

## River I

### Referenced Reading Pages from Textbook

Like many outdoor sports, kayaking requires an initial investment of specialized equipment, and there are retail stores, outfitters, and on-line forums packed with stuff to sell you. In terms of performance, your boat and paddle are the two key pieces of gear to make informed decisions about. The rest of the gear is to keep you safe, comfortable, and functional. In general, though, you are best off to try out whatever equipment you can before buying.

## THE KAYAK

The days of long, skinny kayaks shaped like logs with a hole carved into the top of them are gone, and along with them the performance characteristics that a log offers! Boat design is now a sophisticated process that makes use of professional designers, athletes, flashy software packages with digital simulations, and multi-prototype trial runs. Today's boats are shorter (from 1.5 m to 3 m, or 5 ft to 9 ft), wider (about 40 cm, or 25 in), flat-hulled, and far more thoroughly outfitted than their predecessors. These fundamental changes have afforded the paddler substantially increased manoeuvrability, stability, and control.

Let's start by taking a quick look at the terminology used to describe the characteristics of a kayak.

**Hull and deck:** The bottom and top of the kayak.

**Bow and stern:** The front and back portions of the kayak.

**Cockpit:** The hole through which a paddler enters the kayak.

**Grab loops:** The loops at the bow and stern ends that are used for carrying the kayak and for towing swimmers.

**Security bars:** Metal bars that are permanently attached to the kayak just in front and just behind the cockpit. These are the strongest points on the kayak and get used for rescues, or when locking a kayak up.

**Foot pegs/bulkhead:** Adjustable foot support systems in the bow of the kayak.

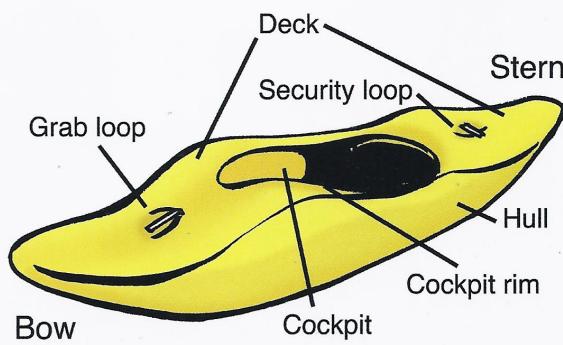
**Thigh hooks:** Contoured pieces of plastic that support the upper leg and provide the leverage from which to rock the kayak back and forth.

**Back band:** An adjustable support for the lower back.

**Support wall:** A wall of foam that provides structural support, and runs vertically, separating the kayak into two equal halves.

**Drain plug:** A screwable plug that provides an easy way of letting water out of the kayak.

**Sidewalls:** The sides of the kayak, between the hull and the deck.



## Rocker

Rocker is the curvature from bow to stern, as viewed from the side. As a general rule, the more rocker a kayak has, the more quickly it will turn. It will also travel through rapids more easily and surf waves with greater ease because the ends won't get caught by the incoming water.

A playboat's rocker is focused in the ends. This creates a long, flat section of the hull and allows the kayak to plane, and therefore spin the most effectively while surfing waves. River running boats have more consistent rocker from bow to stern, which makes them more forgiving and manoeuvrable in river running situations.

## Hull Shapes

The shape of a kayak's hull as viewed from an end can be classified as either a planing hull or a displacement hull.

Planing hulls: These are flat hulls that create a wide footprint in the water. They are the most common form of kayak hull because they are the most stable, and surf waves incredibly well. The edges of the "planing" hull are bevelled up to the sidewalls at varying angles of aggressiveness; the more bevel, the "softer" the edge, and therefore the more forgiving and less tippy the boat will be when its side is exposed to the current.

Displacement hulls: These are rounded hulls. These were once the standard for whitewater kayaks, but have



## KAYAK CONSTRUCTION

For a long time, whitewater kayaks were made only of cloth and resin (commonly referred to as "composite" materials). Composite kayaks are made with layers of fibreglass, Kevlar or graphite cloth, glued together and stiffened by resin. These composite kayaks are very strong and light. The only downside is that if they were to hit a rock hard enough, they would crack. It was for this reason that there was much excitement when the first plastic kayak hit the market in 1970. Since that time, plastic has been the material of choice for recreational whitewater kayaks, although it is still possible to find some composite boats on the market. Plastic (polyethylene) kayaks are incredibly durable, long lasting, and relatively cheap to produce in comparison to composite boats. When they hit rocks hard, they may dent, but will seldom break. These dents will usually pop out after a little time spent in the sun.



been largely replaced by the preferred planing hull. Displacement hulls track most effectively and are easily tilted on edge, but they aren't as stable or as manoeuvrable as planing hulls.

## Choosing a Kayak

Boats designed specifically for playboating (surfing and performing various other acrobatics) will typically be shorter, have wider planing hulls, larger sidewalls, more aggressive edges, and the rocker focused in their ends in order to maximize performance and manoeuvrability. These boats will also tend to have less volume in the bow and stern to allow the ends of the boat to be forced underwater easily when desired. Boats designed for more all-around river running are typically a bit longer for increased speed. They also have narrower hulls that carve a better track in the water, more bevelled (and therefore forgiving) edges, more consistent rocker and more volume in the ends (to prevent them from submerging). As you can see, your intended use for the boat is important in

making a choice.

One of the most remarkable areas of progress in design has been the inside of the boats. Specially contoured and adjustable seats, thigh hooks, foot braces, and lower back support systems have become the norm in all new models. It used to take us so long to outfit boats with mini-cell foam, a grater and soppy cement that we'd have a party and make an evening out of it! Today, you can unwrap your boat, make some minor adjustments, and paddle away—too easy!

In concept, the snuggler you are, the more responsive the boat will be to your every movement and the better your posture will be. In reality, there's a comfort/control trade-off and each individual has his limits. You will figure out your own soon enough!

Now that you're aware of the basic design features, it's time to get out there and test-drive. If you're just starting, you'll want to take lessons; while you're there, ask your instructors for advice and, most importantly, try out different boats. Manufacturers now produce most models in a variety of sizes so you shouldn't have too



Playboats are shorter, have larger sidewalls, and the rocker is focused in their ends.



River running boats tend to be longer, have more volume in the ends, and more consistent rocker from bow to stern.



much trouble getting relatively comfortable in one. The decision should be made based on the following factors: your intended use for the boat, your size and weight, your comfort level in the boat, your budget, and any personal preferences. Remember that you will be improving fairly quickly, so pick a boat that has at least some features you will appreciate as your skill level progresses. New boats typically range from about US \$850–\$1200. Many retail stores or outfitters will allow you to rent a boat as a demo and then allocate the rental cost toward the purchase if you are still keen. By doing this, you maximize your trial time and will have made the most informed decision possible.

## THE PADDLE

In whitewater kayaking, the paddle becomes an extension of your upper body, so the most logical choice is to use one that feels good to you. Designs vary slightly, but the general anatomy of paddles is the same. The two blades are attached to a shaft that can be straight or bent in various ways. The blades may be symmetrical or asymmetrical in shape, but all have a slightly concave power (front) face and a non-power (back) face.

Paddle blades are most commonly made from plastic, fibreglass, or carbon fibre (or a combination thereof). Although plastic blades are the most affordable, they



Paddle blades can be offset very differently. The offset, or "twist", of a paddle ranges between 0 and 90 degrees.

are heaviest and lack durability unless reinforced with fibreglass or carbon fibre. Fibreglass blades are lighter and stiffer than plastic blades, but cost significantly more. Carbon fibre yields the lightest weights and tremendous stiffness, but is also the most expensive material. Paddle blades made from a combination of plastic and fibreglass or carbon fibre offer a great blend of performance, durability, and affordability.

Paddle shafts are made from aluminium, fibreglass, or carbon fibre. We would recommend staying away from aluminium paddles for whitewater kayaking because they don't hold up well to abuse. Fibreglass or carbon fibre shafts are your best options.

You can expect to spend in the neighbourhood of US \$150-\$400 for a good quality paddle.

The most influential factor in choosing a paddle is your size. You need to consider the length of the paddle, the width of the shaft, and the size of the blades. Smaller paddlers should look for a paddle with slightly smaller blades and with a narrower shaft that makes it easier to

grip. The stronger you are, the larger the paddle blades you will be able to control. Using a paddle that is too long or too large will cost you some control and could put an undue amount of stress on your body.

Paddles are conventionally measured in centimetres. In general, a paddle 194–200 cm in length is good for paddlers between 5'8" and 6'1". For paddlers between 5'3" and 5'8", a paddle 188–196 cm in length should work great.

Next, you will need to consider the offset of your blades. The offset, or "twist," refers to the difference in angles between the two blades. Traditional kayak paddles have blades that are offset at ninety degrees so that as one blade pulls through the water, the other slices efficiently through the air. For whitewater kayaking, a thirty- or forty-five-degree twist is most popular, although more and more people are using paddles with no offset at all! A lower offset means less repetitive twisting of the wrist, which can help prevent tendonitis and will facilitate some moves.

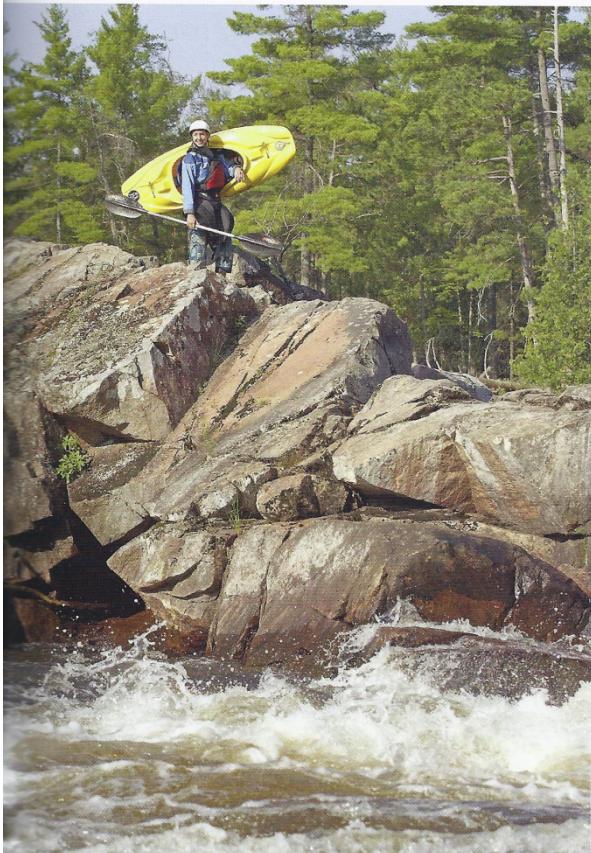
Something else you might see on the water are paddles with bent shafts. The goal of bent shaft paddles is to lessen wrist and muscle fatigue by placing the joints of the hand and wrist in a more natural position when taking a stroke. Because of the added complexity of manufacturing the shaft, these paddles are often quite costly. There's endless debate on how effective bent shafts really are—try one yourself and make up your own mind!

#### TIP

The lightness, strength and stiffness of carbon fibre paddles make them the highest performance paddles on the market, but they are not the best option for everyone. Although a stiff paddle provides additional power for each of your strokes, it will also be more jarring to your joints because the paddle absorbs less shock.

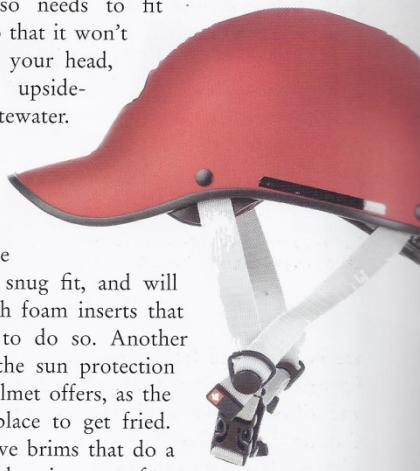
## PERSONAL GEAR

When choosing your personal gear, safety and comfort should be the main considerations. Of course, in this day and age, style is always a factor, but that's okay, because gear manufacturers are pretty in tune with the times. You're likely to find yourself in a variety of paddling and weather conditions, so our general advice is to shop comparatively, but to buy good gear. It will go a long way towards making your paddling experiences safer and more enjoyable, particularly in cold conditions.



### Helmets

Helmets are available in plastic and composite materials (such as fibreglass and Kevlar), and a variety of designs ranging from aesthetically plain to off-the-wall. You want to be sure that the helmet you buy is sturdy and shaped so that it protects your forehead and temples. Give it a good squeeze on its sides to gauge its sturdiness. It also needs to fit snugly enough so that it won't move around on your head, especially when upside-down in whitewater. Helmets often require a little fine-tuning of the inner foam lining to provide this comfortably snug fit, and will usually come with foam inserts that can be attached to do so. Another consideration is the sun protection factor that the helmet offers, as the river is a great place to get fried. Many helmets have brims that do a reasonable job of keeping your face safe. Cost: US \$50-\$200.



### PFDs

Needless to say, your personal flotation device is an essential piece of safety equipment, so be sure to go for a quality product. Manufacturers have struck an appealing balance between flotation and low-profile designs that don't obstruct movement by keeping the bulkiest part of the PFD low on the torso, away from the shoulders and upper chest. Specialized rescue vests offer a releasable harness system and various other safety features that are recommended for more advanced river running (see the "Rescue" segment of this book). Talk to someone at the

store who has been trained in Coast Guard approval ratings, and read the labels inside the PFDs so you are informed about what you are buying. Paddling “vests” are not rated as “life preservers”—this is to say that they are not designed to float your head above the surface when you’re unconscious. They do offer various amounts of flotation; at least fifteen pounds of buoyancy is a common recommendation for the average person. Cost: US \$75–\$250.



## Spray Skirt

The spray skirt is responsible for sealing off the cockpit of your kayak and keeping water out of your boat as you paddle. This is a pretty important job, so when shopping for a spray skirt, you should be looking for one that is comfortable, effectively keeps water out, stays on but comes off when you need it to, and will last. Most companies now offer them with a reinforced layer around the outside of the skirt, where the cockpit rim puts the greatest stress on the material. These reinforced skirts are a bit more expensive, but you’ll find that they last much longer.

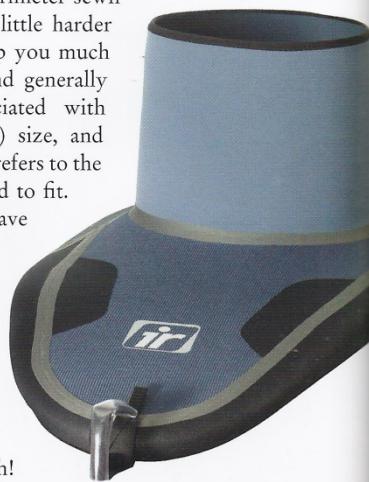
The first thing to know when choosing a skirt is that cockpits of kayaks are not all uniform in size, so you’ll need to be sure to get a skirt that fits your particular boat.

There are skirts with adjustable shock cords that can be used on any kayak. Although these adjustable skirts might seem like a good, economical option in the beginning when having a good seal isn’t overly important, it won’t be long before you need to upgrade to a skirt that is specifically sized to your boat. These skirts have a stiff

rubber rand or perimeter-sewn bungee that may be a little harder to get on, but will keep you much drier. Skirts of this kind generally have two sizes associated with them—the tube (waist) size, and the cockpit size, which refers to the kayak that it is designed to fit.

Most manufacturers have a fit list that specifies what skirt/cockpit size is best for each kayak model. Make sure you pick a size that is not only snug around your boat, but snug around your waist because it will stretch!

Cost: US \$75–\$200.



## Dressing for Warm Conditions

For those of you lucky enough to be dressing for warm conditions, your biggest challenge will be to keep the water out of the boat while staying cool and protected from the sun. The best solution is to have some form of light short-sleeved under layer and either a “shorty” splash top or dry top outer layer. Shorts of any kind are fine for the lower body.

There is a variety of specialized materials designed for paddling now. Lightweight polypropylene (available in many brand names and styles) is the classic under layer, but rash guards have become more and more popular and are often worn without a layer over top. Rash guards won’t

stop water from getting in your boat, but they provide a great means of staying cool and protected from the sun. Although a splash top can work quite well, short-sleeved dry tops do the best job of keeping water out and letting you play uninterrupted for longer. Their only downside is that they can be quite warm on a hot summer day.

Cost: Rash guards, US \$40–\$85; shorty splash tops, US \$50–\$200; shorty dry tops, US \$200–\$300.



## Dressing for Cold Conditions

*“A good dry top is worth its weight in gold if you are in a cooler environment. Staying warm is just as important as a PFD or a helmet.” (James Mole)*

### Under Layers

As with under layers for any outdoor sport, it's preferable to have a material that wicks moisture away from the skin, as opposed to absorbing it and holding it against you. As mentioned above, various blends of lightweight polypropylene, polyester, spandex and neoprene are available in both short-sleeved and long-sleeved tops and bottoms (as it gets colder, you'll want to start covering your legs). For an even warmer layer, micro fleece tops are available in all sorts of thicknesses. Layering is always the best option as it allows you to fine-tune your temperature throughout the day. In other words, as a general rule, wear more than is necessary as you are much better off being too warm than too cold. Being cold on the river will zap your energy, your enthusiasm, and your ability to enjoy your paddle. Cost: US \$40–\$120.

The first layer against your skin should be a wicking layer, which pulls moisture away from the skin.





## Outer Layers

Long-sleeved splash tops and pants or dry tops and pants are most effective in cold conditions. They are constructed using different thicknesses of rip-stop nylon with various types of breathable or non-breathable water-resistant treatments. Dry tops and dry pants have tight latex or neoprene gaskets at the wrists, ankles, and neck to prevent water entry.

Because latex wears quickly in the sun, the gaskets should be protected by other material. The seams of dry tops and pants should be taped for the best seal. For the absolute driest and warmest day on the river, consider a dry suit. Dry suits don't come cheap, but they provide an unrivalled level of comfort on even the coldest and wettest days.

Cost: Splash tops, US \$65–\$250; dry tops, US \$200–\$350; pants, US \$65–\$250; dry suit, US \$600–\$1200.



## LATEX GASKETS

The latex gaskets on dry tops, pants, or suits are designed so that you can customize their fit by cutting rings off along pre-marked lines. When doing so, use a sharp knife or pair of scissors and make clean cuts, because as nicks in the latex will allow the gasket to rip when stretched. When deciding how much to cut off, don't go too big too fast! Keep in mind that the material will stretch a little over time and you can always make another cut later, but you can't add material. If for some reason a gasket does tear on you, it can be replaced by cutting away the damaged one and gluing a new one on. You can find replacement gaskets in some retail stores or order them directly from the manufacturer.

is the closing of the eardrum in response to repetitive cold water shock. There are now earplugs on the market with small holes or valves that allow you to hear quite clearly while keeping all water out. Cost: US \$6-\$50.

## River shoes or booties

It's always important to wear a good pair of water shoes that provide traction on wet rocks. Not only do they keep your feet warm and serve as protection to you both in and out of your kayak, they will allow you to move around quickly on shore to help others if the need ever arises. Cost: US \$50-\$100.



Most river shoes are quite thin and flexible so that your feet fit comfortably into your kayak.

## ACCESSORIES

### Nose plugs

Nose plugs are great little pieces of gear that can make life a lot more pleasant for some paddlers. By preventing water from shooting unmercifully through the sinuses, you'll not only save yourself a running nose for the following few days, but you'll probably find yourself much more relaxed when underwater, which can make a big difference when going for a roll! Be sure to get specialized kayaking plugs that won't come off. Cost: US \$5-\$10.

### Earplugs

Earplugs are always a great idea, as they will help prevent ear infections and the longer-term issue of exostosis, which

### Sunglasses

If you plan on spending a significant amount of time on the water, then you may want to invest in a good pair of sunglasses. The reflection of the sun off the water is intensified and can be very damaging to the eyes. Make sure that your glasses are attached to you so they won't fall off. Some companies now make sunglasses specially designed for sports like kayaking. Cost: US \$20-\$200.

## Pogies, mitts or gloves

Pogies, mitts or gloves are the best way to keep your hands warm while paddling. Pogies cover the hands and attach by Velcro onto the paddle shaft. The nice thing about pogies is that they allow your hands to be in direct contact with the paddle. Gloves and mitts on the other hand are considerably warmer. Cost: US \$15–\$50.

## Skull cap

A skull cap is a thin, insulating layer that fits under your helmet. This simple piece of gear can have a huge impact on your comfort level on the river, and is never a bad idea to bring along in cooler conditions. Cost: US \$20–\$35.