

Procedures Manual for Dragon Boat Operation in the Berkeley Marina

September 4 2011 revision

About the Berkeley Marina

The Berkeley Marina, directly across the Bay from the Golden Gate Bridge, is the largest municipal marina in the Bay Area. Although dense fog rarely reaches the Berkeley shoreline, the Marina is often exposed to the full force of the cool summer sea breeze that makes this part of the Bay an extremely desirable location for sailboats.

The strong sea breeze is both good and bad for dragon boats. The bad part is that summer afternoon conditions outside the Marina are usually too rough for dragon boat operation, restricting practice to the 610-meter-long inner harbor. The good part is that it seldom gets uncomfortably hot, and the Marina and nearby waters have very few recreational powerboats leaving large wakes, and virtually no water skiers or jetskis.

The Marina also hosts a number of sailing-related organizations that are in a position to offer logistic support to dragon boating, especially Cal Sailing Club (www.cal-sailing.org) and Berkeley Yacht Club (www.BerkeleyYC.org). During the winter, or on calm summer mornings, the East Bay shoreline offers a spectacular setting for open-water excursions.

Boat traffic in the Berkeley Marina is a major factor, with sailboats under sail and power, commercial fish boats and a dinner cruise line all operating from the Marina. Steering requires somewhat more positional awareness and advance planning than at other local dragon boat venues. But the boat traffic also provides an extremely interesting and varied landscape, and gives dragon boating in Berkeley a high level of public exposure.

As of September 2011, DragonMax (www.Dragonmax.org) and the Berkeley Racing Canoe Center (www.BerkeleyRCC.org) maintain a regular Saturday morning and Monday through Thursday evening practice schedule. The full schedule continues during the winter months, but with less emphasis on competitive training and more opportunities for recreational paddling.

Practice areas in the Berkeley Marina

The east-west axis of the Berkeley Marina is 610 meters long from the northeast corner of F-dock to the detached rock breakwater. There is also a wide central area of open water in the middle of the Marina basin.



When the harbor is busy, the slightly shorter but less heavily traveled north-south axis of the marina might be a better place to practice. This allows 500 meters between the northeast end of D-dock near the DoubleTree hotel, and the southwest or southeast corner of K-dock near the marina office. Because this is a crosswind route rather than upwind/downwind, interference with sailboats tacking upwind is considerably reduced. Steerspeople and coaches should watch for boats pulling out of their slips and be ready with warning whistles.

On windy afternoons, the best wind relief is usually on the south side of the Marina, between K-dock and N-dock. Although this area only allows 185 meters of straight-line operation, it is sheltered from the strongest wind and has much less boat traffic than the main fairway. This is probably the best practice area for new steerspeople not accustomed to heavy boat traffic.

Conduct on the water

During certain times of the week in summer, the main channel of the Marina has moderately heavy boat traffic. While it is best to schedule practices for times when the channel is lightly used, inevitably there will be traffic conflicts. Always exercise consideration and good manners towards other boats, and never hesitate to "hold water" for a quick stop if in doubt. Good Marina relations are always more important than any single practice run.

Do not obstruct fishing charter boats, dinner cruise excursion boats or sailboats under sail. Small recreational powerboats and sailboats under power will generally yield to a dragon boat, but there is technically no "right of way" that gives the dragon boat any privileges over these vessels. The Inland Rules require *all* vessels to take timely action to avoid risk of collision.

Disputes with other individuals or organizations on the water should be referred to an authorized representative. In short, please do not argue with other users of the Berkeley Marina.

Dragon boating is a relatively new activity in the Berkeley Marina, and good diplomacy is crucial to the continuing use of the Marina and to the growth of this program.

Avoiding sailboats

Sailboats under sail cannot go directly upwind. They will drift to a stop if they try to sail directly into the wind. This is why they sail a zig-zag course when leaving the marina in a normal westerly or southwesterly breeze. Sailboats can make very sharp turns, but they cannot stop easily; they are relatively heavy and have no brakes or "hold water" capability. Yield right of way to sailboats under sail whenever possible.

When a sailboat is approaching one side of the Marina, expect it to "tack." That is, it will make a turn of approximately 90 degrees, first towards the source of the wind (this usually means turning towards the Golden Gate Bridge) and then continue turning the same way until it has turned away from the wind. During this maneuver the sails spill their wind and flap like flags ("luff" in sailing jargon) and then fill with wind again from the opposite side as the turn (or tack) is completed.

Try to anticipate these tacks, and position the dragon boat so that you will be safely ahead of or behind the sailboat on its new course. Eye contact and a few hand gestures can make all the difference. Sailors may indicate with their hands that they are about to tack and intend to "duck your stern" or that they expect

you to turn away. It's a very intuitive and context-sensitive language, not appearing in any book. Stop the dragon boat if you are not certain what is being communicated.

Note that a typical dragon boat practice speed is about six knots (500 meters in 2:42). Most sailboats you will encounter sailing upwind in the Marina will be moving at about 4 to 4.5 knots along their zig-zag course. So it is not hard to pull ahead, but it has to be timed just right.

The average summer wind direction in the Berkeley Marina is slightly south of the axis of the channel. That is, the wind usually appears to come from a point to the left of the Golden Gate Bridge, or from San Francisco. This means that a sailboat leaving the Marina under sail will follow a zig-zag course with short zigs to the left and slightly longer zags to the right. The reverse is true if there is a northerly slant to the wind, so that it appears to blow from a point north of the Golden Gate Bridge or from Marin.

Also remember that sailboats sometimes have very poor forward visibility on their downwind side. If you are ahead of but slightly downwind of a sailboat with a large jib (the sail in front of the mast), do not assume that they are aware of your presence. Five or more short whistle blasts is the appropriate signal to get attention.

Many sailboats raise and lower their sails inside the harbor while motoring directly into the wind, using their engines for propulsion. This is one situation where a sailboat under power might have less maneuverability than one under sail, especially if, as is often the case, the most experienced sailor on board is dealing with the sails while a guest is steering. Do not expect a sailboat to be able to keep clear of a dragon boat - or even to notice a dragon boat - while sails are going up or down.

General Safety Considerations

The steersperson and coach are responsible for understanding the applicable navigation rules and signaling conventions. See

<http://www.navcen.uscg.gov/?pageName=navRulesContent>
for the Inland Navigation Rules on the Coast Guard website, or

<http://www.navrules.com/>
for the Coast Guard Auxiliary's online tutorial.

Do not operate close to the edge of the channel. Although at some practice venues it is important to stay all the way to the right, in the Berkeley Marina it is much safer to use the middle of the channel. This is to avoid blind corners at the entrances to the various fairways. Sailors are used to watching for other sailboat

masts, or looking out for powerboats that are several decks high. A dragon boat is very low to the water and therefore relatively invisible, especially around a corner, and the most likely accident is a collision between a boat leaving a berth or fairway and a dragon boat running close along the edge of the channel into a blind corner. Favor the right side of the channel, but only slightly. ***Blind corners are very dangerous for dragon boats.***

When entering the main fairway from a narrow side channel, always check carefully for cross traffic in the main channel that may be partially obscured by berthed boats. Paddlers in the stroke position (in the most forward paddling position) should also check for cross traffic. If a stroke paddler, drummer or coach at the bow of the boat calls for "hold water" at the entrance to a channel, this is the one situation in which the steersperson should probably be over-ridden by another person on the boat.

When altering course to avoid another vessel it is extremely important to make the course or speed change early. An emphatic course or speed change is the most effective way to communicate to the other boat that you see them, that you are aware of the risk of collision, and that you intend to keep clear. Never wait for a very close approach before avoiding the other boat - this increases the probability that the other boat will take corrective action first, and possibly change course in a direction that will make it difficult or impossible for you to keep clear.

Note that the Inland Rules specifically prohibit making a series of small alterations of course and/or speed in order to avoid another vessel. The Rules require that the course or speed change be "early and substantial."

The Marina has a speed limit of five MPH (generally interpreted to apply only to powered vessels). Wakes are therefore relatively small and require no special strategy.

Large crested waves or irregular chop encountered outside the Marina should be taken with the paddlers bracing the boat, and taken head on to minimize the chance of rolling the dragon boat far enough to ship water. Because dragon boats have almost no shear, large regular waves (smooth round waves that are not breaking) are sometimes better taken on the beam, with the boat moving fast to increase roll damping.

Do not leave the Berkeley Marina unless the wind and wave conditions are exceptionally mild. The wind can build very quickly on summer mornings - only BRCC certified steerspeople who are also certified for outside operation should make the decision to leave the Marina. In general, any visible whitecaps indicates wind over ten knots and conditions likely to become too rough for safe dragon boat operation.

When outside the Marina with a full boat, never operate more than 500 meters from shore unless conditions are extremely flat. With fewer people on board, the boat is lighter and floats higher, and is considerably more capable of handling rough water. 3000 lb is a reasonable maximum live load for safe outside operation in wind speeds not exceeding ten knots.

Trips to other points on the Bay should never be attempted without a safety boat in constant communication, and never without all the required safety equipment for outside operation. Prior BRCC approval is required for a point-to-point excursion.

Be careful not to foul fishing lines when transiting under the Berkeley Pier.

What to do if the boat swamps

Swamping is rare, but can be dangerous if it does happen. The water is very cold and survival time for a swimmer can be less than 30 minutes.

The boat has permanent foam floatation under each thwart, but this will only hold up the boat, not the crew. The water must be bailed out before the crew can be supported again. When the boat swamps, the first thing to do is to get out of the boat and float alongside.

Your lifejacket will hold you up. **DO NOT USE THE BOAT FOR SUPPORT.** However, **DO NOT LET GO OF THE BOAT.** It is important to not be separated from the boat while it is being bailed out. It is equally important not to push the boat down, especially if there is danger of waves washing more water back in as the bailers try to get the water out.

If you have never floated with a lifejacket before, you will find that it tends to ride up around your neck and head, especially if you have been wearing it a little loose. Keep your arms down so it can't slip off, and hold the jacket down so that it holds you up. But remember not to let go of the boat.

Follow the instructions from the person in charge. One, two or three people will be directed to enter the boat to begin bailing. At first there will not be enough buoyancy to support any more people than those needed to bail.

The person in charge might direct some of the people in the water to move towards the bow or stern in order to help turn the boat so that the bow or stern is pointing into the waves. This is to help reduce the number of waves coming over the sides, which might make it difficult to bail.

If the boat has capsized, you might be asked to let go of the boat while a righting line is used to pull the boat upright. Follow the instructions from the person in charge.

If you believe you are having a serious problem with the cold or with staying afloat, bring this to the attention of the person in charge. As the boat is bailed it

will be able to support progressively more people, and those having trouble should be the first to get out of the water.

Do not swim to shore unless the person in charge has directed you to do so. Do not try to climb out on a dock. Even with help, this is very difficult if you are cold and tired. Swim to the rocks around the edge of the Marina.

Other Marina Users to Watch Out For

A large portion of the sailing traffic in the Marina is from Olympic Circle Sailing Club (OCSC). Primary sailing instruction is with a type of sailboat called the J-24, identifiable by the "J/24" sail insignia above the sail numbers. If there is a person standing all the way at the back of the boat, holding on to the backstay (a wire running from the stern to the top of the mast) then there is an instructor in charge and the boat can be assumed to be under skilled direction. If there is no instructor visible, then there is a good chance that relatively inexperienced students or charterers are in command. Give them an extra wide berth.

Cal Sailing Club also gives sailing lessons inside the Marina, usually on Wednesday evenings. These boats can be identified by the "CSC" on the mainsail. There is always an instructor on board, but they may be attempting unusual sailing maneuvers with an inexperienced student on the helm. Give them a wide berth too.

Berkeley Yacht Club runs sailboat races every Friday evening in the summer and on most Sunday afternoons in the winter. These races finish right in front of the yacht club in the main channel, and may generate heavy inbound sailboat traffic for short periods of time. This occurs at about 8:00 PM on Fridays in summer (plus or minus 20 minutes) and at 2-4 PM on Sunday afternoons in winter. The BYC web page (www.BerkeleyYC.org) has detailed information about these races, including how to participate as crew. Dragon boat paddlers are encouraged to take advantage of these opportunities.

Sound signals

Official sound signals are rarely understood or used properly by the average recreational boater, but it is still worth knowing them for those times when they may be important. These are described in detail in many references on boating safety, and are summarized below. Note that technically they only apply between two boats under power, although sometimes they are still useful to communicate intentions with a boat under sail, paddles or oars. The professional skippers of the Hornblower excursion boats, the fishing boat skippers and the OCSC sailing instructors will know the signals, and will appreciate their proper use.

In head-on situations:

One blast = move to the right to pass, or pass "port to port" (like cars in North America).

Two blasts = move to the left to pass, or "starboard to starboard" (like cars in Hong Kong or England)."

In overtaking situations:

One blast: overtaking boat will move to the right and leave the slower boat to port.

Two blasts: overtaking boat will move to the left and leave the slower boat to starboard.

Maneuvering:

One blast: turning to starboard

Two blasts: - turning to port

Three blasts: - going astern

Approaching a blind curve or entering a fairway with obstructed visibility:

One prolonged blast.

When another boat makes a sound signal, you have only two options for your response: Repeat the same signal, indicating that you understand and will comply. Or, reply with five or more short blasts, indicating that you disagree or cannot comply. Never "cross-signal" by returning a different signal other than the one made by the other boat, unless it is five short warning blasts.

Navigation Rules, or "Rules of the Road"

The U.S. Coast Guard administers the "Inland Rules" on the navigable waters of the U.S. These are the "right of way" rules or "rules of the road," or more properly, the Inland Navigation Rules. They can be found at

<http://www.navcen.uscg.gov/?pageName=navRulesContent>

For steering a dragon boat, there are only a few rules you need to know.

1) In nearly all cases, a boat overtaking another boat has to keep clear, regardless of the type of boat. (Rule 13)

2) A boat is considered to be "underway" unless it is tied to a dock, moored, anchored or aground, or disabled in some way. That is, a dragon boat at rest in a fairway or in the middle of the marina is still "underway" as far as the navigation rules are concerned. (Rule 3) This means that you might have to start paddling to avoid another boat, even if you are stationary in the water as the other boat approaches. Only if the other boat is approaching from astern, and therefore overtaking, do the Inland Rules place the responsibility to keep clear primarily on the other boat.

3) When one vessel is required to keep clear of another, it shall "take early and substantial action to keep well clear." (Rule 16). In other words, don't alter course just barely enough to avoid a collision. The alteration of course must come soon enough and be obvious enough so that your intention to keep clear is communicated to the other vessel via your course change.

4) Boats under power must keep clear of boats under sail, except when the sailboat is overtaking or when the powerboat is limited in its ability to maneuver. (Rule 18)

5) The navigation rules do not give human-powered boats any special rights or obligations with respect to sailboats or powerboats. All boats, including dragon boats, have a general obligation to take whatever action is necessary to avoid collisions. (Rule 2). The exception is an overtaking situation: A dragon boat overtaking a sailboat or a powerboat must keep clear. When a dragon boat approaches a sailboat or powerboat at some other angle, the Navigation Rules do not place any preferential rights or obligations on either boat, except that they both must both take whatever action is necessary to avoid a collision.

Medical Emergencies

BRCC rules require at least one cell phone to be on board at all times. Considering the demographics of the BRCC membership, a medical emergency is not an unlikely occurrence. According to the BPD website, cell 911 calls go to the CHP station in Vallejo and must be routed to the local police dispatcher from there. It may be faster to dial the Berkeley Police emergency number directly. The number is

510-981-5911

Program this number into your cellphone right now.

VHF Radio Procedures

The BRCC dragon boat "safety box" contains a VHF radio, a smoke flare, a small flashlight and extra batteries. (The required cell phone may be in the safety box as well). Proper use of the VHF radio is as follows:

- 1) Adjust the squelch control so that background static is just barely suppressed.
- 2) Use channel 16 only for making brief contact with another station, then switch to a working frequency (such as 68, 69, 71 or 72).
- 3) Use channel 16 or 22a (22a is the Coast Guard channel) for distress calls.
- 4) Channel 14 is Vessel Traffic Service, and is useful for monitoring ship traffic.
- 5) When calling, always state the name of the vessel or station you are calling first, and then state your own vessel name. For example:

"BERKELEY MARINA, BERKELEY MARINA, THIS IS THE DRAGON BOAT RUBY, OVER."

Wait for 20-30 seconds before trying again:

"BERKELEY MARINA, BERKELEY MARINA, THIS IS THE DRAGON BOAT RUBY, OVER."

Then you might hear:

"DRAGON BOAT RUBY, BERKELEY MARINA, GO AHEAD PLEASE."

Answer with:

"BERKELEY MARINA, DRAGON BOAT RUBY, PLEASE SWITCH TO CHANNEL 71"

And they say:

"RUBY, BERKELEY MARINA, SWITCHING CHANNEL 71."

Then both you and the other station switch to channel 71, and you initiate the contact on the new frequency:

"BERKELEY MARINA, DRAGON BOAT RUBY."

"RUBY, BERKELEY MARINA, GO AHEAD."

"BERKELEY MARINA, RUBY, COULD YOU WALK OVER TO HANA JAPAN AND LET THEM KNOW WE'LL BE 20 MINUTES LATE FOR OUR DINNER RESERVATIONS? OVER."

"RUBY, BERKELEY MARINA, WILL DO."

"BERKELEY MARINA, RUBY, THANK YOU, RUBY OUT."

Distress calls to the Coast Guard may be preceded with "MAYDAY MAYDAY MAYDAY" if there is immediate danger to life and limb (for example, a swamped dragon boat that can't be bailed and danger of hypothermia). The Coast Guard will generally respond to a call on channel 16, then ask to switch to channel 22 (or more correctly "22-alpha" which refers to the U.S. frequency designation for channel 22 and is slightly different from the international channel 22).

Facilities and Equipment Storage

The BRCC dragon boats are berthed at inside ties on M-dock, near the south-west corner of the Marina basin. This is across the road from Adventure Playground and the Shorebird Nature Center.

BRCC-Certified team coaches and steerspeople, and others authorized by the BRCC Site Manager, can purchase an electronic key to the M-dock gate from the Marina office for a \$15 fee. This key also opens the Marina restrooms.

Note that it is against Marina regulations to block the gate open. Paddlers without keys must be met at the gate, or enter with the team as a group. The gate is easy to wedge into an open position because of a flaw in the gangway design. Do not do this, ever. When the tide goes up, even a little, it can cause severe damage to the gate.

Team assembly and exercises should be on the grassy area on land, not on the dock. Try to avoid a noisy crowd on the dock, especially early on weekend mornings. There are people living on some of the nearby boats, and it is important to respect their privacy and security.

If you arrive a few minutes early and have access to the dock, use one of the bottom brushes to clean one side of one boat. The anti-fouling paint that keeps marine growth off the boat bottoms is renewed about every two years. During the second year the paint is much less effective, and it is especially important to brush each side of each boat at least once a week. By rotating the boats and swapping their berths often, brushing one side of one boat at each practice will keep both boats free of marine growth and keep the bottoms equally smooth and fast.

The paddles and life jackets (personal flotation devices or PFDs) are in storage lockers near the dragon boat berth. Contact the BRCC Site Manager for the combination.

Do not leave the lockers unlocked during practice. Security on the dock has been good, but paddles and PFDs present temptations to other boaters. Do not leave the locks set with only one of the tumblers one digit off. A common hack is the "one-up, one-down" method of opening a Sesame style lock that is set this way. It's almost equivalent to not locking the locker at all.

Be careful not to obstruct the dock with a large crowd of people, and yield right-of-way to boat-owners and their crew or guests carrying boat gear down the dock. It is almost always appropriate and good relations to invite boat owners and their guests to join us for a practice.

Personal belongings should not clutter up the dock during practice - they can be left in the locker or in your car (but do not leave anything that appears to have value in sight in your locked car).

If two boats are rafted together in one berth, secure the inboard boat to the dock cleats with forward, aft and midship dock lines. Pass the dock lines from the cleat on the dock, around the center beam (not around the seats) of the dragon boat, and back to the dock cleat. Use proper cleat hitches, and don't leave any slack in the dock lines - snug dock lines keep the boat from shifting position and contacting the dock where there are no bumpers. Center the boat on the permanent dock bumpers if installed. It is not necessary to use the boat's portable bumpers between the boat and the dock if good dock bumpers are present. Secure the outboard boat by running the dock lines across the inboard boat to the dock cleats, and secure with cleat hitches. Do not tie the two boats to each other. Use all the portable fenders between the two boats.

When the boats each have their own berth, follow this procedure to allow frequent bottom cleaning of both sides of both boats:

When only one boat is out for practice, return facing the opposite direction. That is, if it had been berthed bow-in, it should be put away bow-out.

When both boats are out practicing at the same time, they should swap berths. They should both dock bow-in.

Hosing down the paddles and life jackets is generally not necessary, as it only adds fresh water dampness to the lockers which contributes to mildew. The equipment should be rinsed about once every week, after the last practice on Saturday, and only if the sun is out. Give the paddles and lifejackets a few minutes to drain and dry before returning them to the dock box. Hose down the boat and bail out the accumulated water. Leave the boat dry and clean.

It is important to slide the steering oar as far forward in the boat as it can go. Otherwise the blade might fall back into the water. This accelerates water absorption by the blade and shortens the life of the steering oar.

Leave the bailing buckets in the boat, and the whistles tied around the handle end of the steering oar.

Remember to return the VHF radio, smoke flare and other safety gear to the locker. The anchor and marker float can remain in the bow or stern of the boat.

If you use a hose belonging to a Marina berther, be very careful to turn off the water at the tap and put the hose away neatly after each use.

BRCC Rules and Procedures

All users must comply with all operating rules and procedures for the BRCC boat in the Berkeley Marina.

All dragon boat use must be authorized by vote of the BRCC Board, or by the BRCC President, Vice President, Fleet Captain or Competition Director. This authorization may take the form of an approved weekly practice schedule.

All boat use requires a BRCC certified steersperson to be the "Person in Charge."

All persons on board must have Signed the BRCC waiver form (signed by guardian if under 18). Be sure to update this form if there is any change in contact information. Extra blank waiver forms are on clipboards in the dock locker, and a few blank waiver forms are usually stored in the safety boxes.

All equipment must be stored properly after use.

If you are the last team to practice, make sure that the boat is left clean and dry, that the dock lockers are securely locked and that no gear or trash is left on the dock or in the boat.

Required safety equipment:

- 1) All persons on board must wear a USCG approved personal flotation device. These will usually be type III "work vest" types, but types II and I are also acceptable and may be preferred by non-swimmers. Coast Guard approved Inflatable type V PFDs are also acceptable. These are superior in rough water but not as reliable as foam PFDs.
- 2) Steerspeople should always carry a whistle when practicing in the Marina. It is recommended that coaches and drummers also carry whistles (they are likely to see another boat coming around a blind corner before the steersperson).
- 3) At least two large bailing buckets, secured to the boat with lanyards.
- 4) A marine VHF radio, submersible or in a submersible container, with fresh batteries and spare batteries.
- 5) At least one cell phone in a waterproof bag or container.
- 6) A suitable anchor (at least eight pounds, Danforth type recommended) with adequate chain and rode, and a high-visibility marker buoy.
- 7) Distress flares or smoke signal flare (submersible or in a submersible container).

If operating after dark:

10) At least two powerful waterproof flashlights with fresh batteries.

11) A portable red/green running light on the bow, and a portable all-around white stern light on the stern.

Lifejacket (PFD) exceptions:

When operating inside the marina, lifejackets may be taken off by BRCC members who are over 18 and have filled out and signed the swimming declaration indicating that they have the swimming ability required by BRCC rules. The PFD must remain close at hand. The steersperson can require that PFD's not be taken off if conditions are considered hazardous. A PFD must always be worn while steering, and must always be worn by all people on the boat when outside the marina.

BRCC Canoes and Kayaks

BRCC owns a small fleet of canoes and kayaks. As of September 2011, these included two double sit-inside kayaks (one nice long one and one cheap short one), a single sea kayak, a short sit-on-top single, and a Coleman traditional canoe set up for time trials with a single paddling seat and steering oar control.

BRCC members may use a BRCC canoe or kayak only after they have been authorized by the Canoe and Kayak Chair or by the Vice President (in charge of safety and certifications). Authorization to take a kayak outside the marina will generally require demonstration of a successful "wet exit" and recovery. This is not required for paddling a canoe or kayak inside the marina.

Non-BRCC members may use a canoe or kayak as guests, inside the marina only, and only under close supervision by a BRCC member authorized to use the boat. All guests must fill out and sign the liability waiver form.

See the BRCC Operating Rules for details.

Steering a Dragon Boat - A Guide for Sailors

Sailboats can turn very quickly, but can't stop. A dragon boat can stop very quickly, but can't turn. That sums it up in two sentences. This is because sailboats have large rudders for helm balance, and also have a lot of their weight concentrated in the middle as ballast. Dragon boats, on the other hand, have only the blade area of the steering oar, which is very small for a vessel of this size and weight. They also have most of their weight in the form of crew, evenly distributed along the length of the boat. The high moment of inertia, small rudder blade area and long slender hull form all combine to make turns very slow. So the route through the marina and around obstructions has to be planned well ahead of the boat.

Steering is accomplished by a combination of three techniques: 1) Displacing the steering oar to one side thereby using the oar handle like a long tiller; 2) rotating the shaft of the oar about its own long axis, like a rudder stock, to produce an angle of attack and force on the blade; and 3) "tilling" or rowing the stern around in one direction or the other. This last technique is the only steering oar action that is effective when the boat is not moving.

At speed, you can ask the back two or three paddlers on the inside of the turn to temporarily use their paddles as additional steering oars to help with a sharp turn.

If you get in trouble, the "hold water" command is your best friend. This will stop the boat in half a boat-length, but you have to shout to be heard all the way up at the forward thwart.

The steersperson usually stands while steering, but most sailors find it more natural to sit down. Sailors are accustomed to sensing yaw rate with the "seat of their pants," and sitting often allows more force to be applied to the oar with less chance of losing balance. Sitting also allows the steersperson to trim out a small list due to uneven loading between port and starboard sides. And sitting allows more precise sighting of the horizon behind the bow, which can be important for accurate course-keeping.

Despite the long slender hull, dragon boats sometimes exhibit directional instability. This is more likely when the bottom is not clean, because the fouling increases the thickness of the frictional boundary layer and effectively rounds off the chines, reducing the boat's natural yaw-resisting response. Small yaw motion can quickly amplify into an out-of-control spin to one side or the other unless caught and corrected very early. Keep a sharp eye on the horizon and the bow, and stay one step ahead of the rate of turn.

In strong wind, the dragon boat will be blown sideways at considerable speed. Watch out for boats, docks and other obstructions on the downwind side, especially when backing or moving slowly.

Strong wind will tend to turn the boat into a crosswind orientation and hold it that way while the boat drifts sideways downwind. It will be difficult to turn either downwind or upwind unless there is room to accelerate to a reasonable forward speed before turning. Plan ahead before entering a narrow downwind channel or fairway.

Command summary (YOU HAVE TO SHOUT, THE BOAT IS 48 FEET LONG):

"PADDLES UP" = prepare to paddle.

"TAKE IT AWAY" = begin paddling. Only use following "PADDLES UP."

"LET IT RIDE" = stop paddling and let the boat coast.

"HOLD WATER" or "HOLD THE BOAT" = blades in the water to stop the boat.
"BRACE THE BOAT" = blades in water, turned horizontal to suppress roll.
"BACK PADDLE" = paddle in reverse.
"DRAW LEFT" or "DRAW RIGHT" = paddle to produce side thrust.
"ATTENTION PLEASE" = prepares for a race start, blades in the water. Only used following a "PADDLES UP" command.
"GO" = start paddling for a race start. Only used after the "ATTENTION PLEASE" command.

Most commands can be modified by specifying the row or side that the command applies to, e.g. "FRONT THREE DRAW LEFT, BACK THREE DRAW RIGHT" to rotate the boat counter-clockwise. A similar result can be obtained with "LEFT SIDE BACK-PADDLE, RIGHT SIDE FORWARD PADDLE." This method of maneuvering will be especially familiar to those with experience handling large twin-engine powerboats.

Note that these commands work much better if the position modifier comes first. That is, don't say "TAKE IT AWAY, FRONT THREE ROWS" and expect only the front three to start paddling.

Paddle commands can also be modified for power level and for the number of strokes desired, e.g. "TAKE IT AWAY LIGHT, THREE STROKES" for a short burst at low power. "TAKE IT AWAY 50 PER CENT, THREE STROKES" has the same meaning. Or you can say "FIRST FIVE ROWS< TAKE IT AWAY THREE STROKES" to have only half the paddlers working, another way of achieving the same effect on the boat. It's good to exercise all the different methods of controlling the boat, so that the crew is ready to respond quickly when needed.

Note that the "draw" command is intended to produce pure side thrust, but in practice there is usually some forward thrust from the drawing stroke, so it is sometimes necessary to have some of the paddlers on the opposite side backpaddle for a few strokes to keep the boat from drifting forward during the draw.

The draw also causes the boat to heel over in the direction of the draw as the paddlers on that side lean over the water. Paddlers on the opposite side should lean out to compensate.

These standard commands seem to have evolved to allow about the right amount of reaction time for the command to work as intended. Don't change them unless the crew has had time to adapt to your style. Resist the temptation to prove that you are an old salt with nautical jargon. Even basic words like port and starboard may not be in the paddlers' vocabulary, so keep it simple and communicate clearly.

Transportation and Driving Directions

Access to the Marina is excellent, with adequate free parking, excellent bicycle access over the I-80 overcrossing and the 51M Marina bus about every 30 minutes. This bus line also serves the downtown Berkeley BART station. There is an Amtrak station within a 15 minute walk.

More information about the Berkeley Marina, including links to detailed driving directions and transit schedules, is available online at www.well.com/user/pk/waterfront/

Parking and Security

Parking is allowed in any of the Marina lots for up to 72 hours, and no permit or sticker is required. Car break-ins have occurred at times, so it's best not to leave valuables anywhere in your car, and certainly not in a visible location. The safest place to leave valuables during practice is in one of the BRCC dock lockers.

Berkeley Yacht Club

The relationship between Berkeley Yacht Club and the BRCC is still under development. Please be considerate of the yacht club's rules and procedures, especially as guests of a member of the club. The most important rules are:

Non BYC members are not permitted in the club unless invited by a member, who must be present at all times when the guest is in the club.

Guests must wear a name tag if they are served alcohol at the bar. No alcohol from outside may be brought inside BYC, and no alcohol purchased at the BYC bar may be taken out. No non-BYC member is ever permitted behind the bar. (Don't blame BYC, these are State ABC rules for private clubs that serve alcohol.)

A BYC member may invite up to 9 non-member guests into the club for meeting or socializing. (But four BYC members inviting 36 guests may be pushing it a little, especially on weekend evenings when the club might be busy.)

The club is often available for scheduled meetings and social events, with fees varying from free to expensive depending on the number of people and the kitchen and bar requirements.

Paddlers may be interested in participating in entry-level sailboat races run by Berkeley Yacht Club. These are every Friday evening in summer and every Sunday afternoon in winter. More info on the BYC website at www.BerkeleyYC.org.

All paddlers are encouraged to become members of BYC. For regular membership there is a \$500 initiation fee and monthly dues of about \$60. Members of some local boating organizations (OCSC and Cal Sailing Club) can join as "adjunct" members with reduced privileges for \$60/year, with no initiation fee. This option is not yet available to BRCC members, but could happen in the near future if there is sufficient interest.

Day Care at Adventure Playground

Adventure Playground, on the south side of the marina near the Shorebird Nature Center, offers drop-in day care for up to three hours for children age seven and older, for a \$5.00 fee. It is open from 11 am to 5 (4 in the winter) on all weekends and school holidays.

Berkeley Marina Restaurant Reviews

Seabreeze Market and Deli, at the corner of University Avenue and Frontage Road, is always a good choice for sandwiches, seafood and fresh vegetable juice, among other necessities. Note that they are closed on Mondays.

Skates on the Bay is the upscale restaurant across the road from N-dock, and offers decent lunches and dinners along with a spectacular view.

His Lordships, at the south end of Seawall Drive, has twice the seating area of Skates but only does one-third the business. Do the math.

The Double Tree hotel (formerly the Marina Radisson) contains another upscale restaurant which has at times earned good reviews. They do a decent hamburger for lunch, and you can paddle there by tying up on the inside tie of F-dock.

Hana Japan Steak House, upstairs in the building on University Avenue near the Harbormaster's office, seems to be a close copy of the Benihana format. Lunch specials are okay, but it can get pricey for dinner. They offer free dinner if it's within a week of your birthday and you are with a party of four or more.

And finally, the "bait shop," fronting U. Ave. on the ground floor of the Hana Japan building, features an assortment of junk food snacks. Decent tuna or crab salad sandwiches.

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