CHAPTER 18

Kayaking and Rafting

"It is calm, the smooth sea heaves in a long swell towards the rocky islets that fringe the shore, a light haze still lies over the sounds between them, and the seabirds floating on the surface seem double their natural size. The kayaks cut their way forward, side by side, making only a silent ripple."

—Fridtjof Nansen, *Eskimo Life,* 1894

Tumbling down mountain valleys, foaming through sandstone canyons, heaving, boiling, and swirling between the walls of narrow gorges, wild rivers were once the bane of travelers. They were to be avoided rather than relished, gone around rather than down. Today, all of that has changed. Kayakers and rafters are discovering that rivers can be fluid pathways into some of the finest unspoiled country anywhere. Many offer the bonus of rapids challenging river runners of every skill level. Sea kayaks are expanding the range of possibilities beyond streams, too, as paddlers explore shorelines, coves, and bays, and set out on extended journeys across open water.

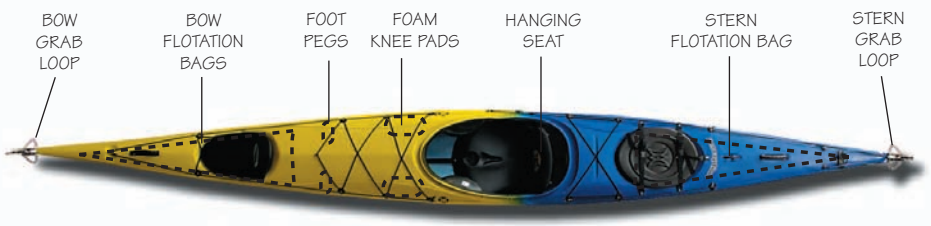
Terrific adventures await you just beyond the bows of kayaks and rafts. With some essential preparation and basic training, you'll soon be taking a paddle in hand or grasping a pair of oars and launching out on your own great watercraft trips.

Kayaks

Natives of the far northern latitudes have been building kayaks for thousands of years, stretching sealskins over sturdy frames fashioned from driftwood to make light, streamlined boats. Modern sport kayaks, while similar in appearance to their sealskin ancestors, are constructed of some of the same durable materials as modern canoes. The most obvious distinctions can be seen in the differences between kayaks built for white water and those intended for the sea.

Touring Kayaks

Touring kayaks are shaped to maintain a course over long distances rather than to make rapid changes in direction. Touring kayaks also are known as sea kayaks, although many never touch salt water, instead leaving their wakes on quiet rivers, lakes, and inland waterways. They are quite a bit longer and flatter than whitewater kayaks, and some have a movable rudder or a stationary fin, called a *skeg,* to help them track a true line—a useful feature when paddlers must contend with winds, tides, and currents.



Touring kayak

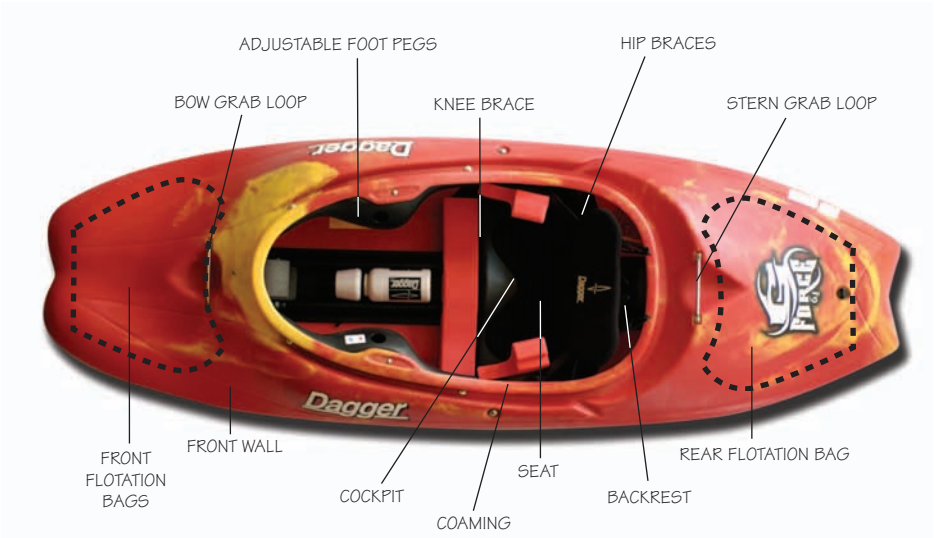
Storage compartments and roomy interiors allow kayakers to carry provisions and gear for camping trips of several days or more. Some touring kayaks feature two cockpits so that partners can paddle in tandem.

Folding and Inflatable Kayaks

Kayaks that can be dismantled for packing and transport make it possible for boaters to reach put-in points on rivers and lakes that might be inaccessible for more conventional boats. Inflatable kayaks offer terrific portability and ease of storage, and they are less expensive than many rigid kayaks, though inflatables don't have decks or cockpits, and thus no way to seal out water.

Hybrid Kayaks

Thanks to its rounded hull and pronounced bottom curve, or *rocker,* a hybrid kayak can manage the quick maneuvers needed for running rapids. The compact interiors of whitewater kayaks offer little room for storing gear.



Hybrid kayak—squirt or stunt boat

Kayak Materials

Anyone familiar with canoe construction will recognize that many of the same materials are used to build kayaks. The *polyethylene* found in most molded whitewater kayaks is tough and relatively inexpensive. *Fiberglass* kayaks are durable and lightweight. They can be more easily damaged than boats made of other materials, but they are easy to repair. A kayak that includes layers of *Kevlar®* fabric can be strong, light, and pricey.

Outfitting Your Kayak

There is more to a kayak than simply the boat. As with canoeing, rafting, sailing, and any other activities involving watercraft, you'll need a personal flotation device (PFD), clothing appropriate for the conditions, and protection from the sun. Kayakers and canoeists venturing into white water also must wear helmets. Sea kayakers might require navigational aids and additional items of emergency gear. A spray skirt, paddle, flotation bags, and bilge pump round out the basic kayaking equipment. (For more on preparing for watercraft activities, see the chapter titled "Watercraft Adventure Safety.")

SAFETY ESSENTIALS FOR KAYAKING AND RAFTING

For a discussion of safety issues that apply to kayakers and rafters, see the chapter titled "Watercraft Adventure Safety." For the text of the BSA's Safe Swim Defense and Safety Afloat, see the *Fieldbook* Web site.

Spray Skirt

A spray skirt made of neoprene or coated nylon fits tightly around your waist and, when you are seated in a kayak, attaches to the rim of the cockpit. The skirt will prevent water from flooding the craft while you negotiate rapids, are hit by spray and waves, or roll upside down. A release loop at the front of the skirt allows you to detach it quickly if you must bail out of the boat.

Paddles

Kayak paddles are made of fiberglass, plastic, wood, aluminum, or combinations of materials, and feature double blades that are either *feathered* or *unfeathered.* Seasoned kayakers argue both sides of the paddle angle issue, revealing the advantages of each:

- *Feathered paddles.* The blades are offset from one another, or *feathered,* most commonly at an angle of about 45 degrees. As one blade pulls against the water, the other blade is positioned to cut through the wind. With a twist of the wrist, a kayaker rotates the paddle shaft to position the blades for each stroke. The shafts of most paddles are oval rather than round, enabling paddlers to sense by feel the pitch of the blades.

- *Unfeathered paddles.* The blades share the same alignment. Unfeathered paddles require no wrist adjustment between strokes, and can be easier for beginning kayakers to manage. However, as each blade is lifted above the water, it can catch the brunt of the wind and reduce forward momentum.

Breakdown paddles are two-piece paddles with a joint in the center of the shaft; this allows them to be stowed in smaller spaces than required for one-piece paddles, which makes them excellent spares. Breakdown paddles often are the choice of boaters using inflatable or folding kayaks. They can be feathered or unfeathered, depending on how they are assembled. *One-piece paddles* have no joints, and thus little can go wrong with them.

Sizing a Kayak Paddle

Hold a kayak paddle over your head with your elbows bent at a 90-degree angle. For a whitewater paddle, there should be about 6 inches of shaft between your hand and the paddle blade. For a touring paddle, that distance should be at least 12 inches. In general, a paddle that is too short is better than one that is too long, and narrow blades will be easier to manage than wide ones.

Flotation Bags

The watertight storage compartments of most sea kayaks double as flotation chambers. A whitewater kayak, however, might not possess enough buoyancy by itself to stay afloat when filled with water. *Flotation bags* inserted in the bow and stern prevent water from completely filling a capsized craft, and will keep it from sinking. Vertical walls under the bow and stern decks strengthen the kayak and help prevent it from collapsing when the boat is under the extreme pressure of rough water.

"The best bilge pump is a scared man with a bucket."

—Traditional maritime lore

Bilge Pump

A spray skirt will keep most of the water out of a kayak, but during a long paddle on open seas or on an outing when a spray skirt isn't essential, some water is bound to get into your boat. A handheld pump can be the answer for getting rid of it while you are afloat. When not in use, the pump can ride under elastic cords on the deck. (Some boats are equipped with built-in pumps that can be operated by a kayaker without removing the spray skirt. Sponges and bailers, common in canoes, also are efficient means for rafters and kayakers to remove water from their boats.)

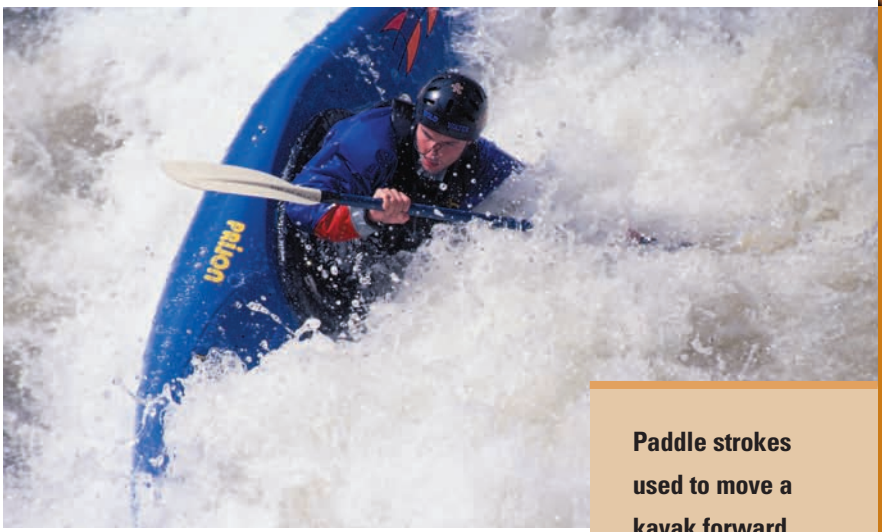
Carrying a Kayak

Many kayaks have toggles installed at the bow and stern, positioned for two people to lift and carry a craft. For a solo carry, reach across the cockpit, lift the kayak, and flip it onto your shoulder. (If the kayak is heavy, allow the stern to stay on the ground as you lift and position it.) Shift the cockpit on your shoulder to reach the kayak's balance point, and you should be ready for a relatively easy tote to your destination.

Getting Into a Kayak

A kayak is an extension of your body, responding not only to the thrust of the paddle, but also to the motion of your torso, legs, and hips. You won't sit in a kayak so much as wear it, the tight fit helping you move the kayak with you as you maneuver.

Put the spray skirt around your waist. Provide stability to the floating kayak by placing one paddle blade across the back of the cockpit and resting the other blade on the shore or dock. Grasp the center of the paddle and the back edge of the cockpit with one hand, then ease yourself into the boat. Attach the spray skirt to the cockpit rim and you're ready to paddle off.



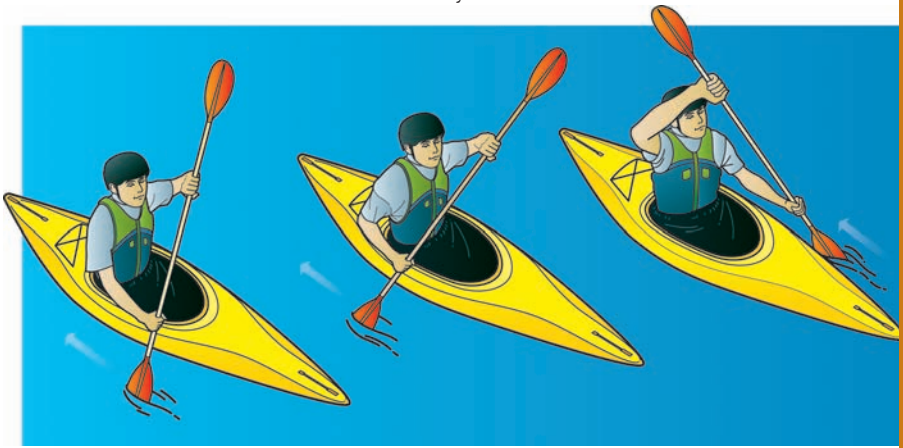
Paddle strokes used to move a kayak forward employ the *power face* of a paddle blade. Strokes for moving backward use the *back face.*

Propelling a Kayak

With a few basic strokes, you can make a kayak dance. The best place to learn is in quiet water, practicing until the strokes are automatic.

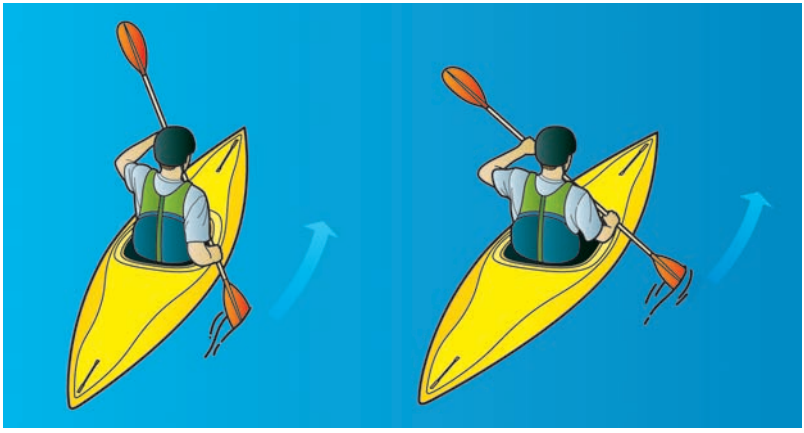
Forward Stroke

Use the *forward stroke* to move a kayak forward: Extend the right paddle blade as far toward the bow of the boat as you can, rotating your body to increase your reach, but not leaning forward. Extending your right arm, place the blade in the water close to the bow. Power comes primarily from the strong muscles of your torso as you pull your right arm back and push your left arm forward to move the kayak past the blade. When your shoulders are fully rotated to the right, knife the paddle out of the water, drop your right wrist to turn the left blade into proper position, and begin a forward stroke on the left side of the kayak.



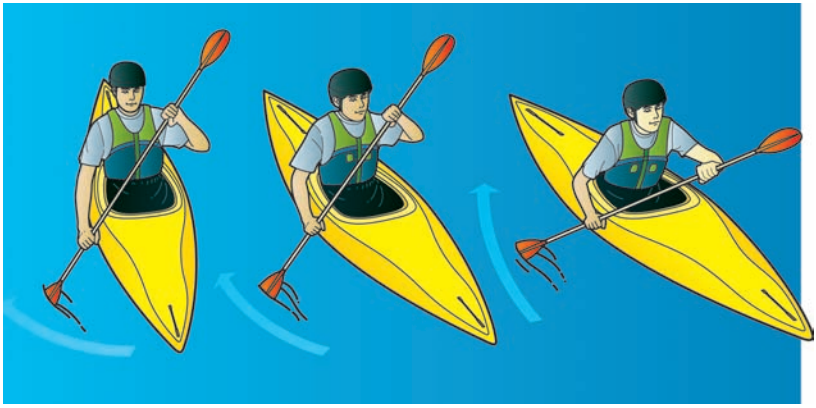
Reverse Stroke

Use the *reverse stroke* to slow a moving kayak or move it backward. Perform this stroke by reversing the steps of the forward stroke. Begin by twisting to the right and placing the right paddle blade in the water behind you and close to the boat. Push forward by rotating your torso to the left. As the right blade slips out of the water at the end of the stroke, drop your right wrist to position the left blade, and begin a reverse stroke on the opposite side of the kayak.



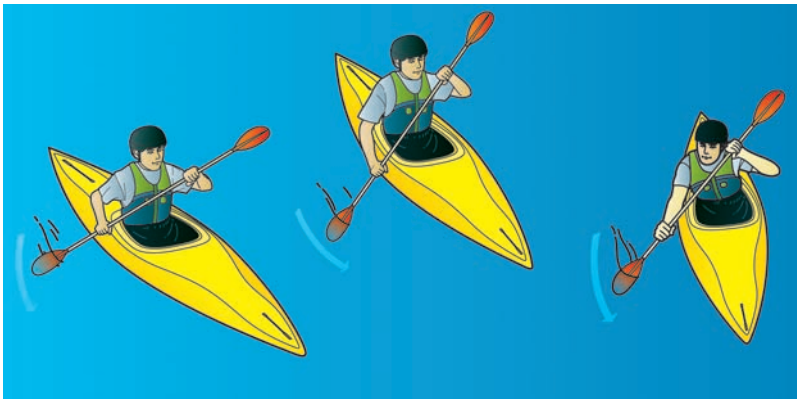
Sweep Stroke

A *sweep stroke* on the right side of a kayak turns the bow to the left as it pushes the boat forward, while a sweep on the left side turns the bow the other way. A sweep is useful for moving around obstacles, though it will also slow your boat considerably. Begin a sweep by holding the paddle horizontally over the boat. Extend one arm and rotate your shoulders, then insert a blade into the water as far forward as possible, the power face turned away from the kayak's bow. Pull the paddle in a wide arc that continues all the way to the stern, powering the stroke with the twist of your shoulders and torso.



Reverse Sweep

A *reverse sweep* slows the forward motion of a kayak and turns the boat toward the side on which the stroke is performed. Use it when you need a quick, forceful course change. Holding the paddle horizontally, twist sideways and insert the blade into the water behind the cockpit. Sweep the paddle toward the bow, rotating your shoulders as you do. For best results, sweep wide.



Drawstroke

Executing a *drawstroke* with the paddle aligned with your seat (a *midship draw)* will move a kayak sideways; a draw with the paddle closer to the bow will turn the boat to the stroke side, making the *bow draw* a good turning stroke.

To perform a midship draw, hold the paddle nearly vertical, your upper hand reaching out across the boat. With the power face turned toward the kayak, place the blade in the water and pull it toward the center of the boat. Before the paddle touches your craft, rotate your wrist and knife the blade under water to the starting point of the stroke.

For a bow draw, reach out and place the blade at an angle in the water, then move it toward the boat.

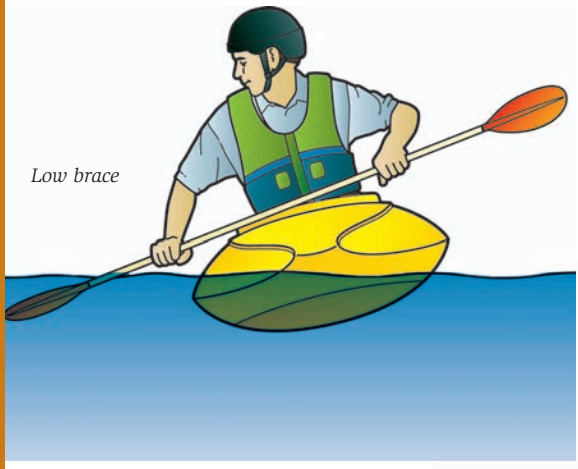
Bow draw

Midship draw

Braces

You can use your paddle to balance a kayak in much the same way outriggers give stability to Pacific island canoes. If you hold a paddle blade against the water with its leading edge tilted up slightly and sweep it back and forth, the force of the blade on the water will lift the paddle and, by extension, the boat.

Apply this principle to kayaking by trying a *low brace.* It is similar to a short sweep, but with the paddle blade nearly horizontal rather than vertical. Lean hard on the shaft during the brace; as long as the paddle is moving relative to the water, the back face of the blade will support your weight. If your kayak does begin to tip away from the sweep, roll your hips to right the boat.



Low brace

A *high brace* can save you from capsizing in rough water and larger waves. The paddle shaft is held at eye level to better position the power face, rather than the back face, of the blade against higher water. Tilt the leading edge of the blade against the push of the current to create a virtual three-point stance. Protect your upper body from injury by keeping your hands in front of your shoulders.

High brace

Kayakers can position themselves below rapids to assist boaters who might capsize.

Hang onto your capsized kayak. It will help keep you afloat, shield you from river obstacles, and enable others to find you more easily as they come to your assistance. Keeping the boat upside down will trap air inside and cause it to float higher in the water.

Capsizing and Righting a Kayak

Capsizing is a part of kayaking. It might be a rare event for a sea kayaker, but in white water it can happen frequently. Practice capsizing in warm, gentle waters—a swimming pool is ideal—so that you will know what to do in a river or on open water. (Wearing a diving mask can make your experience more pleasant and enable you to study the physics of upsetting from a capsizer's point of view.) Become accustomed to making a *wet exit* from a capsized kayak by first pulling the skirt's release loop. Then lean forward to pull your legs from the boat by pushing it forward, with your hands grasping the back edges of the cockpit coaming.

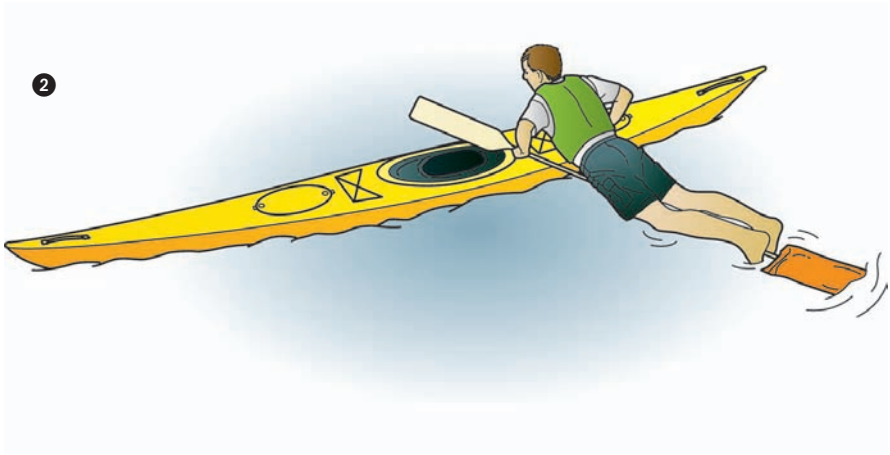
Sea kayakers can use the help of other boaters to get back into their craft, or can do it alone with the aid of a *paddle float*. Both whitewater and sea kayakers can use the *Eskimo roll,* a way of righting themselves without exiting their kayaks.

Assistance From Other Boaters

Fellow kayakers can corral your capsized boat and lift one end to let water dump out of the cockpit. They also can stabilize your kayak by grasping the cockpit from one side while you scramble back in from the other side.

Paddle Float

A *paddle float* is an inflatable bag that is carried under the bungee cord on the deck of a sea kayak. When an upset occurs, you can fit the bag over the blade of a paddle and inflate it with your breath. Then, place the opposite paddle blade across the stern deck of the swamped kayak, and scramble aboard using the floating paddle as a brace. Once you are in the cockpit, empty the boat with the bilge pump, reattach the spray skirt, and continue on your way.



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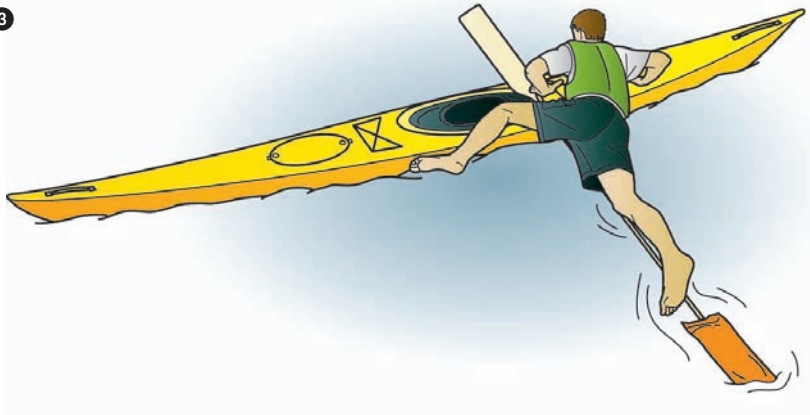

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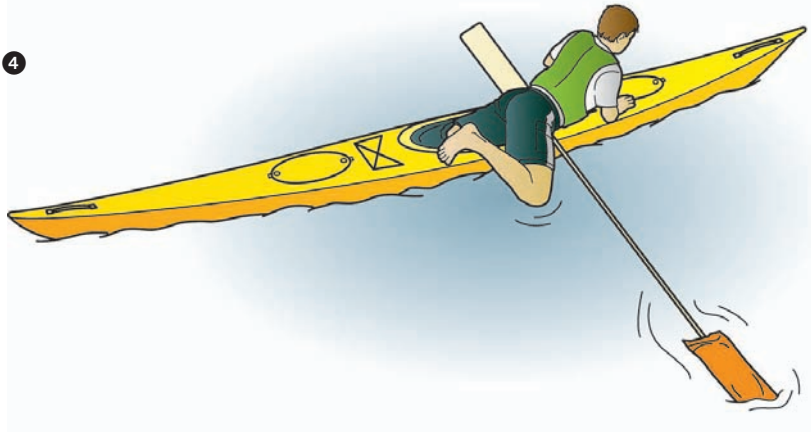

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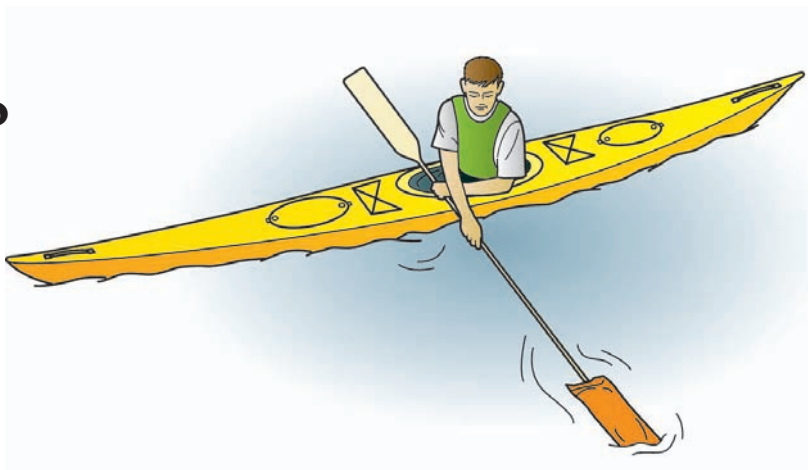


Whenever a kayak capsizes, other boaters must focus their attention on that situation until the paddler is back in the boat or has reached shore. Everyone must stand ready to help a swimming person, right a capsized craft, gather up floating gear and paddles, and render any other assistance that might be called for at the moment.

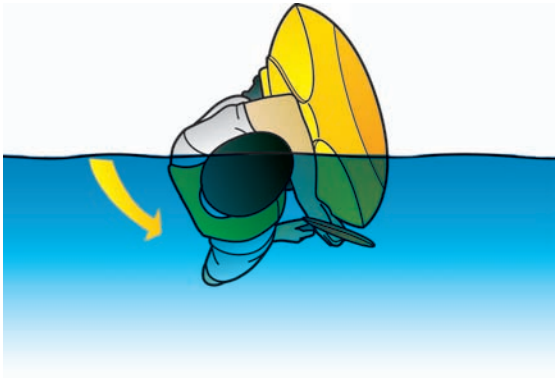
Eskimo Roll

An *Eskimo roll* allows you to recover from capsizing without having to get out of your kayak, a real advantage when you are running a rapids or in a sea kayak far from shore. Before practicing an Eskimo roll, it is crucial to know how to exit an overturned kayak. As with other responses to upsets, the Eskimo roll should be learned in quiet water. You almost certainly will need the assistance of a capable instructor to guide you through the steps.

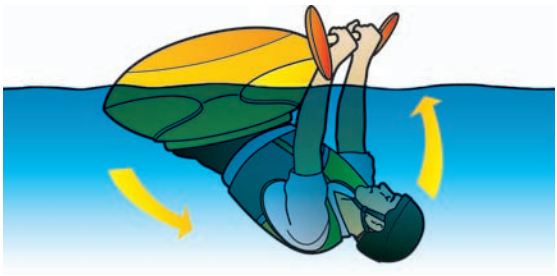
Here's how the Eskimo roll works. As your kayak goes over, lean forward against the deck. Extend so that your face is down and one arm is across the deck. Position the paddle with the front blade's power face up and the shaft parallel to the boat. Use your shoulders, arms, and torso to move the blade in a strong sweep stroke to the kayak stern (keep the front blade on top of the water as it sweeps out from the boat). Wrap your back arm over the hull to give yourself a fulcrum for a powerful stroke. As the force of the stroke rolls you toward the surface of the water, snap the boat upright with your hips.

❶ *Position the paddle parallel and alongside the kayak.*

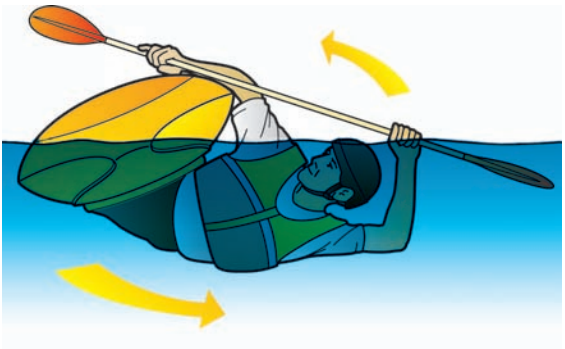
❷ *Lean toward the deck.*



3 *As you sweep, you will roll toward the surface.*



4 *Keep the paddle entirely above water and bend forward over the deck.*



5 *Snap your hips to set the boat upright.*

6 *Recover the boat's balance with a high brace.*

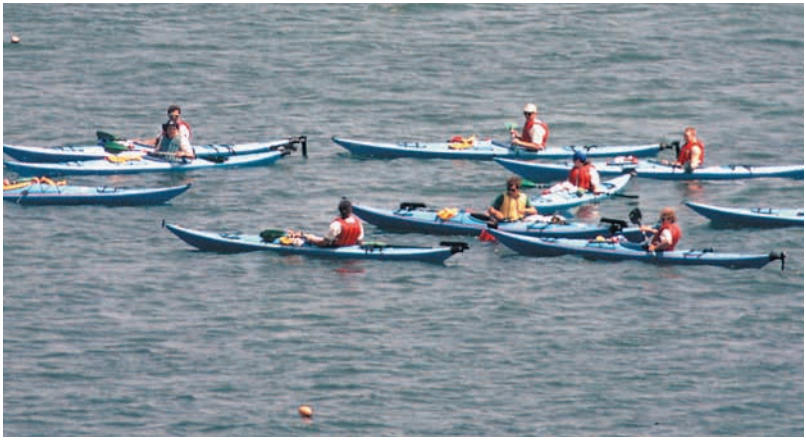
Sea Kayaking Considerations

Getting lost is an unlikely possibility for whitewater paddlers. Open water, though, especially that of large lakes, oceans, or straits and sounds dotted with islands, brings with it conditions much different from those facing river runners. Sea kayakers must develop an understanding of tides, waves, currents, and nautical navigation, and keep their skill levels ahead of the adventures on which they embark.

Essentials carried by a sea kayaker should include a personal flotation device, a spare paddle, a compass, a whistle or similar audible signal for attracting the attention of other boaters, a paddle float, and a bilge pump. The whistle can be attached to a short loop on your PFD (not the zipper pull). The compass also can be clipped to your PFD or secured to the deck where it can be seen from the kayak cockpit. More ambitious sea kayaking trips might require charts, tide tables, a marine VHF two-way radio, a GPS (global positioning system) receiver, emergency shelter and rations, a parasail, and rigging for one sea kayak to tow another.

As with many outdoor activities, sea kayaking is a social sport. Going with others allows you to enjoy an experience with your friends and, through sheer numbers of people and boats, adds considerably to everyone's margin of safety.

For more on the challenges of open water, see the chapter titled "Watercraft Adventure Safety."



Leave No Trace Kayaking

The shallow drafts and extensive range of sea kayaks allow paddlers to venture into salt marshes and mangroves, and along rocky coastlines that are largely inaccessible to other boaters or visitors on foot. Among the most pristine places on Earth, these areas serve as refuges for a tremendous range of wildlife. Enter and treat these environments with the greatest care.

For more on responsible kayaking, see the "Leaving No Trace" section of this book.

Whitewater Kayaking Considerations

A whitewater kayaking trip might be an hour or two of playing in the rapids on a short section of river, or it could be a multiday wilderness adventure with camping gear carried on a support raft. Whatever the case, stay within your abilities. Scout rapids from shore to get a good read on the river ahead so that you will know what you are getting into and how to get back out again. If an upcoming stretch of river appears to be beyond your skill level or if there are strainers, drops, or other water hazards that concern you, make a portage and rejoin the river downstream from the obstacles. There is never any shame in carrying your boat around a rapid you aren't convinced you should run.

For more on sizing up river conditions, see the chapter titled "Watercraft Adventure Safety."

Kayak Storage

When not in use, store a kayak in a dry place sheltered from the sun. Allow it to rest upright, fully supported by its keel, or suspended on edge by three or more wide slings.

Rafts

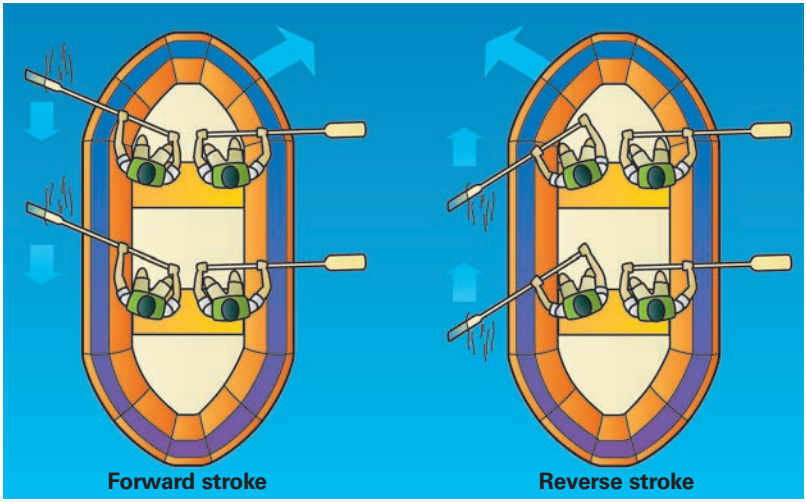
Many early explorers making their way down the great rivers of the American West rowed wooden boats large enough to carry their gear and rugged enough (they hoped) to withstand raging rapids. While wooden boats are still used by some traditional river runners, the sport of whitewater rafting was born shortly after World War II when adventurers began using large Army surplus rafts to challenge the enormous hydraulics of the Colorado River in the heart of the Grand Canyon.

A wooden boat (Grand Canyon style)

The rafts navigating wild rivers today are direct descendants of those military rafts, but are now made of neoprene or rubberized materials resistant to abrasion and puncture. They are constructed with several inflatable chambers, each capable of keeping a raft afloat even if all the others are damaged. Many modern rafts are *self-bailing*—water they take on drains out through grommet holes surrounding an inflatable floor. Depending upon their configuration, human-powered rafts can be propelled either with paddles or with oars.

Paddle Rafts

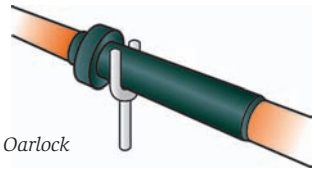
Paddling a raft is a group activity requiring the cooperation of everyone on board. Facing forward, several river runners sit on each side of the boat and use canoe paddles to guide their raft. A group leader calls out commands, instructing the team how to stroke in order to maneuver the boat. The leader might be one of the paddlers, or might sit in the stern and use a paddle as a rudder. Paddle rafts have a distinct advantage in rock-strewn rivers with channels too tight for oar-maneuvered craft. They also allow everyone on board to take an active role in the progress of the trip.

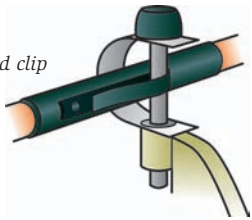


Paddlers using a forward stroke on one side of their raft will cause it to turn away from the paddling side. A reverse stroke will pull the bow toward the paddling side.

Oar Rafts

A raft equipped with oars can best be steered by a single experienced person. Perched atop a platform in the middle of the raft, he or she has a commanding view of the river and can control the motion of the raft by pulling on oars secured to the boat's rigid frame.



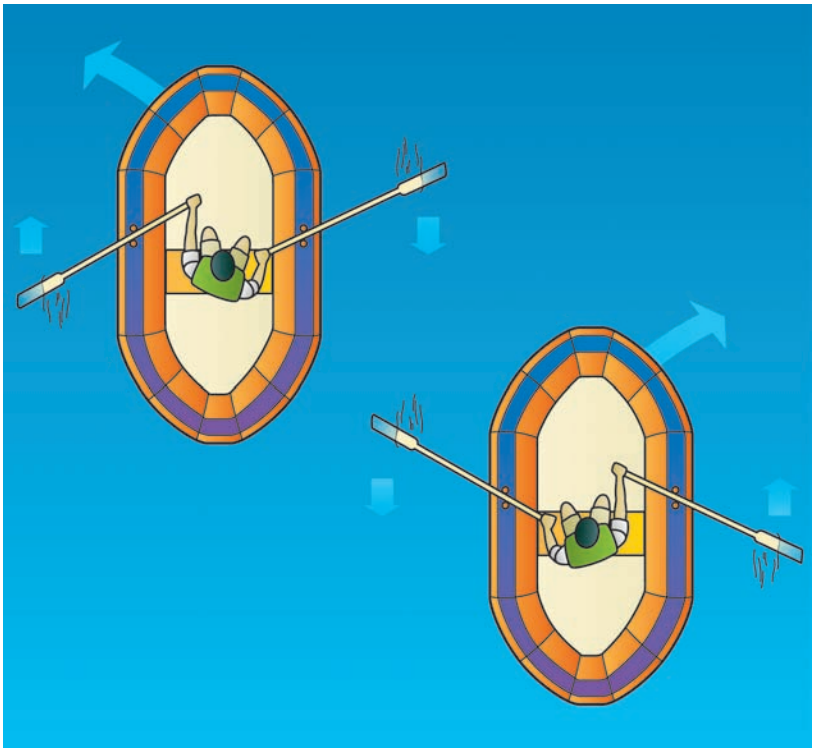


Pins *and* clips *securing oars to a raft set the blades of the oars at the best angle to the water and make it difficult for a big wave to jerk the oars out of a rafter's hands. Oars set in* oarlocks *can be drawn into the boat when rafters are negotiating swift, narrow passages.*

Since a raft with oars needs only one seasoned boater on board, passengers can sometimes run a river even if they don't have much white-water experience. Of course, they'll need to know how to swim, must wear personal flotation devices, and might need helmets. As the raft splashes and churns downstream, they can learn some of the basics of handling a raft in rough water by watching the person at the oars.

Steering an Oar Raft

On moving water, a rafter faces downstream and rows against the current, moving the raft laterally as the boater ferries left and right across the river for the best line through the obstacles ahead.



A pull stroke *on one side of the raft will cause the boat to turn in that direction. A* push stroke *on one side will turn the boat away from the oar. Combine a pull stroke with one oar and a push stroke with the other to make a quick* double oar turn, *or* pivot.

For more on managing river hazards and maneuvering rafts by ferrying, see the chapter titled "Watercraft Adventure Safety."

Rafts and River Journeys

While running rapids is often the highlight of a river trip, floating through a linear wilderness can open opportunities for ecology studies, fishing, camping, navigation, and many other outdoor activities. The carrying capacity of rafts makes them ideal for river trips of several days or more. A raft might be the watercraft of choice for everyone on a journey, or it might serve as the supply vehicle for a fleet that includes several kayaks or canoes.

The ability of rafters to haul lots of cargo and large numbers of people into remote areas brings with it a tremendous responsibility to understand and use the principles of Leave No Trace. That begins during the planning stages of a trip. Contact the agencies managing the river system you wish to visit and learn about any permits or restrictions that apply to you and your group. Of great importance will be methods of waste disposal (perhaps involving bringing along portable toilets called *rocket boxes* for carrying human waste to the end of your journey), fire management (using camp stoves or fire pans), and food handling (leaving shorelines and campsites as clean as you found them).

For more on kayaking and rafting responsibly, see the "Leaving No Trace" section of this book.