

Construction of the Eddie Drifter Versions 1.0 through 1.2

(Revised 20 October 2010 by JiM.)

Introduction

In the summer of 2010, we began experimenting with alternative drifter designs. While the standard surface drifter, “Rachel”, had been performing fairly well, we realized the construction was a bit more complicated than it needed to be. We also wanted to reduce the a) cost of making a surface drifter, b) the windage of the drifter, and c) plastic we were putting into the ocean. After several experiments with multiple prototypes including the “Shawn” drifter (4by4 wooden mast) and the “Miles” drifter (4by4 vinyl fence post filled with foam), not shown here, we finally settled on variations of the “Eddie” drifter (2by4 wooden mast). The masts of the Rachel along with Eddie 1.0, 1.1, and 1.2 are pictured to the right. Note: The flotation on the Eddie drifters are no longer at end of spars.



Figure 1. Variations in the "mast" of the surface drifters with Eddie 1.2, Eddie 1.1, Rachel 1.1, and Eddie 1.0 (left to right).

Step by Step Instruction

1. Preparing the Mast

- Cut a wooden 2" by 4" mast to
 - 53 inches for Eddie 1.0
 - 48 inches for Eddie 1.1 and 1.2

Note: In most cases, we have used pressure-treated but that is probably not necessary.

2. Drilling spar holes in the mast

- a) If making a lot of drifters, it may save you time to build a jig for this step
- b) Using a 3/8" drill bit drill a spar hole 1" on center from the bottom of the 2by4.
- c) Drill a second 3/8" hole 37" (on center) from the bottom of the 2by4.
- d) Rotate 2by4 90° and drill a second set of 3/8" holes 2" (on center) from the bottom and 38" (on center) from the bottom.

Note: The jig helps to place your spar holes more accurately.

Note: If a set of sails are already made, make sure your sails fit before you drill all your holes in the 2by4s.

3. Preparing the ballast

- a) We try to secure a total 4lbs evenly distributed to the bottom of the 2by4
- b) If you have window sash weights, break them with a sledge hammer to make a pair of 2-lb pieces. If you live near a dive shop or a bait shop, you can buy a pair of 2-lb weights. In either case, you can secure one weight on both sides of the 2by4 using either a hose clamp or heavy-duty tie wrap. See photo below.

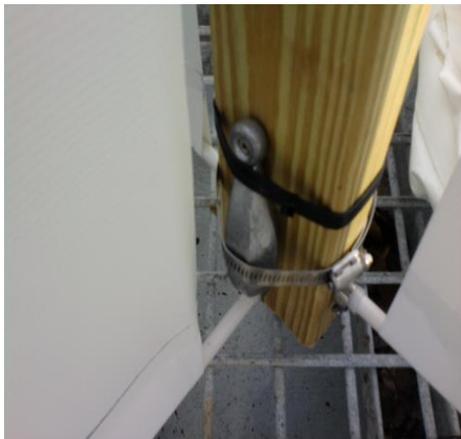


Figure 2a. One option for securing ballast to the bottom of the 2by4



Figure 2b. Another option for securing ballast: run spars through holes in window weights.

4. Preparing the Transmitter mount

- For Eddie 1.0:
 - secure a heavy-duty brass electric switch plate to the top of the 2by4 with stainless screws
 - drill a hole through the 3.5" side of the 2by4 big enough for a hose clamp
- For Eddie 1.1 and 1.2:
 - build a transmitter platform to extend above the 2by4 using a galvanized 9" lag screw and a few pieces of wood where the bottommost piece of wood has been bored out to make room for the lag nut (see photos)
 - Alternatively, if you find a heavy duty electric switch plate you could use that instead of the wood. That eliminates needing to bore out the wood.

Note: If you are using the lag screw platform (1.1 or 1.2), make sure the screw goes 3-4 inches into the wood. Drill a hole for it ahead of time so you don't split the wood. Also note that these lag screw platforms have not been tested for long periods at sea.



Figure 3. Eddie 1.1 transmitter mount (right) vs Rachel 1.1 (left).

5. Cutting the sails

- a) Cut the sail material to 19" (width/sides) x 41" (length/end).
- b) On the dull side of the material make a line 5" from each end.
- c) Fold over the end to meet the line and make a crease mark in the material where the fold should be.
- d) Apply glue (using the width of the glue brush as a guide) along very edge of the sail and along the line
- e) Fold edge over and match the edge to the line (The glue dries fairly quickly so only do one sail pocket at a time).
- f) After glue sets up insert spars temporarily to test sleeve. (If you followed the enclosed instructions and used the template, these sails should have a perfect fit but it is advisable to test all sails after the glue has dried (3-5 minutes).

Note #1: If you feel you may have not have been accurate in drilling the holes in the 2by4, insert spars in 2by4 and take measurements (from top of spar to top of spar) and make each sail separately.

Note#2: If you are making a lot of sails, you may want to build a jig to eliminate the measuring step on each sail.

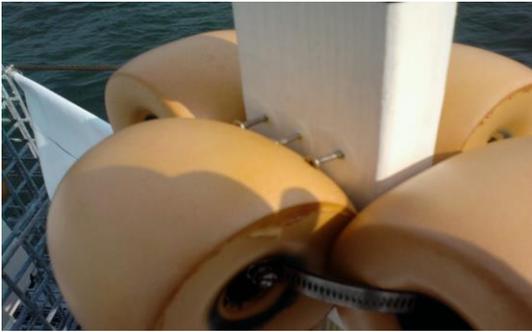
6.Preparing the transmitter

- a) Protect seams of GPS transmitter. We use either:
 - marine caulking (such as 5200 or 4200)
 - wraps of electric tape and Scotch Kote
 - we usually do this step for you since we work with bulk sets of transmitters
- b) Make a small bag for the transmitter with either:
 - extra sail cloth
 - food saver vacuum packer machine
- c) Type a note to put inside the bag describing your project, your contact info. and ask finders to mail transmitter back.
- d) Mark “top” on the outside of your bags along with the 6-digit transmitter #.
- e) **IMPORTANT:** Put the transmitter in the bag so that the top of the transmitter will face up.
- f) Minimize air in the bag.
- g) Make a tighter package with a few wraps of black tape without hiding the transmitter#
- h) Wrap extra sail material around bagged transmitter for cushioning when tightening hose clamp or securing with zip ties so the bag doesn't get ripped by hose clamp.

Note: While the bag around the transmitter is optional, it serves to protect the note and it also provides some material for the hose clamp or tie wrap to grab onto.

7. Securing the Flotation

- For Eddie 1.0 and 1.1
 - run a large hose clamp through the holes of four net buoys
 - secure to 2by4 approximately 5 inches above the uppermost spar holes
 - before tightening hose clam, drill large stainless screws into the 2by4 to act as stoppers so the flotation can not slip upward (see photo below)



- For Eddie 1.2
 - stand the 2by4 inside a small plastic bucket (we used 1.2 gallons in 1st prototype)
 - pour in 2-part marine urethane foam to overflowing
 - shave off excess



Figure 5. Eddie 1.2 flotation.

8. Label the body of the drifter w/ basic information

a) Print out & laminate labels that include:

- Deployment ID
- Transmitter ID
- Phone # to call
- “Science” or “Drift Study”

b) tape, pin, or stencil these to the 4 sides of the wood mast

Note: It is not essential to label the drifter with the “deployment id” since it is often not known ahead of time.



Figure 5a Stenciling "Drift Study" on 2by4.



Figure 5b. Stenciling phone numbers on 2by4

9. Assembly

- a) Make sure ballast is secure (or position it to be held by a bottom spar)
- b) Insert 48" spars
- c) Secure spars using 5/8" hose clamps.
- d) Put on sails.
- e) Put a washer and another hose clamp on to hold the sail in place.
- f) Make sure you secure transmitter with the top facing up or towards the sky using a hose clamp (or heavy-duty tie wrap) and a few wounds of black tape.**



Figure 6. The first assembled "Eddie Drifter" on board the R/V OCEANUS on its way to the Gulf of Maine in July 2010.

Eddie 1.0 Materials

Material	size	Amount needed	Typical total cost	Typical Source/store	Tool Needed
Fiberglass spars	48"	4		kit	3/8" drill bit
vinyl sail material	41"x19"	3		kit	razor knife, straight edge
Toggle floats	3.5"x4"	4		kit	
GPS transmitter	5"x2.7"	1		kit	
Optional jig for holes		1			
host clamps	5/8"	12		Hardware	nut driver or screw driver
wooden mast	2by4	53"		Lumber yard	Skill saw
hose clamp	6 1/2"	1		Hardware	Screw driver
washers	3/8"	4		Hardware	
Electric switch plate	~5" by~2"	1		Hardware	Screw driver
2lb dive weights or top half of window sash weight		2		Dive store (or local carpenter)	Sledge hammer
Electric tape		roll		Hardware	
label lamination					
stainless screws	2"	4			