

- A. River playboat
- B. General purpose kayak (short)
- C. Greenland-style sea kayak
- D. Expedition sea kayak
- E. Double sea kayak

Classic sea kayak - some history

The classic shape is the traditional Greenland hunting kayak with its long overhangs at bow and stern. The design was first tested 3500 years ago in the Arctic and has been polished by millennia of ice and blood.

Lovers of slim traditional kayaks with a width of 22 inches or less say you don't sit in your kayak, you wear it. It's a good feeling which any ordinary kayaker can enjoy.

We could argue for hours over the definition of a classic sea kayak. I think we would say that it

must be capable of covering long distances, must behave well in wind and waves, must protect the paddler from cold and spray, and recover fast and easily from a capsize. Given the right training and equipment, that makes it safe for use all year on exposed coastlines.

The classic sea kayak has a long, narrow hull, fully covered by a deck. The kayaker sits inside a cockpit which is sealed with a spray deck.

The sea kayak existed in the Arctic in very nearly its modern form [before contact with Europeans](#), perhaps for as much as 3500 years. Later a major milestone in kayak design and technology was John "Rob Roy" MacGregor's invention of the wooden touring kayak in the 1860s.

In the 1920 kayakers were built with a [canvas skin stretched over a wooden frame](#). From the 1950s [plywood](#) was used for kayak hulls, with [inflatable or closed-cell foam flotation](#); then by the late 50s [fiberglass was used for hulls](#).

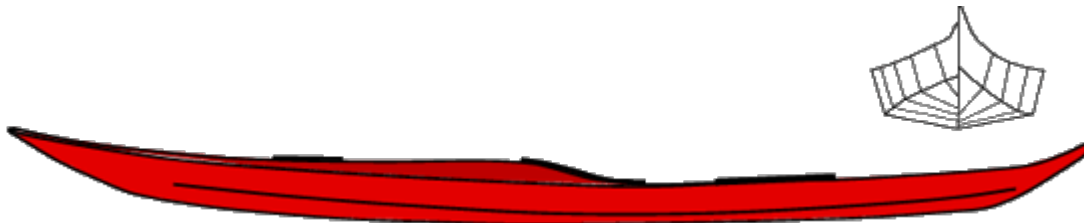
This material became widespread in the early 1960s and with the option of [Kevlar](#) from 1973. From the 1970s [bulkheads](#) were fitted to make watertight compartments, and effective [hatch covers](#), [retractable skegs](#) and sea-proof [rudders](#) being common place from the 1980s.

All of today's touring sea kayak designs would look very familiar to a kayaker from the 1970s

Styles of true sea kayaks

Greenland kayak

The classic Inuit hunting kayak from Greenland is slim, narrow and curved, with a very angular cross-section. Seldom has much space for camping equipment.



This one is 21 in wide, 17 ft long and has quite low [volume](#) which makes it easy to roll. The long overhangs, especially at the front, mean that its waterline length is considerably shorter. It also has high [rocker](#). Both characteristics give it more maneuverability but less speed in a straight line.

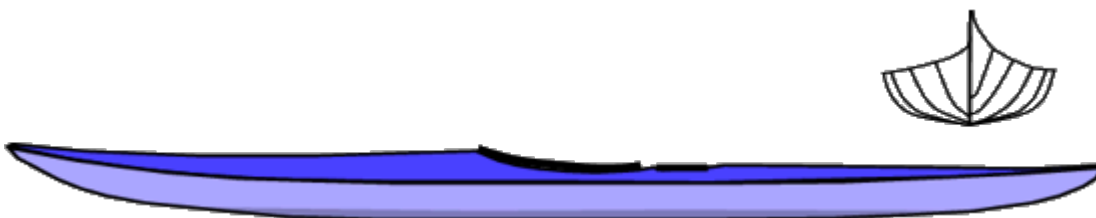
The hull shape of most Greenland kayaks consists of four flat panels, each going from one end to the other. The bottom of the hull is a flat V-shape, the sides are almost vertical, and where the bottom meets the sides there is a sharp angle (the chine) which runs all the way from bow to stern. The rear deck is another flat panel, horizontal this time, and the front deck is usually raised in a long ridge to make room for the kayaker's knees and feet.

This hull shape is known as single chine or hard chine. Inuit kayak builders found it a very practical shape for a strong, light wooden frame which had to be covered with sealskin.

Round-bilge (soft Chine) day or weekend kayak

The typical plastic or composite sea kayak. The chines are now so round that in cross-section, the hull has a smoothly rounded shape ("round bilge"). A semi-circular underwater cross-section would be too unstable, so the bottom of the kayak is almost flat for 3 ft or so in front and behind the seat.

At first glance there may be little difference between a round-bilge boat and a Greenland kayak. They may both be the same length, width and depth, and they may have the same plan view and a similar profile. The big difference is in the shape of the cross-section. It has less rocker and more waterline length so it is less maneuverable but faster in a straight line. Like the Greenland kayak it has fairly low volume, but the rear deck has been raised an inch to give more storage space. It is a fast dayboat which looks very nice on the water and could be used for the occasional camping weekend.



Expedition kayak

An expedition boat looks exactly the same as a dayboat until you compare them side by side. The expedition boat has a longer and deeper hull, which means extra volume so it will carry a heavier load. With careful packing, you can carry enough camping equipment and food for two weeks. An expedition boat usually has very little rocker.



Many expedition kayakers are designed to perform best when carrying a heavy load. They achieve this by being unusually narrow at the waterline, which means that when unladen they are unstable and can become a problem in windy conditions. Some owners of true expedition kayakers have to put bags containing 50 lbs of ballast in each end before they set off, using bags of sand or stones.

Sea kayak features

High or low rocker

If you look at a kayak from the side you will see that the the bottom ("keel line") has some curve so that the underside is higher at the ends. Put the kayak on a flat surface, press down on one end and it will rock. It's like the bottom of a rocking chair. The Greenland as high rocker. The Day kayak medium rocker. The [expedition kayak](#) has low rocker.

High rocker makes a boat more maneuverable and better in steep waves. High rocker can also make a boat feel a lot more stable.

High or low volume

These expressions are relative. A long kayak is likely to have more volume than a short one. The expedition kayak is "high volume" because it has a lot of liters available for camping gear.

High volume

Beginners often prefer the reassuring feel of wider, higher boat. As experienced kayaker sees at once that they are slow, have a harsh motion in choppy water and are hard to paddle in windy conditions.

Low volume

Greenland kayakers have fairly low volume. Their owners love the feeling that they wear their slim boats rather than sitting in them.



Cockpit size & shape - keyhole cockpit

Most whitewater kayakers and sea kayakers now have a much larger egg-shaped cockpit, often the same width as an Ocean cockpit but long enough for the kayaker to bring his/her knees up above the deck. These cockpits have a knee grip on each side which projects a short

distance into the narrow end of the egg, supporting the spray skirt and allowing the kayaker to brace him / herself solidly in the boat. They are called keyhole cockpits and are very reassuring to anxious new kayakers and great on long trips if you start to get sore legs or buttocks, because you can change the position of your legs from time to time. They make solo self-rescue a more practical possibility. And they are wonderful on a choppy day when you are trying to get into your boat from a seaweed-covered rock.

Knee braces / thigh grips

It's good to have something on the underside of the deck, at the front of the cockpit, for your knees to grip when you roll or do deep support strokes. By pressing your feet against the [footrest](#) you can brace your knees firmly under the deck. Commercial kayaks have a knee brace molded into the cockpit assembly.

Deck shape

Most sea kayaks have a high front deck to give enough room for the kayaker's knees and feet, and a low, almost flat rear deck.

In cross-section, the front deck is usually a pointed arch. It gives the front end of the boat a shape and volume which helps it rise up when it enters a wave.

The low rear deck enables the kayaker to lie right back during a kayak roll, provides a convenient flat surface on which to store a spare paddle, and is low enough for a swimmer to climb onto during a rescue.

Construction Materials

Commercially-made kayaks are made from a range of plastics. At the cheaper end is [polyethylene](#) which is very tough indeed; then there are kayaks made of plastic sandwich material, the lightest, fastest kayaks are made of fibre-reinforced plastic. Known as FRP, GRP or [composite construction](#) this is a plastic resin reinforced with fiberglass, kevlar, diolen and/or carbon fiber ("graphite").

Plastics are great for durability. It is possible to build yourself a composite kayak at home, with or without a mold but most people who build their own sea kayak prefer wood or skin-on-frame construction. The results very often equal or beat plastic boats for good looks, and for either high strength or low weight.

Out-fitting

Perimeter lines and Bungees

Seat and Back band

Bulk – heads and hatches

Foot pegs

Skegs and rudders