

Beginner's Guide to Kayaking

by

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For use in
Kin 10A Beginning Kayaking
San José State University

Prerequisites to take class (tested second class meeting in pool):

- swim 100 yards unaided (any “style”) without stopping
- tread water unaided for 5 minutes
- successfully re-enter kayak as described on pp. 12-13
- ability to co-carry a 45 pound kayak
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**STUDENTS MUST DEMONSTRATE THESE SKILLS
BEFORE GOING OUT ON ANY OFF CAMPUS TRIPS**

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Chapter One

(Note: words in **bold** are terms you should know!)

What you will learn/do in this class

The class is designed as an introduction to kayaking for those with no previous experience of the sport. You will learn how to get in and out, both on dry land and in the water. Yes, you will get wet! This IS a water sport and you can expect to fall in sometime, if not by accident then as a practice so you are ready for when it does happen by accident. You will learn how to move the kayak efficiently forwards, backwards, and sideways. You will learn a variety of methods of self rescue and buddy rescue, you will learn about planning a trip on an estuary, you will learn some basic navigation and weather considerations, and through all the kayaking we will do, you will gradually build up your strength and endurance. We will also learn about people's interactions with the natural world, what that can teach us, and how we can understand the connection better. This will be through "hands on" experiences encountered in class and an out of class assignment.

"Kayak" vs. "canoe"

Some confusion surrounds these two terms. Each is a native American word, showing the vessels' histories and origins. Kayak is from the Inuit (Eskimo) and refers to a low to the water boat propelled by a two-ended paddle with a blade at each end. Canoe refers to a higher off the water boat, originally a dugout tree, propelled by a one-bladed paddle. In some parts of the world, however, kayaks are called canoes, and some people say that all kayaks are canoes but not all canoes are kayaks. In the Olympic games, kayaking is a sub-division of canoeing. Confused yet?! The Olympics have K-1 (one person kayak), K-2 (two person kayak), and K-4 (four person kayak) races over 500m and 1000m of flat water. There are also flat-water races for canoes, C-1, and C-2 (one and two person canoes, respectively) over both distances. In addition are the slalom (white water) races for kayaks and for canoes, where competitors race through gates suspended from cables overhead, and must go through in a pre-determined direction, some with and some against the current. Because of the need for a special white water river, or artificial course, these events have not been held at all Olympic Games. Finally, the national governing body is the American Canoe Association, and it covers both canoeing and kayaking. See: <http://www.americancanoe.org> and take a moment now to explore their site to see what is offered. You should be able to tell a kayak from a canoe after reading this. See also the link on p. 45 for more on kayak history.

Fig. 1 KAYAK AND CANOE (see also <http://www.humanhighlife.com/wp-content/uploads/Canoe-Kayak.jpg>)



Types of kayaks/kayaking

Kayaking can mean taking a peaceful paddle down a slow moving river, a tough haul across a lake with white caps, a long distance journey on the sea or river, or a white-knuckle experience in white water. Each situation has a special kayak design to get the best out of the expected conditions. For example, in general on long trips, great maneuverability is not needed but good **tracking** (ability to maintain straight direction) is. In order to keep the kayak going straight and to go faster, a longer **hull** (the body of the boat) is needed, and storage on board is useful if you don't plan on returning to your put-in place. All these attributes make up a classic sea kayak design.

Fig. 2 TYPICAL SEA KAYAK (see also http://en.wikipedia.org/wiki/Sea_kayak)



The opposite extreme is white water kayaking where you need to be able to turn very quickly and be extremely maneuverable. White water kayaks are often shorter in length than the kayaker her-/him- self to achieve these qualities.

Fig. 3 TYPICAL WHITEWATER KAYAK (see also http://en.wikipedia.org/wiki/Whitewater_kayaking)



The great majority of kayakers, and certainly in the early stages of learning the skill, fall somewhere in between with regard to their needs. They need a general purpose kayak that is short enough to be light weight, yet has the ability to stay on track, isn't too likely

to tip up, but isn't so wide as to be very slow. In addition to different lengths, kayaks also come in various widths and shapes but until you are ready to buy your own, you don't really need to concern yourself with this too much.

Fig. 4 CLASS KAYAK (see also http://en.wikipedia.org/wiki/Recreational_kayak)

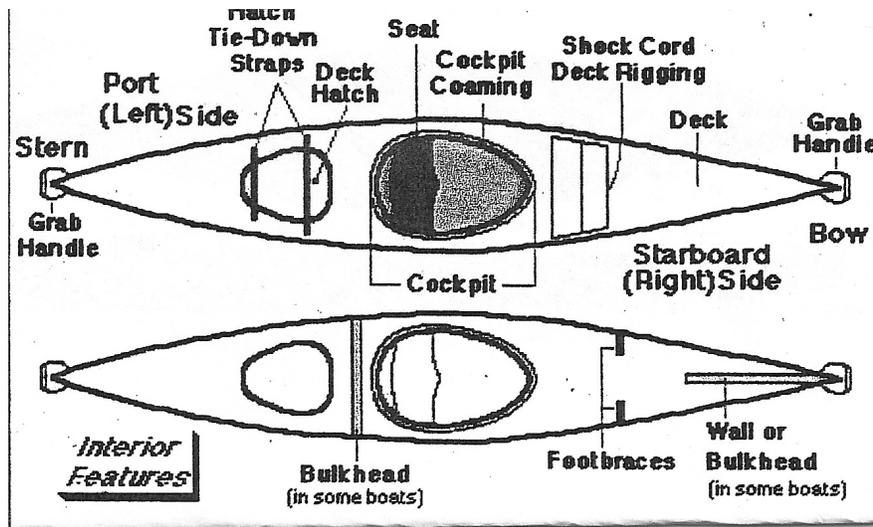


For this class, we will use either 10'6" kayaks, which weigh about 45 pounds and work well for paddlers between 100 and 225 pounds or, if you weigh more than this, we have another model of kayak better suited to your needs. These are 11' long and can take a paddler up to 275 pounds. Anyone in the class must be able to carry a kayak. Our kayaks have a shape that gives good initial stability, which means they are hard to tip over, but once you go beyond a certain point, you are probably doomed to go for a little swim. Both types have a **skeg** (an underwater fin at the back) that can be lowered by means of an elastic line and this helps keep them to track well. Our kayaks have some storage space in the **stern** (the back of a boat), which is reasonably watertight, provided you replaced the hatch cover very firmly and precisely. A good safety feature that our kayaks have is a **bulkhead**, which is a sort of wall that divides off the stern section of the kayak. If the rest of the kayak fills with water, this section should remain dry and the air will give great buoyancy. A well maintained kayak (ie one without any holes!) should always float. BUT it won't float with you in it, when full of water, which is why we need to learn a variety of ways to get the water out in the event of a capsize, and get you back in. This can be done alone or with a buddy, and we will learn several rescue methods.

Parts of a kayak

We've already learned a few new terms, and here are the remaining names of parts of the kayak that you will need to know. It's important to know these terms so that we can communicate easily. If you were told you needed to do something to "the thingy near the whatsit" that wouldn't be very helpful but if we all know the names of parts of the kayak, everything will make a lot more sense. Try to learn these few parts before we go out on the water for our first paddle.

Fig. 5 BASIC KAYAK PART NAMES



Kayaks can be made of many different materials but ours are made of polyethylene. They are strong for their weight, relatively indestructible (but please don't test this on purpose by dropping one), and quite inexpensive. The ones we use, for example, cost around \$450 new for the hull, plus extra for the additional necessary equipment. Some kayaks are made of wood, which looks beautiful but is difficult to repair, and others are made of fiberglass, which is easy to repair but also easy to damage. There are inflatable kayaks, which obviously are easy to transport when deflated but are not very robust and are easily blown off course. You may still see a few canvas kayaks, which were the way kayaks were built before synthetics came in.

All our kayaks are singles but you can buy doubles. Ours also have a cockpit, meaning that you sit in the kayak. Many people today buy sit-on-top kayaks. There's less to learn because if you fall off, you just scramble back on but it's tough to store any gear on a sit-on-top and, without good protective clothing, the paddler can get really cold.

Our kayaks do not have rudders to steer with but regular sea kayaks do. Rudders are a great feature if you buy your own kayak and plan long trips but they are also rather delicate and easy to damage.

What to wear; what to take

You should wear loose fitting clothes such as a T-shirt and shorts. If the weather is cool or raining (Yes! We do paddle in the rain!!), it's best to wear something windproof and waterproof, as well as a fleece or other extra layer to keep you warm. It can be miserable if you are either cold or wet and really miserable if you are both cold AND wet, so be nice to yourself and dress appropriately. If you are looking to buy a waterproof top (later you'll understand why you don't need waterproofing below your waist) consider the slight extra expense of buying one made out of breathable fabric. That way, when you paddle hard, you stay dry, as your sweat escapes through the pores of the jacket rather than soaking your clothes.

Do not wear cotton except on the warmest of days. Many instructors refer to cotton as "killer cotton" because it provides no heat insulation when wet. Some type of poly/cotton mix is best.

Wear a hat! A baseball cap will keep your eyes shaded in the sun, and keep the heat from escaping from your body on the cooler days. Also, it's a good idea for anyone playing on the water to wear sunglasses to reduce the glare coming off the water. Kayaking with a headache is no fun!

Wearing the right footwear can enhance your kayaking comfort. The ideal is wetsuit booties made of neoprene, which can be bought at any diving shop for about \$25. Be sure to buy those with proper soles because you will be walking along stony beaches more than the average diver. If your budget doesn't stretch to booties, wear old sneakers. They should be old because they WILL GET WET. Some students go to great lengths trying to keep their feet dry. Let's get real! Kayaking is a water sport and getting your feet wet is just part of the experience. Because some places we kayak are muddy, don't wear your best new white sneakers or they will soon be your best new gray sneakers.

Students sometimes ask about gloves. If you have neoprene gloves, especially those with the fingertips cut out, these work okay but it's not really worth buying a pair just for this class. We will build up the distance we paddle each week to allow your hands to develop calluses gradually.

What to bring can be as simple as a bottle of water. It's amazing how thirsty you can get while paddling, and sometimes you don't even notice. The kayak has storage space so feel free to bring a snack if you wish also. All the other equipment will be provided, but we'll go over it here so you can get into the habit of checking off all the following items.

Paddlefloats enable you to get back into your kayak without outside assistance. The paddlefloat must be easily accessible, so it is stored on the **bow** (front of the kayak) under the elastic bungees. Simply put, they are blow up cushions that fit around one end of the paddle. This end floats on the water giving you just enough support to slither up the paddle and back into the **cockpit**. We'll practice their use in the pool during the second class meeting. Please note: no one will go out on the water until he/she has demonstrated

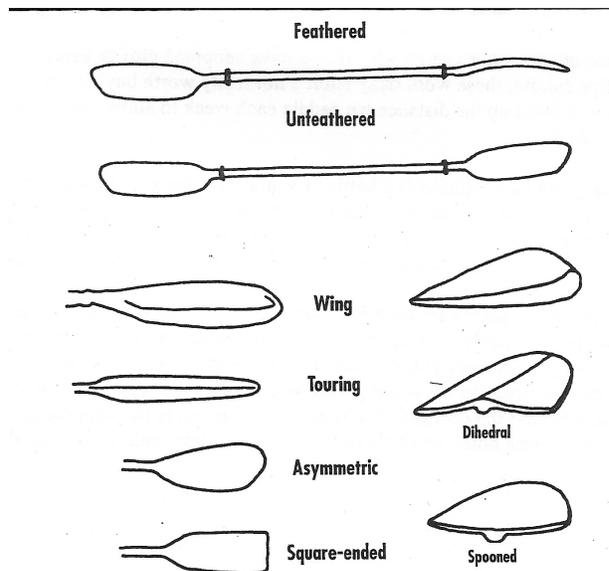
the ability to get back in the kayak unaided. We'll practice this the same day we do the swim test and capsize/exit drill, i.e. at the second class meeting. Please do NOT miss that class (or any other!).

Fig. 6 KAYAK WITH PADDLEFLOAT (see also <http://www.seakayakermag.com/1997/feb97/foster1.htm>)



Also stored under the bow bungees, and also needed in the event that you fall in, is a **pump**. The kayaks are designed to be able to hold up to 235 pounds. Since a (US) pint of water weighs a pound, you can imagine how heavy a waterlogged kayak becomes and why you need to get at least most of the water out before you get back in. The pumps are simple to work but make sure the end is under water or you'll be sucking air.

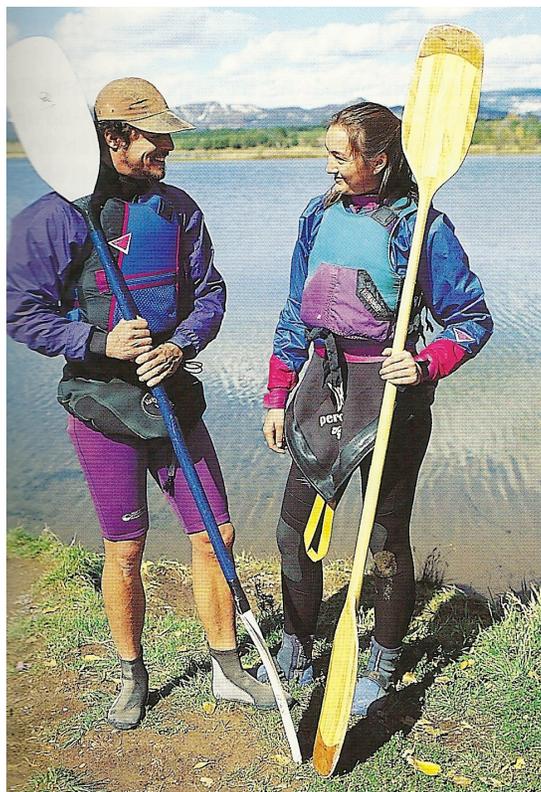
Fig. 7 VARIOUS PADDLE SHAPES



In addition to a paddlefloat and a pump, of course you'll need a **paddle** although it is possible to paddle with your hands, and we'll practice this in case you get separated from your paddle and need to get back to it unaided. Paddles come in various lengths but ours are all very similar at 210 or 220 cm. long. Paddles come in many shapes and sizes, but ours are not symmetrical; so make sure that the larger portion of the blade is pointing down to the water, and of course have the curve of the blade facing forward. The paddle can be **feathered** or straight. This means that the blades can be offset or in a straight line with each other. You change one setting to the other by pressing the button in the middle, and twisting the shaft until the button pops out in the new position.

Finally but most importantly, are the items of equipment that you wear. First, put on your **spraydeck/sprayskirt** (the two terms means the same). The sprayskirt should be tightened around your waist by means of the drawstring. The function of this is to keep most of the water out of your cockpit. It doesn't exactly keep you dry but dry-er than without one. They also provide some insulation on cooler days. The spraydeck fits around the **coaming** (the ridged edge) of the cockpit by means of elastic and can be tough to get on. The key is to start putting the elastic in place behind you, while it is still loose, then work your way up each side to the front where it is easier to pull tight. Be sure to leave the **grab loop** accessible. This is the "ripcord" you pull to separate you from the kayak in the event of a capsize.

Fig. 8 SPRAYDECKS

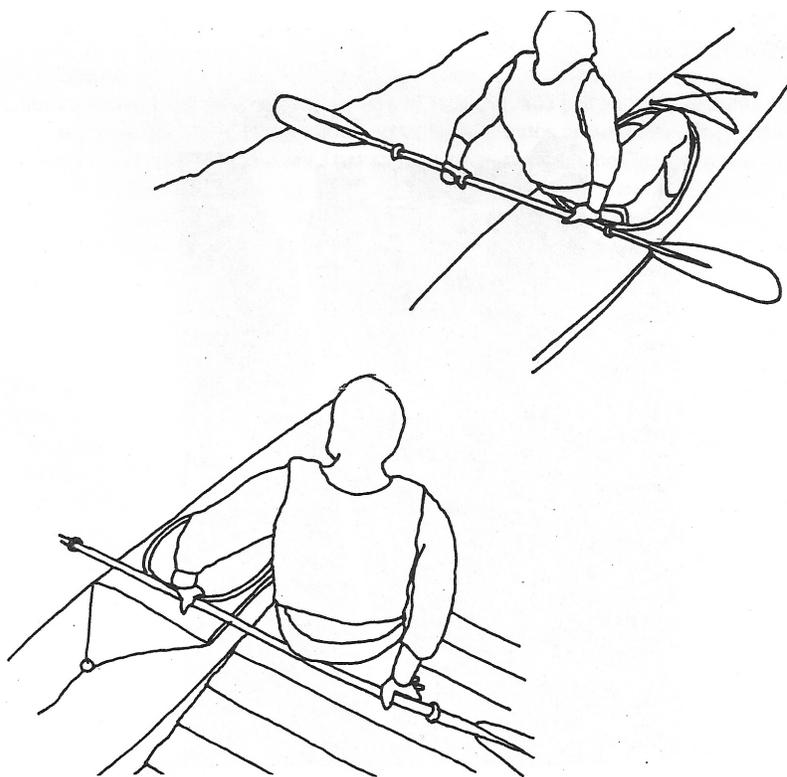


After you have put on the sprayskirt, put on your **PFD (Personal Flotation Device)** which some call a lifejacket. The reason that you put this on after the sprayskirt is for the two to act like roof tiles, by shedding water. If you put the PFD on first and then the sprayskirt, all the water will drain inside and you'll get really wet. The PFDs come in several sizes: extra small/small, medium, large/extra large. Please get one that fits you properly. Properly means that when you do up the zipper and tighten the side straps, it stays in place and doesn't end up around your ears if you reach up. Please note: forgetting to wear, do up, or adjust your PFD is like not wearing a car seat belt. There's no time to put one on after the incident. Please wear the same size PFD each week so that, if everyone does this, everyone can wear the right size

Initial safety: getting in, wet exit; getting back in

Let's now assume that you and your kayak have got all the parts together as indicated above. So, next you need to know how to get in! It's not difficult, if you follow this basic procedure but please don't take short cuts. Probably most accidents occur at the stage of getting in/getting out when people get careless.

Fig. 9 ENTRY/EXIT FROM SHORE OR RAISED DECK (see also <http://www.youtube.com/watch?v=CVAJsLeUzYM>)



Stand at the side of your kayak (let's assume the right side here, but it could be the left; just reverse everything). Place your paddle behind you and hold it with a wider than shoulder width apart grip with both hands. Bend your knees and place your left hand on the back of the coaming while still holding the paddle. Check that the paddle to your right is flat on the ground, with the curve upward. In this position, you have a triangle of support from the paddle blade on the ground/your right hand, the paddle shaft/coaming/left hand, and your feet. You want to keep the three point support. While keeping your weight low, step into the kayak with your left foot, then your right foot, but keep your weight over to the right side where there is the most support (the ground). Once both feet are in, you can scoot your legs all the way down inside the kayak and release the contact with the ground.

Once in, the first thing to do is adjust your **footpegs or footbraces**. As you might guess, these are to put your feet against and if they are well adjusted for you, you will be more comfortable and will be able to paddle more easily and more strongly. The pegs are on a track attached to the inside of the kayak and are moved by squeezing the back of the peg towards you. You can bend forward to reach them or can pull them up toward you by using a foot to squeeze behind them. Watch that you don't pull them off the track as they can be a struggle to put back. The proper adjustment for you is when your knees just break the plane across the coaming. This will mean that your knees are slightly bent all the time and in such a position will help you not to get a backache. Make sure the two are level, unless you have one leg longer than the other (which some people do). Practice getting in and out several times on dry land. You get out by doing the getting in, in

reverse: Balance your right hand and paddle on the ground, lean to that hand, place the left hand on the shaft at the back of the coaming, step out with the right then left foot, keeping low until both feet are on the ground.

Once you have mastered getting in/out and have your footpegs correctly adjusted for you, it's time to practice getting in and fitting the spray skirt, starting from behind you, ending up at the front, and always checking the grab loop is visible. You're going to be using it soon! When you get in at a kayaking location, move the kayak down until the cockpit is half over the water. Once you get in, it won't need much "ooching" to get the kayak to float. Getting in away from the water means you cause a lot of friction for a lot of time before you float and wears out the kayak really fast.

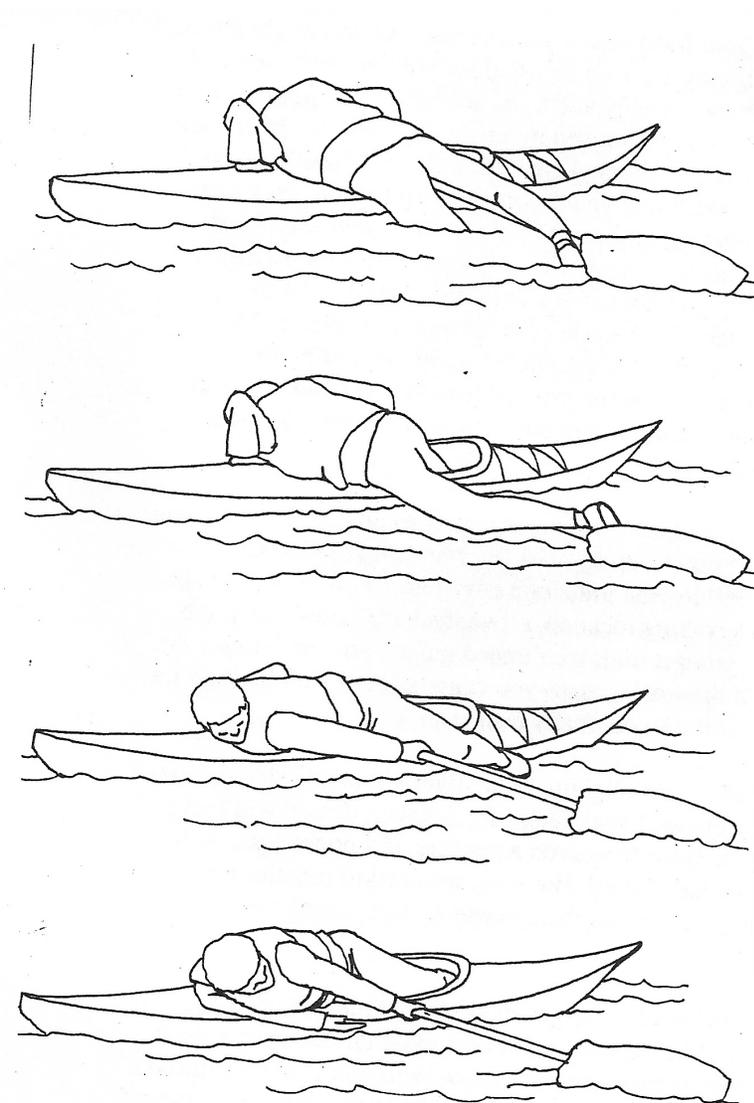
Once you are floating, take a moment to lean slightly (only slightly!) to one side then the other, to get used to how stable/unstable the kayak feels. Each kayak design will feel a little different. Think of it as like testing the brakes on a new car. Of course, you will want to have a go at paddling: Go ahead! Try it! But what we need to practice next is a so called wet exit—falling in sideways, releasing the spraydeck, and exiting the kayak under water.

The first time you try this will be in the pool so forget about the paddle and have one hand ready on the grab loop as you fall to the side. As soon as you hit the water (don't cheat and do it sooner because in the real situation, the capsize will come as a surprise) pull the loop hard towards you. Give it a good sharp tug, and the spraydeck will come off the coaming, and then kick the kayak away. It sounds nasty but being confident of your skill to accomplish this will allow you to learn much faster on the water than if you worry all the time whether you will be able to get out in the event of a capsize.

So now that you're out, how do you get back in? There are many ways but we will first practice the paddlefloat self rescue in the belief that you should always be able to rescue yourself. If the kayak has more than a couple of inches of water in it, first pump it out because it's more difficult to get back into a waterlogged kayak than a properly floating one. It requires a little skill to pump out a kayak when you are in the water, but it's not too difficult.

Watch this first—the first part, without the sling, is what you must do in the first test in the pool: <http://www.youtube.com/watch?v=N9qtEJOCqOw>

Fig.10 PADDLEFLOAT SELF RESCUE



After securely stowing your pump, get your paddelfloat and blow it up half way. Then fit it over one paddle blade and blow up tightly. This will make the float grip on to the blade and not blow away. It is designed to make a kind of outrigger support for you. Place the float end on your side of the kayak. (Let's assume you are on the left of your kayak as you look toward the bow but of course you should be able to do this on either side.) Grasp the other blade in your right hand, and the coaming too. This should mean that you are closer to the bow than your paddle. Wrap/hook your right leg or foot around the paddle shaft to give you a leg up but always keep the paddle perpendicular to the kayak, and also keep the float far out for maximum support help. Slither up by pulling with your left hand, and push with your right. When your stomach is well over the kayak you can begin to turn and get your legs in the cockpit. The key to the entire procedure is now — keep your weight well on the paddelfloat side. If you don't, you're going to be swimming with the fishes. If you do fall in again, just start again from the pumping routine.

You need to repeat this entry several times because after you leave the nice warm pool, the next time you practice this may be for real. It may be unexpected, cold, and a little scary, so take time to get it right now.

A quick caution: if you fall in, you may be tempted to abandon your kayak and swim to shore. More than 99.9% of the time, this is a really bad idea. The shore is always farther away than it looks from water level and, most importantly, you've just abandoned your biggest lifejacket. That's right! The kayak will float under virtually any conditions. You may not. Hang on to your kayak, even if you can't get back in. The same goes for any watercraft: sailboat, windsurfer, rowing shell — always stick with it, unless it's actually on fire, which is somewhat unlikely for a non-engine powered boat. Aside from the benefits of being a giant buoyancy bag, sticking with your craft allows you and it to be seen much more easily than if you are just a small head bobbing in the water. Also, you **MUST BEWARE OF COLD WATER SHOCK**. Watch this short film now; IT MAY SAVE YOUR LIFE: <http://www.youtube.com/watch?v=Sf3O1CcloN0>

Midterm #1 (on the water, first class meeting in the pool)

Okay, it may seem a little strange having a midterm the second week of class, but here's why: until you can pass all of the items below, you are not safe to take out on the water, so think of the two midterms as gatekeepers. Once you pass, you can proceed to more fun stuff! **YOU WILL BE TESTED FOR THESE SKILLS THE SECOND CLASS MEETING, IN THE POOL AT SJSU. DON'T MISS THIS CLASS (OR OTHERS!)**

- a. Demonstrate collecting and stowing all gear needed; perform safety checks.....6 %
(paddelfloat, pump, (paddle!), sprayskirt, PFD; hatch, footpegs, all secured)
- b. Demonstrate getting in kayak from poolside and securing sprayskirt.....2 %
(paddle position; grab loop visibly checked)
- c. Demonstrate wet exit and re-entry unaided, using paddelfloat, in under 5 mins7 %
(pull loop under water, kick kayak away; right; pump, attach paddelfloat, correct hand positions, re-enter)

To pass, you **MUST** be able to do c. Otherwise, you will be advised to drop the class.

Chapter Two

Your first trip: unloading, getting ready, basic strokes

Our first trip will be to a small lake. Here we will really begin to learn how to paddle but first, let's talk a little about preparation. Of course, it is the instructor's decision where/when/if we paddle but what are the considerations to put into making this decision?

First is the weather. Try to get in the habit of listening to a forecast for a couple of days before class. Bear in mind the following: predicted temperature, predicted wind strength and direction, time of sunset. Precipitation is less important (apart from giving you a clue about what to wear) but any lightning or fog predictions are very important. The latter condition could get us lost and the former might be an electrifying experience of the worst kind.

Assuming the weather is OK (and check my voice mail after 12 noon—number given out in class) try to get to the site about 10 minutes before class is scheduled to start. This will enable us all to help unload the trailer and get started on time, thank you. If you are late, we will start without you and you MAY NOT start without being with the group. The kayaks and paddles will be locked up, too.

Unload the trailer as follows: undo the red straps but please do not remove or loosen them more than is necessary. Leave the straps in place on the trailer. Don't unload a kayak alone; have one person at the bow, one at the stern, and always carry by the bow and stern **grab handles**. Take the kayak far enough away to be out of the way for unloading the others and set it down carefully. Make sure you have water, snack etc. and lock your car. Only take the key if it can get wet. If you have a remote/keyless entry, don't take it with you. Figure out your own system of where to hide it. Also, don't take wallets etc. out on the water as they have a strange habit of falling in, and always assume YOU will fall in!

Assemble/put on all your equipment with/on/in your kayak: sprayskirt, PFD, pump, paddlefloat, paddle and help other people too, please. Check the position of your footpegs now. We're going to be working together a lot in this class, so please do your part to make it fun. In twos, carry the kayaks with gear down to the edge of the water. If you each have a kayak in each hand, side by side, it is easy for two people to carry two kayaks. Be sure you are BOTH facing forward, no one should be walking backwards. If there are other launch site users, please be considerate of them and don't hog all the launch space.

When everyone is ready, the instructor assistant will launch first and lead the trip, and the instructor will launch last and stay at the back of the group. We have walkie-talkie contact for additional safety. As soon as you get on the water, find a buddy and be sure to know his/her name. You need to stay within 5 seconds paddle of your buddy throughout the class as you may have to help rescue/be rescued. Have your buddy do a

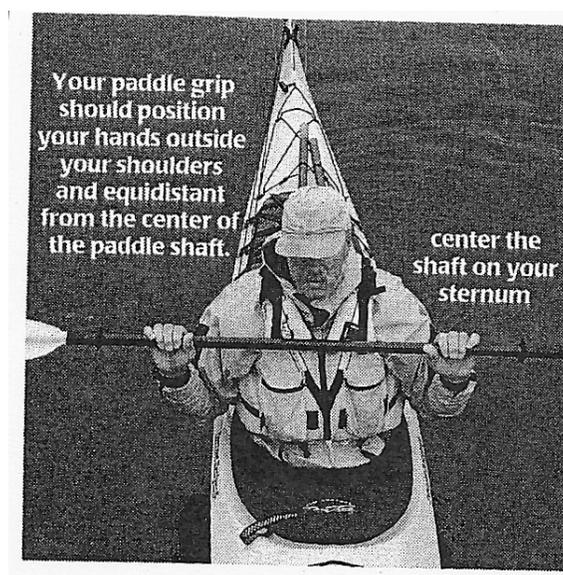
safety check on you as you do for them: all equipment present, hatch cover securely on, sprayskirt grab loop visible, skeg down (sometimes they get stuck; you may have to pull it down manually and obviously you can't do this to your own kayak unless you have 5' long arms). Do not set off until you are told to do so; keep within 30' feet of the launch site until then.

At last! We're ready to kayak!! The basic stroke is called the forward paddle stroke. Just try it and see how it feels with a straight (non-feathered paddle). Next, we can try to improve it by checking several things:

1. hand grip and position
2. position of blade entry and exit
3. use of whole upper body
4. use of footpegs
5. push as well as pull

1. hold the paddle quite lightly with your hands just over shoulder width apart. You'll find there are rubber drip rings on the shaft designed to stop water running down the shaft and into your lap. You can move these to use as markers just outside your grip width. It's important to relax your grip as much as possible so as not to tire your hands and forearms. To begin with, keep your paddle in the straight, non-feathered position so that both hands do exactly the same thing.

Fig. 11 PADDLE GRIP



2. put the blade in the water at about 2 o'clock on your right side and take it out at about 4 o'clock; put it in at about 10 o'clock on the left side and take it out at about 8 o'clock. As you do these actions, watch your blade in the water all the time. This will cause you to slightly rotate your torso, which will make you use more muscles of the back instead

of just arm muscles. Because the back muscles are so much larger and stronger, this is a good thing to do. See <http://www.smart-start-kayaking.com/Paddling-Techniques.html> for hints on all these 1-5 tips for better paddling technique.

Fig. 12 THE BASIC FORWARD STROKE



3. powering through the whole range of the above motion will make for a much more powerful stroke, and keep the back muscles engaged longer. Using a larger body action also seems to make getting into a rhythm easier. Many people will notice that they go slightly (or wildly) to the left or right. It may simply be because you are stronger on one side but more likely it is because you don't make quite such an efficient stroke on each side. Try to keep the blade close to vertical for maximum efficiency and also bring the paddle back in as straight a line as you can. One reason you may go to the side is making a wider arc sweep on one side than the other; try to make each side a mirror image of the other. Another reason for not going straight may be that you are not holding your paddle exactly in the middle. Ask your buddy to watch you to check for symmetry if going to one side seems to be a problem.

4. using the footpegs brings in the use of the legs. Press down on the footpeg on the same side as you are taking the stroke, i.e. on the right foot as the right hand blade is in the water. You may be surprised how much extra power this can give you. This is also why it's important to have the knees slightly up; if they are in contact with the sides of the cockpit you can get some extra power here too.

5. finally, you do not only pull back with the hand making the stroke. At the same time, push the other hand away. Perhaps the best analogy here is to bicycling with toe-clips. The reason they help is that you can pull one pedal up as you push the other down. Ultimately, the more muscles you integrate, the less quickly any one will tire.

Once you have the stroke going with some rhythm and power, check to see that your grip is still relaxed, with no white knuckles. If you try to keep your hands low they will be below the level of the heart for more of the time and thus are less likely to get cold but paddle angle is a personal preference: high angle is more aggressive. Like any other action on or in the water, smoothness is key. Calm deliberation will beat jerky brute force.

Now that you can go, how do you stop? If you just stop paddling, you will eventually glide to a standstill but if you tuck in your elbows and dip first one blade, then the other in the water, you can stop quite quickly. Doing this too fast, however, is an easy way to trip up the kayak and cause you to go for a swim, so be gentle until you learn the appropriate amount of force for any given speed.

You can also pretty easily go backwards by simply reversing the push/pull of the stroke. You'll find that your kayak will twist and turn a little more and that's because it was designed to go forwards. You're not sitting quite in the middle, bow to stern, and the bow and stern have different profiles. Take slightly shorter strokes when going backward to compensate for this.

Group communication

When you are kayaking in a group, it's important to keep together and not go off on your own, or even with your buddy. Be sure that you can see the instructor; that means the instructor can see you!

Should you go too far away to hear spoken directions, there are a few signs/sounds you need to understand.

“Look here” is conveyed by one whistle blast.

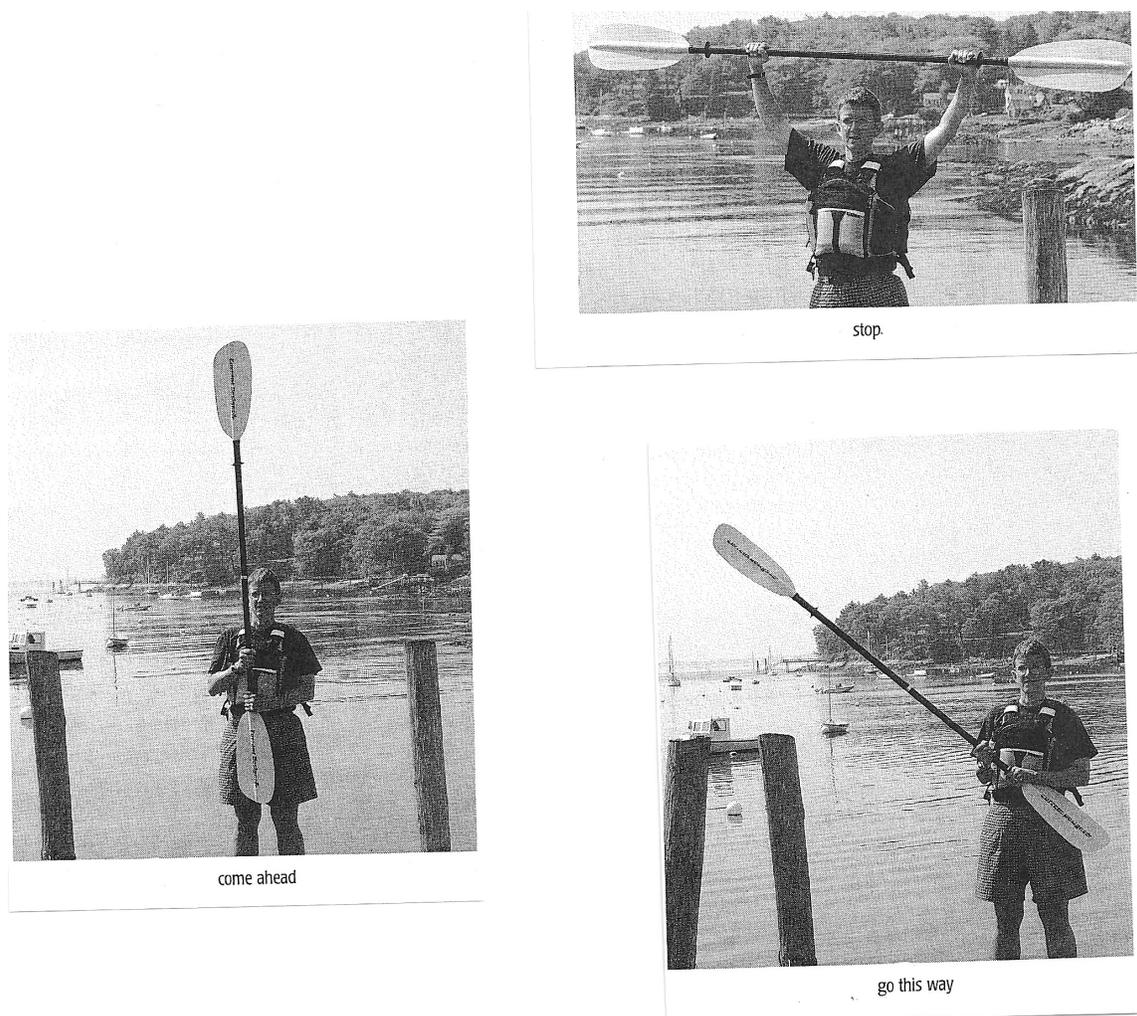
“Stop” is conveyed by the paddle held horizontally overhead; and a whistle blast

“Come here” is conveyed by the paddle held vertically overhead and/or two blasts on the whistle. Reply with two blasts also to indicate you have heard.

“Go right/left” is conveyed by the paddle angled to right or left.

Distress is conveyed by repeated blasts of the whistle (also other means; see chapter 3)

Fig. 13. COMMUNICATION AFLOAT



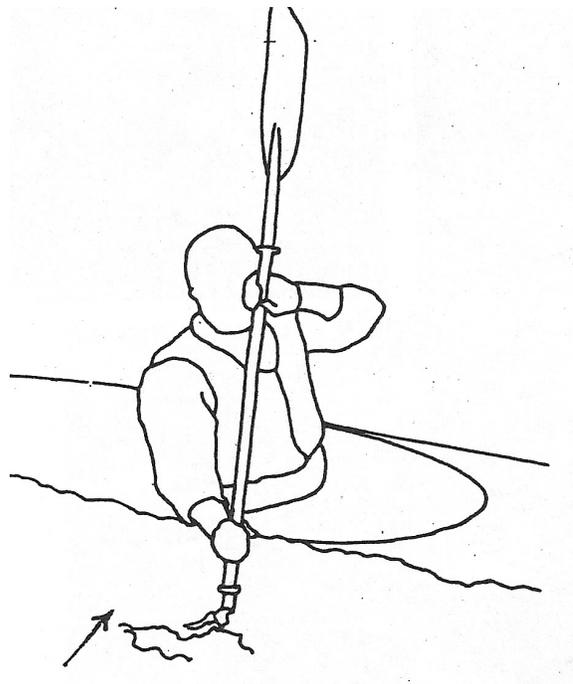
Chapter Three

Additional strokes

In addition to the basic strokes of going forward and backward, you need to learn how to go sideways (draw stroke), how to turn going forward or backward (sweep), how to use steering (rudder) strokes, and how to brace yourself from falling in (low brace).

The draw stroke is designed to pull the kayak sideways. Let's assume you want to draw to the **starboard** (right) side. Put your blade in on the starboard side, placed about 2 feet away from the kayak, and keep it exactly vertical.

Fig. 14 DRAW STROKE (see http://www.youtube.com/watch?v=bOmm30_4DQ)

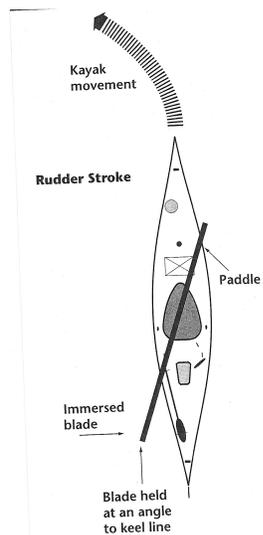
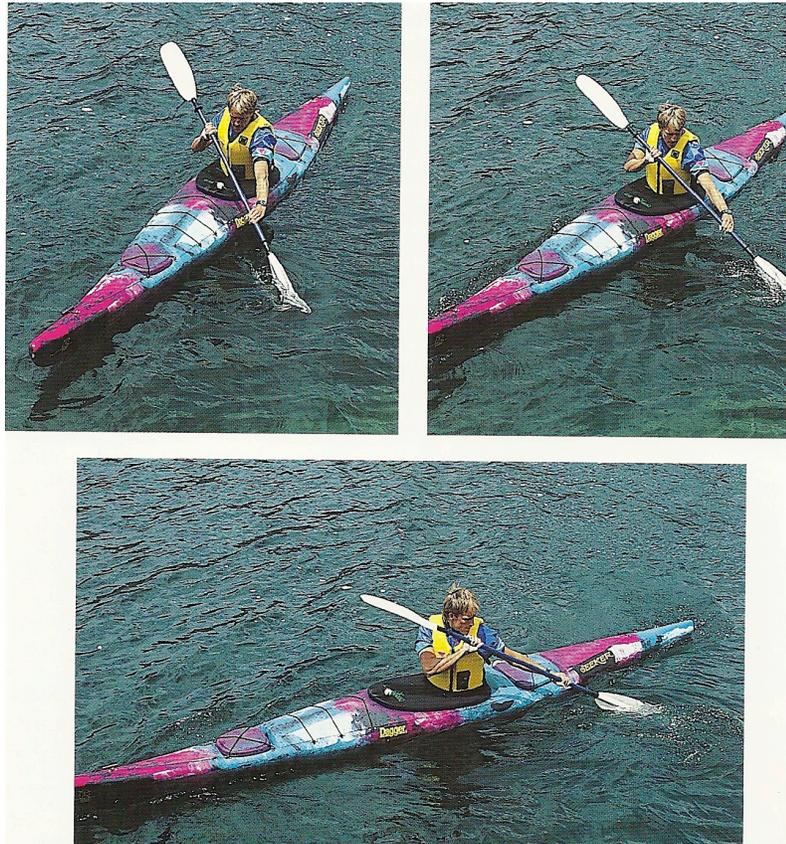


Try to pull the blade directly toward you and in fact what you are doing is pulling the kayak to the starboard side in the water. Stop when you have about 9 inches left to go. Keeping the blade under water, turn the blade away as you push the paddle back to 2 feet away from the kayak and repeat. The blade is under water all the time, but the blade rotates around a vertical axis in the water. You should practice this to **port** (left) as well so that you can go either way equally well. Something to watch out for is not to run over your own paddle, which could cause you to capsize, which is why you stop with about 9 inches to go.

The sweep stroke is designed to turn the kayak. Let's assume here that you want to turn right. If you reach out wide to the port side, at about 10 o'clock and pull back in a C-shaped arc, you can start the turn. Put pressure on the port footpeg and you increase the speed of the turn. You can continue this stroke all the way to the stern or stop at half way

around. If you next do a reverse sweep behind you on the starboard side, you will turn even more quickly. Of course, you should be able to do sweep strokes both sides and both the forward and reverse directions, and in combination.

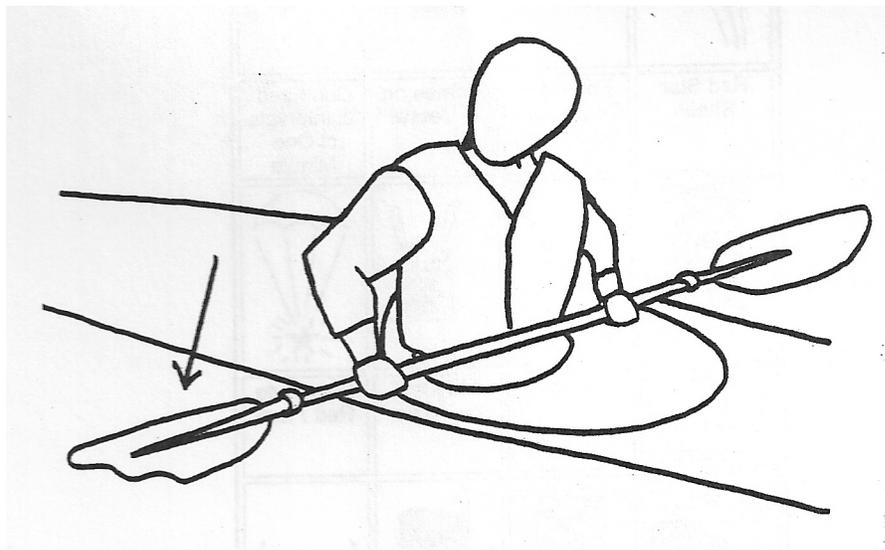
FIG. 15 TURNING: FORWARD AND REVERSE SWEEP STROKES; RUDDER STROKE (see <http://www.youtube.com/watch?v=KInwukLbQcU>)



Sometimes, if you have already got the kayak moving, you want to adjust the direction just a little, like a rudder on a sailboat. If you dip the paddle in on the starboard side, and slightly behind you, you will turn the boat to that side, and vice versa. Be a bit careful how you do this because a change of direction at speed will make the kayak seem a little unstable. A final way of assisting a turn is to move your weight so the kayak leans slightly toward the side to which you wish to turn. You can add this weight shift to any turning stroke.

One other stroke we will cover (although there are many more) is more of a recovery than a real stroke. This is the brace. With you hands below your wrists (which is why it's called a low brace), reach out and lean slightly to one side. Roll your wrists back and have your elbows over your hands so that you can really punch straight down on the water with the flat of your paddle as you simultaneously flick your hips to bring the kayak level. The two actions will bring you quickly upright and can be used instinctively any time to think you may capsize. Practice the low brace often and find out how far you can lean/brace without falling in. You may be surprised how much support you can get from the water. This stroke is typically done at the end of a regular stroke to maintain stability.

Fig. 16 LOW BRACE (http://www.canoekayak.co.uk/Video/Basic-Kayaking-Skills---How-to-Low-Brace/_ga3854)



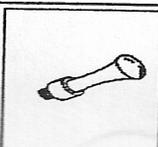
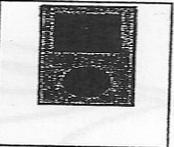
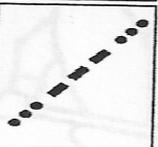
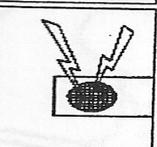
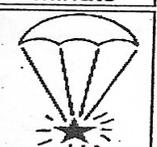
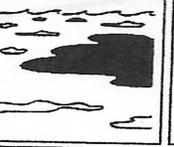
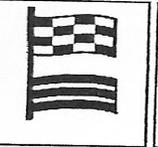
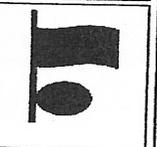
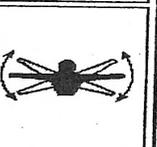
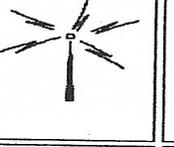
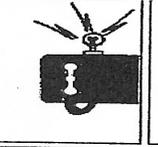
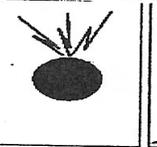
Concerns if things go wrong; distress signals

If you get into trouble, you should have the group with you to help. Don't be afraid to say if your back hurts, or if you have a blister that really stings. The instructor carries a minimal first aid kit on all trips and has a more substantial kit in the car. It's not a bad idea to bring a couple of band-aids the first few trips.

While there are sixteen internationally recognized distress signals in the water, some are impractical in a kayak and are only really observed on sea water. The following are appropriate for kayakers to use:

1. blow your whistle continuously.
2. blow your whistle in S-O-S (three short, three long, three short ...---...)
3. raise and lower both arms together
4. red flare/shell stars. You can buy small flare guns and flares at marine stores. Check they are not expired. Don't expect the Coast Guard to rescue you from a lake! Someone may see your flare, however, and alert the police.

Fig. 17 DISTRESS SIGNALS

			
Red Star Shells	Fog Horn Continuous Soundings	Flames on A Vessel	Gun Fired at Intervals of One Minute
			
Orange Background Black Ball & Square	SOS	"Mayday" by Radio	Parachute Red Flare
			
Dye Marker (any color)	Code Flags November Charlie	Square Flag and Ball	Wave Arms
			
Radio-Telegraph Alarm	Radio-Telephone Alarm	Epirb	Smoke

Other distress signals require specialist equipment that doesn't do well if it gets wet or takes up a lot of space, such as a radio telegraph, radio telephone, VHF radio, (which also require a license); flags N over C, or square shape over round; or black square over black circle against orange background; fire on board; an EPIRB (Emergency Position Indication Response Beacon); foghorn sounded continuously; smoke or dye marker; red parachute flare, gun fired at 1 min. intervals. You should know these in case you come across someone else needing help.

Some additional safety items the instructor carries, which you should have if you plan a trip, include a tow line and means of attaching both ends; a small anchor; a compass; a waterproof (working) flashlight, and a spare paddle. Whilst some people carry cell phones, they are difficult to waterproof and reception of a signal on the water is unreliable.

To tow another kayaker, bear in mind the following:

1. the tow line should be at least 20' long (over twice the length of your kayak) This is so that the kayaks can be on the same wave phase and the towed kayak doesn't "catch up" the tower. Too short a line is hard work for the tower because the towed kayak slews about from side to side a lot more than on a longer tow line. For knots, see chapter seven.

Fig. 18 TOWING



2. attach the tow line around the tower's torso just under the arms so that the PFD takes the chafing. Get the line in the center of the back. Attach the towed kayak also around the kayaker's torso so that either of you can release it in an emergency. Either use a **bowline** knot (see chapter 7) or use a clip of some type. Pass the line through the bow loop of the towed kayak for better tracking but do NOT attach it here as the towed kayaker can't reach it to undo if necessary. If the one being towed is able to paddle at all, have them do so. It will keep them warm and occupied and the extra paddle power will get you back faster. If there is a major problem, consider attaching paddlefloats on both sides of the kayaker being towed for additional stability
3. as the tower, look around often to see what is happening behind you.

Fig. 19 TOWING WITH PADDLEFLOATS RIGGED



Chapter Four

Planning a trip—lake or river

For an inland trip, there are many things to think about even apart from the weather, which is probably the most important consideration (see next section). First, is the access open at this time of year, and what is the height of the water? Is there a current, and if so, which way does it flow and how strong is it? What is the water temperature? Are there any known hazards, such as tree stumps just under water, a dam to kayak over, water skiers, hazardous substances in the water, alligators (!), and is there anyone to help if you need it?

Some launch points are open all year whereas others are seasonal. Check on line if you go on your own, and for class use, the instructor will have checked. Some places have charges for either parking and/or launch fees, usually about \$5. Many places have automatic permits vending machines, so bring small bills. In most places, although you may leave your car adjacent to the launch point while launching/recovering your kayak, you need to park in designated areas so as not to clutter up the launch point. The height of the lake is likely to drop as the summer and fall progress, so be prepared for a short distance portage.

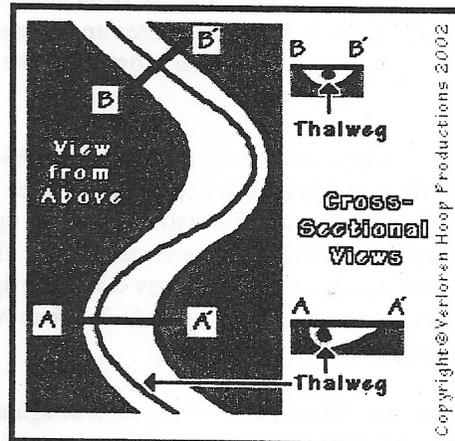
Since lakes are usually fed by rivers, some may have a perceptible current running through them. The major effect of this is likely to be that it takes slightly longer to go against the current than with it. However, if you are able to get up to where the river/creek comes in, you may find quite a strong current there. Be sure never to get yourself up-current of an obstacle; the force of it may drive you against the tree stump/rock and you may become temporarily trapped. In white water situations (beyond the scope of this class), this can be really dangerous.

When kayaking along rivers, the difference in going with or against the current is something to bear in mind when considering when to turn around. If the current is strong enough to be noticeable, a rule of thumb is to add half as much time again to go against as compared to with the current to predict the time taken. If you have a choice, it is obviously better to paddle against the current first before you become tired and have to turn back.

FIG. 20 DIAGRAM OF RIVER CURRENT VARIATION

OK. What about places where the river *doesn't* run straight, then: the water in a bend is always faster on the outside, isn't it?

True. That's why cut-banks are usually found on the outside of bends, while sandbars form on the inside, where the slower water drops some of its "burden" of sediment. The outside of a river bend also collects trees which have been uprooted by the collapse of undercut banks. These "sweepers" and "strainers" can be deadly, especially in high water. That's why prudent paddlers stay close to the inside of bends in spring.



Let's get out of the fast lane, shall we? In places where the current slows down and the water isn't too deep— less than three feet, say—it seems like I have to work harder to go anywhere. Is this some kind of drag?

It is. It's called shallow-water drag, and you'll notice it whenever you've got less than three feet of water under your keel. The magnitude of the drag depends on your speed: the harder you paddle, the more noticeable the drag. (The drag gets worse as the water gets shallower, too. It really mounts up at depths of one foot or less.)

Rivers with a strong current have uneven current strength in different parts of the river. It is generally stronger where the water is shallower, and less perceptible in deeper water. The current flows fastest around the outside of a bend in the river, and slowest on the inside of the bend. If there are levees or banks of any height, there may be more sheltered water to the side the wind is blowing from than in the middle or far side. Pick the challenge you wish, but know where to expect what.

While the water temperature is always important, it is more important if you plan a trip where you travel some distance from your start point. Imagine that you fall in at the farthest point possible from your start point. How cold will you be by the time you get back? Aside from preventing falling in by using brace strokes, and keeping warm by dressing appropriately, it concentrates the mind to have some idea what your survival time is in various water temperatures (see chart).

Fig. 21 CHART OF HYPOTHERMIA SURVIVAL TIMES

Water Temperature in Degrees F (Degrees C)	Exhaustion or Unconsciousness	Expected Time of Survival
32.5 (0.3)	Under 15 min.	Under 15 to 45 min.
32.5 to 40 (0.3 to 4.5)	15 to 30 min.	30 to 90 min.
40 to 50 (4.5 to 10)	30 to 60 min.	1 to 3 hrs.
50 to 60 (10 to 15.5)	1 to 2 hrs.	1 to 6 hrs.
60 to 70 (15.5 to 21)	2 to 7 hrs.	2 to 40 hrs.
70 to 80 (21 to 26.5)	2 to 12 hrs.	3 hrs. to indefinite
Over 80 (Over 26.5)	Indefinite	Indefinite



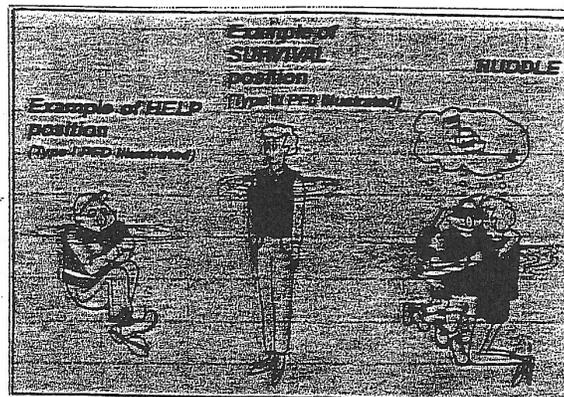
Cold Water Survival

The Cold Facts

Be aware that cold water (less than 70 degrees F (21 Degrees C)) can lower your body temperature. This is called hypothermia. If your body temperature goes too low, you may pass out and then drown. Even if you're wearing a PFD, your body can cool down 25 times faster in cold water than in air.

Water temperature, body size, amount of body fat, and movement in the water all play a part in cold water survival. Small people cool faster than large people. Children cool faster than adults.

But PFDs can still help you stay alive longer in cold water. They let you float without using energy and they protect part of your body from cold water. A snug-fitting PFD is better than one that's loose-fitting. When you boat in cold water, use a flotation coat or deck-suit style PFD. In cold water, they're better than vests because they cover more of your body.



Cold Water Survival

When you're in cold water, don't swim unless you can reach a nearby boat, fellow survivor, or floating object. Even good swimmers drown while swimming in cold water. Swimming lowers your body temperature.

If a nearby floating object is large, pull yourself up on it. The more your body is out of water, the warmer you'll be. Don't use drownproofing methods that call for putting your face in the water. Keep your head out of the water to lessen heat loss and increase survival time.

Use of the HELP position will lessen heat loss. However, if you're wearing a Type III PFD, or if the HELP position turns your face down, bring your legs together tight and your arms tight to your sides and your head back. See SURVIVAL position.

If there are others in the water, HUDDLE together for warmth. Keep a positive outlook. It will improve your chances of survival.

Always wear your PFD. Even if you become helpless from hypothermia, your PFD will keep you afloat.

Some people say that if the combined water and air temperature is not at least 100 degrees F, don't go out without specialized clothing, or without a buddy, or without a means of communicating your distress.

Hazards that are known and can be predicted include knowing if there are submerged obstacles such as tree stumps (which might puncture your kayak); knowing that the dam of a reservoir has a barricade (to stop you falling over the dam when the water is spilling over); knowing what other water users to expect (if powerboats or personal water craft are permitted, there will likely be more on weekends, and they can create large waves – even though it may seem counter-intuitive, lean TOWARD an approaching wake to prevent being capsized by it; if there are sailors, keep out of their way as you are more maneuverable than they are; find out if there are hazardous substances in the water that might cause skin irritation, or worse, if you spend any time in the water; and finally always ask yourself the question, if I get in trouble, who might rescue me? The answer could be a buddy, a park ranger, someone fishing, or no one.

Finally but rather importantly, how fast can you expect to go? Although it may seem much faster because you are so close to the water, most beginning kayakers should plan on averaging about 3 miles per hour, and less if against wind or current.

Weather concerns

Always start listening to a local weather forecast for a couple of days before your trip to get an idea of predicted conditions and how the weather is changing from day to day. One good site is www.wunderground.com but there are many others. In order to make an informed decision about whether to take your planned trip, find out about predicted air temperature, water temperature, precipitation, lightning, fog, and—very important—wind. In many places, including the San Francisco Bay Area, strong afternoon winds form on most days from about 1-6 PM so a day that dawns windless might, by 3 PM, be very windy. Bear in mind what may happen if the wind comes up when you are tired and a long way from your launch site. Is there, perhaps, an alternative place to land?

In addition to having been forewarned of approaching conditions by a professional forecast, you also need to be able to make very short term, local predictions yourself. If you know the wind direction (and you should before setting out), keep an eye on the sky in the direction the wind is coming from. This can give you several minutes warning of an approaching change in the weather. The darker the clouds, generally the worse the weather, and really dark clouds usually have strong downdrafts—winds—which may only last a short time. You can also see approaching rain by looking in the **windward** direction and have time to put on a rain jacket, or seek shelter if necessary. Although the weather can sometimes change very quickly, for those who know how to read the signs and who constantly do so, being forewarned is to be forearmed.

If you get into an area where there is both wind and current, be aware of the following point. When the wind and the current are in the same direction the water surface is flatter than when the wind and current are opposite each other. If there is a change in the wind,

or in the current, know what to expect and plan accordingly. In a river with bends, one section where the wind and current are in the same direction, can be pretty calm, whereas another section after a bend, with the current now opposite the wind, there can be a lot of whitecaps.

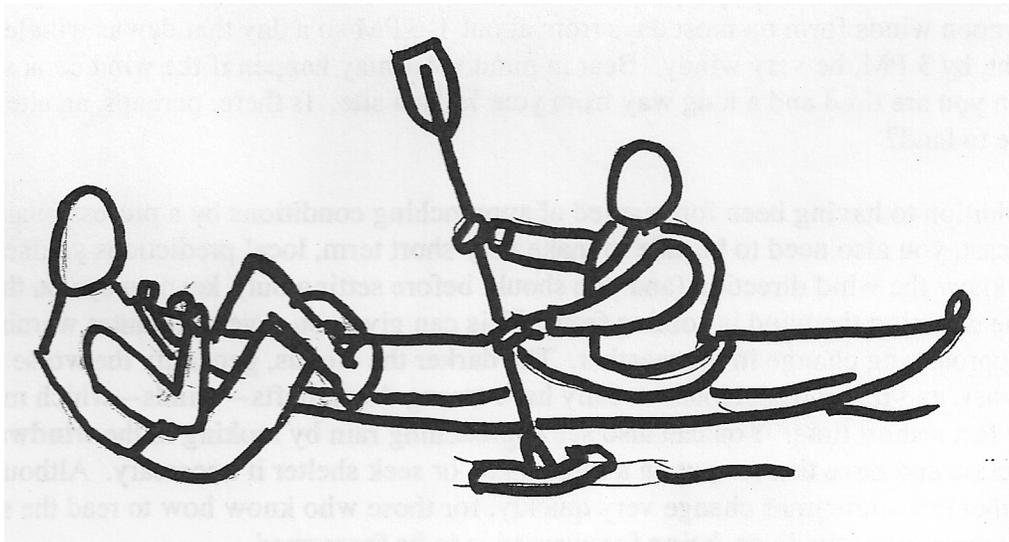
While finding out the weather forecast, also find out what time sunset is. Don't cut it too fine—it isn't much fun finding yourself miles from your launch point as it is quickly getting dark. Err on the side of caution and allow extra time if kayaking in the winter. Also, take a flashlight and make sure its waterproof and with good batteries!

Additional rescues

Before you go out onto larger bodies of water, where you may be some distance from shore, or from the launch site, you need to know and be able to demonstrate, some additional rescue maneuvers. A T rescue is a quick way of draining a buddy's kayak before he/she re-enters; the side-by-side re-entry is one of many methods of buddy rescue, and rigging a rescue sling is a help for a tired paddler to get back in his/her kayak when the paddlefloat alone isn't enough.

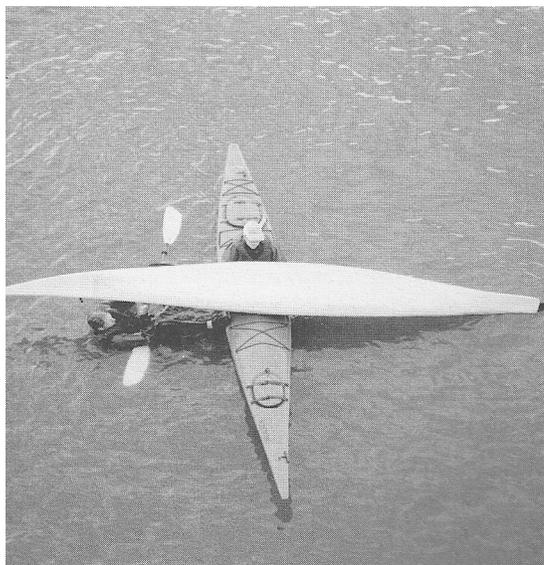
First, if your buddy is separated from his/her kayak, you can give him/her a ride back by **bulldozing**. This means approaching him/her carefully from downwind (so as not to run him/her over) and getting him/her to wrap the arms and feet around the bow of your kayak while you paddle. You can also take someone to shore this way.

Fig. 22 BULLDOZING



Let's assume your buddy has fallen in, the kayak is full of water, and you are some distance from shore. He/she could do the normal paddlefloat re-entry but pumping out the kayak takes a long time. It's much quicker if you do a T rescue. This involves getting your buddy's kayak upside down, across your kayak, and rocking it back and forth until the water is drained.

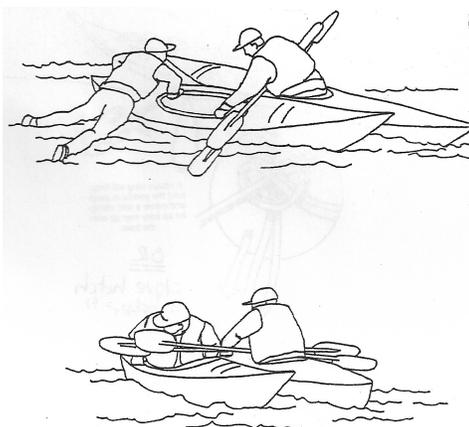
Fig. 23 T RESCUE (see <http://vimeo.com/4014525>)



Your buddy can help position the kayak perpendicular to yours, help push down on it so it is easier for you to lift, and help rock it back and forth.

Once the kayak is drained, the side by side re-entry is quicker than the paddlefloat self rescue. Position the kayaks bow to stern touching alongside. You, as the rescuer, take both paddles and lean way across both kayaks to make a braced raft. Your buddy should then be able to climb back in without the use of a paddlefloat.

Fig. 24 SIDE BY SIDE RE-ENTRY

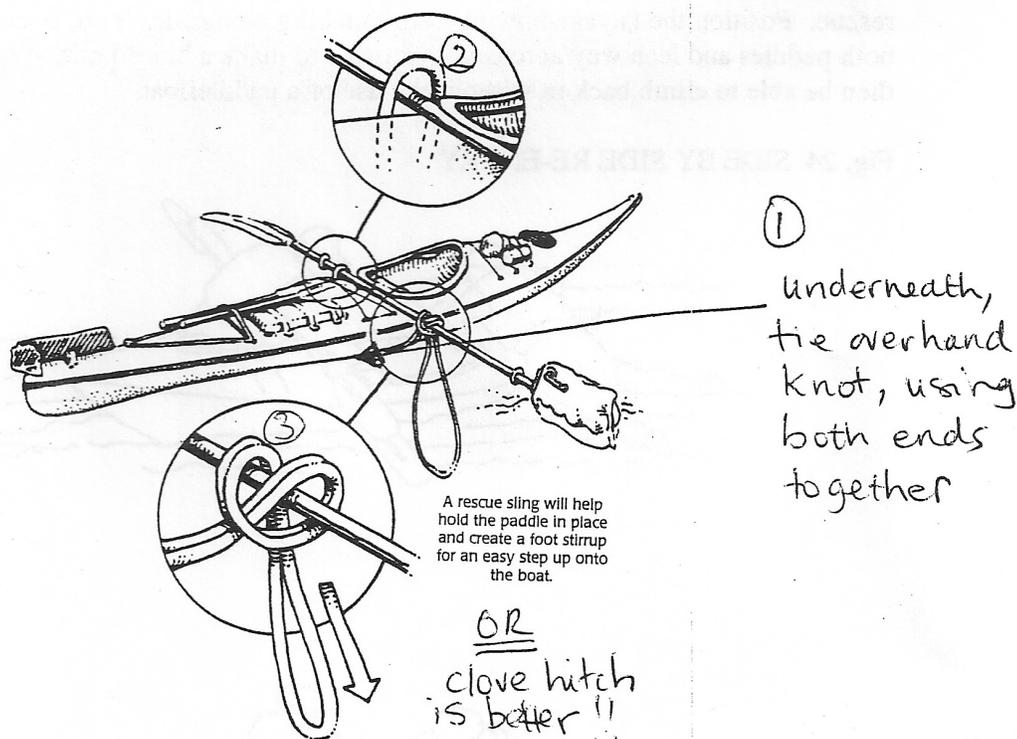


If, for any reason, the swimmer can't get back in, you could try rigging a rescue sling. This is like a small rope ladder designed to give a leg up into the kayak. First, make sure the swimmer is OK. If he/she is really cold, bulldozing to shore might be the best option. If he/she is OK to spend about 5 minutes more in the water, rig the sling.

Take a rope about 20 feet long, double it up and tie the ends in an **overhand knot** (see chapter 7). Now you have an "endless" piece of rope. Loop one end tightly around the paddle shaft right by the hull on the non-entry side. Keeping it very tight on the entry side, tie a **clove hitch** (see chapter 7) around the other end of the paddle shaft so as to leave the bottom of the loop just below the surface. Any deeper than that and the person in the water won't get any help from it. You can either give side-by-side re-entry assistance, or attach a paddlefloat, or both for maximum assistance to a tired friend.

By the way, there are many, many more rescues, each best for certain kayakers in certain conditions. Check out the book *Sea kayak rescue* (see chapter seven for details of this and other kayaking books).

Fig. 25 RESCUE SLING + PADDLEFLOAT



Midterm #2 (on the water test, on location)

Once you pass this test, you are ready to head for the (protected) sea! YOU WILL BE TESTED FOR THESE IN THE FIRST FEW CLASSES, ON LAKES OR IN POOL

- a. demonstrate effective draw stroke, forward sweep, reverse sweep, rudder stroke, low brace, each on both sides.....5 %
- b. demonstrate/describe 3 internationally recognized distress signals appropriate for kayakers.....3 %
- c. demonstrate effective towing.....2 %
- d. demonstrate bulldozing a swimmer.....1 %
- e. demonstrate one assisted rescue method (instructor as swimmer).....4 %

To pass, you must score at least 10/15%.

Chapter Five

Planning a trip—tides and currents

Most of the points to bear in mind for fresh water trips also apply for tidal waters but there are many additional considerations. Most important is probably the weather. Bad weather on a lake or river is one thing; bad weather out on the sea can be many times worse. The first feature is that the waves may be much larger because wave height depends on **length of fetch**, among other factors. This means the distance over which the wind has access to the sea to build up larger and larger waves. The longer the length of fetch, the bigger the waves, in general. This means that on the **windward** side of an estuary, the waves may be 1' (trough to crest) but on the **leeward** side (the side the wind blows to), with a long length of fetch, they may be over 4' and quite unpleasant. Waves break when the depth gets too shallow to support the wave, so look for breaking waves where the water is shallower. This class does NOT cover surf launching with waves greater than 4', which should not be attempted without additional instruction.

The major difference between fresh and salt water is the presence of tides and associated currents. **Tides** mean a change in the height of the water, and **currents** are horizontal movements of water, caused by tides. As previously mentioned, when wind and current (in this case caused by tides) are against each other, look for breaking waves and choppy seas.

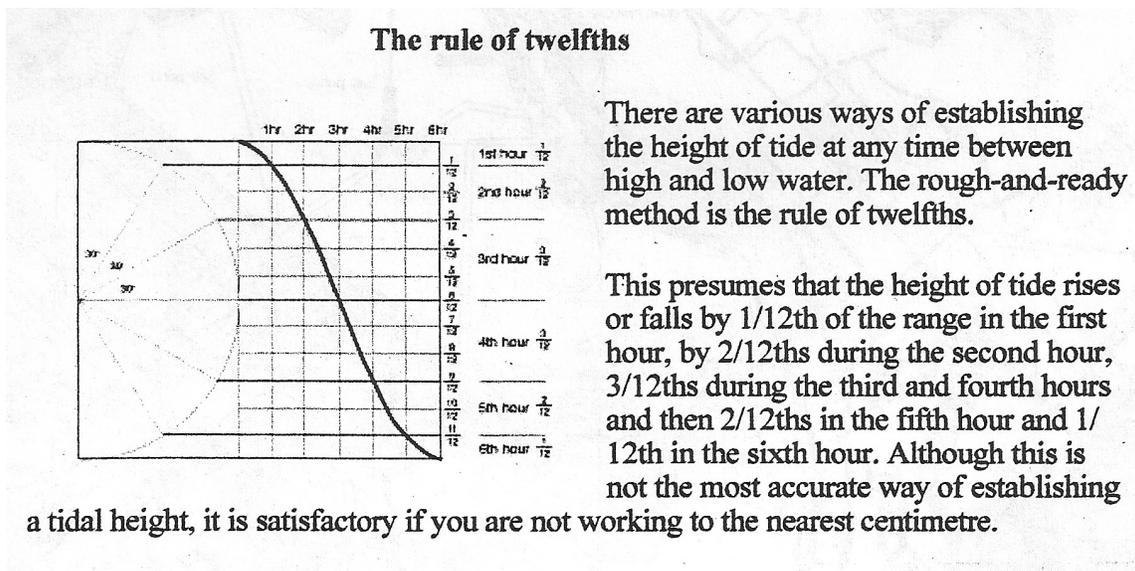
Never go out on tidal water without knowing both the predicted times of high and low tide and the height of the high and the depth of the low. The tidal range varies around the world but is about 6'-8' in places the class goes to. Knowing the time of high/low tide is important in the following: making sure there is enough depth of water to carry out your intended trip; being able to launch and land at different stages of the tide; bearing in mind current direction at all stages of your trip. Be VERY careful to read these predictions accurately. Make sure you have the H and L correct! (See http://www.co-ops.nos.noaa.gov/tide_predictions.shtml?gid=235) The graph and table give similar information but the graph can be used to give a good idea of depth at any time.

Fig. 26 TIDE PREDICTION



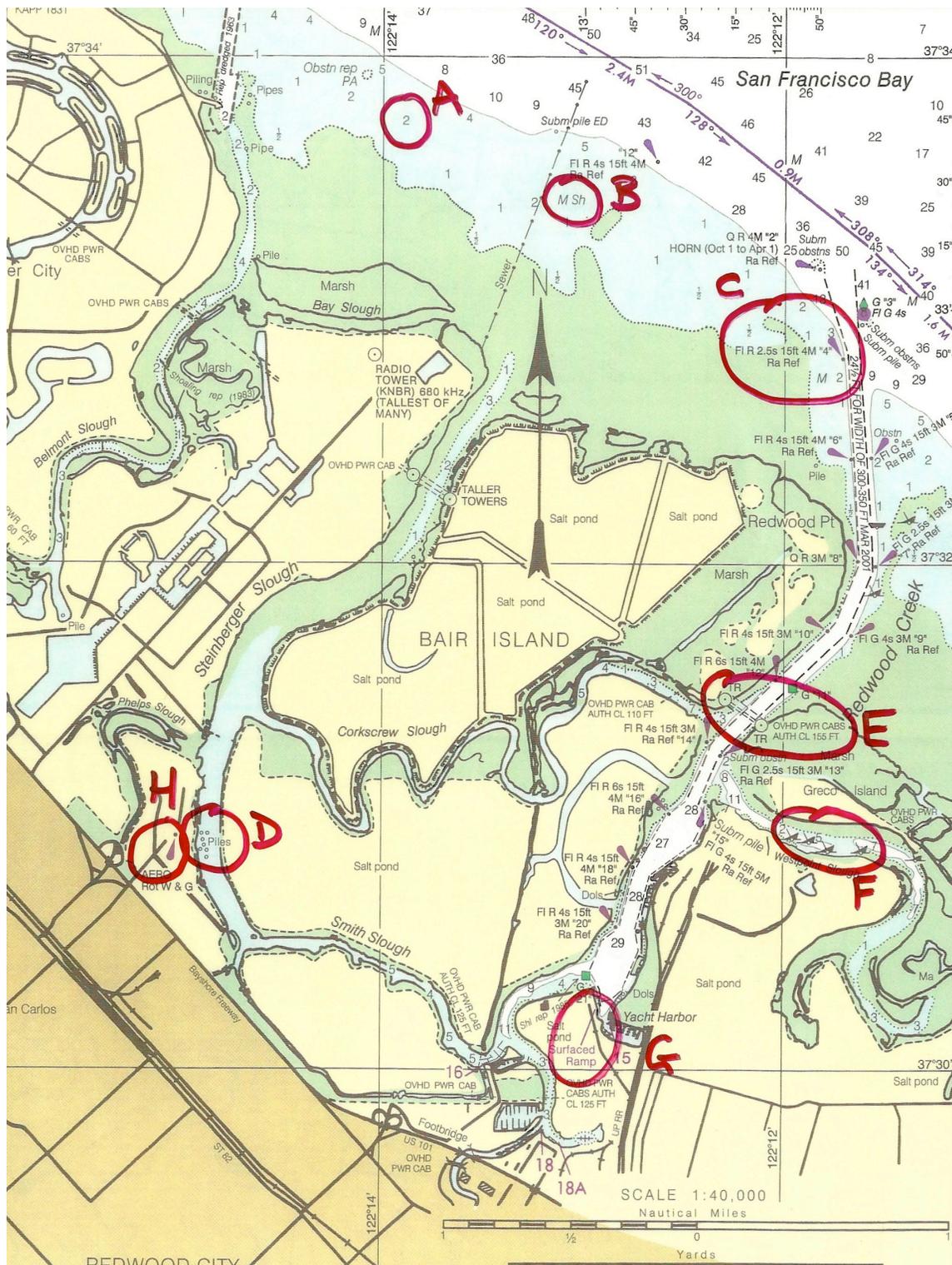
The rate of change of tidal height and the consequent speed of current varies according to the stage of the tide and the difference between the high and the low. A **spring tide** has high highs and low lows, making the currents stronger than at **neap tides** where the high is not so high and the low not so low. Please note that “spring” does not only refer to the spring season, although the most extreme tides are usually in the spring; there can be spring tides at any time of the year. Tides go in phase with the moon; a few days after the new or full moon, you will find the tides are more extreme than when the moon is in its first or last quarter. In most places around the world (including those we visit in the class), it takes APPROXIMATELY 6 hours to go from low tide to high tide and another 6 hours to get back from high tide to low tide. In the first hour after high (or low) water, the height changes by 1/12 of the total height change, in the second hour the height changes by 2/12 of the total height change, in the third and fourth hours, the height changes by 3/12 and 3/12 again of the total height change, in the fifth hour the change is 2/12 of the total, leaving just 1/12 height change in the last hour. This is called the **Rule of Twelfths** and is very useful in predicting current strength and water depth.

Fig. 27 RULE OF TWELFTHS



You should be thinking at this stage that you need a chart that shows how deep the water is to superimpose all this information on to. You're right! Here's a chart of Redwood City. Charts are published covering all marine areas of the world and all give such basic information as **soundings** (depths), a map (chart) of the water and limited land features as are relevant to the water user, such as the presence of overhead power cables, submerged pilings, type of sea bottom (mud/sand/shells etc.), aids to navigation (lights and numbered buoys) as well as numerous other features. You will be loaned a colored chart for your use on the water, which is much easier to use than the black and white copy seen here. See charts at <http://www.nauticalcharts.noaa.gov/mcd/NOAChartViewer.html>

Fig. 27 CHART OF REDWOOD CITY



On the chart, by the hand written letter A is marked the depth (2'). This means that there will almost always be at least 2' of water. MLLW is Mean Lower Low Water, that is the average of the really low lows. Beware: not all charts are marked in feet; look for the designation of what measure the soundings are in AND what they are measured from; from low, or high water, etc. If you add the information from a tide table to the sounding information, and use the rule of twelfths, you can predict the approximate depth at any stage of the tide on any day.

By the letter B is shown the nature of the sea floor, here mud (M) and shells (Sh). This could be useful if you wanted to anchor to know what type of anchor to use and whether it might be expected to hold well.

By the letter C is a great amount of information to tell navigators exactly where they are: a flashing (Fl) red (R) light every 2.5 seconds (2.5s) is positioned 15 feet (15ft) off high water, which can be seen for 4 miles (4M) and is marked on the buoy by the number 4 ("4"). The buoys mark channels, a type or highway in the water, and all port lights are red, and starboards are green. These are labeled for the leaving the harbor direction in the US (but for returning to harbor in most of the rest of the world, should you kayak abroad!). Remember "red right returning" for North America. Thus all even numbered buoys are red and port hand (you keep them to your left on the way out to sea) and all odd numbered are starboard hand (keep them to the right when leaving harbor). This buoy also has a radar reflector (Ra Ref).

At D, you will see a pile or piling. These are often rotted to surface or below surface level and are thus important to position in order to avoid.

At E, you will obviously expect to see an overhead power cable, with a clearance of 110 feet at high water. Such cables also give you an accurate position and can be seen from some distance away.

F marks a veritable ships' graveyard with many wreck symbols. G shows the launch ramp we use for class. To be more accurate, it shows where we recover the kayaks from, since there is a launch fee to launch from the ramp but not from the nearby dock!

H shows an aeronautical light for the San Carlos airport. It can also be used by seafarers, however, and is rotating red and green. Very near it are a whole series of pilings to avoid.

Many more symbols are shown on navigation charts and it's worth getting one when you kayak on what is called "navigable water." A small kayak needs to keep out of the way of most other water users, by the way. Sailboats can't sail into the wind, so kayaks give way to them, being more maneuverable. Large ocean going ships need to keep to the buoyed lanes, so kayaks have to give way to them. If you have to cross a buoyed channel, it's best to do so quickly and perpendicularly so as to get out of it as soon as possible. Kayakers can easily paddle along outside the channel where there is more than enough depth of water for us. About the only vessels over which a kayak does have right of way

are small motor boats, but don't insist on your right of way since many power boaters don't know the rules of the road!

Safety equipment

In addition to the PFD, pump, paddlefloat, and spraydeck, you always carry, on the ocean someone should also carry some extra safety equipment. If you have a waterproof handheld GPS (Global Positioning System), this should ensure that you are never lost, if you know how to use it. A cellphone, if waterproof, might work, but there are many dead areas on the water so don't rely on it. Maybe a walkie talkie is a good idea to keep in communication with someone ashore. At the very least, carry a small compass, and know how to use it! After many turns in sloughs, it can be reassuring to know which way is back to the main channel when you come to a choice of small creeks.

A small folding anchor might be useful, as might be a waterproof working flashlight. Also take a small flare gun and flares if you anticipate longer trips. Food can be a big morale boost if you are stuck in a tough situation, and water is essential for trips longer than a couple of hours in the summer. A towline (see chapter three for how to attach and use; see chapter seven for knots) is essential and taking a spare paddle is not a bad idea in case one breaks or is somehow lost.

More on tides

Although there are (in most places) two high tides and two low tides in an approximate 24 hour period, the height of the high and the lowness of the low vary during the 28 day cycle of the moon. When the moon is full (actually a couple of days after), the sun and moon are in line and exert combined the greatest gravitational pull on the water, causing the highest highs, and the lowest lows. When the moon and the sun are in opposition, at new moon, the effect is similar but not so great. At quarter moons, there are relatively low highs and high lows. It is at these times of smaller tidal difference that currents are weaker; at full and new moons, with bigger tidal differences between high tide and low, the currents caused are strongest. During the year, the largest tides of all happen in the spring (hence "**spring tides**") and also in fall. Large tides are called spring tides, no matter what time of year they occur, and small tides are called **neap tides**. It's important, as a kayaker, not only to know when high/low tide is but also the strength of the current. Knowing what stage or phase the moon is at will help you to know what strength of current you may encounter.

Chapter Six

Repairs to you; repairs to your kayak

The best way to make repairs to you is to prevent them needing to be made. Warm up gradually when you get on the water by first paddling slowly and more gently and consider doing a short warm up, and a little stretching before and after you paddle.

Stretch out your shoulders by crossing your right arm in front of your chest, pull the right elbow towards you with the back of the left hand/left forearm, hold for 30 seconds and repeat on other side. Also, raise right arm, bend at elbow until right arm is on right shoulder, push up and under right arm with left hand, hold for 30 seconds, and repeat on other side.

Stretch out your wrists by pulling the fingers of the right hand back towards the right wrist with the left hand, hold for 30 seconds and repeat other side.

Stretch your back by lying flat on your back, pulling the knees up to the chest and holding the shins into the chest for 30 seconds. Also, rest on your hands and knees; alternately arch and hollow your back.

Stretch your hamstrings by standing about 18 inches from a wall and put your hands on the wall at shoulder height and shoulder width apart. Take a step back from the wall, keep your back straight and try to keep your heels on the floor. Hold for about 30 seconds.

Stretch your quadriceps by bending the right knee until your right ankle is close to your right buttock; grasp the ankle and hold for about 30 seconds. Repeat on other side.

While you are paddling, occasionally “play the piano” with your fingers (while still paddling) to check your grip on the paddle is not too strong. To stop your feet from going to sleep or getting cold, wiggle your toes periodically and use your calf muscles to pump blood to your feet by tensing and relaxing them. If you have a backache or sore hamstrings after paddling, next time, try readjusting your seat to a more upright position, check your footpegs are positioned to keep your knees slightly bent, and bend forward slightly at the waist while paddling.

We will build up our paddling distance gradually over the semester. In our first outing we will paddle only about 1 mile but by the last trip, we will be covering nearly 10 miles without stopping in 3 hours. This IS a physical activity class, after all, and improving fitness through paddling is one of the goals!

You can expect to be a little stiff and sore if you have not done any physical activity like this for a while but by doing the activity again and again, and by stretching, you will soon get through this. You may get a blister on your hand, so think about taking a band aid or

two. The instructor does carry hand warmers and there are cold packs back at the car. If you kayak on your own, consider taking such items with you.

In common with all human-powered water sports, kayaking is relatively injury-free. The consequences of things going very wrong, however, can be very severe and no one should even consider going kayaking, or taking anyone else kayaking, who cannot swim.

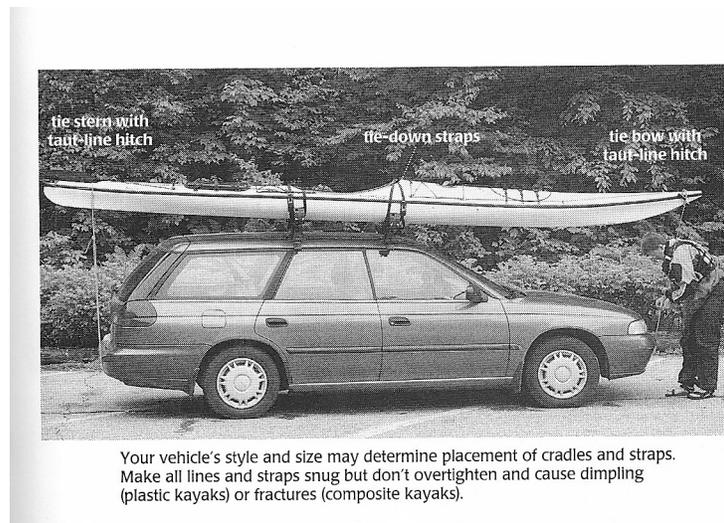
Your kayak is more susceptible to “injury” than you are but it is pretty robust, too. On a longer trip, consider taking some waterproof sealant in case of a small puncture hole. This can be bought at any marine store. If you don’t have any with you and you get a small hole, you can try filling it with small pieces of wood wedged into place until a more permanent repair is possible. Duct tape is also good but needs to have a dry-ish surface to adhere to.

Chapter Seven

How to transport a kayak, knots; kayaking links

Many car and rack manufacturers make racks especially for transporting kayaks but virtually any roof rack can work for a kayak. Generally, place a polyethylene kayak upside down as there are more points to attach to on the top of a kayak, which is of course the bottom when upside down. Fiberglass kayaks are best carried right way up. It's best to tie the kayak to a secure point on your car at both the bow and the stern and strap the kayak down around itself twice, too. Don't forget to check the rack is securely attached to the car!

Fig. 28 POSITIONING OF KAYAK ON ROOFRACK WITH TIEDOWNS



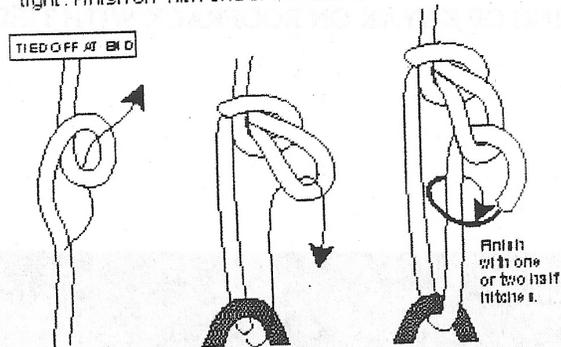
Even better than tie down straps plus securing at the front and back is to use tie downs plus securing to each "corner" of the car, if this is possible. Even so, be careful when going around corners, and be sure to have something very secure to stop the kayak from sliding forward in the event that you have to do an emergency stop. And don't forget a red flag on the back to draw attention to the overhang.

Additional info—knots, places to kayak, kayaking websites and books, organizations

Good knots to use for car topping are the trucker's hitch (but don't tension this so tight as to distort the kayak, which is easily possible)

Fig. 29 TRUCKER'S HITCH

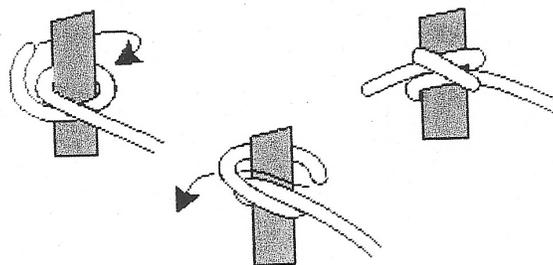
Tie off one end of rope. Tie a slippery half hitch in the middle of the line to form a small loop. With free end, make a half turn around a fitting and bring the free end back up to the loop. Feed through and pull line tight. Finish off with one or two half hitches.



Also the clove hitch can be used for car topping, and for the rescue sling.

Fig. 30 CLOVE HITCH

Make a turn around a post with the standing part on the top. Take a second turn around in the same direction and feed the free end through the eye of the second turn. Pull tight.

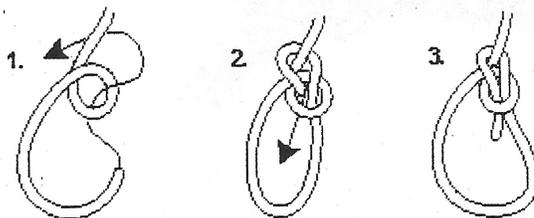


Another very useful knot, to make a non-slip loop, is the bowline

Fig. 31 BOWLINE

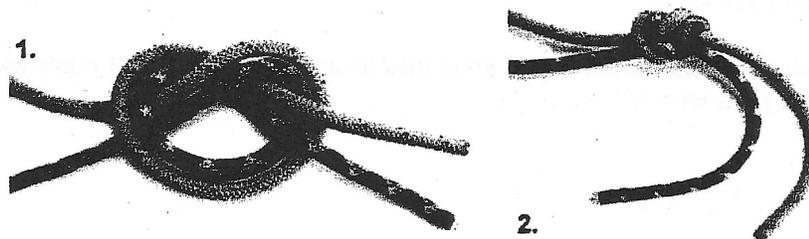
Form an eye in the rope with the standing part underneath. Run the free end up through the eye then take a turn around the standing part.

Feed the free end back down into the eye and hold there while pulling standing part to tighten down knot.



The overhand knot with two ropes is a quick (and not very secure!) way to join two ropes, such as is needed quickly in the rescue sling.

Fig. 32 OVERHAND KNOT WITH TWO ROPES



Step 1: Grab an end of each rope and form the simple pass shown above. *Step 2:* Pull tight, leaving a large amount of tail (ie. about a metre) for both ends, to account for any slippage. It shouldn't slip too greatly if the ropes are of the same diameter, but this is not something to skimp on. You should probably leave more tail than the pictures above imply.

And finally, the sheet bend is a more secure way to join two ropes to make one longer one:

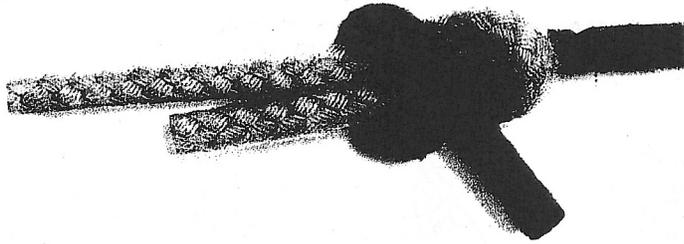


Fig. 33 SHEET BEND

For an easier way to learn to tie knots, try these sites:

<http://www.42ndbrighton.org.uk/?page=knots>

http://www.netknots.com/html/paddling_knots.html

<http://www.goddardkansas.org/troop776/scoutknots.html>

On our trailer, we use bungee cords because they are quick, but they can be quite unstable. Of course, if you have a truck, it's really easy to throw a kayak or two into the bed and tie them down. Whatever method you use, it's always a good idea to stop after a couple of miles and check if anything has worked loose.

Places to kayak

For places to kayak in northern California, see course syllabus and also try this book: Schumann, R. and Shriner, J. (1999). *Guide to sea kayaking in Central and Northern California*. Guilford, CT: Globe Pequot Press. Don't be put off by the title as many routes are lakes or estuaries and several can be done, with care, in a recreational kayak.

For more local kayaking links, see:

<http://bask.org/>(local sea kayaking group)

www.kayakconnection.com (to rent kayaks at Santa Cruz and Moss Landing)

http://www.co-ops.nos.noaa.gov/tide_predictions.shtml?gid=235 (for tide predictions)

http://www.trails.com/catalog_product.asp?ProductFamilyID=%7BE3C5F557-B96D-11D3-812F-0010A4F53EF7%7D#trails (links to many Nor Cal places to kayak)

Chapter Eight

When you have successfully completed this class, you will be ready to head out on your own. Take it slowly, build your skills gradually and you will have an activity to last you, your friends and family, for a lifetime. It's one of the fastest growing activities and new kayak designs and kayak stores are coming along all the time. Every state and province in North America and a vast number of places around the world has somewhere you can kayak!

One final caution: no one who didn't think they knew how to kayak ever came to harm. It's only those of us who think they know something about kayaking who may. Don't make a little knowledge be a dangerous thing. Always plan ahead, think ahead, and never overestimate your abilities or those who are kayaking with you. Have fun!

Review for final (written exam)

The final is comprehensive and may cover anything mentioned in this reader or covered in class. Check especially that you:

1. know all the **bold** terms
2. know the parts of the kayak
3. know how to plan a trip
4. know how to work out water depth at any stage of the tide
5. know how to read a chart
6. know distress signals

Addendum

For more on the history of canoes and kayaks, read:

http://www.virtualmuseum.ca/Exhibitions/Traditions/English/north_america_canoes_racing.html