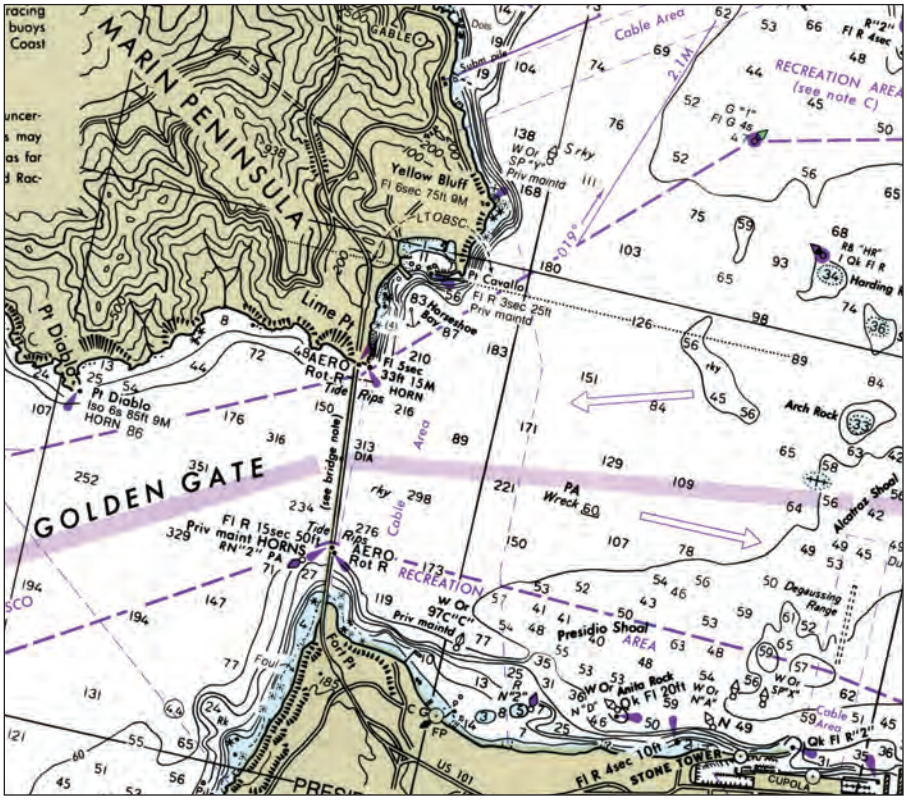
To find out about coastal conditions such as tides and currents, visit **tidesandcurrents.noaa.gov**

Navigational Charts

Navigational charts are available for the California coast, bays, and the Sacramento-San Joaquin Delta (which includes the navigable portions of the Sacramento and San Joaquin rivers). The main purpose of these charts is to mark waterways for deep-draft vessels. These deep-water channels are usually heavy boat traffic areas, and should never be used for anchoring or recreation. Charts show shallow reefs, sandbars, and many other underwater hazards. Boaters can also measure distances they wish to travel by using the distance scale on the chart, or the degrees of latitude on either side of the chart. The rule is one minute of latitude equals one nautical mile, no matter where you are on the earth. You cannot use longitude as an accurate measure of distance, because the scale changes with different locations around the world.

Navigational charts are not available for many lakes and rivers because they are not useful in waterways with extreme changes in water elevation, changes in the shoreline, and areas that may have a lot of floating debris. In these areas, boaters traveling in unknown waters should be extremely cautious and try to learn about any hazards before boating.

In some charted waters, such as the Sacramento-San Joaquin Delta, recreational boaters must be aware of changing waterways, because navigable waters are affected by high volumes of rain, snow melt, and tides. In these areas, floating debris and underwater obstacles can create extreme hazards.



REVIEW QUESTIONS: NAVIGATIONAL AIDS

Answer these questions by circling the letter representing the correct answer.

1. ATONs are:
   a. Games played by sailors out to sea
   b. Knots commonly tied by sailors
   c. Federal rules to guide the operation of a boat on the open ocean
   d. Navigational markers

2. You can moor your boat to a:
   a. Red-striped buoy
   b. Danger sign
   c. White buoy with a blue band
   d. Solid green or red buoys

3. A red nun buoy marks:
   a. The right (starboard) side of the channel
   b. The safe entrance and exit to a channel
   c. The location of submerged debris
   d. One-way traffic

Turn to page 100 for correct answers.

REVIEW QUESTIONS: KNOW YOUR ROAD SIGNS

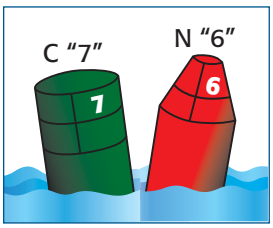
When navigating on the water, you must be able to read the "road signs." For each of the waterway markers below, write what it means:

1.

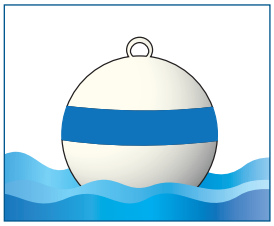
2.

3.

4.



5.



6.

7.

8.

Turn to page 100 for correct answers.

▶ Chapter 3

Vessel Operation

Boating can be unpredictable. Every time you get in a boat, you'll face different weather, new adventures, and new hazards. Many things can make or break your day on the water–tides, winds, currents, how your boat performs, and the way you and other boaters act.

Be prepared and know your boat. This chapter will help you operate your boat safely. It includes specific guidelines for different types of boats, including:

- *Powerboats*
- *Sailboats*
- *Paddlecraft*

The better you become at handling your boat, the better you can handle the unpredictable.

OBJECTIVES

You will learn:

- Basic boat anatomy
- Trailering
- Storage of your boat

General operating guidelines and techniques:

- Fueling
- Docking
- Anchoring
- Maintaining your boat and engine

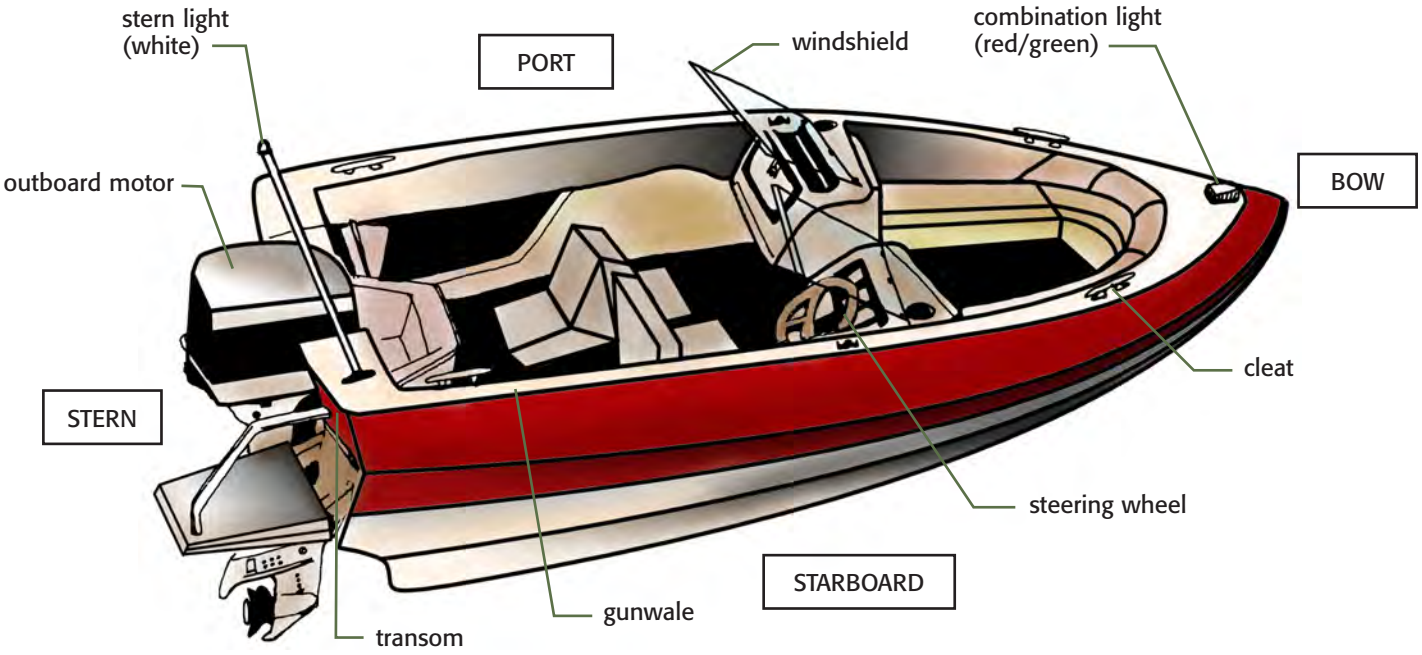
Specific information on:

- Powerboating
- Water Skiing
- Sailing
- Paddling

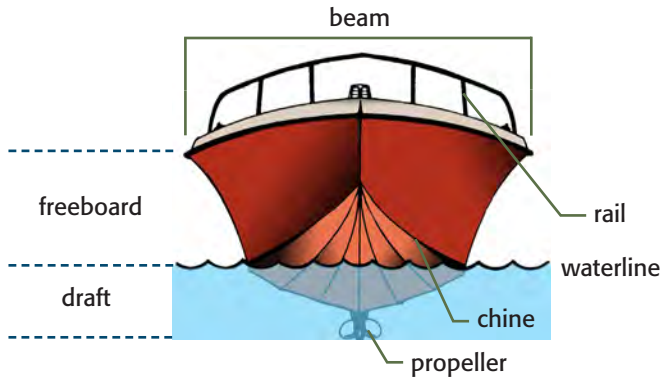
THE ANATOMY OF A BOAT

Some boat parts have familiar names, such as "windshield," while other parts have names unique to boating. To operate a boat safely, it's necessary to learn the names and locations of the parts of a boat, because you will come across them in manuals, in discussions with other boaters, and on navigation signs and charts. If you do not know the definition of any part, look it up in the glossary at the end of the workbook.

Vessel Parts from Side View



Vessel Parts from Front View



TRAILERING AND STORAGE

All trailers owned and operated in the State of California, and used to transport boats of any size, must be registered with the California Department of Motor Vehicles (DMV).

The Boat Must Fit the Trailer

- The length of the boat determines the length of the trailer.
- The beam of the boat determines the width of the trailer.
- Your boat and its contents should not weigh more than 80 percent of the trailer's weight capacity.
- When the boat is placed on the trailer, make sure that the rollers and supports are adjusted to fit the shape of the boat's bottom. And be sure to secure the boat to the trailer.

Trailer equipment

Your trailer should be equipped with the following:

- Brakes (these are optional, mainly for heavier trailers)
- Lights
- Trailer hitch

Brakes for Your Trailer

Usually, small trailers do not have brakes of their own. But larger trailers need special brakes. You have two main choices in braking systems: surge and electric.

- Surge brakes work from the trailer's momentum. When you apply the brakes on your vehicle, the trailer surges ahead slightly and the trailer's hydraulically operated brakes take hold. Trailers equipped with surge brakes also have an emergency release cable that must be attached to the towing vehicle. If for some reason the trailer breaks free of the towing vehicle, the brakes on the trailer will engage.
- Electric brakes go on when you apply the car's brakes. This system works well on the road, but not as well when backing up.

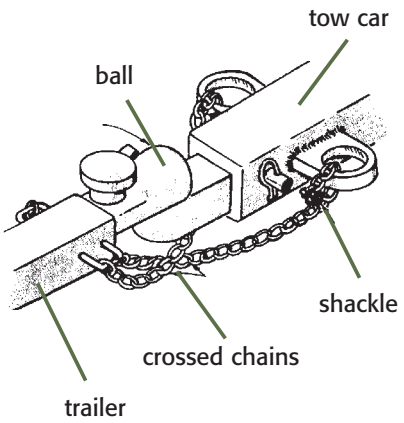
Lights for Your Trailer

In California, your trailer must be equipped with taillights, brake lights, turn signals, and clearance lights. If possible, mount your trailer's lights on a removable board, because water, especially salt water, is hard on trailer lights, and some light fixtures are not waterproof.

WEBSITES

For information about boat and trailer registration, scan the QR code to visit DMV Online Vessel Registration Web page.

TRAILER HITCH



CAUTION

You must disconnect tail lights from the tow vehicle while getting ready to launch. This allows the bulbs to cool down before they are dipped in the water and prevents a short circuit in the vehicle's electrical system.

The Trailer Hitch

A hitch is used to attach the trailer tongue to the ball on the towing vehicle.

- The ball should be bolted or welded to the towing vehicle.
- Special heavy-duty equalizing hitches are necessary for trailer tongue or hitch weights of 350 pounds or more.
- The size of the coupler on the hitch should match the size of the ball exactly. Never use a ball that is too small, because your trailer could separate from the towing vehicle. The weight rating and size in inches should be stamped on the ball.
- The trailer should be equipped with two strong, rust-free, safety chains. ***The chains should be crossed under the hitch/tongue to form an "X"*** when you connect them to the frame of the towing vehicle.
- Use sealed waterproof electrical connections on the trailer. Wire couplings should be high enough to remain dry when on- or off-loading the boat. Never use the trailer hitch for the ground connection. Instead, use four-pole electrical connectors.

The tongue weight on the ball affects the towing vehicle and the trailer.

- No more than 5 to 7 percent of the total tow weight should be on the hitch.
- You can distribute weight properly by adjusting the trailer's wheel carriage either forward or backward.
- If the carriage cannot be adjusted, relocate movable gear in the boat until the trailer is more balanced.

Too much weight on the rear of the vehicle:

- Raises the front end and makes it difficult to control.
- Affects the steering and traction on front-wheel drive vehicles.
- Raises the focus of the head lights, possibly blinding drivers of on-coming vehicles.
- Reduces the driver's field of vision.

Not enough weight on the rear of the vehicle:

- Will cause the trailer to sway or fishtail.
- Increases the chances that the trailer hitch will separate from the ball.

Tips for Safe Trailering

- Driving with a trailer takes special care and requires practice. Skills that take extra practice include backing up, taking corners and judging braking distances.
- Avoid sudden stops. Always allow extra distance between your vehicle and vehicles in front of you.
- Don't brake when the rush of air from a large vehicle pushes the trailer to the side. The trailer will tend to correct itself without braking.
- When traveling below average traffic speed, you should pull over at the first safe opportunity to permit cars to pass. (California law requires drivers to pull over at the first possible safe location when they are holding up **five** or more vehicles.)
- You need more time and distance than usual to overtake and pass another vehicle because the trailer adds weight and reduces acceleration.
- Change lanes smoothly to prevent whipping the trailer.
- Stay in the middle of your lane.
- Take special care when going around corners to avoid making the trailer run over curbs, lamp posts and other objects. The trailer will take the turns in a tighter radius than the towing vehicle.
- Carry a properly inflated, mounted spare tire and wheel. You will also need a lug wrench and jack for changing the tire. Be sure that the lug wrench and jack matches your trailer, because the size of the bolts and the height of the trailer may differ from your car's.
- It is illegal and dangerous to carry passengers on the trailer or boat while towing.

Trailer Maintenance Tips

Water will rust the metal parts of your trailer, causing these parts to get stuck and/or wear away. It is nearly impossible to keep the rims of the trailer's wheels or the bearings out of water when launching. Maintain the bearings by:

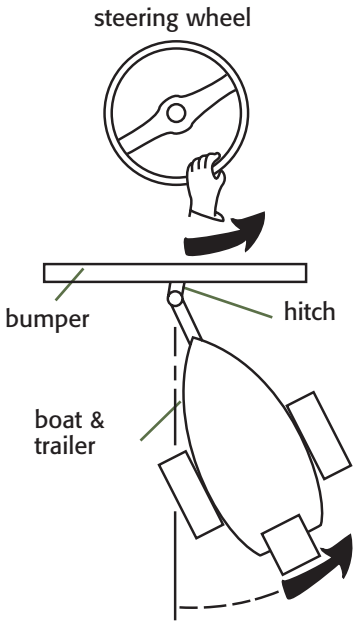
- Keeping the bearings well greased.
- Allowing bearings to cool first if they must be immersed in water.
- Repacking the bearings when necessary or as recommended by the manufacturer.
- Carrying spare bearings, grease and tools for replacing the bearings on extended trips.
- It's also a good idea to maintain the lug nuts on the wheels. You can do this by "exercising" or loosening the bolts, and then oiling them. Be sure to tighten them back up!

TAKE NOTE

Before towing a boat on a trailer, **check to see if:**

- The locking mechanism on the trailer hitch is properly engaged.
- Boat tie-downs are secure and in their proper locations.
- The cable that secures the front of the vessel to the trailer is attached and in good working condition.
- Trailer safety chains are connected in a criss-cross pattern.
- The spare tire is inflated and usable.
- The trailer lights are in working condition.
- The boat is not overloaded with extra gear, which could affect handling of the towing vehicle.

BACKING UP A TRAILER



backing right

Tips for Launching Your Boat

Using a ramp to launch a boat requires practice. An empty parking lot is a good place to practice backing your vehicle with a trailer. Do not practice at a launching area when the parking lot and ramps are busy. To back the trailer into the water, here are some safety tips:

- The trailer turns in the direction opposite to the direction you turn the steering wheel. To adjust for this, ***place your hand on the bottom of the steering wheel.*** Now, when you turn the steering wheel to the right, the trailer will turn to the right. (See at left side.)
- Be comfortable using your sideview mirrors when backing a trailer.
- Learn to guess distances when using the mirrors.

Before backing down the ramp, pull off to one side to let the bearings cool for a short time. While waiting:

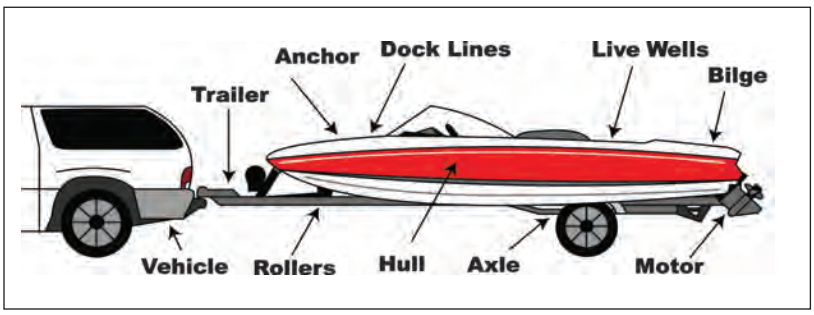
- ***Do not remove the boat from the winch cable at this time.***
- Take off the boat's cover. (It may be necessary to remove the cover before you leave home to reduce wear from wind while driving.)
- Attach a tag line to your boat so that it will not float away when launched.
- ***Put the drain plug in your boat.***
- Check for adequate fuel level.
- Remove the tie downs.
- Unplug the lights.
- Make sure that the boat's lights and horns are in operating condition.
- Make sure that necessary rowing, bailing, and safety equipment are on board.
- Make sure that you have a Coast Guard-approved life jacket on board for every passenger.

Launching your boat:

- Check the ramp to make sure that it's clear.
- Back the vehicle and boat down the ramp until the boat begins to float. If you do not back down the ramp far enough, the boat will be hard to get off the trailer when you are ready to leave. If you back down the ramp too far, the boat will float off the trailer too quickly and may cause damage.
- If the ramp has room for more than one boat, back straight down on one side of the ramp to leave space for other boats.
- Do not start the engine until the boat is in the water, because engines that are supposed to be cooled by circulating water may be damaged.
- Once the boat is off the trailer, you can remove the winch cable.
- Quickly move the boat out of the launching area using the engine or the tag line. Take the vehicle and trailer to the parking area so that the ramp is clear.
- If you must leave the car while on the ramp, set the parking brake and put blocks under the wheels. If you have a manual (stick shift) transmission, turn off the engine and put the car in low or first gear.

Pulling your boat out of the water:

- Back the trailer down the ramp so that the trailer is partially under water and you attach the winch cable to your boat. Pull the boat up using the winch so that the bow of the boat contacts the bow rest. Carefully center the boat on the trailer so that it rests on the cradles evenly, and secure the bow tiedown to the trailer.
- Raise and secure the outboard or inboard/outboard engine.
- Drive up the ramp in low or first gear. If the drive wheels spin, add weight over the drive axle and try again.
- Take the boat to the staging area and remove the drain plug.
- Inspect your boat and remove aquatic plants or animals before you leave the ramp area or take-out point.
- Use your tie downs to secure the boat to the trailer.
- Plug in trailer lights and check to see if they work.
- Check the tongue, hitch, safety chains, and other parts, as you did before.



ALERT

Help prevent the spread of aquatic invasive species that cause a nuisance in California waters. Boats that are not properly cleaned, drained or dried can transport species to a place where they're not native, and can cause problems for native organisms and upset the natural ecosystem. **Remove all aquatic plants and drain water from your boat and trailer when you pull your boat out of the water.** Aquatic invasive species in California include plants such as the:

- Water hyacinth
- Hydrilla
- Egeria densa
- Zebra and quagga mussels
- Amur River clam
- Chinese mitten crab
- European green crab
- New Zealand mud snail

WEBSITE

For more information about aquatic invasive species, visit **dbw.parks.ca.gov/StopQZ**

Storing Your Boat and Trailer

Proper storage prevents rust, mildew, dry rot, damaged wheel bearings and weathered tires. Before storing your boat and trailer for the winter season, check out these tips:

- If you cover your boat with a canvas tarp, prevent mildew and dry rot by allowing air to circulate under the cover. Do not cover your boat before it has dried. Do not use a nylon tarp, because it will trap moisture.
- If your engine has an "open" cooling system, such as an outboard, flush it with fresh water before storage.
- If your engine has a "closed" cooling system, check the level of antifreeze and fill the system if necessary.
- Prevent water from collecting in the gas tank by filling the tank with gas. Add a gasoline stabilizer to prevent gum from forming.
- Follow the manufacturer's instructions for protecting your engine from winter weather. Wipe all metal surfaces with a lightly oiled rag.
- Repack the trailer's bearings if necessary and rinse the trailer with fresh water.
- Remove the drain plug before you store the boat.
- If the trailer will be stored outside, cover the wheels to prevent sunlight from damaging the tires.

Storage in the Water

If you store your boat in the water:

- Put chafing gear on the mooring lines to prevent damage.
- If necessary, adjust the mooring lines for all ranges of the tides and shifting currents.
- Even if you have a bilge pump, cover the boat because, during heavy rains, the pump battery may wear out and the boat may fill with water and sink.
- Do not store your boat where ice can form.

REMEMBER

It is important to check your boat several times throughout the winter, especially after severe storms for trapped moisture and pools of water collecting on the cover.

WEBSITE

For more information about marine security, visit **dbw.parks.ca.gov/MarineSecurity**

Tips to Prevent Theft

- Engrave valuable boating gear with the owner's drivers license number.
- Photograph or videotape the inside and outside of the boat, showing all installed equipment and additional gear carried.
- Keep a written inventory of the boat, trailer and equipment. List all electronics, outboard engines, and other gear by brand name, model and serial number.
- Remove property from the boat after each boating trip.
- Store the boat and trailer out of sight in a garage, storage shed or backyard.
- Secure the boat and trailer to a pole or tree with a strong lock and chain.

REVIEW QUESTIONS: TRAILERING AND LAUNCHING A BOAT

Answer these questions by circling **T** for true or **F** for false.

1. It is necessary to unplug the brake lights from the trailer before you launch your boat. . . . . T F
2. You should always remove the winch cable from the boat before you back down the ramp. . . . . T F
3. Check the boat for safety equipment and fuel level while it is on the ramp. . . . . T F
4. If your boat is registered, you do not need to register the trailer. . . . . T F
5. When trailering a boat, it takes longer to stop and to pass another car. . . . . T F

Turn to page 100 for correct answers.

HOW MANY PASSENGERS?

If the vessel or PWC no longer has a capacity plate, the operator should check the owners' manual and state laws to know how many passengers can safely be loaded onto the craft. The person-capacity of a boat can be calculated by multiplying the boat length by the boat width, and dividing the answer by 15.

$$\text{Capacity} = \frac{\text{Length x Width}}{15}$$

The length of a motorboat is measured from end-to-end along the centerline on the out-side of the hull. The measurement does not include outboard motors, brackets, or other attachments, such as a swimmer's ladder. Boat length and width are measured in feet and fractional answers are rounded **down** to the next number of persons.

QUESTION

If a boat is 16 ft. long and 6 ft. wide, how many passengers can it carry?

Answer: 6

GENERAL RULES: OPERATING A BOAT

To operate a boat safely, the owner and operator should know what the vessel can do, as well as the general rules for operating boats. The first part of this section presents information that applies to many forms of boating. The second part of the section covers more specific information for water skiing, sailing and paddling.

Before Leaving the Dock

Check the predicted weather and water conditions. Avoid boating in heavy winds, lightning storms, hard rain and thick fog. Make sure the predicted conditions match your boating skills and equipment. Take a portable radio with you to receive updated weather forecasts.

Find out about local hazards by talking to marina operators, other boaters and marine law officers. They can keep you from running aground or hitting hidden obstacles.

Pre-Departure Checklist

- ***Check*** to see if the boat's lights and horn work properly.
- ***Check*** all necessary safety equipment.
- ***Check*** that you have a backup power source and bailing equipment. A backup power source may include paddles, oars or a backup engine.
- ***Check*** to see that a Coast Guard-approved life jacket is on board for every passenger.
- ***Check*** to see that all gear is stowed in its proper place.
- ***Check*** the capacity plate for the maximum number of people, maximum weight capacity, and maximum horsepower recommended for the boat. The capacity plate is located near the operator's seat. Make sure you don't put more people or weight on board than it says on the plate. An overloaded boat is difficult to control.
- ***Check*** the overall condition of the boat, including the engine, hull and structure.
- ***Check*** that all passengers know where life jackets and safety equipment are stored. You should show passengers how to use all the equipment.
- ***Check*** to make sure your passengers know what to do in case of an emergency. Show them if they don't know.

Passenger Boarding

- The operator of a boat with an enclosed engine compartment should run the blower for at least four minutes before boarding passengers.
- When boarding a small boat, passengers should step to the middle of the boat and sit down immediately.
- Keep the mooring lines secured to the dock while passengers are climbing aboard the boat.
- If the boat is small, be sure every person sits down, and the gear is stowed so that the boat is balanced.

Finally

- ***Check*** to see that you have enough distance (freeboard) between the waterline and the gunwale. If not, your boat is overloaded.
- ***Check*** the direction of the wind and current.
- ***Check*** the area to make sure it is clear of other traffic. Proceed slowly to reduce the wake and observe wake-free zones (5 mph).

When Under Way

- ***Check*** the lines. Trailing lines in the water can foul the propeller and damage the engine.
- ***Check*** the speed. Always travel at a slow speed (5 mph.) when you're close to swimmers, docks, piers or crowded boat ramp areas, as your wake may cause personal injury or damage.
- ***Check*** navigation rules and signs.
- ***Check*** both sides and aft before turning.
- ***Check*** meters and gauges frequently while underway.
- ***Check*** the weather, winds and tides. A good way to get weather reports is to use a marine band radio. Detailed information can also be obtained by tuning to local radio stations or the National Weather Radio broadcasts on frequencies of 162.400, 162.425, 162.450, 162.475, 162.525, and 162.550 MHz in areas where available or by consulting local news sources.
- ***Check*** charts for the local area for underwater objects, shoals, shipping lanes and other hazards.
- ***Check*** for local hazards such as dams, bridges, power lines, changing tides and low or high seasonal water.
- ***Check*** that everyone is properly seated and that the boat is balanced. It's not safe to have passengers riding on the bow, gunwales or transom of a boat.
- ***Check*** to make sure you reduce your wake. You are responsible for any damage to other boats and property caused by your boat's wake.

BE COURTEOUS

Courtesy is essential for safe boat operation, and a major way to prevent accidents.

Here are some examples:

- Know the nagivation rules and always give way to avoid a collision.
- Limit noise.
- Lower your speed to reduce your wake around others.
- Do not spray other boats, water skiers or bathers with your wake.
- Keep a safe distance from docks, bathers and fishing boats.

WEBSITES

For more information about weather terminology and conditions, visit **dbw.parks.ca.gov/BoatingConditions**

For assistance selecting launch locations in California, see **BoatCalifornia.com**

KNOW YOUR LINES

Mooring lines are used to secure a boat to a dock. These lines should be long enough to allow the boat to rise and fall with the tide or flow of the water, but not so long that the boat strays too far from the dock.

- **Bow line.** The bow line leads forward from the bow to the dock.
- **Stern line.** The stern line leads backward (aft) from the stern to the dock.
- **Spring lines.** The spring lines lead aft from the bow and forward from the stern. You typically use spring lines in rough water conditions.

Reckless or Negligent Operation

California law says no one may operate a boat, water skis, an aquaplane or other vessel in a way that will be dangerous to people and property. Dangerous examples include:

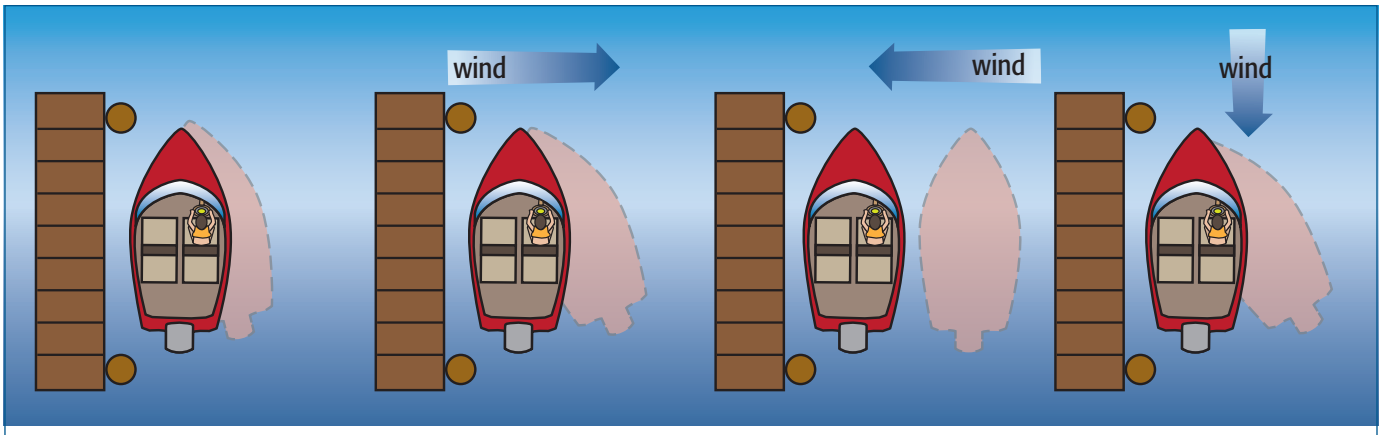
- Riding on the bow, gunwale or transom of a moving vessel when you're not protected by railings.
- Riding your vessel over the towline of another vessel or its skiers.
- Steering your vessel between another towing vessel and the skiers or freight it's towing.
- Boating while under the influence of drugs and/or alcohol.
- Boating too close to swimmers.
- Boating too fast in a crowded area, or in thick fog and heavy storms.
- Speeding in restricted areas, "buzzing" or "wetting down" others, or skiing when or where you're not allowed.
- Teak surfing, body surfing or platform dragging behind a boat.

Docking

- **Check** the current and wind direction, the main factors to consider as you approach the dock, so that you can ease the boat into the dock. It's easiest to land at a dock when you are heading into the current and/or wind.
- **Check** your docking skills. Practice docking to an anchored float in open water. This will help you understand how wind and current affect the handling of your boat. For a temporary low-cost float, use an empty plastic milk jug anchored with a line and small weight.

Tips for Tying Up

- ***Check*** the tide level so you can make allowances when mooring your boat to a stationary pier. If the tide is high, remember to leave enough slack in the lines to adapt to low tide.
- ***Check*** the type of dock you are using. If it is a floating dock, it will rise and fall with the tides and water level. In this case, you should secure your boat tight to the dock.
- ***Check*** and secure the bow, stern and spring lines before leaving the boat.
- ***Check*** the fenders. Make sure they are placed properly between the boat and the dock.



Without wind or current.
Approach the dock slowly at a 10°–20° angle. Have fenders in place and mooring lines ready. If someone is on the dock, have them secure your bow line.

With wind or current from the dock.
Approach the dock at a sharper angle. Secure the bow line and use the motor to guide the stern in.

With wind or current toward the dock.
Approach parallel to the dock and let the wind or current push you to the dock.

Into the wind or current.
Approach the dock in a gradual turn at the slowest speed possible, bring the boat up parallel with the dock and stop with a touch of reverse power. Secure the bow line first.

Tips for Leaving the Dock

If the wind or current is pushing away from the dock, release the lines and shove off. When clear of the dock and other boats, put the engine in forward gear and move ahead slowly.

If the wind is holding the boat to the dock, or if other boats are in the way, you may need to use the bow line to help you depart. Tie one end of the bow line to the boat, run the line around the bollard or piling, and bring the other end aboard. Wrap the end around a cleat once or twice. Turn the helm to carry the stern away from the dock. When the boat is at a right angle to the dock, release the bow line and bring it aboard. Put the engine in reverse, and back away until you are clear of the dock and other boats.

If the wind is blowing from the bow, you should have no problem casting off unless the wind is very strong. If the wind is strong and makes casting off hard, have someone else release the bow and spring lines. Push the bow away from the pier and go forward. When the boat is clear of the dock, release the stern line and bring it aboard. Be careful to keep the stern line from tangling in the propeller.

REVIEW QUESTIONS: GENERAL RULES FOR OPERATING A BOAT

Answer these questions by circling the letter representing the correct answer.

1. Before leaving the dock, the boat operator should:
   a. Check the water and temperature.
   b. Check the safety equipment.
   c. Use all gear as ballast.
   d. Cast the anchor over the bow.

2. To check weather conditions:
   a. Read the newspaper, check the Internet, call the National Weather Service, and/or monitor radio transmissions.
   b. Call the Coast Guard.
   c. Observe the weather in the morning.
   d. It's not necessary if you're not going out on the ocean.

3. A spring line is:
   a. A line made with elastic so the boat can ride up and down on the tide.
   b. A line that can be used in place of a bow or stern line.
   c. A line that is used for the anchor.
   d. A line that leads aft from the bow or forward from the stern.

4. When docking a boat:
   a. Fenders should be attached to the mooring lines.
   b. If possible, land into the wind and current so the boat can ease into the dock.
   c. Keep one foot in the boat and one on the dock to steady the boat.
   d. Tie the lines as tightly as possible so the boat does not drift into another boat or person.

Turn to page 100 for correct answers.

FUELING

Always use extreme caution when fueling a boat. Gasoline vapors are more explosive than dynamite and they're heavier than air. The vapors may sink to the bottom of the boat or collect in the bilge. These vapors may explode when exposed to a spark or open flame.

Safe Fueling Tips For Fire Prevention

- Always remove portable tanks from the boat for refueling.
- Shut off motors that can make a spark or generate heat.
- Turn off electrical equipment and liquid propane tanks.
- Close all ports, hatches, and openings before fueling. This prevents vapors from seeping into the boat and settling in the bilge.
- Try to fuel before night. If you need a light to refuel, use a flashlight or a spark-proof light.
- Never smoke while fueling or when you're close to a fuel dock.
- ***When fueling, place the fuel nozzle in contact with the fill pipe or tank.*** This prevents a buildup of static electricity which could produce a spark.
- Maintain the contact between the fuel nozzle and the fill pipe or tank until fueling is completed.
- Always use an oil absorbent, fuel donut or fuel bib around the deck filler (available at some marinas and marine supply stores) to catch spills and overflow. Be sure to properly dispose of fuel-soaked absorbents as hazardous waste at your County Household Hazardous Waste Collection Center.
- Before starting the engine, you must draw or force gasoline vapors out of low pockets in the bilge. Open all doors, windows, ports and hatches. If you use fans to circulate the air in the cabins and bilges, use only explosion-proof fans with spark-proof switches. To clear the air in the bilge properly, turn on the power blower for ***at least four minutes.***
- Check all fuel lines and connections for leaks. Sniff around gas lines, motor, and bilges. Do not start the motor until the vapors are gone.
- Prevent water pollution by being careful with oil and fuel near the water. Even a small amount spilled into the water can pollute a large area. If a spill occurs, do not apply detergents or soaps, it is illegal!

A HELPFUL HINT

Your nose is the best tool for finding gasoline vapors and preventing an explosion. Every time **before** you start your engine, operate your blower for at least four minutes, and then smell for fumes.

WEBSITE

For more information about clean and safe fueling, visit **BoatingCleanAndGreen.com**

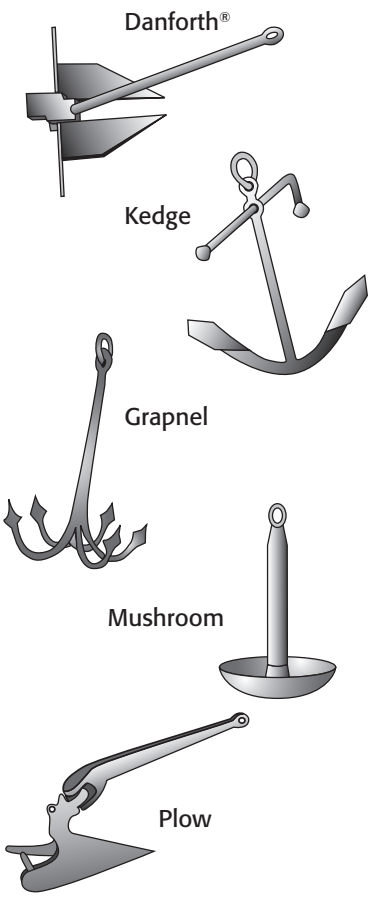
REMEMBER

Discharging any oily water, oil, or petroleum product into the water is against state and federal law. You are responsible for cleanup costs and correcting any environmental damage caused by your fuel spill, under the California Oil Spill Prevention and Response Act of 1990.

Prevent Fueling Spills

- Think in terms of preventing even a drop of fuel from going into the water, especially when fueling at a fuel dock or along the shoreline.
- Avoid overfilling—fill the tank slowly to avoid a spill. Fuel the boat at the start of trips and only to 90% of tank capacity. Remember fuel expands as it heats. If you leave your boat with a full tank on the water your boat may vent fuel overboard. It's best to fill the tank away from the water.
- Never leave a gas hose unattended while refueling. Remember, the automatic shutoff on the gas nozzle may not work.
- Be sure that all fuel system fittings are tight and not leaking.
- Don't drain oil into the bilge.
- Recycle used oil through your marina, community oil recycling center, or at an automobile oil change business. Visit earth911.org for recycling centers near you.

ANCHORS



ANCHORING

Using the appropriate anchor and anchoring techniques such as kedging will prevent collisions, grounding, and drifting. Keep the anchor and its lines in an easy to reach place on your boat.

Types of Anchors

The type of anchor you need depends on where you're anchoring your boat.

- Danforth® anchors work best in clay, sand and mud.
- Kedge anchors are the best type to use in weeds or grass.
- Grapnel anchors work best on a rocky bottom.
- Mushroom anchors give a temporary hold in sand or firm mud.
- Plow anchors dig in to a hard or gravel bottom.
- An anchor rode is a line, cable and/or chain. The chain helps keep the anchor parallel to the bottom so it can "dig in." Any vertical movement of the boat from wave action is "absorbed" by the line and chain, leaving the anchor intact.
- Nylon makes a good anchor line because it stretches and acts like a shock absorber during strong current, wind or wave action.

When You Anchor

- Select a protected spot. Try to find a spot where obstacles or debris on the bottom will not snag the anchor or rode.
- Head the boat into the wind or current. For an overnight stay, lower your anchor upwind from where you want the boat to be positioned.

- Back the engine so that the boat is moving astern very slowly. Then put the engine in neutral.
- Keep the engine running. If the engine is not running, you will lose control of the boat, and you may run aground or collide with a dock or other boats.
- Lower the anchor over the bow. **Never throw it.**
- Do not tie your anchor line to the stern. This could cause your boat to swamp or capsize.
- As the anchor lowers, let out (or pay out) line.
- Make sure your foot or other objects on deck do not get caught in the line as it is paying out.
- For secure anchoring, the scope of the anchor line should be at least seven to one—that means the line will be seven to ten times as long as the distance from the boat's bow to the bottom of the water.
- Cleat or tie off the rode.
- Check the boat's swing to make sure the boat will not go aground or hit something if the current changes or the wind shifts.
- Inform passengers of safe anchoring procedures in the event of an emergency.

While You Are Anchored

The anchor is set when the boat turns into the wind and the anchor line stops paying out or jerking. Once enough line has payed out, remember to cleat or tie off the rode. For safety:

- ***Check*** to see if the anchor is holding, not dragging. The line will bounce if the anchor is dragging.
- ***Check*** your position by noting several landmarks.
- ***Check*** your anchor. Never anchor from the boat's side or stern. A strong current, a heavy sea or the wake from another boat may sink your boat.
- ***Check*** your position often, especially since tides, wind and weather can change constantly.
- Never anchor in a deep water channel between red and green buoys that mark the heavily traveled areas or channels used by large ships.
- Never anchor directly below a dam, because the hydraulic currents created by the rising or falling water can be hazardous.
- Never anchor directly above a dam. A sudden release of water from a hydroelectric power plant can suck the boat over the dam.
- Warning markers, such as a boom or buoys, often indicate restricted zones for traffic and anchoring. Check your charts for these restricted zones.
- If you have to leave the anchor, tie a floating marker to the line so you can locate it later.

REMEMBER

Careful boaters always have an extra line, chain and anchor along, just in case!

Emergency Anchoring

Use of an anchor can help in emergency situations.

- If the boat engine fails, set the anchor immediately to avoid running aground.
- If drifting into shallow waters or other boats, set the anchor.
- If bad weather, rough waters or currents are blowing you ashore, set the anchor.

Kedging

- Practice kedging before it is needed by using a long line and light anchor.
- Use kedging to move a sailboat out of dead calm, by hauling on a line attached to a kedge anchor, a sea anchor or a fixed object, such as a bollard.
- Use kedging to haul a small boat that has run aground, for example, from a sandbank.

Weighing Anchor

- Head the boat toward the anchor.
- Go ahead slowly using the engine while you retrieve the line.
- When the boat is over the anchor, stop the boat—but not the engine—and lift the anchor.
- Carefully stow the anchor and line so it will be ready for the next use.
- **Never** pull up the anchor without starting the engine first.

If the anchor does not come free, try the following in calm water, avoiding wave action from your vessel's stern:

- Tie the anchor line to a cleat and go forward slowly.
- If the anchor still does not come free, circle slowly and try to loosen the anchor. Be careful to keep the line from wrapping around the propeller.
- Try to free the anchor from several different angles—and don't give up easily. The chain or the anchor may be hung up. Don't put the boat or passengers in danger.

Common Mistakes

- Letting the anchor go without securing the line to the boat—***oops, lost the anchor!***
- Letting the anchor go with the anchor line wrapped around gear or the foot of a passenger—***oops, lost the passenger or the gear!***
- Poor communication between the boat operator and the person setting the anchor—***oops, dropped the anchor at the wrong time!***

KNOW YOUR KNOTS

You should learn six basic knots useful for many kinds of boating:

- The cleating hitch is used when docking. It goes around the cleat in a figure eight and then again with one loop reversed.
- The bowline, handiest of the knots, is probably the most difficult of the six. It is used when an eye (or loop) is needed. The bowline will not slip or jam and is easy to untie, even after the knot has been under a lot of stress.
- The sheet bend is good for tying two lines together, especially if they are of different widths or textures.
- The anchor bend is used to fasten a line to a ring or anchor. It is also called a fisherman's knot. Seize the free end to the standing end for extra security.
- The clove hitch is simply two loops with an end tucked under. This knot is used to temporarily secure a boat to a piling or similar structure. To secure the boat for longer periods, use two half hitches to lock the clove hitch.
- The figure eight knot is used mostly as a stopping knot. Place it at the end of a line to keep it from running through a block, jam cleat or other opening. The figure eight can be used temporarily to keep a line from unraveling.

MAINTAINING YOUR BOAT AND ENGINE

Maintain your boat and engine so you'll be safe. Your boat and engine will also last longer so you'll have more fun on the water.

- Check the inside and outside of the hull when your boat is out of the water.
- Check thru-hull fittings for signs of leakage or corrosion, as part of an annual maintenance program.
- If you have an aluminum hull, sand the white rust spots with fine sand paper until the metal is shiny again.
- If you have a fiberglass hull, use gentle soap to remove oil and algae. Fix holes with fiberglass patch compound.
- Avoid using toxic cleaners and paints on your boat. Chemical products should only be used on your boat when it is out of and away from the water. These products must be kept out of the water and disposed of properly.
- Hang canoes upside down.
- Keep lines and ropes clean and out of the sun when you're not using them. Dirt, sand and sun wears them down. Replace old ropes.
- Sew or tape torn and frayed sails.
- Follow the maintenance schedules found in the boat owner's manual.
- Keep the engine tuned and the battery charged.

KNOTS

Cleating hitch

Bowline

Sheet bend

Anchor bend

Clove hitch

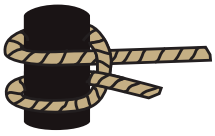


Figure eight

TAKE NOTE

Since 2006, general purpose gasoline may include up to 10% ethanol, known as E10. Use of ethanol fuels in equipment not designed for these fuel types can result in equipment malfunction. Always follow the boat or engine operating manual to maintain optimal and safe performance.

MAINTAINING YOUR BOAT AND ENGINE (CONT.)

- Check the oil and fluid levels before each trip.
- Change the oil regularly. Older engines need oil changes more often.
- Keep the battery connections clean, tight and corrosion free, by disconnecting terminals and removing corrosion with a wire brush.
- Keep the engine clean. Oil and grease buildup can soak up moisture and short out your electrical system.
- Check belts, bolts, hoses, nuts and screws for proper fit. Tighten, repair or replace bad parts.

REVIEW QUESTIONS: FUELING, DOCKING, ANCHORING, KNOTS AND MAINTENANCE

Answer these questions by circling **T** for true or **F** for false.

1. If you have a ventilation system, it is not necessary to close all ports, hatches and openings before refueling . . . . . T F
2. An anchor rode is a shelf that holds the anchor while the boat is underway . . . . . T F
3. Never anchor within a restricted zone near a dam . . . . . T F
4. Never anchor from the boat's side or stern . . . . . T F
5. When you are ready to leave, head the boat away from the anchor . . . . . T F
6. The bowline is a handy knot that is easy to untie . . . . . T F
7. Your boat will last longer if you maintain it . . . . . T F
8. You should check oil and fluid levels once each season . . . . . T F
9. You don't have to worry about oil and grease buildup on an engine . . . . . T F

Turn to page 100 for correct answers.

POWERBOATING

Powerboats have many different types and uses, with a variety of engines and hull designs. See page 48 for general boat anatomy.

Powerboats come in classes, determined by length, and each class has its own set of rules and regulations for trailering and required safety equipment. More than half the recreational powerboats in California are less than 16 feet long. The four classes common to recreational boating are:

1. Less than 16 feet.
2. 16 feet to less than 26 feet.
3. 26 feet to less than 40 feet.
4. 40 feet to no longer than 65 feet.

Types of Engines

Powerboats can be propelled by outboard, inboard, stern-drive (also known as inboard/outboard) or jet drive motors. An outboard motor clamps directly to the transom or can be mounted using special brackets. Outboard motors range in size from 2 to 275 horse-power. Outboard engines run on either gasoline or battery power.

Inboard engines are much like automobile engines, using either gasoline or diesel fuel. These engines are usually mounted in the middle of the boat (amidships) and are connected to the propeller by long shafts.

Similar to inboard motors, stern driven engines are like automobile engines. They fit into the hull, and connect to a drive unit attached to the outside of the transom. The drive unit, called the lower unit or outdrive, is like the lower half of an outboard motor.

Jet drive engines consist of a pump that draws water into a housing where it shoots out at high pressure through a steerable nozzle. This jet of water propels the boat. Most personal watercraft use jet drive engines. You'll find details about personal watercraft in Chapter 4.

Propeller Safety

A propeller is used to move a powerboat through the water (except for personal watercraft jet drive systems). Propellers can inflict severe, devastating injuries that result in death, loss of extremities, severe permanent deformity, disfigurement and/or disability. Every year people who recreate on and around boats are struck by the propeller of their boat or another boat. Even propellers in neutral or at rest can cause serious injuries.

Like carbon monoxide poisoning, the propeller is unseen and is extremely dangerous. It will be too late to avoid an accident once a person is caught in the pull or churn of the propeller blades. Boat operators can avoid injuries and death by informing their passengers of unsafe activities around the propeller, the proper use of safety equipment and by wearing an engine cut-off switch.

TAKE NOTE

Inflatables are a special type of boat. Some inflatable boats have a rigid hull. They are very stable and can carry significantly larger loads than traditional boats of a similar size. They are frequently used as dinghies or sport boats, and may be towed astern, hoisted by davits, stored on deck, or deflated and stored in a locker. They may be powered by outboard motors or oars. Inflatables use several air chambers to prevent disaster if one chamber is punctured.

CAUTION

The greatest risk of serious injury to a person in the water near a motorboat is being struck by a moving propeller.

Engine cut-off switch (ECOS) photo courtesy of the National Safe Boating Council

TAKE NOTE

A typical three-blade propeller running at 3,200 rpm can inflict 160 impacts in one second. A typical recreational propeller can travel from head to tow on an average person in less than one-tenth of a second. Most propeller accidents can be prevented!

Engine Cut-Off Switches (ECOS) were developed to help avoid propeller and runaway vessels in personal watercraft (PWC). In 2021, the U.S. Coast Guard announced a new federal law requiring the use of ECOS on recreational vessels less than 26 feet in length over 3 horsepower and equipped with an ECOS and the ECOS Link (ECOSL) to be worn by the operator.

There are two exemptions for ECOS wear: if either the main helm of the vessel is installed within an enclosed cabin, or if the vessel does not have an engine cut-off switch and is not required to have one. (Generally, boats built prior to 2020)

Lanyard and wireless ECOS devices disengage the motor and prevent runaway vessels, collisions and propeller injuries. Using the ECOSL is required only when the vessel is operating on plane or above displacement speed. As of 2021, California boating law requires ECOS for PWCs only.

⚠ WARNING

Rotating propeller may cause serious injury or death.

Do not approach or use ladder when engine is running.

What a boat operator can do to prevent propeller accidents:

- Install/maintain propeller warning labels around back of the boat.
- Establish routine and prevention strategies for safely starting the motor: Check for people in the water near the boat, never start a boat with the engine in gear, never board or disembark when the engine is on or idling, be aware of congested areas and designated swimming zones.
- Wear the engine cut-off switch to shut off the motor if you unexpectedly move away from the controls or fall overboard.
- Assign a responsible adult to always report a head count to the operator before starting the motor, and educate passengers about propeller safety.
- When retrieving a person from the water (man overboard), turn the bow of the boat toward the person to keep the propeller away from that person.
- To move the boat alongside a person in the water, as you approach, take the engine out of gear and turn off the engine at least a boat length before reaching the person in the water. Never reverse the boat to pick someone up out of the water. Go around again.
- After the motor is off, throw a line or float to the person to pull them to the boat.
- Never operate the boat under the influence of alcohol or drugs.

Propeller safety equipment

A variety of safety devices are available to help prevent propeller strikes. Review all options to determine which preventive measures are best for your boat:

- Lanyard or wireless engine cut-off switches
- Propeller guards
- Ringed propellers
- Propulsion alternatives
- Interlocks
- Sensors
- Anti-feedback steering

Passenger education to prevent propeller accidents

As the operator of your boat, it is your responsibility to properly inform your passengers about propeller dangers and how to avoid injury:

- Call attention to the location of the propeller(s), discuss the dangers associated with them and point out the propeller warning labels on the boat.
- Establish clear rules for swim platform use, boarding ladders and seating.
- Assign a passenger to keep watch around the propeller area of your boat when people are in the water and each time you are ready to start the motor.

Cooling Systems

Most engines use "open" cooling systems. The engine draws water in, circulates it to cool the engine, and empties the water through the exhaust system or through a small opening above the water line. If the intake is clogged with debris, or the water pump fails, you will not see a stream of water coming from the opening while the engine is being used.

Some inboard and stern drives operate with a "fresh water" cooling system. This is a closed system that works like the cooling system in an automobile. A heat exchanger cools the water, working like a car's radiator. This cooling system can reduce corrosion when the boat operates in salt water.

Hull Designs

Powerboats have two kinds of hulls—displacement or planing hulls. Powerboats with displacement hulls move through the water, and require more power to push through the water. Powerboats with planing hulls skim over the water and travel at higher speeds. Planing hulls work best when boats operate on calm or flat water. All hulls are displacement hulls when boats run at low speeds.

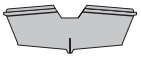
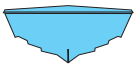
Powerboats also have five types of hull designs. The following chart outlines advantages and disadvantages of each design:

CAUTION

Be careful of debris in the water. If you clog the cooling water intake, the engine will overheat. You should check cooling systems that empty the water into the exhaust if you accidentally drive the boat through weeds or kelp. To clear the intake, run the engine in reverse gear when in clear water.

Personal watercraft and other jet-drive engines clog easily when you operate them in shallow water.

Prevent internal engine corrosion by flushing out the cooling system with fresh water after you operate your boat in salt water.

TYPES OF HULLS	ADVANTAGES	DISADVANTAGES	EXAMPLES
Flat bottom	shallow draft plane easily	excessive pounding at high speeds	jon boats, small utility boats, racing runabouts
Round bottom	move easily through water at slow speeds	somewhat unstable	sailboats, canoes, some trawlers
Vee 	smooth ride in choppy water	require more power to move at same speeds as flat bottom	some small utility boats and runabouts
Deep vee 	smoother ride in choppy water	require even more power than vee hulls	most runabouts cruisers and ships
Multi-hull	provide great stability in most conditions	some multi-hull boats have reduced maneuverability	catamarans, trimarans and houseboats

DID YOU KNOW?

You can receive a free, vessel safety check without risk or obligation. Specially trained members of the Coast Guard Auxiliary and U.S. Power Squadrons provide this service for recreational boats.

TAKE NOTE

When weather reports indicate the possibility of thunderstorms, be on the lookout for the formation of cumulus clouds growing larger—the first indicator of an approaching storm.

WEBSITE

For more information about courtesy vessel examinations, visit: **www.safetyseal.net**

Choose your boat carefully

You should select a boat by how you plan to use it. For example, a flat-bottomed boat is not safe on the ocean, and boats with a deep vee hull will have difficulty navigating in shallow water. Choose a boat according to:

- The intended boating activities or special purposes.
- The bodies of water where you'll operate the boat.
- Your skill level.

Powerboats come in many types. Utility or jon boats are widely used for fishing and hunting in protected waters. Runabouts are commonly used for fishing, water skiing and cruising. Cruisers offer more room and special features, such as cuddy cabins, berths, heads and galleys. Personal watercraft (PWC) are for recreation or light duty.

Before leaving the dock, start the engine while you review your pre-departure checklist of your boat and its safety gear. This will give the engine time to warm up.

- ***Check*** the weather reports. Look for any threatening clouds such as thunderheads or approaching fronts.
- ***Check*** the boat, engine and fuel lines for leaks.
- ***Check*** the battery, motor and propeller to make sure they work properly.
- ***Check*** the fire extinguishers, ventilation system and other safety equipment to make sure all of them are working properly.
- ***Check*** the oil and fuel levels. Plan on using no more than one-third of the fuel to reach your destination. To be safe, use one-third of the fuel going out, one-third to return and keep one-third as a reserve.
- ***Check*** the first aid kit and all safety equipment including life jackets, and engine cut-off switch (ECOS).
- ***Check*** the anchor and line.
- ***Check*** the radio to make sure it's working.
- ***Check*** for your backup power source (oars, paddles, or a motor) and bailing equipment.
- ***Check*** that your float plan is filed with the local marina and a friend or relative. Remember to notify them when you return.

If the trip is taking you offshore or to a remote region:

- Take along tools and spare engine parts. Useful tools include wrenches, screwdrivers, duct tape, a hammer and vise grips. Spare parts include spark plugs, a fuel pump, fuel filter for diesel engines, lubricant, sheer pins and drive belts.
- Have a back-up VHF radio and/or a cellular phone.
- Bring foul-weather clothing and survival suits in cold-water regions.

LEARN TO MAKE EMERGENCY REPAIRS	
Problem	**Possible Solution**
Broken drive belt	You can temporarily use a small line, like a bathing suit drawstring or a pair of pantyhose, in place of the broken belt. Tie the ends together tightly around the pulleys with a square knot.
Broken pipe or hose	Wrap the break with duct tape.
Engine failure	Check the portable fuel tank for vapor lock. Check to see if seaweed, rope, or fishing line has fouled the propeller or if the drive pin has been sheared.
Engine oil leak	Catch the oil in a pan and pour it back into the engine.

While Underway

- ***Check*** to make sure passengers are not riding on the bow or gunwales.
- ***Check*** the posted speed signs—move slowly when near the shore or crowded areas.
- ***Check*** crowded areas for collision hazards, especially in fog or storms.
- ***Check*** for and obey "no wake" signs. You may have to pay for damage caused by your wake.
- ***Check*** for any posted local laws or regulations.
- ***Check*** for wood, plastic bags, seaweed or anything else that may foul the propeller or jet pump.

In smaller boats, passengers should not stand up or move around. If a passenger must move to another seat, make sure that:

- The skipper is informed of passenger movement.
- The passenger holds onto the gunwales.
- The passengers keeps their centers of gravity as low as possible.
- The other passengers or gear are moved to counter-balance the shift in weight.

TAKE NOTE

A Practical Guide to Gauging the Distance

When you don't see speed limit signs, operate the boat so that it will not endanger others. Speed is limited to 5 mph within 200 feet of a beach with bathers…a swimming or diving platform…or a landing or dock where boats are tied up or which passengers are using…or 100 feet of bathers in the water.

- ▶ A distance of 200 feet is two-thirds the length of a football field.
- ▶ A distance of 100 feet is one-third of a football field.

TAKE NOTE

Fishing line can entangle and kill wildlife, and cause boat damage. It is **not** biodegradable and can remain in the environment for many years.

One solution to this problem is to properly discard used line at recycling locations provided through the California State Parks Division of Boating and Waterways and the California Coastal Commission's Boating Clean and Green program.

Anglers may also mail used fishing line to: Berkley Recycling Collection Center at
1900 18th Street, Spirit Lake,
Iowa 51360-1099.

WEBSITE

A list of fishing line recycling stations is available at **dbw.parks.ca.gov/FishingLine** or scan QR code for Boating Clean and Green tips.

Hunting and Angling

People who hunt or fish from boats are also considered boaters. Too often, hunters and fishers give little thought to their safety and equipment required for their boats. Their lack of boating preparation can end in tragedy. If you hunt or fish from a boat, you must remember to obey federal and California boating laws and follow safe boating rules.

Precautions and responsibilities of hunters and anglers:

- When using a boat as a sporting platform, give special thought to proper loading and balance of the boat.
- Obey the weight and passenger restrictions listed on the capacity plate.
- Be aware that small boats can easily capsize or be swamped.
- Avoid standing and keep the boat balanced when passengers move about. Keep weight low and distribute gear evenly in the boat.
- Wear a Coast Guard-approved life jacket at all times when on the water. Life jacket styles include camouflage vests, fishing vests and float coats.
- Wear and use your engine cut-off switch (ECOS) lanyard or wireless link (ECOSL).
- Dress in several layers under your life jacket because cold water can kill.
- Recycle or throw away empty shell casings or old fishing line. Do not litter the water or shoreline with your discards as they are harmful to wildlife.
- Remain seated when shooting or casting.
- Bring and display your licenses, tags and permits as required.
- Transport unloaded firearms with the safety on and in a gun case while under way.

REVIEW QUESTIONS: POWERBOATING

Answer these questions by circling the letter representing the correct answer.

1. If the boat engine overheats:
   a. Don't worry—engines on small boats run hot.
   b. Change the coolant from an open to a closed system.
   c. Check the cooling water intake to make sure it is free of debris.
   d. Enrich the fuel mixture.

2. To avoid a propeller injury when retrieving a person in the water, the operator should:
   a. Point the bow away from the person.
   b. Pull up slowly to the person from behind.
   c. Shift the motor into reverse and back slowly towards the person.
   d. Upon approaching the person in the water, turn the bow towards the person.

3. To make sure you have enough fuel to return from your trip:
   a. Drift with the wind and currents whenever possible.
   b. Monitor your fuel level: allow one-third to go out, one-third to return and keep one-third in reserve.
   c. Carry two extra gallons of gasoline in safety-approved gasoline cans.
   d. Thin the fuel mixture to make sure it lasts longer.

4. When fishing or hunting from a boat, you:
   a. Are also a boater and must follow the same rules as other boaters.
   b. Have different operating rules than boaters.
   c. Can ignore boating rules if you catch your fish or game.
   d. Must display a fish and game flag while hunting or fishing.

Turn to page 100 for correct answers.

WATER SKIING

Water skiing, a popular sport for powerboat owners, requires extra precautions. Ski boat operators must travel at high speeds and make tight turns, frequent stops and sudden starts. And skiers are always in the water. At the very least, a water ski team must consist of a boat operator, an observer and a skier.

People enjoying other activities while being towed by a boat must follow the same rules and guidelines for water skiing. Some of these activities include wakeboarding, knee boarding and tubing.

Equipment

- ***Check*** to see that any person being towed behind the vessel is wearing a Coast Guard-approved life jacket appropriate for the intended use stated on the label. Exceptions: the law does not apply to performers engaged in professional exhibitions, official regattas, marine parades, or tournaments. Any person engaged in slalom skiing on a marked course, or barefoot, jump, or trick water skiing, may instead wear a wetsuit designed for the activity and labeled by the manufacturer as a water ski wetsuit. A Coast Guard-approved life jacket appropriate for the intended use stated on the label must still be carried on board for each skier choosing to wear a wetsuit.

  Note: Inflatable life jackets are not approved for use while water skiing.

- ***Check*** to see if a ski flag is on board. The flag must be orange or red and at least 12 inches square or rectangular. You must use this flag to warn other boats about gear or skiers in the water.

Safety Rules

- ***Check*** to see that at least three people are present when water skiing—the boat operator, the observer and the skier.
- ***Check*** to see that you are water skiing at legal times. Remember, water skiing is not allowed from sunset to sunrise.
- ***Check*** to see that water skiers know the correct hand signals (the preferred form of communication between skier and observer.)
- ***Check*** to see that the boat operator is at least 16 years old, if unsupervised.
- ***Check*** to see that the observer is at least 12 years old.
- ***Check*** that the ski area is not crowded.

Towline Safety

Water skis and aquaplanes must not be operated in a manner to endanger the safety of people or property. Passing the towline over another vessel or skier and towing a skier or navigating between a vessel and its tow are prohibited. Towing a skier does not give the vessel operator any special privileges. You must observe the rules of the road.

Team Guidelines

Each member of a water ski team—the boat operator, observer and skier—has an important role to play:

Boat Operator

- Practices caution to make sure the skier, tow rope and other equipment is well away from the boat's propeller.
- Looks well ahead for other boats, skiers, the shoreline and other obstructions.
- Gets information from the observer.
- Operates the ski boat in a counter-clockwise direction, unless forbidden by local law.
- Avoids making sharp turns in designated traffic areas.

Observer

- Clearly signals the skier's activity to the boat operator.
- Raises the signal flag when equipment, such as the ski rope or skis, is in the water.
- Raises the signal flag when the skier is down in the water for any reason.

Skier

- Knows and uses hand signals to communicate with the observer.
- Watches for floating debris, other boats, and other obstructions.
- Raises skis perpendicular in the water to indicate to other boats that a skier has fallen.
- Does not spray swimmers or boats with boat wake or ski spray.
- Does not ski in shallow water or dry land at a dock or beach.

CAUTION

If the weather or water is cold, water skiers should wear wet suits under their life jackets. A wet suit also provides padding for protection from falls.

IF A WATER SKIER FALLS:

- ▶ 1,000 feet in front of a ship sailing at 10 mph, the skier has one minute to get out of the way.
- ▶ 500 feet in front of a ship sailing at 10 mph, the skier has 30 seconds to get out of the way.

QUESTION

A water skier falls 1,000 ft. in front of a boat cruising at 20 mph. If the crusing boat doesn't see the fallen skier or the raised ski flag, the skier could get hit. How many seconds does the skier have to get out of the way?

Answer: 30 seconds

REVIEW QUESTIONS: WATER SKIING

1. It is against the law to water ski: (choose one)
   a. When you are in open water
   b. Between sunset and sunrise
   c. When no other water skiers are around
   d. When you are 12 years or older

Answer this question by circling **T** for true or **F** for false.

2. Unless otherwise posted, the standard direction to drive a ski boat is counter-clockwise . . . . . T F

Turn to page 100 for correct answers.

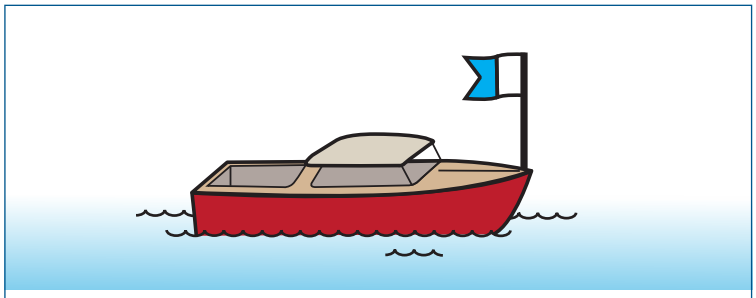
CAUTION

If you see either diving flag, stay at least 100 feet away from the diving site and vessel.

DIVING

Alpha Flag

Whenever the size of a vessel engaged in diving operations during daytime hours makes it impracticable to exhibit the daytime shapes required of a vessel restricted in its ability to maneuver, a rigid replica of the international blue-and-white code flag (Alpha) is required to be displayed. The flag must measure not less than 1 meter (3 ft. 3 in.) in height and must be visible all round the horizon.



Required for use by vessels engaged in diving operations and restricted in their ability to maneuver.

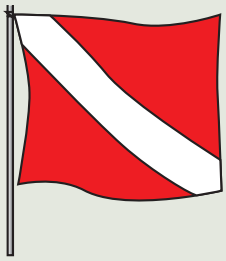
For boats tending free-swimming divers where the diving does not interfere with the maneuverability of the boat, the alpha flag is not required and they may display the "divers down" flag.

Divers Down Flag

State law recognizes that a red flag with a white diagonal stripe—commonly called the divers down flag—indicates a person engaged in diving in the immediate area. Displaying the divers down flag is not required by law and does not in itself restrict the use of the water. When operating in an area where this flag is displayed, boaters should exercise caution.

TAKE NOTE

A red flag with a white diagonal stripe is generally flown on a small float or vessel when divers are in the water. It warns other boats to "stay clear."



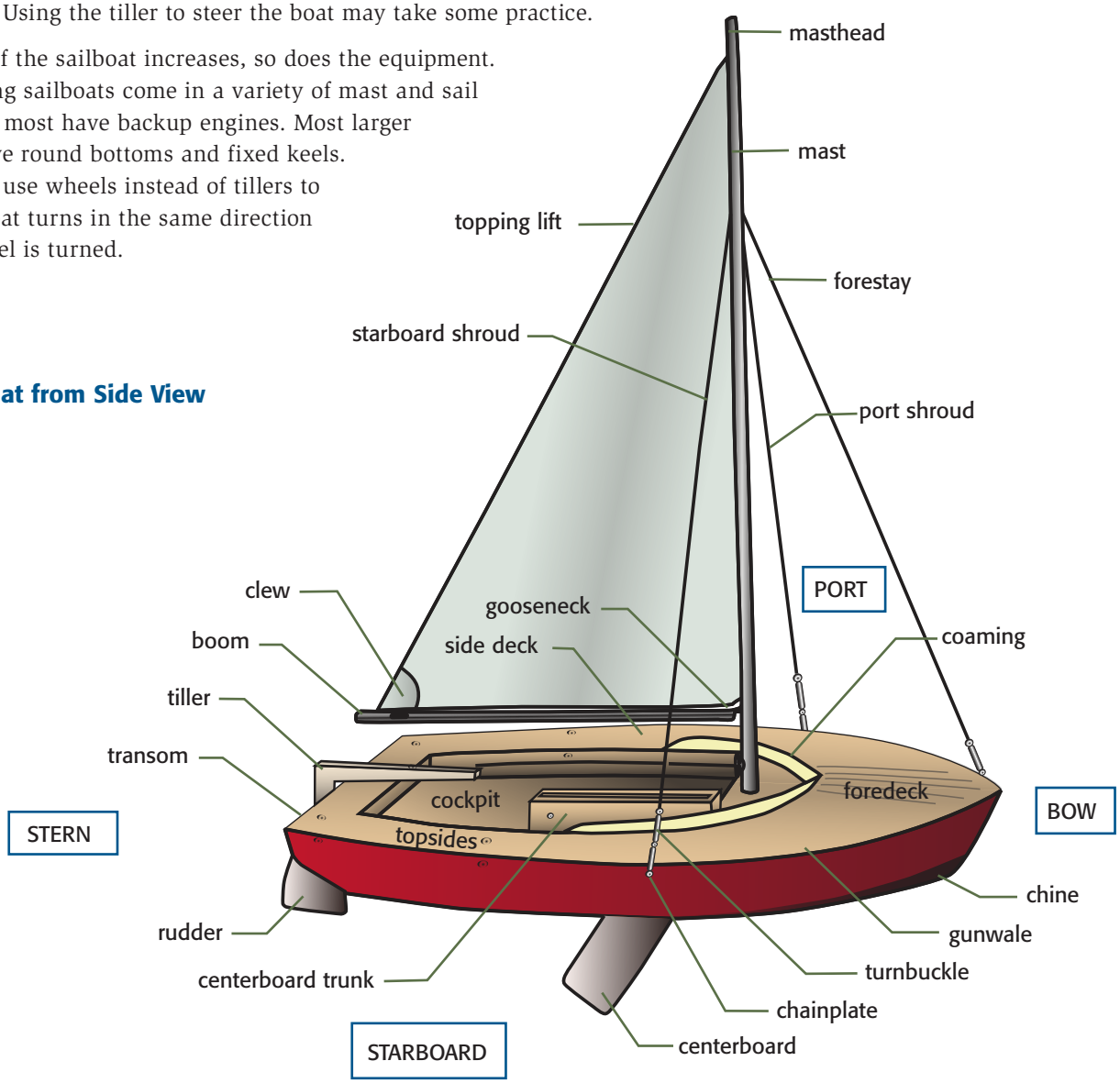
SAILING

Sailboats come in a variety of sizes and designs and have four basic parts: the hull, sails, centerboard or keel, and rudder. The hull is designed to carry the crew, support the mast and rigging, and to move the boat through the water easily. The sails provide the power. The centerboard and the keel help keep the boat stable, so it won't get pushed sideways by the wind. The rudder steers the boat.

Smaller sailboats, commonly called day sailors, usually have flat bottoms or vee-shaped hulls. On a smaller sailboat, the rudder is mounted on brackets at the stern. The rudder has a wooden or metal bar called a tiller that is used for steering. When the tiller is turned one way, the boat moves in the opposite direction. For example, if you push the tiller to starboard the boat will turn to port. Using the tiller to steer the boat may take some practice.

As the size of the sailboat increases, so does the equipment. Large cruising sailboats come in a variety of mast and sail designs, and most have backup engines. Most larger sailboats have round bottoms and fixed keels. Larger boats use wheels instead of tillers to steer. The boat turns in the same direction that the wheel is turned.

Sailboat from Side View



TAKE NOTE

When a sailboat uses a backup engine, it is considered a powerboat and must observe the rules of navigation and operational guidelines for powerboats.

If the sailboat has an engine

- Check the backup engine, making sure the motor, fuel lines and propeller are in operating condition.
- Operators must have a California Boater Card.

Capsizing

- See page 108 for sailing specific rescue and accident prevention techniques.

WEBSITE

For additional sailing navigation rules check with your local chapter of US Sailing or American Sailing Association, at: **www.USSailing.org**, or **www.ASA.com**

Navigation Rules for Sailboats

When two sailing vessels are approaching one another, one of them shall keep out of the way of the other so as to avoid the risk of collision, as follows:

- When each has the wind on a different side, the vessel with the wind on the port side shall keep out of the way of the other.
- When both have the wind on the same side, the vessel that is to windward shall keep out of the way of the vessel that is to leeward.
- If a vessel with the wind on the port side sees a vessel to windward and cannot determine with certainty whether the other vessel has the wind on the port or the starboard side, she shall keep out of the way of the other.

The windward side shall be deemed to be the side opposite to that on which the mainsail is carried or, in the case of a square-rigged vessel, the side opposite to that on which the largest fore-and-aft sail is carried.

Note: International sailing rules are the same as those above.

Before Leaving the Dock

- ***Check*** out your skills by taking sailing lessons or sailing with someone who is experienced.
- ***Check*** to see if passengers are wearing properly fitted, Coast Guard-approved life jackets. Under California state law, children under the age of 13 must wear a Coast Guard-approved life jacket when underway, unless they are restrained by a harness tethered to the sailboat or are in an enclosed cabin.
- ***Check*** your clothing. Wear clothing in layers. Wear protective clothing, such as wind breakers, and deck shoes that provide traction on wet surfaces.
- ***Check*** the radio or cellular phone to make sure it's working.
- ***Check*** your protective equipment. Wear UV-rated sunglasses and apply sun block to exposed skin.
- ***Check*** the weather conditions.
- ***Check*** the safety equipment. Be sure you have a fire extinguisher aboard and that it's working. Check to see if you have rowing equipment in case of a power loss.
- ***Check*** the sails and rigging for rips, tears or damaged clews.

REVIEW QUESTIONS: SAILING

Answer these questions by circling **T** for true or **F** for false.

1. You push a tiller in the opposite direction from the direction you want to go . . . . . T F
2. It is not necessary to wear a life jacket on larger sailboats because they almost never sink . . . . . T F
3. All sailboats have backup engines. . . . . T F

Turn to page 100 for correct answers.

PADDLING

Paddlecraft—including canoes, rafts, kayaks, stand up paddleboards and utility boats—are each used in a different manner and in different waterways. Flatwater paddling includes lakes, bays, and low current rivers with few obstructions. Whitewater paddling includes faster flowing rivers with turbulent water and steep terrain. California coastal paddling can include the surf zone with its own set of safety hazards. Like any sport, paddling education is key to safety and mastery. Hands-on beginning paddlecraft courses are available throughout California and are recommended before launching out on your own.

FLATWATER PADDLING IN A UTILITY BOAT, CANOE OR KAYAK

Utility boats are usually used in harbors to travel between a moored boat and the shore. These boats must meet all safety requirements. Canoes and kayaks also are often paddled on flatwater among other marine traffic. You should know that it may be difficult for other boats to see and avoid paddlecraft. If you find yourself in a utility boat, canoe or kayak before taking a safe boating lesson, remember these basic safety points:

- **Always** wear a properly fitted life jacket and avoid alcohol use. Be prepared to enter the water, know how to swim and self rescue in river/current. Nothing says "amateur" like a paddler without a life jacket.
- If you paddle any paddlecraft at night, you must carry a flashlight and warn other boats of your presence to avoid a collision.
- Standing up or moving about in a canoe or kayak greatly increases the chance of capsizing. Keep your center of gravity low.
- Maintain three points of contact while moving around in a canoe or utility boat. (As you move a foot to step forward, you should be holding onto the boat with **both** hands, then with both feet down, move one hand at a time, etc.)
- Load the boat properly: keep the weight centered both from side to side and bow to stern. The lower and the closer the load in the boat is to the boat's centerline, generally the more stable the boat will be, assuming there is adequate freeboard. Stay within the limits of the boat's capacity rating on the capacity plate if one is present.
- Kneeling is the most stable position for canoe paddlers.
- Keep your shoulders inside the boat's gunwales. When retrieving something from the water, reach with your paddle or guide the boat close to the object so you can grab the item from the water without leaning your shoulders over the gunwale.
- **Never** paddle alone. There is safety in numbers.
- Avoid extreme conditions including weather, distance from shore, water conditions, current beyond your skill level.

Utility boat

Canoe

Kayak

WEBSITE

Visit **dbw.parks.ca.gov/AquaticCenters** or scan the QR code on this page for a list of facilities in your area offering on-the-water paddling courses.

TAKE NOTE

Stand up paddleboarders are required to follow the Navigation Rules and:

- Carry or wear a Coast Guard-approved life jacket (life jackets must be worn by paddleboarders under the age of 13).
- Carry an efficient sound signaling device such as a loud whistle.
- Use a white navigation light such as a strong flashlight when paddleboarding between sunset and sunrise and during times of restricted visibility.

WEBSITE

For AquaSmart paddle safety videos on whitewater, flatwater, ocean and SUP, scan the QR code below."

Visit **dbw.ca.gov/Paddling**

Navigation Rules

Like power and sailing vessels, paddlecraft must observe the "rules of the road," with regard to observing water traffic, obeying buoys and signs. It is important that paddlers keep a sharp lookout, cross channels with care and always wear a life jacket. If you are paddling a canoe, kayak or stand up paddleboard, be visible, courteous and try not to get in the way of faster, larger vessels such as power and sailboats.

STAND UP PADDLEBOARDING

Stand up paddleboarding, or SUP as it is more commonly known, came to California from Polynesian roots and Hawaii's surf culture. The sport has exploded in popularity beyond surfers who adopted stand up paddleboarding in order to catch waves. The longer, wider paddleboards are now used by growing numbers of boating enthusiasts on California lakes, rivers and miles of coastal waters. Paddleboarding diversity includes racing, fishing, touring, and as a platform for on-the-water cardio workouts and yoga exercises. With so much interest and so many new paddlers merging on the water with other, larger boats, it is important to know how to be safe while enjoying California's waterways.

Because of this extensive growth of SUPs on many waterways, the United States Coast Guard responded to safety concerns and classified the paddleboards as vessels in 2008. The new classification uniformly addressed personal and navigational safety on the water. In California, this new classification means that stand up paddleboarders are required to follow the Navigation Rules.

Paddleboard Safety

Before going on the water, check that the paddleboard is free of cracks and leaks and that the fin and fin screw are secure. Also make sure the leash and leash string are in good condition and tethered to the paddleboard. The deck should have a non-skid pad or wax to keep the operator from slipping. If the paddleboard has a vent plug, it must be secured in place prior to launch.

Personal Safety

Like other vessels, the stand up paddleboard must carry a Coast Guard-approved life jacket in serviceable condition and of a type and size appropriate for the conditions and the activity being engaged in. The life jacket must be worn or readily available on the paddleboard. All paddleboarders and passengers under 13 years of age are required to wear a life jacket.

The inherently low profile of the paddleboards, especially when the operator is lying down or kneeling, can be a visibility problem for other boaters. The operator must keep a sharp lookout for other vessels at all times. Operators must always have a whistle or loud sound signal device, and a white light, such as a head-mounted flashlight between sunset and sunrise. Other items for personal safety include appropriate clothing: wicking, non-cotton fabric, or a wet suit/dry suit, and foot protection.

Before paddleboarding, be sure to drink plenty of water to stay hydrated. Sunglasses with a leash, sun screen, and a hat are good protection against the sun. Additional equipment depending on the conditions include: paddleboard leash, helmet and protective gear for swift water use, a dry suit, booties and gloves for extremely cold conditions and a dry bag with charts, basic first aid supplies and a tow line for emergencies. A spare, take-apart paddle may also be appropriate depending on conditions and water body.

Personal fitness, swimming ability and a basic knowledge of boat handling all help promote a safe stand up paddleboarding experience. Classes are available at aquatic centers, the American Canoe Association and from paddleboarding suppliers.

REMEMBER

Paddleboarding with a buddy is helpful for emergencies such as falling off the paddleboard or when an accident has occurred. Know what rescue signals to use with a buddy or to hail other boaters.

Water and Weather Safety

Stand up paddleboarders, like other boaters, should know the body of water including hazards, currents, rules, and water quality before going out. Always check out river releases or tide conditions as well as local traffic on the water in order to be prepared.

Always check the predicted weather and water conditions. Avoid paddleboarding in heavy winds, lightning storms, hard rain and thick fog. Make sure the predicted conditions match your skills and equipment.

Stand up paddleboard

Navigation Rules of the Road

Stand up paddleboarders must follow the Navigation Rules in channels and open water. Paddleboarding navigation in swim and surf zones generally follow surf etiquette.

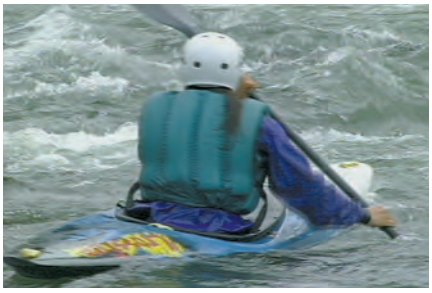
- **Crowded waterway –** Keep a visual and be sure to have a clear path before crossing a channel. Maintain course and speed when crossing and take the shortest path across. Stay visible and aware around blind corners or approaching a channel or fairway**.** Travel with flow of traffic or hug the shoreline.
- **Swim zone – launching and returning –** Kneel or lie down on the paddleboard when departing and returning from a dock or beach. Stand only when in water that is at least waist deep and away from obstacles.
- **Surf zone etiquette** – Always paddle 90 degrees angle to waves. Paddle standing, kneeling or lying down. Never paddle out directly in front of, or behind, another paddler, surfer or swimmer. Paddle out towards the peak of the wave—away from the anticipated direction of surfers catching the wave. When riding a wave, the paddleboarder (surfer) nearest the peak has the right of way.

Stand Up Paddleboard Rescue

Depending on the body of water, weather conditions and the availability of help from a buddy, stand up paddleboard rescues are made differently.

- **Calm water rescue alone and with buddy** – Don't leave the paddleboard and swim to shore. Don't try to swim with the paddle. After falling off the paddleboard, return to the board first, then recover the paddle.
- **River current rescue with a buddy (never paddle alone in whitewater)** – In whitewater, never wear a leash around your ankle. Either attach the leash to a quick release system on your life jacket or don't wear one at all. When dumped into the water hold onto your paddle, swim aggressively back to your board and mount it as soon as possible. If you are unable to pull yourself on the board, angle it toward calm water or the shore if the shore is a safe option. Never try to stand up in current. If swimming without board and paddle, angle the body away from rocks, strainers and debris. Swim towards safety.
- **Surf zone rescue alone and with buddy –** Always protect the head when surfacing. A downed paddleboarder in a surf zone should never position the board between him/herself and the oncoming waves. Don't try to swim with the paddle. Get on the paddleboard first then recover the paddle. Do not wrap the paddleboard leash around the hands or try to hold the paddleboard from the leash connections.
- **Wind and weather rescue alone and with buddy –** In bad weather or choppy water, always paddle on knees or lie down and hand paddle. A tow line or leash may be used to rescue another stand up paddleboarder.

Whitewater raft



Whitewater kayak

WHITEWATER CLASS SYSTEM

Whitewater rapids are classified by six degrees of difficulty:

- Class I: Easy
- Class II: Novice
- Class III: Intermediate
- Class IV: Advanced
- Class V: Expert
- Class VI: Extreme

See Appendix C on page 123 for a detailed description of the whitewater class system.

WHITEWATER PADDLING

Whether you paddle a kayak, canoe, or raft on a river, you must know about river hydrology (the way the water moves) **before** you put in. It is important to know about currents, eddies, holes, and other river features in order to paddle safely. It's best to hire a professional guide, or take classes on river running and safety, before you take your own river trip. California has world-class rivers, but you can enjoy them safely only after instruction.

River Features

- A rapid is a section of turbulent water. Rapids usually run through steep terrain, which increases the water's speed. Rapids can vary a lot in length and severity.
- An eddy is a current that tends to flow upstream, usually found downstream of an obstruction in the main current. An eddy creates a calm spot in the river that paddlers can use to rest, regroup, scout and pull out of the main current.
- The terms "hole," "reversal," "keeper" and "hydraulic" all describe the same river feature. This is where the river current pours over an obstruction or dam and the water reverses, causing a revolving current that can trap boats and people. You should avoid these "holes."
- A "strainer" is an obstacle the current flows through.

BASIC RIVER RUNNING TACTICS

1. **Before you go**, know the level of difficulty of the river, and the landmarks of the take-out point.

2. **Launch the craft** into the current facing upstream. Stern person gets in first while bow person holds craft against the current. Before heading downstream, become familiar with the craft and how it handles, and "warm up" with some basic maneuvers in calm water.

3. **Avoid fallen trees**, brush, and bridge abutments. Even in slow water, these hazards can be deadly. When approaching obstructions, plan well in advance. Portage may be necessary (carrying boat around obstacle). Use a backstroke in large waves to crest the wave gently and avoid swamping.

4. **Your craft may "wrap"** around an obstacle sideways. Know how to "highside" to prevent a "wrap." To avoid being trapped, you can climb on top of the obstacle or your boat or abandon the boat and swim.

5. **Capsized?** Stay at the upstream end of the craft to avoid being caught between it and any obstruction. Keep your paddle if possible, but don't take chances saving equipment. If it improves your safety, leave the craft and swim to the nearest eddy.

6. **Avoid waterfalls**, low dams, and dangerous rapids. A flat horizon line in the river may indicate a waterfall or low dam. Portage all of these areas.

Downstream V

8. **Downstream V** with large stationary waves indicates gaps between rocks.

Upstream V

7. **The point of the up-stream V** indicates rocks.

9. **To avoid being swept** into a rock or other hazards on a curve, position the craft sideways to the current. Paddle strongly through the curve close to the shore opposite the hazard.

Take-Out

10. **Don't miss your take-out point.** Head for shore, turn into current and forward ferry to shore. Boater in stern should be last out of the craft while bow person holds craft against the current.

LEGEND

BOW — STERN

LOW WATER COURSE

NORMAL WATER COURSE

HIGH WATER COURSE

REMEMBER

- Never boat alone. Make sure at least one experienced person is along.
- Drink plenty of water, not alcohol or other diuretics like caffeinated sodas or coffee that can make you urinate.
- Never wear baggy clothes, which tend to get caught on things.
- Never wear cotton, which holds water and makes you cold.
- Never tie yourself or others into the craft.

General Safety Guidelines for Whitewater Paddling

If you are a beginner, always go with a guide or experienced leader who is familiar with the river.

Before You Put In

- ***Check*** weather and river conditions. Consult the radio, newspaper, Internet or local authorities.
- ***Check*** that you boat with one or more partners to make your trip safer. For a whitewater run, you should have at least three boats in a party to be safe.
- ***Check*** the boat or raft to make sure it is made well with strong materials.
- ***Check*** the river course. Be familiar with the river's features before starting out, or hire a river guide who knows the run, its classification and its special hazards.
- ***Check*** to make sure everyone is wearing a properly fitted, Coast Guard-approved life jacket. Attach a whistle to each one.
- ***Check*** to make sure you know how to "Eskimo roll," or escape for self-rescue, if you're using a kayak or closed-deck canoe.
- **Check** to make sure you have a realistic view of your boating skills. Good river skills take time and practice to learn. Overconfidence or overestimating your ability can quickly get you into trouble.
- ***Check*** your float plan. Be sure it lists the correct put-in and take-out locations. Give your float plan to a friend or relative, and let him or her know when you have returned.

At The Put-In

- ***Check*** the equipment. Secure all ropes and other gear so they do not get in the way of paddling. Securing ropes and gear is also important so that they will not get tangled in brush or trees, or entangle a swimmer if the boat overturns.
- ***Check*** to see if you have—and know how to use—safety gear such as throw bags.
- ***Check*** to see if you have a first aid kit, extra clothing, drinking water and high-energy snacks.
- ***Check*** to make sure everyone on the water knows basic verbal and hand signals. These commands include paddle commands, signals for hazards, emergencies, course direction and for general communication. (See page 109.)

WEBSITE

To check for river flows for many California rivers, visit **dbw.parks.ca.gov/RiverFlow**

- ***Check*** that all passengers know what to do if the boat capsizes or "flips." This means knowing swimmer's position, keeping to the upstream side of the boat, keeping track of people and gear, righting the boat and re-entering the boat.
- ***Check*** to see that you have recommended equipment such as a repair kit, bailing device, river maps, a flashlight, a compass, a knife, and a pump.

SWIMMER'S POSITION

While Under Way

- ***Check*** any section of the river you're unfamiliar with, or that you can't see from the boat. Go to the shore and scout rapids you are not familiar with. If the rapid is too much of a challenge, carry the boat (portage) around the obstacles.
- ***Check*** the terrain along the river and river banks. Beware of and avoid strainers such as overhanging trees, log jams, brush piles, and other obstacles in moving currents.
- ***Check*** to make sure you are aware of the effect of cold water, air temperature and wind on your body temperature. Cold water shock is a constant hazard on the river.

CHECK OUT YOUR EQUIPMENT

Each crew member should wear:

- A Coast Guard-approved life jacket in serviceable condition and of a type and size appropriate for the conditions and the activity.
- A properly fitted helmet.
- Booties, sandals with a heel strap or shoes that will not come off easily.
- Nylon, synthetic or wool clothing because they do not hold water.
- A wet or dry suit for cold weather or water conditions.
- Sunglasses with a leash, sunscreen and a signaling whistle. Do not apply sunscreen to your forehead where it can drip into your eyes, or to the back of your legs because it can cause you to slip out of the raft.

Scouting

- Pull over to the side of the river a safe distance upstream of the rapid or obstruction that you want to scout.
- Keep your life jacket and helmet on to protect yourself if you slip and fall into the river or onto rocks.
- Carry a throw bag with you. You may need it if a group member falls into the water or you may need it to help other boaters.
- Look at the rapid and mentally chart the best course. Remember where the eddies or safe parts of the river are in case you take an unexpected path through the rapid. Consider actions you would take if you stray from the best course.
- Everyone in the group should be comfortable telling the others that they want to portage around a rapid that is beyond their skill level. The rest of the group should respect the individual's decision.
- At especially difficult rapids, station rescuers downstream with boats and throw lines to prepare for unscheduled swims.

Returning to Shore

- ***Check*** the surrounding area at put-in and take-out points so that you don't leave any equipment or other items behind. Carry out what you carried in. Leave the wilderness cleaner than you found it.
- ***Check*** that you are extra careful when entering or exiting the water. Slippery rocks or underwater objects can often cause leg or ankle injuries.

REVIEW QUESTIONS: PADDLING

Answer these questions by circling **T** for true or **F** for false.

1. Whitewater paddling is a basic skill that requires no previous experience or instruction . . . . . T F
2. You should get out of your boat and scout unfamiliar rapids from the shore . . . . . T F
3. A class V river is a good choice for beginners. . . . . T F
4. Make sure to wear baggy clothes for whitewater paddling . . . . . T F
5. River flows generally remain constant throughout the day . . . . . T F
6. A strainer is a significant hazard on the river. . . . . T F
7. Eddies are dangerous obstacles in a river, and you should avoid them . . . . . T F
8. If you fall into a river, you should get into swimmer's position, floating on your back with your toes up and your feet pointed downstream.. . . . . T F

Turn to page 100 for correct answers..

▶ Chapter 4

Personal Watercraft

Personal watercraft (PWCs) go by many names–water bikes, wet bikes, thrill craft, Jet Skis–and they all mean fun. You see them everywhere these days. They're fast, powerful and fairly easy to operate.

But PWCs are also involved in many boating accidents and injuries. Operators often go too fast, don't pay attention and don't have much experience. You'll have fun on a PWC when you treat it like a boat–with skill and respect. This chapter will show you how to prevent accidents, be aware of hazards, and use courtesy and common sense.

OBJECTIVES

You will learn:

- Legal PWC operating requirements
- PWC operating guidelines
- PWC and personal safety
- Navigational rules and aids
- Accident prevention and rescue
- Other important features of operating PWC

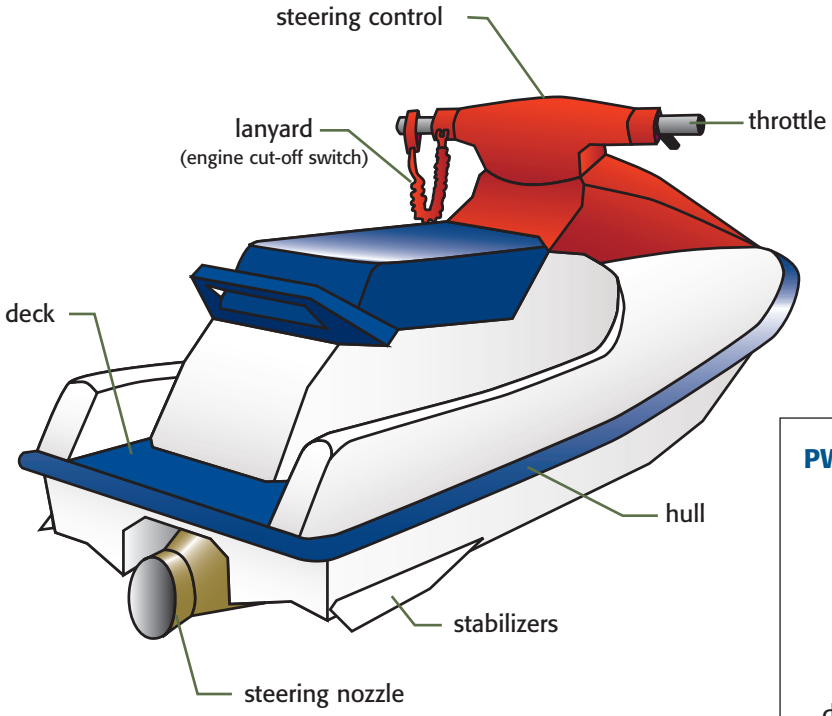
ANATOMY OF A PERSONAL WATERCRAFT

Personal watercraft, or PWC, are small jet-driven powerboats 13 feet in length or less. The pumps draw water into the housing, through something called the impeller, which compresses the water and forces it through the steerable nozzle, pushing the boat forward—see picture on page 94. (PWCs are often called "Jet Skis," which is a trademark of Kawasaki Motors Corp., USA.) Personal watercraft come in three main styles: stand-up, sit-down sport class (one or two people), and sit-down for three to four people. The stand-up style carries only one person, who stands while operating the vessel, while the sit-down style has seats for one to four people.

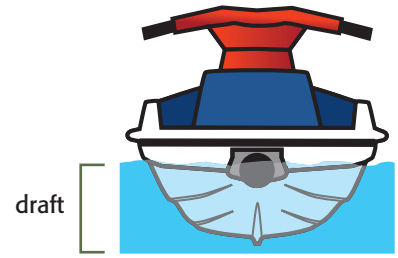
The main components of a PWC are the:

- Hull—the body of the boat.
- Deck—flat surfaces such as the seat, foot wells and compartment covers.
- Throttle—mounted on the handlebars, regulates how much fuel goes to the engine and controls the speed and steering ability.
- Other controls—include the on/off switch and the engine cut-off or "kill" switch with an attached lanyard.
- Steering nozzle—located at the rear of the pump and controlled by the handlebars.

PWC from Side View



PWC from Back View



Safety Mechanisms

Most personal watercraft are equipped with engine cut-off switches (ECOS) that must be attached to the operator by a lanyard. If the rider falls off, the cutoff switch engages and shuts off the engine. The PWC engine will stop, and the watercraft will glide to a stop nearby.

Other personal watercraft have an automatic idle and self-circling device. If the rider falls off, this will make the vessel circle slowly in the area until the rider can reboard. Operating a PWC equipped with a self-circling device is prohibited if the device has been altered.

SAFETY EQUIPMENT AND PERSONAL SAFETY

Similar to powerboat operators, PWC operators have the primary responsibility for preventing accidents, and must have the following safety equipment:

- A Coast Guard-approved fire extinguisher, good for gasoline and oil fires.
- Sound signaling device—a whistle attached to your life jacket, or a stored signal horn.
- A backfire flame arrestor that is clean and well secured.
- Ventilation of the engine compartment—in order to clear the compartment of fumes, you should ventilate by opening storage spaces and seat for at least four minutes before starting the engine, and after refueling.
- Visual distress signals if your boat is 16 feet or longer (for coastal waters only).

Every person on board a PWC and any person towed behind a vessel **must wear** a Coast Guard-approved life jacket. The life jacket must be in serviceable condition and of a type and size appropriate for the conditions and the activity. Exceptions: a person aboard a personal watercraft or being towed behind a vessel, if that person is a performer in a professional exhibition, or preparing to participate in an official regatta, marine parade, tournament or exhibition. Instead of wearing a Coast Guard-approved life jacket, any person engaged in slalom skiing on a marked course, or any person engaged in barefoot, jump, or trick water skiing may choose to wear a wetsuit designed for the activity and labeled by the manufacturer as a water ski wetsuit. A Coast Guard-approved life jacket must be carried in the tow vessel for each skier choosing to wear a wetsuit.

EXAMPLE

Jet pump action is similar to letting go of an untied balloon. Imagine blowing up a balloon and letting it go. The air rushing out propels the balloon. A jet pump operates in the same fashion. Water, rushing through the pump, propels the personal watercraft forward.

REMEMBER

To maintain good awareness and judgment:

- Beware of natural things that can cause stress, such as wind, sun, noise and motion.
- Do not drink alcohol and operate a PWC.
- It is against the law for anyone under the age of 21 to drink alcohol.
- If you are convicted of being under the influence and operating a PWC, you can lose the privilege of getting or keeping your driver's license.

For personal safety, a PWC operator should also have:

- A whistle attached to your life jacket, one that works even when wet.
- Eye protection, to guard you from the sun, spray and bugs. You should have a leash on your sunglasses so you won't lose them if you enter the water.
- Boat shoes/booties, to improve traction and protect your feet from underwater hazards.
- Gloves to improve your grip and make you more comfortable.
- A wet suit, to protect you against sun, wind, scrapes and bruises, and cold water shock. Manufacturers recommend wearing wet suits to prevent injury.
- A helmet, to protect your head from injury. The type of helmet varies with the type of water activity. A properly fitted helmet is mandatory for racers.
- Sunscreen and lip protection.

See Chapter 1 for more details on Personal Safety and Chapter 2 for details on Boating Law.

LEGAL REQUIREMENTS

Age of Operator

To operate a PWC alone, the operator must be 16 years old or older. A person 12–15 years old may operate a PWC designed to carry at least two people, if someone 18 years old or older directly supervises him or her on board.

Hull Identification Numbers (HIN)

A HIN is a 12-digit number/letter combination that is stamped into the hull of the vessel. A HIN is required for registration and is useful in identifying a stolen PWC.

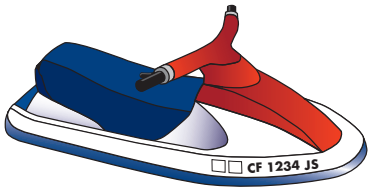
Registration

A PWC must be registered with the Department of Motor Vehicles (DMV). The registration numbers must be applied left to right on the forward sides of the bow in block letters at least 3 inches high and of a contrasting color—light letters on a dark background, or dark letters on a light background. The state decal must be placed 3 inches aft of the numbers. PWC's operated in fresh water must also display Mussel Fee Paid stickers next to the state decal. Letters are separated from the numbers by hyphens or spaces equal to the width of the numbers (other than the number "1") or equal to the width of the letters (other than the letter "I").

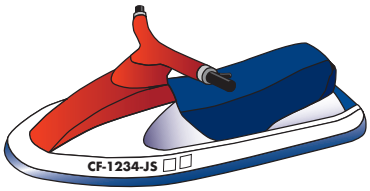
The registration must be carried on the PWC when you are under way. It's best to keep the registration in a waterproof container.

PWC REGISTRATIONS

CF 1234 JS
or
CF-1234-JS



starboard side



port side

Restrictions Applying to PWC

It's important to know that personal watercraft are subject to the same boat operating and navigation rules as other powerboats. Ignoring the rules does not excuse you from the law. To help make PWC a safer form of boating, the law doesn't allow the operator of a personal watercraft to:

- Use unsafe or reckless practices.
- Jump another vessel's wake within 100 feet of the vessel creating the wake.
- Operate at more than 5 mph within 200 feet of a beach or within 100 feet of swimmers.
- Operate so fast and close to another vessel that they cause the other operator to swerve at the last minute to avoid a collision.
- Operate the PWC toward any person or vessel in the water, and turn sharply at close range in order to spray that vessel or person.
- Alter the self-circling device on a PWC that is equipped with such a device.
- Operate the PWC without a properly attached lanyard that runs from the cut-off (ECOS) switch to the operator's body.
- Operate the PWC between sunset and sunrise.

See Chapter 2 for more details on boating law.

REMEMBER

Operating a personal watercraft after dark is against the law. As a general rule, never ride a personal watercraft between sunset and sunrise or at other times when it's hard to see.

This law does not apply to people in professional exhibitions, regattas, races, parades and other similar activities.

OPERATING A PWC

Before Leaving Home

***Check* that the trailer:**

- Is registered with the Department of Motor Vehicles.
- Lights and hitch are working.
- Tires are in good condition and are properly inflated.
- Tie-downs are in good condition and secure.
- Has no loose bolts, cracks or broken joints.
- Bearings are lubricated and adjusted according to the manufacturer's recommendations.
- Gas cock on the PWC is in the "off" position.

Pre-Operation Check

Read and understand the owner's manual. Be familiar with the steering controls, and the mechanism that controls the PWC if the rider falls off. Read the warning stickers on the craft.

- ***Check*** the regulations that apply to powerboating and to PWC.
- ***Check*** out your skills. Be a competent swimmer.
- ***Check*** the weather and file a float plan with a friend or family member.
- ***Check*** the engine, battery fluids, oil and fuel levels.
- ***Check*** the required safety equipment to make sure the:
  - » Coast Guard-approved fire extinguisher is charged and secure.
  - » Backfire flame arrestor is clean and secure.
  - » Engine Cut-off Switch (ECOS) works.
  - » Start/stop button works.
  - » Sound signaling device (such as a whistle or horn)is on board.
  - » Coast Guard-approved life jackets for every person are on board.
  - » Visual distress signals for coastal waters (if your boat is 16 feet or longer) are available.

Check the recommended safety equipment:

- Basic First Aid kit
- Anchor and a tow line
- Extra ECOS lanyard
- Phone or VHF radio
- Tool kit for simple repairs

Check your personal equipment:

- Wear suitable clothing—wet suit, eye protection with a leash, gloves, booties or boat shoes.
- Make sure life jackets are in good condition and that a whistle is attached to each life jacket.

Check the condition of the PWC to make sure the:

- Hull is not damaged.
- Engine cover latch is secure.
- Storage compartment cover is secure.
- Engine compartment is vented.
- Gas and oil caps are secure.

- Spark plug cables are secure.
- Throttle grips are not loose.
- Hose connections are tight and not cracked or leaking.
- Bilge is drained.
- Drain plugs are in place and secure.
- Jet pump is not fouled or clogged.
- Throttle springs back after being pressed.
- Steering mechanism moves easily.

Casting Off

- ***Check*** that the ECOS lanyard is attached to your left wrist or life jacket.
- ***Check*** that the fuel cock is in the "on" position.
- ***Check*** the steering and throttle as you ease the personal watercraft away from the dock.
- ***Check*** your surroundings. Watch for swimmers and other boats. Leave the dock or beach area slowly.

REMEMBER

Keep hands, feet, and hair away from the pump intake and the jet pump nozzle while the PWC motor is running.

While Under Way

- ***Check*** the water depth. Never operate a PWC in shallow water, because the watercraft may suck materials up from the bottom, into the drive intake area damaging the pump and creating a hazard. Manufacturers recommend operating in at least 18 to 24 inches of water that is free of debris and weeds.
- ***Check*** for other boats, swimmers, and water skiers. Be careful when turning—look to both sides and aft.
- ***Check*** the speed laws, traffic, navigation markers and signs.
- ***Check*** your noise. Be polite, and limit noise by not boating in one place for too long.
- ***Check*** the current or water flow. Avoid strong currents, because they can be dangerous to riders trying to reach and climb aboard their watercraft.
- ***Check*** the waterway. Avoid rocky areas and jetties (barriers built to protect harbors) because of unexpected currents and a possible collision.
- ***Check*** the fuel—conserve to make sure you can get back to shore. Remember the one-third rule—one-third of a tank out, one-third back in, and one-third for safety. If you have to switch to the reserve tank, head for the shore immediately.
- ***Check*** the time. Return before dark or before you are too tired.

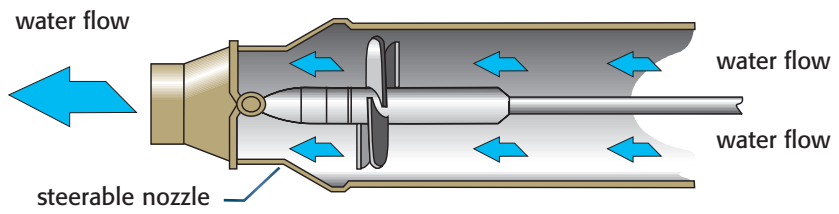
CAUTION

It may take several hundred feet to stop after throttle release to come to a complete stop. Loss of steering also occurs in personal watercraft without off throttle steering (OTS) systems. It is important to be alert and always be ready to apply power and steer away from a person, vessel or object when riding personal watercraft not equipped with OTS.

How a PWC Jet Pump Works

While propeller powered boats move forward by a rotating prop, a PWC jet pump pulls water in through the impeller and uses a nozzle to powerfully push water out. When you turn the handlebars to the right, the steering nozzle also turns to the right and the water stream pushes the back of the boat to the left, causing the personal watercraft to turn right.

PWC JET PUMP IMPELLER



Off Throttle Collision Risk and Stopping

Older PWC do not have a way to stop quickly because they have no brakes. Depending on how fast you're going, you will keep moving forward for several seconds, and possibly several hundred feet after you let go of the throttle. Without power or at idle speed, most of the steering control will also be lost. You must apply the throttle and steer away to avoid obstacles. This loss of control is a common cause of PWC accidents. Since 2003, most of the personal watercraft manufacturers have developed off-throttle steering (holding some RPMs on the engine after throttle release) on many models, as well as adding braking systems using drop down rudders. However, it is important to learn the steering and stopping ability of your personal watercraft before operating the vessel in crowded and/or unfamiliar waters.

REMEMBER

- ***Do not*** follow or operate too closely to other watercraft.
- ***Do not*** jump the wake of another boat within 100 feet of that boat.
- ***Do not*** operate a PWC while under the influence of alcohol and/or drugs.
- ***Do not*** pollute the waterways.

To Tow a Water Skier Behind a PWC

- You should not tow a skier with any PWC smaller than a three-person model, which can hold the operator, the observer and a skier.
- You must have an observer on board who is at least 12 years old.
- The skier and all persons on board must wear a Coast Guard-approved life jacket.
- The observer must display a red or orange signal flag (at least 12 inches on each side) to indicate a:
  - » Downed skier
  - » Skier in the water preparing to ski
  - » Ski line extended from the personal watercraft
  - » Ski in the water near the personal watercraft
- You should know the standard water ski hand signals in order to communicate with the skier and those on board.
- Be aware that your PWC will handle differently when towing a skier.
- It's against the law to operate a PWC or tow a skier between sunset and sunrise.

For more detailed information on water skiing, see Chapter 3.

Returning to Shore

- ***Check*** your speed. Slow to the lowest possible speed as you approach the landing site.
- ***Check*** the water depth. Be ready to get off the watercraft and push it ashore or to its mooring site.

Fueling

You should fuel your PWC while it's on the trailer in the parking lot, or at a gas station. If you need to add fuel to the personal watercraft on the beach, it's important to take all necessary precautions to prevent spilling fuel. Pull the PWC up on the beach as far as possible so that accidentally spilled fuel will not go directly into the water. Wrap a rag around the opening to the gas pipe and pour the gas in very slowly. When you hear or see that the tank is nearly full, stop pouring the gas. Do not overfill, because gasoline expands as it warms. Never top off when fueling on a beach, because this is the most common way spills occur. Replace the cap tightly when you're done. Air the rag until it is dry or store it in a covered metal container.

CAUTION

When operating a PWC:

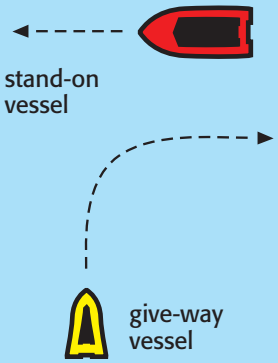
- ▶ Take frequent breaks.
- ▶ Avoid tunnel vision—look around for other boats, swimmers, and water skiers, not just straight ahead.
- ▶ Drink water or soft drinks, instead of alcohol.

CAUTION

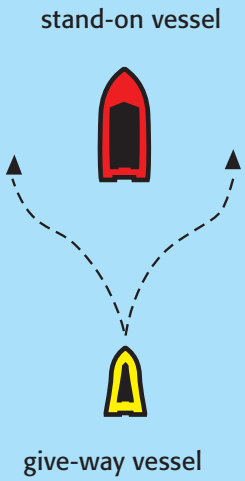
Before you restart your PWC, it's very important to ventilate the engine compartment for at least four minutes, to release any gas fumes that may have settled and may explode.

HEAD-ON SITUATION

CROSSING SITUATION



OVERTAKING SITUATION



PWC NAVIGATIONAL RULES AND AIDS

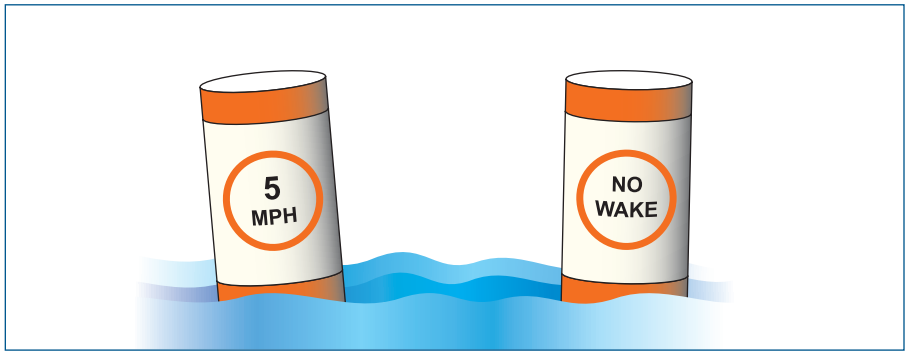
Navigational Rules

Operating a personal watercraft in some ways is a lot like driving a vehicle, because you must follow rules of the road and obey signs. But operating a PWC is also different from driving a car or motorcycle, because when you release the vessel's throttle, you lose steering ability and you have no brakes to help you stop.

Meeting head-on	When two boats meet head-on, each must keep to the right (starboard).
Crossing	When crossing, the boat to the right is the stand-on vessel. The stand-on vessel continues on a steady course and speed. The give-way vessel should slow and turn to starboard if necessary, and carefully pass the stand-on vessel astern (behind it).
Overtaking another boat	When you overtake another boat from behind (the stern), you are the give-way vessel. The boat being overtaken should hold course and speed. Pass with care on the right or left of the stand-on vessel.
Right-of-way	Other boats, such as commercial fishing boats, deep-draft ships, sailboats, or other non-motorized vessels cannot maneuver as well and have the right-of-way over personal watercraft.

Navigational Aids

Buoys and signs mark the waterways for all vessels (see page 42). When operating a PWC, the most important signs to recognize are the ones that read "NO WAKE" and "5 MPH." All boaters must obey these signs.



PWC Rules of the Road

Follow the basic rules of the road except when you need to depart from them to avoid a collision.

- Avoid ship channels when possible. Cross ship channels quickly when you can't avoid them.
- Always watch and listen for all boat traffic.
- Know that five or more short sound blasts mean danger or emergency.
- Know the charts for the waterways in which you operate your PWC. Know the likely hazards and high traffic areas.
- Keep a wide distance between your PWC and other boats or persons in the water.

ACCIDENT PREVENTION AND RESCUE

Prevention

- Do not make sharp or wild turns.
- Do not operate your PWC in shallow water, because the intake will pick up debris and clog the pump.
- Be aware of other boat traffic and your skill level as an operator at all times.
- ***Check*** the weather and water conditions before going out.
- Do not carry more passengers than your PWC can safely hold. (Check the capacity plate.)
- Drink water or soft drinks, not alcohol.
- Prevent fire and environmental damage by refueling correctly.

Dangerous Moves

Operators of PWC who perform the following dangerous moves are breaking the California boating law and can be cited for reckless or negligent operation. Beyond breaking the law, these dangerous moves can result in serious injury or death to the operator, any passengers or others on the water.

- Tag and turn—this involves sharp and wild turns close to each other.
- Overtaking another vessel closely at high speeds.
- Wake jumping within 100 feet of another vessel.
- Following other boats too closely—leave a safe distance to allow time to maneuver and avoid a collision.

REMEMBER

If you are involved in a boating accident causing more than $500 in damage, or the loss of a vessel, you must report it to the DBW within 10 days.

A formal report of a death or a missing person must be filed with the DBW within 48 hours.

Also, if an injury requires more than first aid, you must file a formal report with the department within 48 hours.

45-DEGREE ANGLE

Dangerous Moves (cont.)

- Operating your PWC in another boat's wake—the water may be whipped to a froth, which can affect how you steer.
- Chasing another PWC in small circles.

Bad Weather

If you're caught in bad weather:

- Reduce speed.
- Proceed with caution.
- Head for the nearest safe shore landing area.

If the water becomes choppy, head into the waves at a slant, or about a 45-degree angle as shown to the left.

Rescue

The moving parts of a PWC are inside the craft, reducing your chances for injury. If a rider falls off a personal watercraft, most of the craft have one of the two following safety devices:

- A cutoff switch will stop the engine when the operator falls off.
- Or the engine will continue to idle and the steering mechanism will turn all the way to port or starboard, making the PWC circle slowly nearby if the operator falls off.
- In either case, the operator should carefully climb aboard the PWC. If the vessel has a lanyard, remember to reconnect it in order to restart the engine.

If your PWC capsizes:

- Right the craft the way the manufacturer recommends. Look for the label with this information on the hull of the PWC.
- Board and restart the engine after you have connected the lanyard to the cut-off switch.

If your PWC has stalled and will not restart:

- Wait a few minutes before trying to restart. The engine may be "flooded" or the fuel line may be clogged.
- Do not attempt to repair the engine while you're on the water.
- If the watercraft will not restart, stay with the PWC until help comes.
- Wave your arms, or use a whistle, mirror or other signaling device stored on board to attract attention.

WEBSITE

For information on a PWC Safety course, visit **dbw.ca.gov/PWCsafety** or scan QR code for PWC course.

If a fire starts aboard your PWC

- Pull the fire extinguisher pin.
- Aim the nozzle of the fire extinguisher at the base of the flame.
- Squeeze the trigger.
- Use a sweeping motion.

If you cannot reach the fire extinguisher

- Swim a safe distance away from the personal watercraft to prevent injury in case of an explosion.
- Signal others to keep away from the PWC.

REVIEW QUESTIONS: PERSONAL WATERCRAFT

Answer these questions by circling the letter representing the correct answer.

1. Before casting off on your PWC, you should:
   a. Check to see if the trailer tires are properly inflated.
   b. Check to see if the tie downs are tight and properly attached.
   c. Check that the ECOS lanyard is attached to your wrist or life jacket.
   d. Check that the fuel cock is in the "off" position.

2. Which of the following is true?
   a. PWC cannot be operated between sunset and sunrise.
   b. You cannot operate PWC in deep water channels.
   c. PWC cannot tow water skiers.
   d. PWC cannot race.

3. When a PWC operator wishes to cross the path of another vessel approaching from the right, he or she must:
   a. Slow until the vessel passes, and cross behind it.
   b. Speed up to cross in front of it so the other vessel has clear passage.
   c. Kill the engine and wait for the other vessel to clear the area.
   d. Signal with four long whistle blasts to alert the other vessel.

Answer these questions by circling **T** for true or **F** for false.

4. Registration numbers must be displayed using letters that are at least 3 inches high and that contrast the hull color.. . . . . T F

5. It is against the law to operate a PWC equipped with an ECOS lanyard without properly attaching the lanyard. T F

6. If your PWC capsizes, you should right it following the manufacturer's instructions. . . . . T F

Turn to page 100 for correct answers.

ANSWERS TO REVIEW QUESTIONS

CHAPTER 1

Personal Safety, page 8:
1. T 2. F 3. T 4. F 5. F 6. T

Alcohol and Drugs, page 9:
1. T 2. T 3. F

Life Jackets, page 14:
1. F 2. T 3. F 4. T 5. T

Homeland Security, page 16:
1. F 2. T 3. T 4. F

Carbon Monoxide Poisoning, page 18:
1. d 2. b 3. c 4. b

CHAPTER 2

Boating Law, page 22:
1. F 2. T 3. T 4. T 5. T 6. F 7. F 8. T 9. T

Safety Equipment, page 29:
1. a 2. a 3. b

Alcohol, Boat Registration and Environmental Laws, page 37:
1. b 2. c 3. d 4. b

Navigational Rules, page 41:
1. The vessel that must hold course and speed when nearing another vessel.
2. The vessel that is required to take early and obvious action to avoid a collision when nearing another vessel.
3. Five or more short blasts of a signaling device to warn others of possible danger.
4. T 5. F

Navigational Aids, page 45:
1. d 2. c 3. a

Know Your Road Signs, page 46:
1. Boats keep out.
2. Danger, watch for rock.
3. Controlled area, no wake zone.
4. Information, turn right for first aid station
5. Channel markers. Green can buoy marks left side of the channel. Red nun buoy marks right side of the channel.
6. Mooring buoy: you may tie your boat here.
7. Red and white buoy: marks safe water.
8. Red striped channel marker; marks the center of a channel.

CHAPTER 3

Trailering and Launching a Boat, page 55:
1. T 2. F 3. F 4. F 5. T

General Rules for Operating a Boat, page 60:
1. b 2. a 3. d 4. b

Fueling, Docking, Anchoring, Knots and Maintenance, page 66:
1. F 2. F 3. T 4. T 5. F 6. T. 7. T 8. F 9. F

Powerboating, page 73:
1. c 2. d 3. b 4. a

Water Skiing, page 75:
1. b 2. T

Sailing, page 78:
1. T 2. F 3. F

Paddling, page 86:
1. F 2. T 3. F 4. F 5. F 6. T. 7. F 8. T

CHAPTER 4

Personal Watercraft, page 99:
1. c 2. a 3. a 4. T 5. T 6. T

▸ Chapter 5

Accident Prevention and Rescue

Face it, accidents still happen, no matter how prepared you are. This chapter will teach you how to prevent accidents, and what to do when you can't. It includes several "what if" cases taken from real boating accidents, to help you recognize dangers, rescue injured people and prevent accidents.

Knowing how to prevent accidents and rescue others will give you more confidence and make your time on the water more enjoyable.

OBJECTIVES

You will learn:

- Trends and causes of boating accidents
- Basics of accident prevention and rescue
- Prevention and rescue methods for environmental hazards
- Basic rescue for water activities, such as capsizing, person overboard, collision, grounding and water skiing

Trends in Boating Accidents

As in any other sport, an accident can always happen. Among the statewide trends:

- According to the U.S. Coast Guard, capsizing and falling overboard are the leading causes of recreational boating fatalities.
- As the population ages, accidents involving people over the age of 40, and the injuries and deaths resulting from these accidents, is growing.
- Thirty-five percent of youth operators involved in accidents were under 16 years old, and 88 percent of youth operators involved in accidents were operating personal watercraft.

WEBSITE

Scan the QR code for information on engine cut-off switches (ECOS)

The Causes of Accidents

- Boating accident numbers show that a high percentage of accidents, especially fatal ones, are due to operator error when boaters use poor judgment, don't pay attention, don't have enough experience, and behave irresponsibly.
- Many accidents, especially those that cause serious injury or death, happen when boaters drink alcohol.
- Many accidents happen because boaters don't have the right equipment, or any safety equipment at all. Accidents also happen when operators don't know how to use their equipment, or don't know the limits of their equipment. And they may not maintain their equipment correctly.
- Current trend shows the majority of personal watercraft involved in accidents in California are either borrowed or rented.

Basics of Prevention

- Know and practice the basic safety guidelines and the law for your type of boating.
- Always carry the proper safety equipment and know how to use it.
- Have a properly fitted, Coast Guard-approved life jacket for everyone aboard when boating.
- Have the proper clothing for your type of boating and for the weather and water conditions.
- Be water safe by knowing how to swim and tread water.
- Always boat carefully and with good judgment. Stay within the limits of your boating skills and equipment.
- Never boat under the influence of alcohol or drugs—it is against the law, and extremely dangerous to you and others.

Basics of Rescue

- The first rule of any rescue situation is to never put yourself or other rescuers in danger when trying to help someone. You don't want to become a victim and make the situation worse.
- Stay calm. Be sure to carefully judge the situation and condition of the people involved.
- Plan how to use your own and others' experience and resources to deal with the situation. Experience is a key resource in any type of emergency situation.
- Call for help on a phone or VHF radio.
- If the group size allows, send two or more persons together to get help.
- If you send someone for help, be sure the person knows the details of the situation, knows where to find a phone or other means of communication, knows who to contact, and either directs rescuers to the accident scene or returns to the scene of the accident after successfully contacting authorities.
- Seek basic training in first aid, cardiopulmonary resuscitation (CPR) and life-saving skills.

As a boater, there's a lot to keep track of. If only there was a single place where you could keep up with all the California boating safety information…. oh wait, there is! Download the BoatCA App today.

WEBSITE

Visit .**BoatCalifornia.com** or scan the QR code to get the app.

Each Section Below Includes Three Parts:

Guidelines for prevention, suggested techniques for rescue and actual case studies. You should be able to read the case study and point out what the person(s) did right or wrong, what the person(s) could have done differently, and how you would react to the situation. Chapter headings at the beginning of each section point out the location of more detailed information on the topic.

▶ **REFER TO CHAPTER 1 PAGES 4-9**

ENVIRONMENTAL HAZARDS

Environmental stressors can cause many types of accidents by impairing your judgment and reducing your awareness. Environmental injuries, such as cold water shock, can result from an accident or carelessness.

Prevention

- Check local weather sources such as the radio, TV, newspaper, or the Internet before getting under way. Constantly monitor the winds and horizon for changes in the weather.
- Be ready for all types of weather and water conditions, by having the necessary clothing and safety equipment on board.
- Be sure your skills and vessel are suitable for the conditions.
- It's a good idea that at least one person on board have a current first aid/ CPR certification.
- Be able to recognize and treat cold- and heat-related illnesses.
- Always carry extra clothing, food and water.
- Limit your exposure to stressors.

Rescue

- Call for outside help if necessary.
- Be sure there is no danger to yourself and others at the scene.
- Be sure the victim does not face other dangers.
- If possible, remove the victim from whatever caused the emergency.
- Treat the victim using your first-aid knowledge and available resources.

Case Study

The operator of a small fishing vessel and a passenger were fishing on the ocean. The water was calm in the morning when they left the dock, but

the operator was unaware of an incoming storm. In the afternoon, the seas became dangerous, swamping the vessel and causing it to sink. The victims were in the water for 30 minutes and had body temperatures of 82° F when they were rescued. The victims were wearing life jackets but not special clothing for cold water.

Questions

1. Identify the mistakes that the people made and the proper actions.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

BASIC RESCUE TIPS FOR WATER ACTIVITIES

◀ **REFER TO CHAPTER 1 PAGES 10-14**

Navigation rules are built upon safety and courtesy. Boat operators are required to assist other boats in distress when doing so does not put their own vessel or passengers in danger. You should be trained, careful and responsible when attempting to help others.

Always be ready to help others, but do not take needless risks. To help in emergencies from a boat:

- Approach an accident scene cautiously. Watch for victims in the water. Check the area for possible risks to yourself and other rescuers. Turn the engine off before picking up victims—as long as you don't need it on to maneuver against winds or currents.
- Communicate with people in the water. They can tell you if they are all right, if other passengers are with them, and help you to choose your first rescue steps.
- Whenever possible, use equipment such as a throw bag or line, ring life preservers or floatable objects to save lives.
- Toss lifesaving devices to those who do not have them.
- Do not jump into the water to help a victim unless it is your only choice and you face no risk to yourself.
- Give help first to anyone who seems to be seriously injured or is having trouble staying afloat.
- If necessary—and if your boat can safely hold additional people— help victims by pulling them aboard over the stern. In heavy seas, it may be safest to rescue the victim over the side of the vessel near the stern.

CAUTION

You should not enter the water to rescue someone unless you have been trained in lifesaving skills.

To help in emergencies from the shore:

- ***Reach:*** First try to reach the person. Use your hand, or anything else you can hold onto, such as a stick, rope, towel, oar, or a fishing pole, to reach the person. Make sure that you have a firm grip on a solid object or another person on shore before reaching. Keep a low center of gravity by keeping low to the ground and get ready for the weight of the person you're rescuing before you reach. You don't want to be pulled into the water.
- ***Throw:*** If you cannot reach the victim, throw something that will float, such as a ring life preserver with a line attached so you can pull the person to safety. If a ring life preserver is not available, throw any object that will help the victim float until help arrives.
- ***Row:*** If the person is too far away and you know how to swim, you can row out to them on something that will keep both of you afloat. For example, you may use a small boat, raft, large inner tube or surfboard. Remember to put on a life jacket before rowing to the victim, and carry an extra one in case the victim needs one. Help the victim climb aboard or have him hold onto the float while you paddle back to safety.
- ***Go:*** If you can't reach, throw, or row, go for help or call 9-1-1. Give the location information to lead rescuers to the emergency site.

Case Study

A family was having a picnic in late Spring on a beach next to a river. Their ten-year old daughter was swimming in an eddy just upstream from the beach. She suddenly found herself in the fast downstream current. The father grabbed a loose branch from the beach and extended it toward his daughter. When his daughter grabbed the branch the added weight pulled the father into the swift current. They were both quickly swept downstream and out of view. The mother quickly alerted the park ranger. The park staff was trained in swiftwater rescue and was able to pull the father and daughter to shore. Both sustained some bruises but were otherwise OK.

Questions:

1. Identify the mistakes that the people made, and also their proper actions.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

CAPSIZING OR SINKING

◀ REFER TO CHAPTERS 1-4
PAGES 5-7, 27, 79, 97-98

POWERBOATS, INCLUDING PERSONAL WATERCRAFT

Capsizing or sinking can result from severe weather, water conditions, an overloaded boat, poor judgment in operating a vessel or faulty equipment.

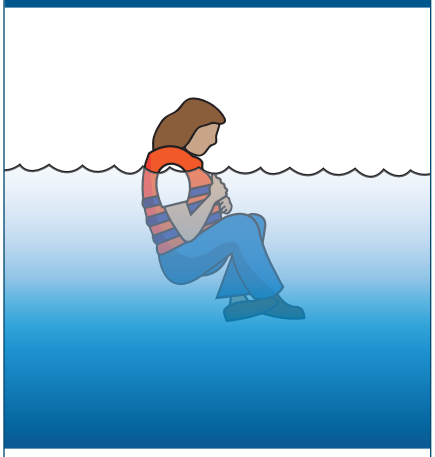
Prevention

- Constantly check the weather and water for conditions that may cause hazards.
- Do not carry more people or weight on your vessel than the capacity plate says you can. In the absence of a capacity plate, you should check the owners' manual and state laws to know how many passengers can safely be loaded onto the vessel.
- Distribute the weight of passengers and gear evenly.
- Check the automatic bilge pump in your boat (if it has one) to see that it is working properly.
- Check the drain plug.
- If your vessel leaks, bail out the boat continuously and head for a safe shore as soon as possible.
- Do not stand up or change seats in small boats. If you have to change position, tell the operator, hold onto the gunwales, and have other passengers move to counter-balance the shift in weight.
- Engine failure places motorboats at greater risk of capsizing. Maintain the engine and battery. Carry spare parts, and learn to do simple repairs.

Rescue

- Do not attempt to swim ashore unless it's safe to do so. Be aware that distances are hard to judge accurately on the water. The shore may be farther away than you think. Stay with the boat until help arrives. A boat is far more visible than a person in the water.
- Hold onto the nearest floating object.
- Put on a life jacket if possible.
- Count the number of people to make sure that no one is missing.
- Check and treat serious and life-threatening injuries.
- If possible, right the boat and bail out the water.
- If you can't right the boat, climb onto the hull and signal for help. Use signaling devices to tell rescuers you are in danger. You can also wave your arms and yell.

HELP POSITIONS



- Avoid cold water shock by preventing heat loss. Keep your head out of the water, climb up on the boat's hull as far out of the water as possible. If you cannot get out of the water, curl into a ball or huddle with other passengers and limit your movement **(HELP—Heat Escape Lessening Position)**.
- Blow a whistle, yell or wave your arms to get attention.

SAILING

Many of the prevention and rescue techniques discussed here also apply to sailing. But you should know a few techniques specific to sailing.

Prevention

- If the sailboat is going to capsize, let the sail all the way out, push the tiller away from you or steer into the wind, and get to the high side of the boat.
- Be sure to check weather and wind conditions constantly. You may need to adjust your course and sails to adapt to changing conditions.
- Know how to sail and use your equipment in strong winds and stormy weather.

Rescue

- If the boat capsizes, search the area to make sure everyone is accounted for. Look for injuries and be sure that no one is having difficulty staying afloat.
- Throw a flotation device to anyone overboard.
- If the boat is small enough, release sails, stand on the centerboard and, holding on to the gunwale, use your weight to right the boat (this procedure should be practiced in a calm, supervised setting, such as a boating class).
- Once righted, immediately free the lines so the sails do not "catch" wind and cause the boat to capsize again.
- Help other passengers climb aboard if necessary.
- Begin bailing out the boat after it has been righted and secured.
- If you cannot right the boat, climb onto the hull to get as far out of the water as possible.

PADDLING ON WHITEWATER

Paddling on whitewater requires skill and experience. The added danger of moving water makes capsizing very dangerous.

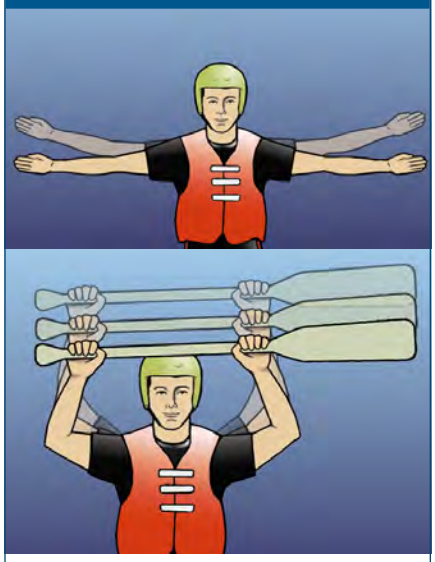
Prevention

- The crew should check the water flow and weather conditions before starting out.
- Be sure to have the proper life jackets and clothing for the weather and water conditions.
- Carry a throw bag and other safety equipment and know how to use them.
- Do not carry too many passengers on the raft or boat.
- The crew should be familiar with the basic rules of river safety.
- Do not paddle on rivers that are too swift or dangerous for your abilities.
- Know and practice the procedures for prevention of a "wrap." This technique is known as a "highside."
- Know hand signals.
- Know and practice the swimmer's position, and swimming to an eddy.

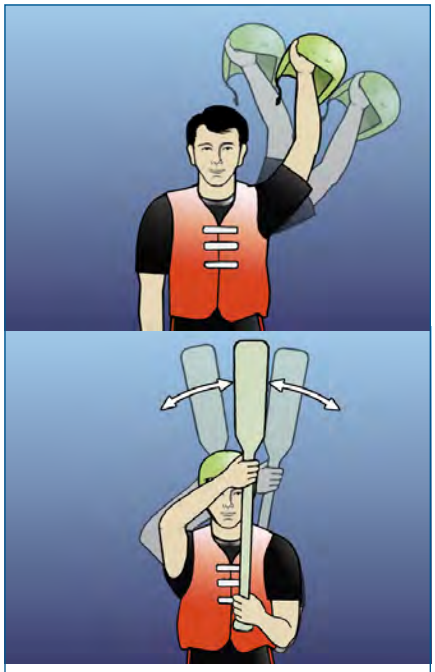
Self-Rescue

- If your boat capsizes or you fall overboard, stay on the upstream end of the craft. This prevents your chance of being pinned against obstacles in the water.
- Hold on to your boat unless it threatens your safety.
- Float on your back, feet-first downstream, to the nearest eddy or calm area. Keep your toes up out of the water. This position allows you to push away from obstacles and prevents your feet from getting caught in anything under the water.

HAND SIGNALS



Stop & Pull Over

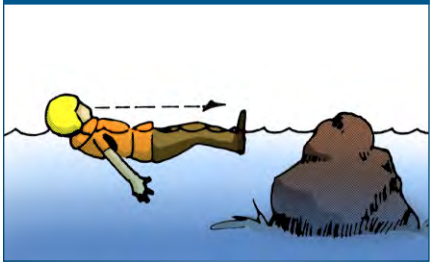


Help or First Aid Needed

Are You OK? Yes, I'm OK

Pointing Positive "A Safe Place to Go"

SWIMMER'S POSITION



- You may need to turn onto your stomach and swim hard to an eddy or the shore to avoid upcoming rapids, or if help is not nearby.
- Do not attempt to stand in swift water. If your foot gets wedged in the rocks, the force of the water can push you over and hold you under.
- You should avoid strainers if you can. If you are swept into a strainer, then you should swim hard toward it and vigorously climb your way to the top as you hit it.

Assisted Rescue

- If someone falls overboard, crew members will "point positive" toward a safe place.
- The swimmer in the water should listen for instructions from the guide.
- A paddle or oar can be extended to the person overboard if he or she is close.
- You must use a throw bag if the current is swift, or the victim is too far away. To use a throw bag:
- Clearly yell the person's name to attract his or her attention.
  - » Throw the bag so it hits the swimmer or lands slightly upstream.
  - » The swimmer should grab the rope and bring it over his or her shoulder. This keeps the person in swimmer's position with his or her face out of the water.
  - » The swimmer should not grab the bag because the remaining rope will continue to be pulled out and he or she will be carried farther downstream.
  - » Rope should never be wrapped around an arm or wrist. This could cause serious injury.
  - » The rope thrower should be prepared for a jolt when the rope tightens.
  - » Pull the swimmer toward shore or the boat.
  - » When pulled back to the boat, you can lift the swimmer aboard by grabbing the shoulder straps of his or her life jacket. Do not pull the victim by his or her arm or wrist.
- Paddlers should never put themselves in danger to rescue another.
- Helping swimmers is the first priority. Saving equipment should wait until after all swimmers have been helped.

Seek help from passing boaters if an accident happens. Most commercial rafts have guides who know how to handle emergencies. On remote sections of a river, stay on the riverbank. Chances are, help will come to you faster than you can find it.

If you must leave an accident site to seek help, follow the riverbank to the closest available help. Do not try to go overland unless you're familiar with the area.

WEBSITE

For AquaSmart paddle safety videos on whitewater, flatwater, ocean and SUP, scan the QR codes below."

These videos illustrate many of the bullet points found on these pages; learning these quick tips on personal, boat and water safety before you paddle or raft could save your life!

PADDLING ON FLATWATER OR THE OCEAN

Weather and water conditions can change very quickly and with little warning. Be ready for the unexpected.

Prevention

- Do not overload the vessel.
- Check and monitor weather and ocean conditions.
- Do not go out when conditions are worse than your skills or your equipment can handle.
- Carry the proper safety equipment and wear the right clothing for the water temperature.
- Get training in the techniques used to right a sea kayak or other paddle craft. Practice these techniques in a calm and supervised setting, such as a boating class.
- If you are paddling in open water you should know and practice open water rescues. These can be rescues for one or more boats.

Rescue

- Try to right the boat if possible.
- Once the boat is righted, climb back in and begin bailing out the water.
- Count the number of people to make sure that no one is missing.
- Check the group for signs of cold water shock and take necessary actions.
- If you're unable to right the boat, climb on top of the boat and signal for help.

Case Study

The operator had overloaded the small row boat and was allowing the passengers to ride in an unsafe position on the gunwales and transom. As a prank, all the passengers moved to the stern of the vessel at once, swamping and sinking the vessel. During the crazy scene that followed, two of the passengers drowned. The operator and many of the passengers were under the influence of alcohol.

Questions:

1. Identify the mistakes that the people made and the proper actions they could have taken.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

WEBSITE

For AquaSmart paddle safety videos on whitewater, flatwater, ocean and SUP, scan the QR codes below."

▶ **REFER TO CHAPTERS 3-4 PAGES 68, 71, 85, 98**

PASSENGER OVERBOARD

People can fall overboard or leave their boat for a variety of reasons, but most often because of heavy seas, not holding onto something solid when moving on deck, or sitting on the gunwale or other dangerous location.

Prevention

- The operator should not overload the boat.
- In a small boat, passengers should be careful and limit movement while the boat is operating. If you must move, be sure to inform the captain of the boat so he or she can get ready for the weight shift.
- Passengers should not ride on the gunwales or the bow.
- You may not be used to being on a moving platform, such as a boat on the water. You should take time to get used to balancing and moving safely on a boat that is in motion.

Rescue

- Even if the person overboard knows how to swim or the boat is anchored, toss the victim a ring life preserver throwable flotation device, floating cushion, or other floatable object with a line attached.
- If the boat is under way, the operator should immediately slow the boat. You should be careful maneuvering when someone is in the water. Avoid hitting a person with the boat or propeller.
- Whoever spots the person overboard must keep sight of the victim, unless another crew member is assigned to watch the victim. Point toward the victim to help guide the operator.
- At night, direct the best possible light on the victim.
- Warn approaching boats.
- Approach the victim from downwind or into the current.
- Judge the situation to see if you need to get help from somewhere else.
- When trying to rescue the victim, put the engine into neutral and keep the victim away from the stern of the boat. If there is no wind or current that would require you to maneuver the boat, you can turn the engine off. Bring the victim aboard over the stern while keeping the boat balanced. These steps will prevent serious injury from the boat's propeller.
- If the victim has (or might have) a spinal injury, a person trained in life-saving procedures may need to enter the water to help the victim. Keep the injured person in the water until a trained rescuer arrives.

Case Study

A passenger on a sailboat was sitting on the gunwale of the boat when a sudden shifting of the boat caused him to fall overboard. The operator of the boat panicked and took a wide turn while trying to come about and lost sight of the victim. The victim came into view momentarily but the boat passed by quickly as it was picking up speed from the wind. The victim was not wearing a life jacket and drowned.

Questions:

1. Identify the mistakes that the people made and the proper actions they could have taken.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

COLLISIONS

◀ **REFER TO CHAPTERS 2-4 PAGES 25, 27, 39-40, 78, 81, 94, 96-97**

Collisions can be two or more vessels crashing into one another, or a vessel colliding with another object, such as a dock, pier or shore. Most collisions can be avoided by using caution and good judgement.

Prevention

- Keep a sharp lookout on all sides for boats and other obstructions, such as piers, docks, buoys, shorelines and floating debris. Beware of tunnel vision—don't just look straight ahead.
- Follow the rules of the road.
- Be aware of things that can act as stressors, such as overexposure to sun, wind, motion, noise and vibration.
- Don't drink alcohol and operate a boat because it can impair your judgment and depth perception. The effects of natural stressors are made worse when you use drugs or alcohol.
- Slow down when approaching a landing, such as a shore or dock. Be extra careful.
- Maintain a safe distance between your boat and other boats. Be aware that two boats approaching each other head-on can close the distance between them very quickly.

TAKE NOTE

When a collision is about to happen, take steps to avoid it.

The stand-on vessel must maintain course and speed. The give-way vessel must change its course and/or speed to avoid a collision. If the give-way vessel does not take proper action, the stand-on vessel must take action to avoid a collision. All boaters have the responsibility to avoid collision.

Rescue

- If a collision happens, people may have fallen overboard or your vessel may be capsized or severely disabled. Take needed actions that are outlined under **Capsizing or Sinking** on page 107 and **Passenger Overboard** on page 112.
- If you're not involved in the collision, or if your vessel is not seriously damaged, you should stand by to offer help.
- If you need further help, use a radio or signaling device to call for help.
- Be sure to warn other boats when people, debris or flammable liquids are in the water.

Case Study

An inexperienced personal watercraft operator, Jill (on her second trip) was riding alongside a friend on another personal watercraft. Her friend Bill was slightly ahead of her when he suddenly slowed down. She let off the throttle, trying to slow down, but instead lost control of her craft. She slid sideways into Bill. He sustained a fractured spinal cord and was paralyzed from the waist down. He also had serious head and chest injuries. Jill was thrown into the water. The fall left her unconscious, but her life jacket kept her afloat.

Questions:

1. Identify the mistakes that Jill and Bill made and the proper actions they could have taken.
2. What could these people have done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

FIRES

◀ REFER TO CHAPTERS 2-3
PAGES 23-24, 61-62

An unexpected fire can burn a vessel down to the waterline if the boat operator and passengers are not prepared for this type of emergency.

Prevention

- Use safe fueling procedures as described in chapter three.
- Check fuel lines and connections for leaks. Make any repairs before launching.
- Clear gasoline vapors from the bilge by using the power blower for at least four minutes.

Rescue

- Stop the boat and have all passengers put on a life jacket. Everyone on board should move away from the fire area.
- Keep the fire downwind.
  - » If the fire is in the stern, turn the bow of the boat into the wind.
  - » If the fire is near the bow, turn the stern of the boat into the wind.
  - » If the engine catches fire, turn off the engine and turn the bow of the boat into the wind.
  - » Use a paddle to keep the boat turned with the fire downwind.
- Shut off all fuel supplies and sources of electrical power.
- Get your fire extinguisher and aim it at the base of the fire, sweeping back and forth. (Remember PASS) Repeat if the fire flares up again.
- Do not use water on a flammable liquid or electrical fire.
- Call for help using your VHF radio or cell phone.

Case Study

The vessel operator had just finished fueling and attempted to start the engine. Suddenly there was an explosion that started an engine fire. The fire spread and completely destroyed the vessel.

Questions:

1. Identify the mistakes that the operator made and the proper actions that could have been taken.
2. What could this operator have done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

▶ **REFER TO CHAPTER 2-3 PAGES 38, 42-44, 62**

GROUNDING

Running aground, touching bottom and getting stuck, at high speed can seriously damage a boat and throw passengers overboard or into solid objects on board. You can prevent grounding easily by learning about the area beforehand, and by using caution in shallow areas.

Prevention

- Always be alert to your surroundings.
- Know and observe the Aids to Navigation (ATON) markers, signs and buoys.
- Learn to "read" the water surface. Ripples, boils, and coloration can indicate shallow water, reefs or shoals.
- Know the expected tide levels and times. Consult a tide book. You may have good water depth in an area during a high tide, but the area may be dangerous at low tide.
- Know the area where you will be boating. Check charts for possible shallow areas or other underwater hazards before boating.
- Use caution rather than convenience. Don't just guess about the depth of the water.

Rescue

- First, check for leaks and damage to your boat's hull. Make sure you are not sinking or taking on water.
- Identify the cause of the grounding (sand, rock, sharp objects, a wreck, etc.).
- If it won't damage the hull, reverse engines and attempt to back off.
- Waiting for a higher tide may be the solution if you ran aground because of a low tide.
- If there are obstacles that may increase damage and the vessel is in danger of sinking, or if you have serious hull damage, call the local law enforcement agency or Coast Guard on Channel 16 for help.

Case Study

Bill, the operator of a vessel was traveling in the early morning darkness in ocean waters. He thought he was familiar with the area, so he was not using any navigational aids. He lost his bearings and struck rocks just offshore. Then, his engine stalled. He tried to drop anchor, but it was too late and he was washed against the jetty, which destroyed his vessel.

TAKE NOTE

If there is an emergency and you are out to sea or in an isolated area and have a radio, hail the Coast Guard over VHF Channel 16 using the standard "Mayday" call.

WEBSITE

For more information on distress calls and grounding, visit **dbw.parks.ca.gov/DistressSignals**

Questions:

1. Identify the mistakes that the operator made and the proper actions that could have been taken.
2. What could this person have done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

RESCUING WATER SKIERS

◀ **REFER TO CHAPTER 3 PAGES 74-75**

Water skiing accidents are very dangerous because of high speeds, crowded ski areas and loose equipment such as the tow rope or skis.

Prevention

- The operator should be aware of the surroundings at all times. The operator should take great care to avoid other boats, skiers and objects in the water such as skis, tow ropes, buoys, swimmers and other skiers.
- The observer should observe the skier at all times, know the hand signals that the skier may use, and communicate with the operator. The observer should also have the signal flag ready for any time that a skier or his or her equipment is in the water.
- When a skier, ski or tow rope is in the water, the boat operator and passengers should take great care. You should always keep a sharp lookout for other boats.
- The skier should be looking for floating objects, other skiers and boats. The skier should pay special attention to the tow rope to keep from getting it entangled.

Rescue

- The downed skier should hold up a ski or arm to warn other boats and skiers.
- The observer should raise the signal flag designating a downed skier, watch the position of the skier and alert other boats.
- Approach the site from downwind or into the current using slow to idle speed.
- The boat should return to the water skier as quickly as possible, making sure that the skier's tow rope is not caught in the boat's propeller.
- An operator should keep a skier on the operator's side so that the skier always remains within the operator's view.

REMEMBER

If the boat is put into neutral while the engine is running, the propeller may continue to spin for a short time and cause serious injury. You should make sure that the propeller is no longer spinning before allowing a skier near it.

- If the skier is re-entering the boat, the operator should turn the engine off a boat length before reaching the skier and before the skier comes on board. You may be able to leave the engine in neutral if your boat design has the propeller a good distance away from the skier. For instance, many boats specially designed for water skiing have a swim step on the stern and a propeller that is mounted amidships. In either case, the water skier should be brought into the boat over the stern.

Case Study

A skier had just finished skiing and was sitting on the swim step of a vessel, pulling in the ski line. The ski flag was raised, as there was still a ski line in the water. A second vessel came very close to this vessel at a high rate of speed and ran over the ski rope, which became caught in the propeller. The line then broke, and snapped back, striking the skier on the swim step in the stomach and leg. The skier sustained third degree burns and a fractured pelvis.

Questions:

1. Identify the mistakes that the people made and the proper actions they could have taken.
2. What could have been done differently to prevent this accident?
3. What steps could you take to rescue the victims and/or make the situation better?

Photo courtesy of U.S. Adaptive Recreation Center

Accident Assistance

A vessel operator who witnesses or is involved in an accident is responsible for helping other people in the accident, as long as it does not endanger his or her vessel, crew and passengers. Any person offering help in "good faith," without objection by anyone being helped, can't be held liable for the results of that help.

Accident Reporting

If you are in a boating accident, you must report it to California State Parks Division of Boating and Waterways or the local marine law enforcement authority. This may be the local harbor patrol, county sheriff or the Coast Guard.

If a person dies, disappears, or needs medical attention beyond first aid, the incident must be reported to the enforcement agency responsible for the waterway. Report the following information:

- Date, time and exact location of the accident.
- Name of each person who disappeared, died or was injured, and the vessels involved.
- Names and addresses of the owner, operator and passengers of all boats involved.

A formal report must be filed with the California State Parks Division of Boating and Waterways:

- Within 48 hours if someone has disappeared or died, or if a person has injuries that require more than first aid.
- Within 10 days if the accident involves more than $500 damage, or the boat is a complete loss.

A vessel operator involved in an accident that causes damage to a moored boat or other property must notify the owner or person in charge of the property. If the operator can't locate the owner or person in charge of the property, the operator involved in the accident must leave a written notice in an easy-to-see place on the property damaged. This notice must give the name and address of the operator and of the owner of the vessel involved, and a statement describing what happened.

REMEMBER

Failure to submit a boating accident report as required is a misdemeanor and is punishable by a fine not to exceed $1000 or imprisonment not to exceed 6 months or both.

WEBSITE

For information on reporting accidents and an online fillable accident form, visit **dbw.parks.ca.gov/AccidentReporting**

Scan the QR code to open the online Boating Accident Report (BAR) form.

APPENDIX A Checklist and Float Plan

CHECKLIST AND FLOAT PLAN

CHECKLIST

Before embarking on a cruise:

1. File a Float Plan (see below)
2. Give consideration to basic safety items, including the following:

- ☐ Vessel in good condition
- ☐ Vessel properly loaded
- ☐ Ample supply of fuel
- ☐ Check weather reports
- ☐ Compass and charts
- ☐ Good anchoring equipment
- ☐ Bailing Device
- ☐ Spare parts
- ☐ First-aid kit
- ☐ Tools
- ☐ Extra starting battery
- ☐ Life jackets/Throwable devices (Coast Guard-approved)
- ☐ Fire extinguishers (Coast Guard-approved)
- ☐ Visual distress signals
- ☐ Oars or paddles
- ☐ Marine VHF radio
- ☐ Flashlight

3. Cancel your Float Plan when you return

FLOAT PLAN

Operator _____
Name and address of operator — Phone number

Searches for an overdue boat have a much greater chance of being successful if the Coast Guard or other rescue agencies have certain facts. For your own safety and before leaving on a cruise, complete this form and leave it with a reliable person who will notify authorities if necessary.

If overdue, contact _____
Name and phone number of rescue agency near point of departure

Vessel _____
Name — CF Number — Length

_____
Power, Inboard - Outboard — Rig, If Sail — Hull Color

_____
Type/Style — Range — Speed

Persons _____ Radio _____
Number Persons Aboard — Frequencies

Departure from _____
Place — Date/Time Depart

_____
Car Parked License # — Trailer Parked License # — Where Parked

Destination _____
Place — Stops en Route — Date/Time Return

DISCLAIMER: *The Float Plan and checklist is not a definitive list of everything that may be required for safe boating on any particular boat or boating excursion. Knowing what is required is the responsibility of each individual boater.*

IMPORTANT: Don't forget to cancel your Float Plan when you return

WEBSITE

This Checklist and Float Plan form is available on the BoatCA app and at the website: dbw.parks.ca.gov/FloatPlan

Scan the QR code to open the Checklist and Float Plan.

APPENDIX B California Boating Accident Report

For a copy of this form, call toll free 1-888-326-2822 or visit dbw.parks.ca.gov/AccidentReporting

CALIFORNIA BOATING ACCIDENT REPORT

CALIFORNIA STATE PARKS DIVISION OF BOATING AND WATERWAYS

The operator of every recreational vessel is required by Section 656 of the Harbors and Navigation Code to file a written report whenever a boating accident occurs which results in death, disappearance, injury that requires medical attention beyond first aid, total property damage in excess of $500, or complete loss of a vessel. Reports must be submitted within 48 hours in case of death occurring within 24 hours of an accident, disappearance, or injury beyond first aid. All other reports must be submitted within 10 days of the accident. Reports are to be submitted to California State Parks Division of Boating and Waterways, Accident Unit at P.O. Box 942896, Sacramento, California 94296-0001, (916) 327-1826. Failure to submit this report as required is a misdemeanor and is punishable by a fine not to exceed $1000 or imprisonment not to exceed 6 months or both.

DATE OF ACCIDENT (M/D/Y)	TIME OF ACCIDENT	COUNTY	STATE	BODY OF WATER	NEAREST CITY OR TOWN
	☐ AM ☐ PM				

LOCATION ON WATER	LATITUDE/LONGITUDE ACCIDENT OCCURRED: N W

# INJURED	# DEAD	TOTAL $$	LAW ENFORCEMENT ON ACCIDENT SCENE? ☐ YES ☐ NO	AGENCY NAME

TEMPERATURE
WATER AIR

WEATHER (select all that apply)
- ☐ CLEAR
- ☐ CLOUDY
- ☐ FOG
- ☐ RAIN
- ☐ SNOW
- ☐ HAZY

WATER CONDITIONS
- ☐ CALM (Waves less than 6")
- ☐ CHOPPY (Waves 6"-2')
- ☐ ROUGH (Waves 2'-6')
- ☐ VERY ROUGH (Waves >6')

WIND CONDITIONS
- ☐ NONE
- ☐ LIGHT (0-6 MPH)
- ☐ MODERATE (7-14 MPH)
- ☐ STRONG (15-25 MPH)
- ☐ STORM (OVER 25 MPH)

WEATHER FORECAST

	AVAILABLE		USED	
BEFORE VOYAGE	☐ YES	☐ NO	☐ YES	☐ NO
DURING VOYAGE	☐ YES	☐ NO	☐ YES	☐ NO
AFTER VOYAGE	☐ YES	☐ NO	☐ YES	☐ NO

VISIBILITY
☐ GOOD ☐ FAIR ☐ POOR

STRONG CURRENT
☐ YES ☐ NO

TYPE OF ACCIDENT (select all that apply)
- ☐ CAPSIZING
- ☐ COLLISION WITH VESSEL
- ☐ COLLISION WITH FIXED OBJECT
- ☐ COLLISION WITH FLOATING OBJECT
- ☐ FALL OVERBOARD
- ☐ FALL IN BOAT
- ☐ GROUNDING
- ☐ FIRE/EXPLOSION (fuel)
- ☐ FIRE/EXPLOSION (other than fuel)
- ☐ FLOODING/SWAMPING
- ☐ SINKING
- ☐ STRUCK BY BOAT/PROPELLER
- ☐ SKIER MISHAP
- ☐ OTHER: _____

CAUSE OF ACCIDENT (select all that apply)
#1 #2 (see back of sheet for vessel number)
- ☐ ☐ IMPROPER LOOKOUT/INATTENTION
- ☐ ☐ OPERATOR INEXPERIENCE
- ☐ ☐ EXCESSIVE SPEED
- ☐ ☐ MACHINERY FAILURE (DESCRIBE): _____
- ☐ ☐ IMPROPER LOADING
- ☐ ☐ OVERLOADING
- ☐ ☐ EQUIPMENT FAILURE (DESCRIBE): _____
- ☐ ☐ HAZARDOUS WEATHER/WATER
- ☐ ☐ RESTRICTED VISION
- ☐ ☐ IGNITION OF SPILLED FUEL/VAPOR
- ☐ ☐ IMPROPER ANCHORING
- ☐ ☐ OFF-THROTTLE STEERING INABILITY
- ☐ ☐ FAILURE TO VENT
- ☐ ☐ OTHER: _____

ACTIVITY AT TIME OF ACCIDENT (select all that apply)
#1 #2 (see back of sheet for vessel number)
- ☐ ☐ WATER SKIING
- ☐ ☐ WAKE BOARDING
- ☐ ☐ TUBING
- ☐ ☐ FISHING
- ☐ ☐ RACING
- ☐ ☐ WHITEWATER ACTIVITY
- ☐ ☐ FUELING
- ☐ ☐ HUNTING
- ☐ ☐ OTHER: _____

DID DRUGS OR ALCOHOL CONTRIBUTE TO THE ACCIDENT?

ALCOHOL ☐ YES ☐ NO ☐ UNKNOWN
DRUGS ☐ YES ☐ NO ☐ UNKNOWN
IF YOU MARKED "YES," PLEASE PROVIDE DETAILS IN NARRATIVE.

DESCRIBE WHAT HAPPENED AND WHAT YOU COULD HAVE DONE TO PREVENT THIS ACCIDENT
(Use sketch if helpful. Explain the cause of death or injury, medical treatment, etc. If needed, continue description on additional paper.)

OTHER PROPERTY
(Damage to items other than vessels)

DESCRIPTION OF DAMAGE	ESTIMATED DAMAGE $$ ☐ NONE

OWNER'S NAME	ADDRESS	STATE	ZIP	PHONE ( )	NOTIFIED ☐ YES ☐ NO

VICTIM OR WITNESS INFORMATION

VICTIM/WITNESS NAME/ADDRESS/PHONE	VICITM/WITNESS STATUS	RIDING IN VESSEL #	DATE OF BIRTH/AGE	INJURY DESCRIPTION	CAUSE OF DEATH	COULD VICTIM SWIM?	LIFE JACKET WORN?
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO
	☐ INJURED ☐ DEAD ☐ WITNESS ONLY				☐ DROWNING ☐ TRAUMA ☐ OTHER	☐ YES ☐ NO	☐ YES ☐ NO

DBW FORM BAR-1 11/17

THIS CONFIDENTIAL REPORT IS USED IN RESEARCH FOR THE PREVENTION OF ACCIDENTS AND A COPY IS FORWARDED TO THE UNITED STATES COAST GUARD

CALIFORNIA BOATING ACCIDENT REPORT

CALIFORNIA STATE PARKS DIVISION OF BOATING AND WATERWAYS

INFORMATION: OPERATOR #1

OPERATOR NAME, ADDRESS, PHONE #

IS OWNER DIFFERENT THAN OPERATOR? ☐ YES ☐ NO

OWNER NAME AND ADDRESS

OPERATOR EXPERIENCE
- ☐ UNDER 10 HOURS
- ☐ 10 TO 100 HOURS
- ☐ OVER 100 HOURS

CALIFORNIA BOATER CARD
☐ YES ☐ NO

OPERATOR EDUCATION
- ☐ USCG AUXILARY
- ☐ US POWER SQUADRON
- ☐ STATE COURSE
- ☐ INFORMAL
- ☐ NONE
- ☐ OTHER: _____

AGE

MARINA/RAMP LAUNCHED FROM:

INFORMATION: VESSEL #1 *(YOUR VESSEL)*

THIS VESSEL ONLY	# INJURED	# DEAD	ESTIMATED DAMAGE	RENTED BOAT ☐ YES ☐ NO	# OF PERSONS ON BOARD	# OF PERSONS TOWED

BOAT NUMBER (CF OR DOC #)	MFR. HULL ID #	BOAT NAME	DEPTH (TRANS. TO KEEL)	BEAM WIDTH	LENGTH

BOAT MANUFACTURER	BOAT MODEL	YEAR BUILT	SPEED AT TIME OF ACCIDENT _____MPH	# OF ENGINES	HORSE POWER

ACTIVITY
- ☐ RECREATIONAL
- ☐ COMMERCIAL
- ☐ OTHER

FIRE EXTINGUISHER ON BOARD ☐ YES ☐ NO

TYPE OF FIRE EXTINGUISHER

ONBOARD

FIRE EXTINGUISHER USED ☐ YES ☐ NO

LIFE JACKETS ON BOARD ☐ YES ☐ NO

LIFE JACKETS ACCESSIBLE ☐ YES ☐ NO

LIFE JACKETS WORN ☐ YES ☐ NO

TYPE OF BOAT
- ☐ OPEN MOTORBOAT
- ☐ CABIN MOTORBOAT
- ☐ PERSONAL WATERCRAFT
- ☐ HOUSEBOAT
- ☐ PONTOON
- ☐ INFLATABLE
- ☐ SAILBOAT (aux. engine)
- ☐ SAILBOAT (sail only)
- ☐ CANOE/KAYAK
- ☐ RAFT
- ☐ ROWBOAT
- ☐ AIRBOAT
- ☐ OTHER (specify) _____

HULL MATERIAL
- ☐ WOOD
- ☐ ALUMINUM
- ☐ FIBERGLASS
- ☐ PLASTIC
- ☐ RUBBER/VINYL/CANVAS
- ☐ STEEL
- ☐ OTHER (specify) _____

PROPULSION (select all that apply)
- ☐ PROPELLER
- ☐ SAIL
- ☐ MANUAL
- ☐ WATER JET
- ☐ AIR THRUST
- ☐ OTHER (describe) _____

ENGINE TYPE (select one)
- ☐ OUTBOARD
- ☐ STERNDRIVE (I/O)
- ☐ INBOARD
- ☐ POD DRIVE
- ☐ NONE
- ☐ OTHER: _____

TOTAL HORSEPOWER: _____ HP

OPERATION AT TIME OF ACCIDENT
- ☐ CRUISING
- ☐ CHANGING DIRECTION
- ☐ CHANGING SPEED
- ☐ TOWING SKIER/TUBER
- ☐ TOWING SKIER – SKIER DOWN
- ☐ TOWING ANOTHER VESSEL
- ☐ BEING TOWED BY ANOTHER VESSEL
- ☐ DRIFTING
- ☐ AT ANCHOR
- ☐ TIED TO DOCK
- ☐ LAUNCHING
- ☐ DOCKING/LEAVING DOCK
- ☐ SAILING
- ☐ OTHER (specify) _____

TYPE OF FUEL
- ☐ GAS
- ☐ DIESEL
- ☐ ELECTRIC
- ☐ OTHER: _____

INFORMATION: OPERATOR #2

OPERATOR NAME, ADDRESS, PHONE #

IS OWNER DIFFERENT THAN OPERATOR? ☐ YES ☐ NO

OWNER NAME AND ADDRESS

OPERATOR EXPERIENCE
- ☐ UNDER 10 HOURS
- ☐ 10 TO 100 HOURS
- ☐ OVER 100 HOURS

CALIFORNIA BOATER CARD
☐ YES ☐ NO

OPERATOR EDUCATION
- ☐ USCG AUXILARY
- ☐ US POWER SQUADRON
- ☐ STATE COURSE
- ☐ INFORMAL
- ☐ NONE
- ☐ OTHER: _____

AGE

MARINA/RAMP LAUNCHED FROM:

INFORMATION: VESSEL #2 *(OTHER VESSEL INVOLVED)*

THIS VESSEL ONLY	# INJURED	# DEAD	ESTIMATED DAMAGE	RENTED BOAT ☐ YES ☐ NO	# OF PERSONS ON BOARD	# OF PERSONS TOWED

BOAT NUMBER (CF OR DOC #)	MFR. HULL ID #	BOAT NAME	DEPTH (TRANS. TO KEEL)	BEAM WIDTH	LENGTH

BOAT MANUFACTURER	BOAT MODEL	YEAR BUILT	SPEED AT TIME OF ACCIDENT _____MPH	# OF ENGINES	HORSE POWER

ACTIVITY
- ☐ RECREATIONAL
- ☐ COMMERCIAL
- ☐ OTHER

FIRE EXTINGUISHER ON BOARD ☐ YES ☐ NO

TYPE OF FIRE EXTINGUISHER

ONBOARD

FIRE EXTINGUISHER USED ☐ YES ☐ NO

LIFE JACKETS ON BOARD ☐ YES ☐ NO

LIFE JACKETS ACCESSIBLE ☐ YES ☐ NO

LIFE JACKETS WORN ☐ YES ☐ NO

TYPE OF BOAT
- ☐ OPEN MOTORBOAT
- ☐ CABIN MOTORBOAT
- ☐ PERSONAL WATERCRAFT
- ☐ HOUSEBOAT
- ☐ PONTOON
- ☐ INFLATABLE
- ☐ SAILBOAT (aux. engine)
- ☐ SAILBOAT (sail only)
- ☐ CANOE/KAYAK
- ☐ RAFT
- ☐ ROWBOAT
- ☐ AIRBOAT
- ☐ OTHER (specify) _____

HULL MATERIAL
- ☐ WOOD
- ☐ ALUMINUM
- ☐ FIBERGLASS
- ☐ PLASTIC
- ☐ RUBBER/VINYL/CANVAS
- ☐ STEEL
- ☐ OTHER (specify) _____

PROPULSION (select all that apply)
- ☐ PROPELLER
- ☐ SAIL
- ☐ MANUAL
- ☐ WATER JET
- ☐ AIR THRUST
- ☐ OTHER (describe) _____

ENGINE TYPE (select one)
- ☐ OUTBOARD
- ☐ STERNDRIVE (I/O)
- ☐ INBOARD
- ☐ POD DRIVE
- ☐ NONE
- ☐ OTHER: _____

TOTAL HORSEPOWER: _____ HP

OPERATION AT TIME OF ACCIDENT
- ☐ CRUISING
- ☐ CHANGING DIRECTION
- ☐ CHANGING SPEED
- ☐ TOWING SKIER/TUBER
- ☐ TOWING SKIER – SKIER DOWN
- ☐ TOWING ANOTHER VESSEL
- ☐ BEING TOWED BY ANOTHER VESSEL
- ☐ DRIFTING
- ☐ AT ANCHOR
- ☐ TIED TO DOCK
- ☐ LAUNCHING
- ☐ DOCKING/LEAVING DOCK
- ☐ SAILING
- ☐ OTHER (specify) _____

TYPE OF FUEL
- ☐ GAS
- ☐ DIESEL
- ☐ ELECTRIC
- ☐ OTHER: _____

PERSON COMPLETING THE REPORT

NAME	ADDRESS	PHONE ( )	QUALIFICATION OF PERSON COMPLETING REPORT ☐ OPERATOR ☐ OWNER ☐ OTHER (specify) _____
SIGNATURE		DATE	

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APPENDIX C Whitewater Class system

The following classification is based on a guide for rivers established by the American Whitewater Affiliation. The river should be considered one class more difficult than normal if the water temperature is below 50° Fahrenheit, or the trip is in a wilderness.

Class I ▶ Easy

Fast-moving water with riffles and small waves. Few obstructions, all obvious and easily avoided by paddlers with little training. Risk to swimmers is slight; self-rescue is easy.

Class II ▶ Novice

Straightforward rapids with wide, clear channels, which are evident without scouting. Occasional maneuvering may be required, but rocks and medium-size waves are avoided easily by trained paddlers. Swimmers are seldom injured and group assistance, while helpful, is seldom needed.

Class III ▶ Intermediate

Rapids with moderate, irregular waves, which may be difficult to avoid and which can swamp an open canoe. Complex maneuvers in fast current and good boat control in tight passages or around ledges are often required; large waves or "strainers" such as fallen trees, bridge pilings and undercut rocks may be present but are easily avoided. Strong eddies and powerful currents can be found, particularly on large-volume rivers. Scouting is advisable for inexperienced parties. Injuries while swimming are rare; self-rescue is usually easy but group assistance may be required to avoid a long swim.

Class IV ▶ Advanced

Intense, powerful but predictable rapids requiring precise boat handling in turbulent water. Depending on the character of the river, it may feature large, unavoidable waves and holes or constricted passages demanding fast maneuvers under pressure. A fast, reliable eddy turn may be needed to initiate maneuvers, scout rapids or rest. Rapids may require "must" moves above dangerous hazards. Scouting is necessary the first time down. Risk of injury to swimmers is moderate to high, and water conditions may make self-rescue difficult. Group assistance for rescue is often essential but requires practiced skills. A strong Eskimo roll is highly recommended.

Class V ▶ Expert

Extremely long, obstructed, or very violent rapids, which expose a paddler to above-average danger. Drops may contain large, unavoidable waves and holes or steep, congested chutes with complex, demanding routes. Rapids may continue for long distances between pools, demanding a high level of fitness. What eddies exist may be small, turbulent or difficult to reach. At the high end of the rating scale, several of these factors maybe combined. Scouting is mandatory but often difficult. Swims are dangerous, and rescue is difficult even for experts. A very reliable Eskimo roll, proper equipment, extensive experience and practiced rescue skills are essential for survival.

Class VI ▶ Extreme

These runs often exemplify extremes of difficulty, unpredictability and danger. The consequences of errors are very severe and rescue may be impossible. For teams of experts only, at favorable water levels, after close inspection and taking of all precautions. This class does not represent drops thought to be unrunnable, but may include rapids that are only occasionally run.

Generally, Class I and II rivers can be run in open canoes. Some higher-class rivers are suitable in open canoes if boaters are highly skilled, if time is allowed for emptying water from the boat, and if extra flotation is firmly installed in the boat. A CLASS OF RIVER MAY CHANGE ACCORDING TO THE AMOUNT OF RIVER RUNOFF AND THE DEPTH OF WATER AT A GIVEN POINT.

GLOSSARY

A

abaft Toward the rear of the boat or vessel.

aboard On, in or into a boat.

abreast Side by side; by the side of.

aft Describing the after section of a vessel, or things to the rear of amidships and near the stern.

ahead In a forward direction.

aground (See grounding)

Aid to Navigation (ATON) Any device external to a vessel specifically intended to assist navigators in determining their positions or safe courses, or to warn them of dangers or obstructions.

all-round light A light which shows all the way around; 360 degrees.

amidships Midway between the bow and the stern on a boat.

anchor A forging or casting shaped to grip the sea bottom and, by means of a cable or rope, hold a boat in a desired position.

anchorage A suitable place for anchoring in relation to the wind, seas and bottom.

anchor line A line used to hold a vessel fast to the anchor.

arrhythmia an irregularity in the rhythm of the heart's beating.

asphyxiation to cause a loss of consciousness as a result of too little oxygen and too much carbon dioxide in the blood; suffocation.

astern Behind or towards the rear of a vessel.

athwart Across.

auxiliary engine A "stand by" source of power.

B

bail To remove water from a boat by pump or bailer.

bass boat A modified skiff or jon boat. Usually has a covered forward deck and a powerful motor to get to fishing places quickly. Used on lakes and rivers.

bathers Swimmers.

beam Imaginary line amidships at right angles to keel of vessel. Also vessel's width amidships.

bearing The direction of an object from an observer.

berth A bed or boat slip.

bight The part of the rope or line, between the end and the standing part, on which a knot is formed.

bilge The lower internal part of a boat's hull.

bilge pump A submersible pump that is used to pump water out of the bilge.

blind bend An area in which another vessel may be obscured from view.

boat A waterborne craft smaller than a ship.

bollard A fitting usually on a dock, pier or wharf to which mooring lines can be attached.

bow The forward part or front of the boat.

bowline The name of a commonly used knot.

bow line A docking line leading forward from a vessel's bow.

buoy A floating aid to navigation.

C

cabin A compartment for passengers or crew.

can buoy A green cylindrical buoy bearing an odd number and marking the port side of a channel from seaward.

canoe A lightweight, long, narrow boat propelled by a paddle or sail.

capacity plate Gives maximum weight of passengers and gear and permitted horse-power of the motor. Must be in full view of the operator's station.

capsize To turn over.

carburetor backfire flame arrestor Required equipment on all motorboats except outboards and diesels. Reduces chance of fire caused by sparks in internal combustion engines.

cast off To release all mooring lines.

catamaran Boat with two hulls connected by a deck.

centerboard A pivoting board or metal plate, housed in a slotted trunk, which can be raised or lowered. When lowered it reduces a sailboat's leeway (tendency to sideslip).

chafing gear Cloth, tape, or material attached around a line or rigging to prevent wear or chafing.

channel The part of a body of water deep enough for navigation through an area otherwise not suitable; usually marked by ATONS or range markers.

chart A map of a body of water that contains piloting information.

chine The intersection of the sides and bottom of a boat.

cleat A piece of wood or metal with projecting ends to which lines are made fast.

clew The lower, aft corner of a sail.

clove hitch A hitch temporarily fastening a line to a spar, piling, or another line.

closure The act of closing the distance between two vessels.

cold water emersion/ cold water shock The sudden physiological reactions upon entering cold water that cause significant and deadly medical injuries leading to hypothermia.

compass The instrument which shows the heading of a vessel.

coupler A device on the tongue of a trailer; attaches the trailer to the ball of the towing vehicle.

cowl Hooded opening that provides ventilation.

crossing situation The situation in which one vessel moves across the path of another.

cruiser A seaworthy craft that usually has some sort of living quarters.

cuddy cabin A small shelter cabin.

current The movement of the water in a horizontal direction.

D

danforth anchor A patented lightweight anchor characterized by long, narrow twin flukes, pivoted at one end of the relatively long shank.

danger signal A series of five or more short blasts on a vessel's whistle, air horn, or other signaling device.

danger zone The area of a vessel from dead ahead to 22.5 degrees abaft its starboard and port beams.

daybeacon An ATON consisting of one or more daymarks and the piling to which they are attached.

daymark A signboard shaped like a diamond, square, triangle or octagon.

deck Any permanent covering over a compartment.

dinghy A small rowboat.

distress signal See visual distress signal. Also:
1. Mayday, Mayday, Mayday.
2. Any of a number of devices for showing a vessel needs help.

diuretic Drug or substance that increases the output of urine causing dehydration. Caffeine in coffee or soft drinks is an example.

diving flag The white-and-blue, swallow-tail, Alpha signal flag, or a red flag with a white diagonal stripe used to indicate a diver in the area.

dock A place to moor a vessel; the act of mooring a vessel to a pier or wharf.

documented vessel Vessel registered with the Coast Guard.

draft The depth of a vessel's keel and propeller below the waterline.

dry chemical The material in some Class B fire extinguishers; baking soda.

E

eddy A current that moves in the opposite direction of the main current.

Emergency Position Indicating Radio Beacon (EPIRB) An automatic radio transmitter that should be carried on any boat that is operating off shore. When activated, it sends a signal that there is an emergency and guides searchers to the position.

Engine Cut-off Switch (ECOS) Emergency engine/propulsion cut-off device, sometimes referred to as a kill switch, is used to stop the boat engine should the driver unexpectedly leave the wheel or fall overboard.

Eskimo roll The primary self-rescue technique for kayakers to right themselves after capsizing. The paddler remains sealed in the kayak while performing a series of steps that brings them upright.

F

fairway A navigable part of a river or bay through which vessels enter or depart; a part of a harbor or channel that is kept open and unobstructed.

federally navigable waters The seas and waters which provide a "road" for transportation between two or more states or to the sea.

fenders Objects placed along the side of the boat to protect the hull from damage.

ferry When referring to river travel, a method used to navigate across a river current with little or no downstream travel.

figure eight knot A knot in the form of a figure eight, placed in the end of a line to prevent the line from passing through a grommet or a block.

fishtail The side-to-side motion of a trailer when it does not have sufficient weight on its tongue.

flame arrestor A safety device on an inboard or stern drive engine which prevents an explosion from an exhaust backfire.

flare 1. The outward spread of the boat's sides from the waterline to the rail at the bow.
2. A visual distress signaling device.

float plan A document that describes the route(s) and estimated time of arrival of a particular voyage. It usually includes a description of the vessel, its equipment, and its passengers.

forward Toward the bow.

fouled Any piece of equipment that is jammed or entangled, or dirtied.

four-pole electrical connector An electrical connector commonly used to connect a tow vehicle and a trailer. Comes in two different and incompatible shapes, flat and round.

freeboard The vertical distance measured on a boat's side from the waterline to the gunwale.

G

gear A general term for ropes, blocks, tackle and other equipment.

give-way vessel Required to take early and obvious action to avoid a collision when nearing another vessel.

grab rails Hand-hold fittings mounted on cabin tops and sides for personal safety when moving around the boat.

grounding On or onto the shore, the bottom, or a reef: the boat ran aground.

GPS Short for Global Positioning System. This is a satellite system used for highly accurate navigation and pinpointing of location.

grapnel A straight-shank anchor with four or five curved claw-like arms and no stock.

gunwale The upper edge of a boat's side. (Pronounced gun-nel.)

H

hailing port A port to which a boat is documented with the Coast Guard.

hard-chined Hull shaped with flat panels joined at an angle.

hatch An opening in a boat's deck for persons or cargo to go below.

head A marine toilet.

head-on The situation which exists when two boats approach each other and each sees both the red and green sidelights of the other.

helm The tiller, wheel or steering gear of a vessel.

highside In rafting when a team of paddlers puts their weight on the downstream end of the raft to prevent a "wrap."

hitch 1. A knot used to secure a rope to another object or to another rope, or to form a loop or a noose in a rope. 2. A trailer hitch which is an attachment on the tow vehicle where the trailer is directly attached.

holes In river terminology a hole is a place where water flows over a submerged object, creating a reverse current that can hold a buoyant object.

horsepower The equivalent of a lift of 550 pounds one foot in one second.

hull The body of a boat.

hull ID number A number that includes the manufacturer's ID code, hull serial number, date of certification, and model year, and is permanently affixed to a vessel's hull.

hydrology In river terminology, denotes the science dealing with the properties of flowing water.

hyperthermia A physical condition where the body gains heat faster than its ability to cool itself.

hypothermia A physical condition where the body loses heat faster than it can produce it.

hyper-ventilation Extremely rapid or deep breathing that may cause dizziness, fainting, etc.

I

inboard engine An engine often mounted amidships; connects to the propeller by a propeller shaft.

inflatable A vessel which is inflated by air or carbon dioxide; can be collapsed for transporting.

J

jet drive A special form of a stern drive engine; pumps large amounts of water which is "jetted" out to propel the craft.

jon boat A flat-bottomed boat with square ends used on rivers and lakes; often used by people fishing or hunting.

K

kayak An Eskimo canoe. A water-tight boat; if it turns over, water does not enter; easily righted.

keel The permanently positioned, fore-and-aft backbone member of a boat's hull.

knot A bend in a line. Also, a unit of speed equal to one nautical mile (6,076.10 feet) an hour or 1.2 statute (land) miles an hour.

L

lanyard 1. A short piece of rope or cord used for fastening something or securing rigging. 2. For powerboats and PWCs, a cord with a clip attached to an egine cut-off switch.

latitude The distance north or south of the equator, measured in degrees.

line Rope and cordage used aboard a vessel.

longitude The distance in degrees east or west of the meridian at Greenwich, England.

M

Marine Sanitation Device (MSD) A device fitted to a marine toilet to prevent the dumping of raw sewage into the water.

marlinespike A tool for opening the strands of a rope while splicing.

mast A spar set upright to support rigging and sails.

masthead light A light at the top of a mast; in a small vessel may be on a staff or post Usually shines forward; covers an arc of 225 degrees.

mooring Commonly, the anchor, chain, buoy, pennant, etc., by which a boat is permanently anchored in one location.

mooring line A line for making a vessel fast to a pier, dock or mooring buoy.

motorboat Any watercraft 65' or less in length propelled by machinery, whether or not such machinery is the principal source of propulsion.

mushroom anchor A stockless anchor with a metal bowl at the end of its shank. Large ones are used for anchoring mooring buoys.

N

nautical mile One minute of latitude; approximately 6076 feet or 1.2 statute (land) miles.

navigation The art of conducting a ship using compasses, charts and other navigational equipment in order to get from point to point.

navigation rules The regulations governing the movement of vessels in relation to each other, generally called steering and sailing rules.

nun buoy A conical, red buoy bearing an even number and marking the starboard side of a channel from seaward.

O

oar A long, wooden instrument with a flat blade at one end, used for propelling boats.

outboard motor A detachable motor mounted on a boat's transom.

outdrive A type of propulsion system for boats. The inboard motor operates the exterior drive, also called an inboard/outboard.

overboard Over the side.

overtaking A vessel coming up on another; at night the overtaking vessel sees the stern light of the other vessel.

P

paddlecraft Any boat whose primary propulsion is a paddle. Usually refers to canoes, rafts, kayaks and stand up paddleboards.

Personal Watercraft (PWC) A vessel propelled by a water-jet pump or other machinery as its primary source of motive power and designed to be operated by a person sitting, standing, or kneeling on the vessel, rather than sitting or standing within the vessel's hull.

PFD Personal Flotation Device. (Lifejacket)

pier A loading or mooring platform.

planing A boat is said to be planing when it is essentially moving over the surface of the water rather than through the water.

planing hull Type of hull that is shaped to lift out of the water at high speed and ride on the surface.

port The left side of a boat when you are (inside) facing the bow; also a destination or harbor.

powerboat A vessel propelled by mechanical means.

prolonged blast A whistle signal four to six seconds long.

propeller Wheel or screw mechanism that pushes water aft to propel the boat.

R

rail A protective edge on the deck of a boat.

regulatory marker A white and orange marker used in the USWMS to indicate danger, restricted operations, or an excluded area.

restricted visibility Any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, smoke or other causes.

rigging The general term for all the lines (ropes) of a vessel.

rode An anchor line and/or chain.

rope In general, cordage as it is purchased at the store. When it comes aboard a vessel and is put to use it is referred to as a "line."

rowboat A small, flat-bottom, pointed boat propelled by oars.

rowing shell Long, narrow and relatively unstable craft powered by oars. Used for recreation and racing.

rudder The control surface, usually aft by which a boat is steered.

rules of the road The nautical traffic rules for preventing collisions on the water.

running lights required to be shown on boats underway between sundown and sunup, and during periods of reduced visibility.

S

sailboard Also known as a windsurfer. A board similar to a surfboard that is propelled by wind and sails.

sailboat A boat powered by wind and sails. May or may not have an auxiliary engine.

ship A larger vessel usually thought of as being used for ocean travel. A vessel able to carry a "boat" on board.

short blast A one-second sound signal given by a vessel's whistle.

sidelights A green light on the starboard side and a red light on the port side each showing an unbroken light over an arc of 112.5 degrees and so fixed to show the light from right ahead to 22.5 degrees abaft the beam on its respective side. In a vessel of less than 20 meters in length the sidelights may be combined in one lantern carried on the fore and aft centerline of the vessel

spar Any pole, as a mast, yard, boom or gaff, supporting or extending a sail of a ship.

spar buoy A channel marker that looks like a tall, slender pole.

special purpose buoy A buoy having no lateral significance used to indicate an anchorage area, fish net area, spoil grounds, military exercise zone, etc.

SPF Short for sun protection factor. This is a rating indicator of how effective a sunscreen is in blocking the harmful effects of the sun.

spring line Fore and aft lines used in mooring to prevent a boat from moving forward or astern while fast to a pier.

square knot A knot used to join two lines of similar size. Also called a reef knot.

stand-on vessel The vessel required to first hold course and speed when nearing another vessel. However, the stand-on vessel is also required to take any action necessary to avoid a collision if the give-way vessel does not take early and significant action.

stand up paddleboard A type of surfboard that provides a platform for a person to stand up and propel the device across the water with a long-handled paddle. The Coast Guard considers the stand up paddleboard to be a vessel when it is used outside of a swimming, bathing, or surfing zone, subject to the navigation and safety rules of other paddlecraft. In California, the stand up paddleboard is always considered to be a vessel when a paddle is used or carried, making it always subject to the navigation and safety rules of other paddlecraft.

starboard The right side of a boat when you are (inside) facing the bow.

steal your wind When any vessel or object blocks a sailboat's wind.

steering nozzle A device for directing a stream of water from left or right in a jet-propelled engine, thereby affecting the vessel's heading or course.

stern The aft end or back of a boat.

stern drive engine A vessel with an engine mounted inside the hull near its stern and with its propelling mechanism attached to the transom.

sternlight A white light placed as nearly as practicable at the stern showing an unbroken light over an arc of 135 degrees and so fixed as to show the light 67.5 degrees from right aft on each side of the vessel.

stern line A line leading aft from the stern of a boat to a pier.

strainer On a river, any obstacle that the current flows through. Willows, fallen trees or brushy plants are common examples.

stow To store items neatly and securely.

swamp To fill with water, but not sink, a boat or vessel.

swimmer's position In a river, floating on your back, keeping your toes up and your feet pointed downstream.

T

throttle A device for regulating the amount of fuel delivered to the engine to control speed.

throw bag A nylon bag filled with foam and climbing grade rope that is thrown to rescue paddlers swimming in whitewater.

tide The alternate rise and fall of waters caused by the gravitational attraction of moon and sun.

tiller A bar or handle for turning a boat's rudder or an outboard motor.

tongue The front area of a trailer; contains the coupler or hitch that attaches to the towing vehicle.

towing Pulling a vessel through the water; an assistance or rescue maneuver.

transom The transverse planking which forms the aft end of a small, square-ended boat. (Outboard motors are usually attached to a transom.)

trimaran Boat with three hulls, the center one the largest.

U

underway In motion, said of a vessel when not moored, at anchor or aground.

Uniform State Waterway Marking System (USWMS) A system of marks used on state waters to warn boaters of dangers and to provide general information and direction.

unscheduled swim An unexpected fall into the water from a paddle craft. The person overboard should assume swimmer's position.

utility boat A small boat used for transportation, fishing, hunting, and other purposes; includes dinghies and prams.

V

V bottom (vee) A hull with the bottom section in the shape of a "V."

vessel Every kind of watercraft, other than a seaplane on the water, capable of being used as a means of transportation on water.

VHF-FM The frequency band of "ship-to-shore" radios used on small vessels.

visual distress signal A signal to show that you need help and to guide rescuers to a search-and-rescue mission.

W

wake Moving waves, created by vessel motion. Track or path that a boat leaves behind it, when moving across the water.

waterline The line where the surface of the water hits the boat's hull. Can vary on an individual boat depending on the weight of the load.

weighing anchor Raising the anchor when preparing to get underway.

weight carrying hitch A trailer hitch which fastens to the towing vehicle's frame and bumper.

whipping Twine wound around a line to prevent fraying or abrasion.

whitewater Foaming white-tipped water marked by whitecaps, rapids, etc.

windsurfer Also known as a sailboard. A board similar to a surfboard that is propelled by wind and sails.

wrap In rafting, canoeing or kayaking when a raft is pushed against a rock or other obstacle and held there by a strong current.

NOTES

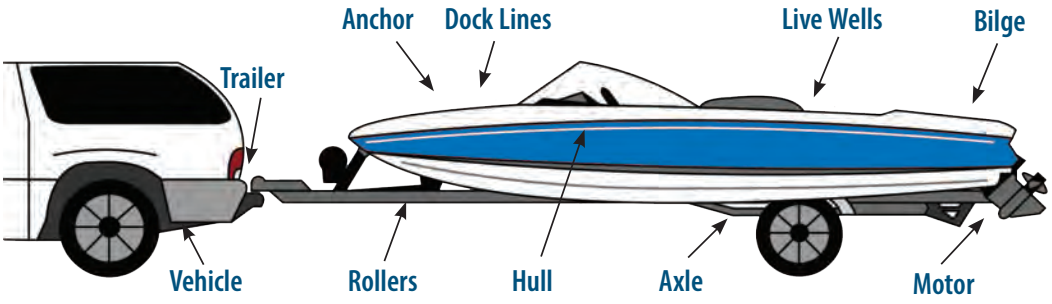
NOTES

Don't Move a Mussel!

Mussels will ruin your boat, fisheries and California waters.

Invasive aquatic mussels are primarily transported by recreational boats. When leaving the water, boaters should follow these steps to prevent the spread of quagga and zebra mussels:

- **Inspect** all exposed surfaces—small mussels feel like sandpaper to the touch.
- **Wash** the hull of each watercraft thoroughly, preferably with high-pressure hot water.
- **Remove** all plants and animal material.
- **Drain** all water and dry all areas.
- **Drain** and dry the lower outboard unit.
- **Clean** and dry all live-wells.
- **Empty** and dry any buckets.
- **Properly** dispose of all bait.
- **Wait** five days and keep watercraft dry between launches into different fresh waters.

Report Mussel finds to 866-440-9530
Visit dbw.parks.ca.gov/StopQZ

Check Your Boat, Trailer and Vehicle. Look for Mussels Here: