

New Kayak Purchase Guide 101

(Whitewater, Recreational, Sea Kayaks, and Touring)

Table of Contents

Introduction	1
Section 1: Whitewater Kayaks	1
Section 2: Sit-in vs. Sit-On-Top Kayaks.....	1
Section 3: Rocker or No Rocker	2
Section 4: Chine Hull vs. Round Hull	2
Section 5: Rec Boat vs. Transitional, vs. Sea Kayak.....	3
Section 6: Plastic (Rotomolded), Thermoform, Fiberglass, Carbon Fiber, Kevlar	3
Section 7: Skeg vs. Rudder	4
Section 8: Safety	4
Section 8a: Safety by Clothing	5
Section 8b: Safety by Boat Type	6
Section 9: Paddles	6
Section 10: Other Considerations	7
Section 11: Summary	7
Glossary.....	8

Introduction

It is the opinion of this author that kayaking is an amazing sport – one that exposes individuals to unimaginable sights and sounds as well as some inherent risk. Selecting the right kayak to suit your needs can mean the difference between a wise investment and buyer's remorse. The following guide is not sponsored by a brand or company, but rather, was assembled using years of experience and so called "lessons learned". This guide is intended to be a helpful and educational starting point as the opinions mentioned herein are that of seasoned amateur kayakers. Happy paddling. •

Section 1: Whitewater Kayaks

Whitewater boats (ww for short) are designed with one very specific goal in mind: safely transport a kayaker down a river while hitting every rock imaginable...ha! Not really, but ww boats are shorter than many recreational (rec) and touring boats because they need to be maneuverable and able to squeeze between tight spaces usually occupied by rocks. There are dozens of ww boat options, rodeo, down river, play boats, river runners, creek boats, squirt boats, etc. They have many of the same qualities as longer boats with regards to rocker and hull width. All ww boats are made to spin on a dime and usually track (go in a straight line) horribly on flat water. These boats are not designed for long distance paddling; they are the jeeps of the kayak world. They can take a beating and keep the paddler safe. WW boats usually don't have bulkheads and the space voids in the rear of the kayak are usually filled with float bags to displace the water and allow the kayak to float if capsized. Water weighs 8 lbs. a gallon and if you have a 55-80 gallon volume kayak and you come out of your boat, you're attempting to drag 500+ pounds of water to shore. Float bags give you a fighting chance of rescuing you and your boat. WW boats also have various metal attachment points. These are used to un-pin a kayak if pinned to a rock by strong current. Helmets, spray skirts and throw bags are a must when ww kayaking and there are very specific skills a paddler uses to navigate moving water, especially whitewater.

Section 2: Sit-in vs. Sit-On-Top Kayaks

Sit-in-kayaks are pretty self-explanatory; you usually sit inside a cockpit. Recreational boats tend to have large openings and no thigh braces molded into the combing for boat control. Higher end boats have smaller cockpit openings (sometimes referred to as key-hole or ocean cockpits). These smaller openings on higher end boats are equipped to attach a spray skirt, which keeps water out of the boat and keeps you warmer in cold conditions. Sit-on-top (SOT) kayaks are basically modified surfboards there you sit-on-top without being confined to a cockpit. There are a lot of recreational SOT's on the market but they tend to be heavy, short and not ideal for covering a lot of miles. The market has also designed special sit-on-top kayaks for fishermen and they tend to really like these boats for getting where power boats can't travel. There is some fun video footage on Youtube where these fishermen are being pulled across the ocean by really big fish. You can also find a fast, racing segment of SOT's called Surf Ski's, these are extremely fast, narrow, light and very tippy. Some surf skis have a hard time staying upright unless you're moving or have a paddle in the water! They are fun and challenging. Most touring or sea kayaks are sit-in and you have a deck covering your legs.

Section 3: Rocker or no Rocker

Rocker is a hull shape where the bow and stern are turned up; imagine looking at a banana from the side. Boats with pronounced rocker tend to handle rough seas better, are better for coastal exploring and are more maneuverable. Kayakers who like to surf shore breaks or like to paddle in really rough conditions tend to choose boats with more rocker so the bows don't pearl (submerge) when going up and over a swell or surfing down the face of a wave. Boats with less pronounced rocker or have straighter keels tend to be faster and are better for racing/workouts. The increased waterline length on these boats are designed to go straight, fast and glide more during the pull phase of your forward stroke. Straighter keels tend to bounce and slap in rough seas vs. rockered hulls which tend to ride up and over swells better. Almost all kayaks have some sort of rocker, but for the best view of a straight hull, fast, sit-in kayak Google: Epic Kayaks. The author owns a variety of sea kayaks, some with more rocker for rough water play and some with longer waterlines for fast touring.

Section 4: Chine hull vs. Round Hull

Chined hulls typically have a hard edge at the waterline where the sheer (side) transitions to the hull under your butt. A chine hull boat tends to have a flatter bottom and the hard edge runs most of the length of the boat. Round hulls are pretty obvious where the transition from the sheer to the hull is round. Racing-type or faster boats tend to have round hull's because the resistance is less, think of the wind traveling over an airplane wing, there are no square airplane wings, right? A chine hull tends to allow a paddler more control when steering or keeping a bearing over a long distance and there is a lot of wind. In a chined boat, you can drop a knee (under the deck) which puts the turning side of the boat deeper in the water and allows you to snap off a turn easier while maintaining your paddle cadence. The author finds it is easier to keep a kayak on a course/bearing over a long distance with a chine hull. It's usually personal preference, but for the author's long distance sea kayak touring, chine hull boats are preferred. Others enjoy the added maneuverability and rough water handling of a round hull, rockered boat. For rough water play and surfing the preference is typically a highly rockered, round hull boat. You'll find sea kayaks with both types of hulls and it's personal preference and both have their merits. There are also boats with variations of a V-hull where the keel is sharply steeped, and the sheer, transitions from a hard chine to a multi-chined hulls.

You may also read where boats have better or worse initial or secondary stability. Most boats when put on edge have a spot where they sit better in the water. You're never really sitting upright, flat and stiff in a touring kayak, you're always moving, adjusting for wind/waves and being an "active" paddler. A boat with good initial stability sits well on edge for the first 10-15 degrees, but if leaned too far, you'll have to be ready to brace with your paddle or get wet. A boat with good secondary stability can be put on edge more than 15 degrees. The boat will lean past the initial stability pretty quick before it finds its comfort spot when leaned. Boats with good secondary stability are better rough water boats and can be leaned pretty far over without dumping. Many times new paddlers think a boat with good secondary stability is too tippy, but it takes some time to get comfortable, these are still very good boats. These are really basic descriptions of hull design and it's just the tip of the iceberg. One could write a Ph.D dissertation about all the hull styles and the fluid dynamics involved.

Section 5: Rec boat vs. transitional, vs. sea kayak:

A rec boat is basically a pool toy on steroids. Many people buy these boats thinking they are going to be the next great adventurer and the boats are not designed for anything more than short excursions, small lakes and slow moving rivers. Rec boats are in the 8' to 12" range, have large cockpits (not designed for spray skirts), are wide, slow, have few if any safety features, no thigh braces, and usually cost in the neighborhood of \$250-\$400. For the most part, these kinds of boats don't have any business in big water or fast moving current. Many recreational boats also don't have flotation or bulkheads which keep a boat floating in the chance the boat capsizes. Recreational boats are a fun and inexpensive way to get on the water and learn basic skills, but they have their limitations. Using these boats wisely, can offer many years of enjoyment.

Transitional boats are a newer and fast growing segment of boats on the market. Manufacturers are realizing that people making the transition from a rec boat to a full on sea kayak aren't ready to make the full jump. Transitional boats are a mix of recreational and sea kayaks. They tend to be 11'-15' long, are lighter, faster and have some of the features of higher end sea kayaks. Their cockpits are designed for spray skirts and you could camp for a weekend out of some of these boats. They are good all-around boats for day paddles or the occasional overnighter. Their shorter length means a slight loss in speed if paddling with a group of high end sea kayaks. These boats are also a little bit lighter to carry and car-top.

Sea Kayaks tend to be anything over 15' in length, their beam (max hull width) is usually less than 24 inches; they have two or more bulkheads (hatches), deck lines, thigh braces, and have spray skirt accommodating cockpits. They are faster, skinnier and designed for rough conditions. Their 15'+ length allow you to pack for a week or more if you want to camp out of your boat. Kayakers can easily pack for 10 days of camping in sea kayaks. Sea kayaks can also be used for day-paddling, working out, etc. Higher end boats also usually require higher end skills and some practice to make them do what you want and to perform more efficiently. It's easy to get overworked in a full on sea kayak if you're not familiar with weather cocking and handling a boat in wind and waves. Learning rolls and rescues are normally on the short list of skills to acquire when venturing into the sea kayak markets.

Section 6: Plastic (rotomolded), thermoform, fiberglass, carbon fiber, Kevlar

Listed above are the most common kayak construction materials. As you go left to right the price increases. Plastic can take a beating, but is harder to repair if punctured and tends to be a heavier boat for carrying and paddling, plus it can flex while paddling. You always have to be careful storing plastic in the sun because UV rays can make them brittle. They can also deform a bit if left in direct sunlight. People who have stored their plastic boats on their side or flat on their keels in hot sun can find the bow and stern has drooped a bit and now the boat doesn't want to go straight, and there's a "C" to the keels or their rocker is less pronounced. If supported properly at the bulkheads and out of the hot sun, this usually won't happen. Thermoform is a harder plastic denser plastic like what ABS plumbing pipe is made from. Thermoform performs close to fiberglass, but still flexes a bit and can get brittle in extremely cold conditions. Thermoform can take a beating with less repair issues than fiberglass. Fiberglass is endlessly fixable and is stiff and rigid. Stiff and rigid hulls are more efficient because your

effort is not lost due to the flex in the boat. Fiberglass has and will always be the go-to material for mid to high end touring kayaks. If you're always running a fiberglass hull up on to rocks or hard surfaces, plan on fixing your gel coat every couple of years. Depending on the manufacturer, the quality of fiberglass layups goes up and down depending on the manufacturer, batch, day of the week, etc. Some people never have problems and others can have trouble where the fiberglass weave separates, a hull seam was missed in the glassing process or the gel coat wasn't put on correctly, etc. Kind of like buying a car, you can buy a lemon or a never have a problem after 300,000 miles. Carbon and Kevlar are lighter and as stiff as fiberglass, but it's harder to repair cosmetically. For the most part, the advantages in weight savings isn't worth the extra \$1000. If a boat weights 45 Lbs. is it really worth an extra grand to shave 2 lbs.?

Section 7: Skeg vs. Rudder

Most recreational boats do not have either. A skeg is a small adjustable keel in the stern (rear) that the paddler can adjust up and down from the cockpit. A skeg is usually controlled by a sliding tab attached to a wire or a rope on the deck of the kayak. A rudder is controlled by the paddler from the foot pegs inside the cockpit. Some think that skegs and rudders are steering devices, but they're not, they are weather cocking prevention tools. When out on open water, wind will tend to push your bow into the wind (weather cocking). It is frustrating and especially difficult if you're trying to paddle from point A to Point B and the wind keeps pushing you to Point C. New paddlers will try and fight the wind all day and I promise you, you'll lose! A paddler is basically wearing a 16+ foot rudder (kayak) and you control this rudder with your body, edging and paddle strokes. You can use the wind to your advantage or not. By dropping your skeg or rudder, it locks in your stern and keeps your bow pointed to your destination. There is also technique involved in keeping your boat going in its intended direction by dropping your windward edge deeper into the water, this takes practice and experience. Yes, you can probably turn "better" with a rudder and some people complain that "my boat won't turn quickly." Kayaks over 11'-12' aren't supposed to snap off turns like a short whitewater boat. Turns in longer boats are more gradual and very rarely will you have to snap off a 90 degree turn in a long boat. Yes, there are techniques for turning quickly, for example in a rescue situation in rough seas, but that is a skill that needs to be practiced. Experienced boaters tend to like a clean, uncluttered deck and a boat with a skeg supports this. When a rudder isn't engaged it's usually retracted and sits on the stern deck of the boat, thus making it a little sail that can push the paddler around from the rear. Skegs push you to better your skills and use the boat and corrective paddle strokes to turn and maneuver vs. using a rudder and foot pegs to steer your boat.

Section 8: Safety

As mentioned earlier, rec boats usually don't have bulkheads. Bulkheads are the sealed hatches in the bow and stern, typically found on longer transitional and touring boats. Bulkheads serve two purposes, semi dry gear storage (mostly) and they serve as buoyancy in case of capsize. An overturned rec boat without bulkheads is impossible to drain and flip over while in water over your head. A rec boat becomes a 400+ lb. immovable object in water deeper than what you can touch. Transitional or traditional sea kayaks have bulkheads, perimeter lines, bow and stern toggles and in a perfect world are

designed to roll with the right skills and practice. An overturned kayak with bulkheads can be drained and overturned by a solo paddler or assisted by another paddler. Perimeter lines are helpful for an overturned kayaker to hold onto while being rescued. Perimeter lines also help a rescuer right your overturned boat and move it into a position where the dumped paddler can re-enter. The chances that a paddler comes out of their boat increases in lumpy water and it is difficult for a rescuer or the swimmer to hold onto a boat in rough water without the deck lines. Bow and stern toggles are used to carry the boat and are places for an overturned kayaker to hold onto while you're pulling them out of a dangerous situation. For example, your buddy wet exits along a rocky shore and he's getting swept into the rocks, you'd have him grab your stern toggle and you'd tow him to safety away from the rocks. As your skills advance, a common safety practice is learning to roll your kayak, so you stay in the cockpit and continue on your trip. Rolling is a special skill that cannot be covered in this arena.

Buy and use a coast guard approved and preferably paddle oriented PFD (personal flotation device). There are paddle specific PFD's that are cut higher in the back so it won't get pushed up to your ears by your back band or seat back. Plus, there are adjustable straps to personalize the vest and keep it secure. Many times people use old ski vests and they ride up to their ears, are uncomfortable and not ideal for rescue situations. A PFD won't work if you're using it as a seat cushion. If you do flip, it's nearly impossible to put it on while submerged and holding onto your gear and paddle while the wind is pushing your boat 100 yds. away. Plus a PFD helps a skilled rescuer get you back into your boat and helps to not put your rescuer at risk in the event you overturn. Make sure your PFD is fitted and tight to your body. If a rescuer has to pull you out of the water they will most likely reach for your shoulder strap. It is easy for a PFD to slip over your head if it is not fitted properly.

There are other safety tools I would recommend purchasing and learning to use: a paddle float (can help you re-enter your boat) and a hand held bilge pump. Having and knowing how to use both of these tools are necessities if you capsize and don't know how to roll. Take a basic kayak class; Riverside Kayak Connection in Wyandotte, MI offers them year round and they can show you basic rescues and how to use the tools mentioned above. The Toledo area Metroparks and the Toledo River Gang also offer classes.

Section 8a: Safety/Clothing

If you decide to paddle during the shoulder weather seasons, clothing and proper submersion gear are a necessity. Several seasons ago, two paddlers lost their lives in Sandusky Bay. A number of reasons contributed to this unfortunate accident, first they weren't wearing their PFD's, secondly they were wearing street clothes, third they didn't have the education to make wise decisions for their day on the water and lastly their boats were rec boats with no safety elements, bulkheads or floatation. The paddlers couldn't have gotten back into the boats even if they had the knowledge. The boats were not designed for re-entry and hypothermia got them within 10 minutes of dumping. Dress for the water temperature, not the air and you'll have a reasonable chance of buying yourself time to get back into the boat. In the Sandusky Bay situation the paddlers were not wearing PFD's and it took a month to find them as they bobbed around Lake Erie, sad all the way around. Cold water usually requires at a minimum of a wet suit or a combination of paddle specific dry pants, dry top, layers of poly pro (non-

cotton) clothing. If you're looking at doing a lot of cold water paddling a dry suit is an expensive, but necessary item. A dry suit paired with the right thermal gear will keep you dry and warm in the event you're out of your boat for an extended period of time.

Section 8b: Safety /Boat Type

Know your skill and boat limitations. A recreational boat isn't intended to cross any of the great lakes or for rough water play. Not all kayaks are the same and there are different boats for different types of water. If your intent is to only paddle on an inland lake, fish or play from a cottage dock, then a recreational boat is right for you. If you want to spend the majority of your time around the great lakes, paddle coastlines, paddle the shoulder seasons (Fall/Spring) or winter, then a transition or sea kayak is your boat of choice. Make sure your skills also match your conditions and boat type. If you can't roll or re-enter your boat, then playing in rough water might not be the best choice.

Section 9: Paddles

There are a ton of different paddle styles, manufacturers and construction materials. Don't just walk into a big box store and buy a heavy, way too long, 240 cm piece of junk. Even a recreational paddler can benefit from a better paddle. Sea kayak or touring paddles tend to be 220 cm and below and Whitewater paddles tend to be under 215 cm based on your height, the beam of your boat and your personal preferences. There are straight shaft, bent shaft, Greenland and wing paddles (racing), different blade size and length to consider. Is your stroke a high angle or low angle stroke, etc.? You can spend \$75 and be miserable after a couple of hours or you can spend a few extra bucks and get a lighter, better fitting paddle that will not feel like you're using a crowbar after a day of paddling. Blade size and paddle length from small to large usually depends on your physical strength. Broad shouldered paddlers tend to use bigger blades to move their boats through the water. Thinner or smaller blades may not have as much catch, but can be efficient in wind, or for paddlers who don't have the muscle to move a larger blade. Paddle shaft length is personal preference. Lower angled paddle stroke paddlers usually tend to use a longer paddle. High angle paddlers tend to use shorter paddles which emphasize more core/torso rotation. A high angle paddle stroke is usually considered a more powerful or racing-like stroke.

Straight shaft vs. bent shaft paddles. There isn't much difference between these two paddle shafts, but bent shaft paddles tend to be more ergonomic for people who have wrist or shoulder issues. Greenland paddles are a growing segment of paddle purchases. These paddles are long and narrow and benefit from spreading the power face of the paddle along the length of the loom or shaft. Many Greenland paddlers, make their own paddles out of cedar 2x4's and shave them into shape, but there are many quality wooden blades available online. Wing Paddles are an interesting segment and you'll see these mostly used for racing and the occasional sea kayaker will use one as a day touring paddle. There is airplane wing technology built into these paddles that makes them efficient and fast if used properly.

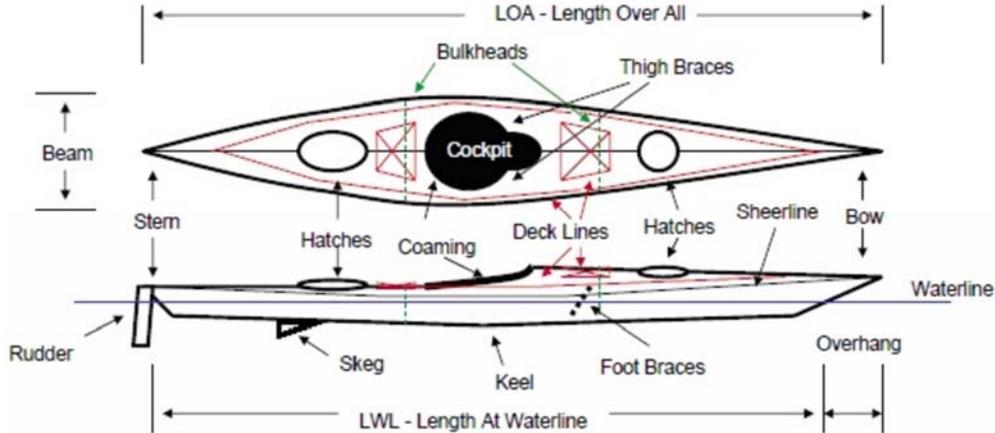
Section 10: Other Considerations

If you're looking to buy a kayak, you'll also need to consider how you're getting the boat to the water. This always seems to get forgotten and unless you have an SUV with factory cross bars, you'll need to buy a rack system, saddles and straps. Mainstream manufacturers are Thule and Yakima. This will be another \$400 to safely transport your boat. You can buy foam blocks at a big box store for \$50 but the convenience of a rack system will quickly surpass the foam blocks. Rack systems can be transferred car-to-car by buying gutter clips specific to the car you're using. Once you make the initial investment, it's easy to use the racks for many years. Also learn how to properly tie a boat to the top of your car with cam straps and utilize bow/stern lines. You can use rope if you know the correct knots to secure both the boat and bow/stern lines. Think about your fellow drivers and how they wouldn't appreciate a boat flying at them at 65 mph down the highway. Recently a poorly strapped kayak caused a pileup and hours long traffic jam near Cincinnati and luckily nobody was hurt seriously. The author was in SUV that lost a whitewater boat on the turnpike. It slipped out of the cam-straps on top of the vehicle and luckily didn't land on another car. It was a scary moment as the boat was bouncing down the highway. It was early morning and luckily the traffic was lighter. With only a little road rash the boat came to rest in the emergency lane. A bow line would have prevented the boat from ejecting out the back of the car. Cars have been spotted going down the highway with boats rotated to 90 degrees on the roof of their cars because the boat wasn't properly strapped.

Section 11: Summary

When recommending kayaks I usually suggest going to a demo day and trying out 30 different kinds of boats. Riverside Kayak Connection in Wyandotte, MI hosts regular demo days. Kayak Corral in near Toledo, OH has hosted demo days and will also let you demo out of their store. There is also an outfitter in Jackson, MI. that is always having sales on recreational and transitional touring boats. The Toledo Metroparks also has lots of classes and you can tryout out their boats. Once you determine what kind of paddling you want to do, I usually recommend purchasing a boat slightly ahead of your skill level. If you buy a \$200 rec boat, many will outgrow it in a weekend and then you'll never be able to get rid of it. Get a boat that might be a little longer, faster and more advanced than your present skills and you'll quickly grow into the boat (with practice). It might feel tippy at first, but seat time and learning the nuances of the boat will make you a better paddler. Your height and weight also factor into your first purchase and it's tough to buy off the internet without sitting in the boat. You'd hate to spend your hard earned cash only to find the cockpit is too small, the seat is uncomfortable, the beam is squishing the hell out of your hips or the back band hits you in the wrong place. Lastly you don't have to buy a new boat; there are a lot of boats for sale on Craigslist or through a quick internet search. Buying through an outfitter usually gets you some personal attention, skilled advice and recommendations for the type of paddling you're looking at doing.

Glossary



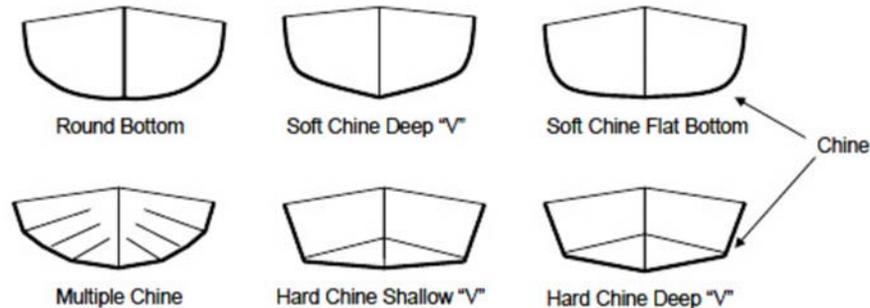
Beam – The width of the boat at the widest point. This may be at the sheerline or waterline.

Bow – The front of the boat.

Brace – A paddling technique used to prevent the boat from heeling over.

Bulkhead – Watertight separations between the areas of the boat.

Chine – The curve in the hull where it changes from the bottom to side. If rounded it is considered Soft. If angular it is Hard. There may be multiple chines.



Coaming or Combing – This is the raised lip surrounding the cockpit. A spray skirt would secure around the coaming.

Cockpit – The opening where the paddler sits.

Deck lines – Lines secured to the top of the boat for securing equipment or as safety lines.

Displacement – The amount of water equal in weight to the boat, paddler and equipment.

Draft or Draught – How deep the boat protrudes below the waterline.

Eskimo roll – The procedure where kayakers right themselves from a capsized boat while still remaining in the kayak.

Footbraces – Pegs or rudder pedals positioned to allow paddlers to brace themselves. These are necessary to transmit your paddling effort to the boat.

Hatch – Waterproof covers for the storage areas of your kayak.

Keel – The bottom centerline of the boat.

Overhang – Describes the section of the bow and/or stern that extends over the water past the waterline.

Paddle – the device used to propel the kayak forward. Variations include hand paddles, bent shaft, and straight shaft, and Greenland paddles.

Port – the left side of the boat (if the front of the boat is forward).

Rigging – the system of ropes, cables, or chains used to control or set sails.

Rocker – Like the rocker of a rocking chair, this shape of a hull allows the kayak to maneuver more easily.

Rudder – A steering device at the stern of the kayak usually controlled by foot pedals.

Sheerline or Sheer – Where the hull and deck are joined.

Skeg – A fin, protruding from the bottom of the boat that helps it maintain a straight track. Usually this is retractable into the hull.

Starboard – the right side of the boat (if the front of the boat is forward).

Stem – The section of the bow coming up from the keel to the very front of the boat.

Stern – The backend of the boat.

Skin – The surface of the boat.

Spray skirt – A fabric or neoprene skirt closing off the area between the coaming and paddler preventing water entry into the cockpit.

Stability – The tendency for the boat to stay upright. If the “righting moment” is greater than the “heeling moment”, the boat will return to the upright position.

Thigh Braces – Portions of the cockpit that allow for the legs to brace against the hull for stability.

Tipping or Heeling – A force, either unintentional or intentional, tipping the boat over to one side. Also described as “heeling moment”.

Tracking – The ability to go straight.

“V” or deadrise – The angle the hull makes up from the keel.

Wetted-surface area – The area of the hull surface below the waterline.

