How to Roll Boona, the 29' North Canoe

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This is a description of how Boona, the world's most famous 29' Langley North Canoe, was rolled and got back underway with +12" of freeboard in less than 2m:30s.

This is being written so that north canoe crews can consider how to be prepared for one of the worst possible scenarios: tipping far from shore, while paddling.

The context: we were working on our safety processes for a planned paddle of Boona from Prince Rupert to Rose Spit, Haida Gwaii. Safety was very important, so we practiced rolling Boona.

The process:
The big thing is to think about beforehand is what you will do in a tip, roll over or sinking scenario. With that planned, all you have to do is practice, test your plan, correct your plan, test the plan again until you are sure you have done well enough. Then, if bad things happen, you have the best chance.

The biggest danger: After capsizing, holding a discussion between 6 to 10 people in cold water during a stressful and likely life-threatening time is very dangerous and can be avoided. Group discussions do not work well under those conditions. Too many people will want to be heard and they will loudly advocate for too many ideas too long.

Personal interaction plan comes first:
Assigned roles: Pick a captain. In fact, order the whole crew with specific assigned jobs in advance.

- Captain, the leader and the only one giving commands or talking unless someone else is asked for comment or information.
- Lieutenant, the person that leads if the captain is unable. A possible additional taskfor the lieutenant is control of all electronic communication via marine radio, SPOT, InReach, or cell phone. Our captain and lieutenant sat in the back two seats. All the electronics, including the GPS were tied in the safety pail between their seats.
- Lightest person, the first one back into the canoe so they can bail without re-sinking the canoe.
  - As soon as the boat is upright, this person boards and bails. The flotation should be sufficient to allow this. Counter balancing by folks on the other side will be needed.
- Second, third, fourth, ... up to heavy person. This determines the sequence in which people get back in.
  - Two of these folks are preassigned to be the ones to pull the roll over ropes to right the canoe. They have designated backups or assistants. Roll the canoe away from approaching waves.

Equipment:
The canoe and it fittings:

- Flotation: Boona had all the flotation built in by Clipper in place. This helps a great deal to give some initial free-board when the canoe is righted. Re-entry of the first person and their use of the 5 gallon bail bucket right away is key to fast recovery.
- Rolling the canoe: At two points on each side, tied to the thwarts. are ropes long enough to go all the way across the bottom of the hull to the opposite gunwale so two people can pull them and roll the canoe upright. This is the first step to recovery after checking that all crew are

present and OK.

- Re-entering the canoe: As part of the roll ropes the first 2 1/2 feet are a loop tied to the thwart. The loop is rope or webbing. These are re-boarding loops. These allow all sizes of people to easily stand in the loop and get in the boat. It is like using a stirrup to mount a horse.
- Mark the outside of the hull with the location of re-boarding loops/roll-over ropes with a stripe of reflective tape. This is a must since when the canoe is upside down and unmarked, the sides do not give an exact location to search at. Seaching can cost considerable time.
- Bailers 1: Every seat has a 4L plastic jug with the bottom cut out, cap on and cord to tie it to the seat. This means that as soon as the boat is righted every one can bail some water. 8 * 4L every 2-3 s gets rid of 600L of water in a minute. More than the weight of a person in 10 s.
- Bailers 2: 2 * 5 gallon (20L) pails are tied in near or under the front and back seats. As soon as possible the lightest and second lightest person re-entered which gave ~16L*2 every 3 s of bailing so 600 L of water a minute. One more person worth of buoyancy in less than 10 s.
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The process:

- Before you get on the water:
  - Identify roles and people.
  - Get the boat fitted out.
- Paddle off shore, start the timer, roll the canoe.
- Then:
  - Captain takes a poll to see that everyone is accounted for.
  - Everyone else has work to do:
    - Roll the canoe right side up.
    - Commence bailing with jugs.
  - Lightest person is now entering the canoe and bailing with 20L pail.
  - One or two at a time: #2, #3, ..., #8 get in. All resume bailing. #2 has taken the second 20L pail. #3 to #8 are using jugs.
  - After 4 people are in, 2 people get in the front and back seats and re-establish directional control, likely into the wind or start steering/paddling the boat. Others keep bailing.
    - This helps prevent the boat from re-swamping due to broadside waves.
  - By the time that #8 is in the boat, there will be at least 12” of free-board and you paddle off. Half the crew bailing, half the crew paddling.

Topics to work on if you are really doing a long deep-water crossing:

- Personal Equipment: each person must have on them at all times:
  - Approved life jacket
    - With highly reflective stripes or tape or something that will reflect light at night if someone is searching for survivors with a light.
    - With pockets sufficient to hold or attach the following:
  - Personal safety items:
    - Whistle
    - 1-person bivy sack (about $20 at Totem or MEC) – hypothermia protection.
    - Two ways to start fire (e.g. matches and BIC) and fire starter.
    - Knife or multi-tool. Not too big because it is negatively buoyant.
    - Options: SPOT or InReach and / or GPS and/or cell phone, short length of orange flagging, blinking diode light about the size of a whistle (Totem or MEC again), ziplock baggies for your cell phone, (the GPS, maps and calling 911 work a surprising number

of places off shore.)
  - Paddle: Coach everyone to hold onto their paddle. Some people have been known to let go when they hit the water. A paddle is a buoyant assist in addition to being essential when you get back in.
  - Rain pants, rain coats, canoe boots: For roll practice we also wore our rain pants, rain coats, canoe boots.

- In-boat equipment:
  - 4 Re-boarding loops each of which are 6' of 1" wide strap tied as a loop, then tied around a thwart. Put a strip of reflective tape vertically on the side of the canoe where the straps are. 2 straps to a side.
  - 4 Roll-over ropes which are 5'extensions of the re-boarding loops. These are thrown across the hull to the other side so the canoe can be rolled. With no straps, the hull is too smooth to grip and roll. Attach the straps to the underside of the thwarts with shock cord so they are easy to access but out of the way.
  - Individual bailers: at each seat (8 places) a 4-L plastic jug with the cap on, bottom cut out and a cord attaching it to the seat.

All the above equipment and skills are just practice and everyday good sense.

What if you are going for real? In the ocean or a great lake.
For the most serious crossings more safety is an excellent thing to have. SO:

- Radar reflector on a 10' pole. This is X,Y,Z direction circles of reflective metal foil on foam backing available at marine supply stores. It is does not need to be powered. They work very well.
- Flare gun and flares.
- Marine radio.
- Lights for night running Red/Green on the bow left and right. White on the back.
- Lights on each person. Petzels are good. Blinking helps people see just like well like bicycles on a dark road.
- Over the life jacket a very light high visibility reflective safety vest such as construction workers wear so that they are obvious. This is an additional bit of visibility if boats are approaching at night or if a search is on. Or ,have a life jacket with considerable reflective tape already sewn on.
- Life raft, deflated and put under a seat.
- 12v electric pump and car battery mounted towards the back.
- All gear tied in.
- Nautical charts laminated in plastic so they are not damaged by water. Paper charts do not rely on batteries to work.
- More than one GPS, hopefully of the same brand with spare batteries.
- Reflective tape the length of the canoe just below the gunwales.
- Food and camping gear as appropriate.
- Spare paddles.

If it is a crossing longer than 6 hours:

- Avoid wet suits. The retained moisture causes chaffing that is very irritating and somewhat

disabling. Gortex moisture shedding dry suits, jackets and pants are a lot better.

- Have a time cycle from front to back person for taking time about every 45 minutes to an hour for food, drink, ... Make every one eat and drink starting no more than 45 minutes from launch.
- Within the crews, rotate the stern person about every 2 hours so steering stays sharp.

Does it work?
We did paddle across to from Rupert to Rose Spit in a total time of 20 hours. 120 km in 16 hours of paddling and 4 hours of slacking on the west shore of Stephen Island June30 -> July 2012. :)

We did not take on any water. So we have no idea if the roll over would have worked 30Km from shore. Likely it would.

What did work very well were the lights and radar reflector. Especially at 2:00 a.m. when the 900' long, 10 story high cruise liner came within 300m and then blinked its bridge lights for us twice. We had just cleared ahead of its path, which it had slightly deflected to pass to our stern. Never did get to use the flare gun.