

## RIVER RATS- Hurricane Anchoring Guidelines

During Hurricanes Dennis and Floyd over \$50,000 worth of damage was incurred by RRYC members. All the damage was as a result of dragging anchors. To avoid future damage, some "Local Wisdom" was compiled especially for Jordan Creek Rats.

**Hurricane Warning:** The contracts on the docks at Jordan Creek require boats to be moved off the docks during a Hurricane Warning. The owners can evict boat owners if they disregard this requirement.

**Anchor:** Two or three anchors, two rodes. A good rule of thumb is one pound of anchor per foot of boat. Jordan Creek is clay and muck. At least one Bruce or Max type with your Danforth is the best. The key with all anchors is having the appropriate size for your boat and setting them correctly. (Storm anchors may be stored under the Clubhouse. Write your boat name on them clearly with an indelible marker.)

**Rode:** It is critical that you allow for surges with hurricanes. In Jordan Creek this means having at least 120 feet of rode (including chain) available to deploy. To make it easy, mark the rode with markers from any boat store. If everyone sets out the same length of rode, the risk of dragging and swinging into each other is lessened greatly. Check the Clubhouse bulletin board to determine the recommended length for each storm. Bob Haynes will post this for each storm. Small boats should have each anchor rode run back to a winch or more substantial cleat. Size of rode: up to 25' rode 3/8"; 27'-31' rode 7/16"; 32'-36' 1/2"; 37'-44' 9/16'.

**Angle:** Since hurricanes circle over Jordan Creek, we experience a 180-degree wind shift. Set your anchors at angles of 120o to 180 o apart. If you are using two Danforths, set them at 180 o apart. Because of the prevailing winds in storms, DO NOT set the anchors on an N-S line.

**Engine:** It is vital to have a working engine to test the set of the anchor. Drop the anchor and back off the anchor until it holds the boat still.

**Distance:** Boats will swing. If everyone deploys the same length of rode and sets their anchors at the recommended angles, the boats should not swing that much and should not crash into each other. Allow about 100 feet from other boats.

**Floats:** Place a float, a life jacket or jug with a trip line (10 feet) on each anchor. It will help you retrieve your anchor. It will also help other Rats know where your anchors are located so that rodes are not crossed. Crossing rodes is a major cause of boats dragging into each other.

**Chaffing gear:** The winds and surges cause the rode to rub. Chaffing gear can help prevent the rode from breaking.

**Hurricane Log:** For emergencies enter a location of your boat key or your combination and other information on the Hurricane forms. Ask one of the officers for a form.

**Retrieving anchors:** Several Rats have tricks to help retrieve anchors from the muck. One is to use the jib halyard to lift the anchor. One Rat favorite is to put weight on the bow, secure the anchor, go to the stern, and drink a beer while the stern weight loosens the anchor. Repeat several times. To reduce muck on your boat, secure the anchor off and let it drag through the water as you return to dock. River Rats are most willing to help if you need information about local conditions. Please ask.

Consider lining up a "boat buddy" ahead of time, to anchor your boat out if you are not available. Bob Haynes is available if prior arrangements are made (at first warning of a hurricane) to anchor boats.

**Fee \$200/each way  
(off dock and back to dock)  
if boats need to be anchored out.**

*The following information was compiled by Vice Commodore Bob Dawson in an effort to better educate old and new Rats on anchoring procedures.*

### **Supplementary Hurricane Anchoring Guidelines**

#### **River Rat Tails (Tales):**

- ! If you have two anchors out at, say 120degrees, you don't need anchors as big or rhode as long as if you only had one anchor.
- < **Wrong**—When at anchor with two anchors, the boat swings from one anchor to the other, so that any given time, one or the other anchor bears the full load.
- < **180degree**- Following the Hurricane Anchoring Guidelines, if anchors are set on nearly equal length rhodes with anchors set at 180degrees and inline with the mouth and head of the creek, the boat will clearly be on one or the other anchor during the major storm surge. As the hurricane passes, the wind will shift 180degrees and anticipating this

will minimize the anchors having to reset as the boat swings.

! If you have an all chain rhode, you don't need as big an anchor

< **Wrong Again**—Under severe wind conditions (70 to 125+knots) the force is so great that the an all chain rhode will be stretched straight like an iron bar causing severe loading in wind surges and storm surge. This will dislodge the set anchor faster than a nylon rhode, which will stretch 20 to 30% of it's length.

< **Snubber**-For the reason discussed above, if you have an all chain rhode, it is highly advisable to use 20 ft of 5/8 or 3/4inch nylon line as a snubber with a chain hook on one end and plenty of chafe gear on the snubber line where it goes through the chock or over the gunnel edges. Without a snubber line to absorb the storm surge, the chain could cause significant damage to the boat gunnels.

The chain is looped down from the bow, with the snubber line taught; but don't leave the chain on the windless as the force of the storm surge could damage the windless in the event that the snubber chafes through. Attach the boat end of the chain to a cleat or bollard.

! I don't need 120 ft of Rhode, after all Jordan Creek is only five ft deep at the deepest

< **Emphatically Wrong**- A 7:1 total rhode length to depth is required. Do the calculation: Depth = 5ft water depth + 3ft freeboard + 5ft surge (maybe more) + 2 ft mud penetration (for a total of 15ft depth) requiring total rhode length of 105ft. You need some additional rhode on board to cleat and leave out if necessary i.e 120ft of each anchor rhode is required The dockmaster will post the anticipated storm surge height.

< **Unequal Rhode lengths**- They should be 10-20 ft different, to avoid one anchor inadvertently dragging on to the other in the peak of the storm causing the anchors to foul.

! A length of chain (6-10ft) will help the anchor set and hold better

< **Not Necessarily**—On the muddy-clay bottom of Jordan creek, if it doesn't load up with a ball of mud and skid without setting, the anchor will be pulled deep into the bottom; and for that matter, the chain loads up with mud and resists the anchor pulling deep. The primary function of the short section of chain is to prevent chaffing on anything hard, like another anchor, if encountered on the bottom. What really works well is 10-20ft of 1/4inch or larger stainless steel wire rope (Talk to Bob Haynes about this). It is also a lot easier to clean up compared to mud loaded chain links when retrieving the anchor and rhode.

! If the anchor rhode (line) is tied to the mast rather than the forward cleat, the boat will be a lot more secure.

< **This can be dangerous**- If the mast is stepped on top of the dog house, the storm forces may be sufficient to dismast the boat. In addition, the distance between the mast and the chock (or boat gunnels) is sufficient to allow the line to stretch over the edge of the boat leading to sever chafing as well as internal heating that can effectively melt the nylon anchor line.

< **The RRYC Hurricane Anchoring Guidelines** recommend that especially the smaller boats "should have each anchor rode run back to a winch or more substantial cleat". However, there is no real substitute for having substantial cleats, through bolted

and properly backed, located close to the chocks or gunnels to minimize line stretch over the edge of the boat. When running the anchor lines back to the winches, they should be fixed to the front cleats first, and these cleats need to be properly backed.

! Rubber or Vinyl Hose provides excellent chafe guard

< **Better than nothing-** However, the line can stretch inside causing significant heating. It is better to have heavy canvas wrapped several wraps, or leather or loose fitting fire hose, so that the line running through the chafe guard gets wet and the heat dissipates from the water boiling off (that has to get replenished by the storm). Leather is best because it is porous to water and resists chafing.

! Tests conducted by Practical Sailor and Cruising Magazine show that the Bruce (or Claw, a Bruce clone) does not have good holding in mud and otherwise inferior setting.

< **Tests can be misleading-** In the muddy clay bottom of Jordan Creek, the Bruce type anchor has proved to have excellent holding. Just try to remove one after a storm. The tests are no doubt valid in muddy goo. Cruising Magazine found that the Bruce did not set well in loose sand over hard pack sand. Again, these tests do not apply to the Jordan Creek bottom. The Bruce sets well, and perhaps better than the Danforth, but it does help to give both anchors settling time and adequate rhode out (at least 5:1) before backing on the anchor at all.

The CQR drags and will not hold your boat in position in a storm

< **Partially True-** It's a matter of degree. The CQR will plow in any bottom except coral heads, but experience in the Jordan Creek muddy clay bottom is that it holds very well. However, there may not be a lot of data for really extreme conditions in Jordan Creek. As a recommendation, one can expect excellent results if you set a moderately sized Danforth on a 10-20ft wire rope or chain attached to the back end of the CQR so that the two are in series, provided that the CQR meets guidelines for size.

! The Fortress (Aluminum Alloy Danforth) is so light that it can't set properly

< **True if you don't use the mud setting-** The Fortress has wider mud setting that allows the flukes to grab hold in the mud. If the mud setting is not used, it will have difficulty setting. Mud plates are also available that hold the flukes open at the wider angle. These plates also make it more difficult for mud to ball and cling to the anchor improving setting and resetting.

! If two anchors are minimum required, set at 180degree angle, wouldn't a third be even better?

< **Maybe-** Depends on where the boat is anchored in the fleet. If the boat is anchored in the middle of the fleet, you need to consider how the other boats will swing. If they are all following the guidelines of two 180degree set anchors, then it is best to do the same so that all boats swing in sync with each other. If you are a late boat to anchor, and you are on the edge of the fleet, a third anchor can be used, perpendicular to the primary anchors, to act as a safe guard to prevent your boat from dragging on to the fleet.

! My engine doesn't work right now, but don't worry, I'll just pull the boat out with my dingy before the wind picks up and run the anchors out and drop them from my dingy.

<

**Well intentioned, but not adequate-** Even if you pull on the anchors with your dingy, usually the dingy motor is not powerful enough to do an adequate job of setting the anchors. You may not really know if they are adequately set until the wind picks up and it may be too late to reset them. A number of skiffs and power boats can help you set your anchors if your engine is not working, but it is best to get there early and to have made arrangements ahead of time—see RRYC Hurricane Info Sheet.

## **Resources for anchor, rhode and tackle sizing**

**Anchor Size:** In hurricane storm conditions regarding anchor size selection it is recommended to have at least one of the two or three anchors that is placed against the major storm surge (usually creek mouth) to be at least one size larger than what would be selected for normal safe use.

Lewmar has an interactive web page to guide to the selection of anchor size for Delta, CQR and Claw:

[http://en.lewmar.com/products/index.aspx?lang=1&page\\_id=1](http://en.lewmar.com/products/index.aspx?lang=1&page_id=1)

This web page also has guide lines for anchor rope, chain and shackle sizes.

Likewise, Fortress has table guides for selection of Fortress and Guardian (a Danforth clone):

<http://www.fortressanchors.com/>

Fortress also has a web page at the above site discussing safe anchoring practices; however the extreme storm conditions faced in a hurricane require choosing one size larger.

### **Examples:**

For 30 ft sailboat with moderate freeboard, using the “one size larger” rule, a steel Danforth anchor of 20lbs or 33lb Claw, 6ft of 5/16inch chain, and about 100ft of 1/2inch three strand or double braid nylon line would be minimum.

For 40 ft sailboat with moderate freeboard, a 33lb Danforth or 44lb Claw anchor, 6 ft of 3/8inch chain, and about 100ft of 5/8inch three strand or double braid nylon line.

For a 40ft Motor Yacht with raised cabin has extreme freeboard which requires two or more sizes up from the norm. 50 to 60 lb anchors are required and freeboard height is typically five feet requiring additional 14 ft of anchor rhode.

### **Bottom Line:**

The recommended procedure is to buddy up and to use your own boats engine to set the anchor. In return, you will be able to assist others. If your boat engine is not working arrange to have one of the members with a skiff to help you set the anchors.

Given that the bottom is muddy-clay, after placing your anchor, freely feed out enough scope to reach 5:1 while backing without putting tension on the anchor. After waiting maybe five minutes, then temporarily cleat the anchor rhode and back on it with low engine revs, 1000rpm is enough. Proceed to feed out more rhode until you reach the recommended 7:1 ratio. Wait a little bit longer, and while waiting, take two point bearings or GPS location coordinates; and then gradually back on the anchor until reaching 10,000rpm. Check bearings or GPS coordinates to ascertain that the anchor has indeed set and has not dragged.

It is highly recommended to use a minimum of two anchors deployed at 180 degrees (Bahamian style). One may

use a strategy of placing the best holding anchor toward the mouth of the creek (East), the next best holding anchor toward the creek head (West). Possibly a third for the largest boats anchored on the edge or the fleet in deeper water can be set to the North or South to hold the boat off from the drifting down on the fleet if either of the two primary anchors drag.

## **It is recommended that new members provide the following information to dock master Bob Haynes for review**

(highlight the following info, print it out, fill it out and send it to Bob at:)

291 Jordan Creek Marina Dr.  
Belhaven, NC 27810

### ***River Rat Yacht Hurricane Info Sheet*** **Adjunct to “River Rat Hurricane Prep” Web page**

**Please complete and return all information so that you, or designee, can be contacted in the event of a hurricane warning or dock emergency. The information will be reviewed by the RRYC Hurricane Safety Committee in an effort to minimize risk of damage to members yachts and the docks. This information will also allow someone to help in the event that neither you nor the designee can be reached and will be filed in a notebook in the Clubhouse.**

Name \_\_\_\_\_  
Boat Name \_\_\_\_\_  
Address \_\_\_\_\_  
email \_\_\_\_\_  
Phone No-(H) \_\_\_\_\_ (W) \_\_\_\_\_ (C) \_\_\_\_\_

Designee Name(s) \_\_\_\_\_  
Address \_\_\_\_\_  
email \_\_\_\_\_  
Phone No-(H) \_\_\_\_\_ (W) \_\_\_\_\_ (C) \_\_\_\_\_

Need dockmaster to anchor or return to slip - Y/N \_\_\_\_  
Make/Length/Draft \_\_\_\_\_  
Dock(YC or SC) \_\_\_\_\_ Slip No \_\_\_\_\_  
ComboorKeyLocation \_\_\_\_\_  
Engine \_\_\_\_\_  
Does engine Work–Y/N \_\_\_\_ Do you need assistance with skiff–Y/N \_\_\_\_

Diesel or Gas \_\_\_\_\_ Is Engine Sea cock Open or Closed \_\_\_\_\_

Leave (O) or (C) \_\_\_\_\_

Starting Instructions

\_\_\_\_\_

Windlass Op Instructions

\_\_\_\_\_

**Ground Tackle (anchors and rhode)**

Type&Size	Location	Chain Length	Rhode Size/ Length
1)	_____	_____	_____
2)	_____	_____	_____
3)	_____	_____	_____

Location of Anchor Position Marker lines and floats \_\_\_\_\_

Have Read Anchoring Inst- Y/N \_\_\_\_\_

Anchoring Instructions \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Chafing Gear Location and Instructions \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Seacocks and Location**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Designate to be left Open (O) or closed (C) at anchor \_\_\_\_\_

**List of Equipment to be Stripped from Boat**

- 1) **Electronics**
  
- 2) **Dinghy**
  
- 3) **Outboard/Fuel**  
    **Key to Outboard**
  
- 4) **Sails**
  
- 5) **Bimini/Dodger**
  
- 6) **Ship's Papers**
  
- 7) **Placement of Fenders**
  
- 8) **Other**

### **Hurricane Plan Checklist**

- |  |                          |
|--|--------------------------|
| _____ Anchors and Rhode on Board and Ready               | _____ Electronic Gear    |
| _____ Anchor Marker Lines and Floats Ready               | _____ Secure             |
| _____ Chafing Gear and Material Available                | _____ Lock if Applicable |
| _____ Strip Dodger, Bimini, Sails, Life Rings etc.       |                          |
| _____ Close Fuel Valves                                  |                          |
| _____ Close Required Sea Cocks (usually all but cockpit) |                          |