

Construction of the Eddie Drifter

Modified Eddie 1.2

Modified from Jim Manning's instructions – see NEFSC Drifter Page at <http://gisweb.wh.who.edu/cgi-bin/ioos/drift/driftTable.cgi>

For additional resources on drifters and lesson plans please go to www.coseenow.net/mate
(Revised 27 July 2011)

Introduction

NSF, NOAA and the Department of Defense are increasingly investing in national and international ocean observing systems to aid in climate and hazard prediction. Ocean drifters are an example of the type of technologies involved in ocean observing; they are floating platforms equipped with sensors (optional) and satellite communication technology that can transmit data on a nearly continuous basis. They provide the maritime community, scientists, and the general public with real-time observations relating to ocean properties, such as currents and temperature, which have widespread applications in optimizing shipping routes, search and recovery, oil spill mitigation, recreation, and science.



Drifter Shopping List

Material	Size	Amount needed	Store	SKU#	Cost/each	Total Cost	Notes
Pine 2x4	48"	1	Home Depot		\$1.31	2.62	Buy 8' 2x4 for \$2.62
3/8" Fiberglass Spars	48"	4	Goodwinds www.goodwinds.com	007359W	1.79	7.16	Quantity pricing
3/8" Fiberglass Spar	9"	1	See above				
Vinyl Sail Material	19"x41"	4	Sailmaker's Supply 1-877-374-7245	21104	3.35	13.40	\$8.38/yd 60" wide
Toggle Floats	3.5"x4"	4	hamiltonmarine.com	HML-TOGGLE-SB-8	1.31	5.24	Listed as "fish net float"
TrackPack GPS Transmitter		1	Resolve Tracking and Response Tallen@resolvemarine.com	Trackpack	Email for current price		
Stainless Steel (SS) Hose Clamp	5/8"	16	Home Depot	100-561	0.87	13.92	
SS Hose Clamp	5"	1	Home Depot	078575177250	1.85	1.85	
SS Hose Clamp	8"	1	www.horticulturesource.com	100-558	3.40	3.40	\$27.00 for box of 10
Washers	3/8"	8	Home Depot	655-570	0.14	0.56	
Heavy Duty Brass Electric Switch Plate	~2by~5	1	Home Depot	565-709	4.97	4.97	
Stainless Screws	#8-2"	2	Home Depot	35451	0.98	0.98	
2 lb Flat Slotted Dive Weights		2	Aquarius Dive Shop		6.50	13.00	
Vinyl Cement	8 oz can	1	www.sailrite.com	HH-66 Vinyl Cement	10.95	10.95	
Heavy Duty Zip Ties		4	Home Depot				

Step by Step Instructions

Tools:

- ▶ A saw to cut 2x4 (or have them cut it at Home Depot)
- ▶ A hand drill (if you are very careful) or a drill press
- ▶ A saw (hand or power) that can cut a 3/8" fiberglass spar
- ▶ 25/64" drill bit
- ▶ 3/8" drill bit
- ▶ 1/8" drill bit
- ▶ Scissors
- ▶ Measuring tape
- ▶ Straight edge
- ▶ Pen or pencil
- ▶ Screw driver

1. Preparing the mast [Parts: pine 2x4]

- A. Cut a wooden 2x4" mast to 48 inches for the Eddie 1.2 drifter.

2. Label the mast of the drifter with basic information [permanent marker, stencils – if you can't write neatly. Make the drifter look professional.]

- A. Print out & laminate labels that will be attached to the GPS transceiver:
- Your Institution
 - Transmitter ID
 - Phone # to call
 - Drifter Study
- B. Stencil or mark the two sides of the wood mast with Drifter Study and phone number.



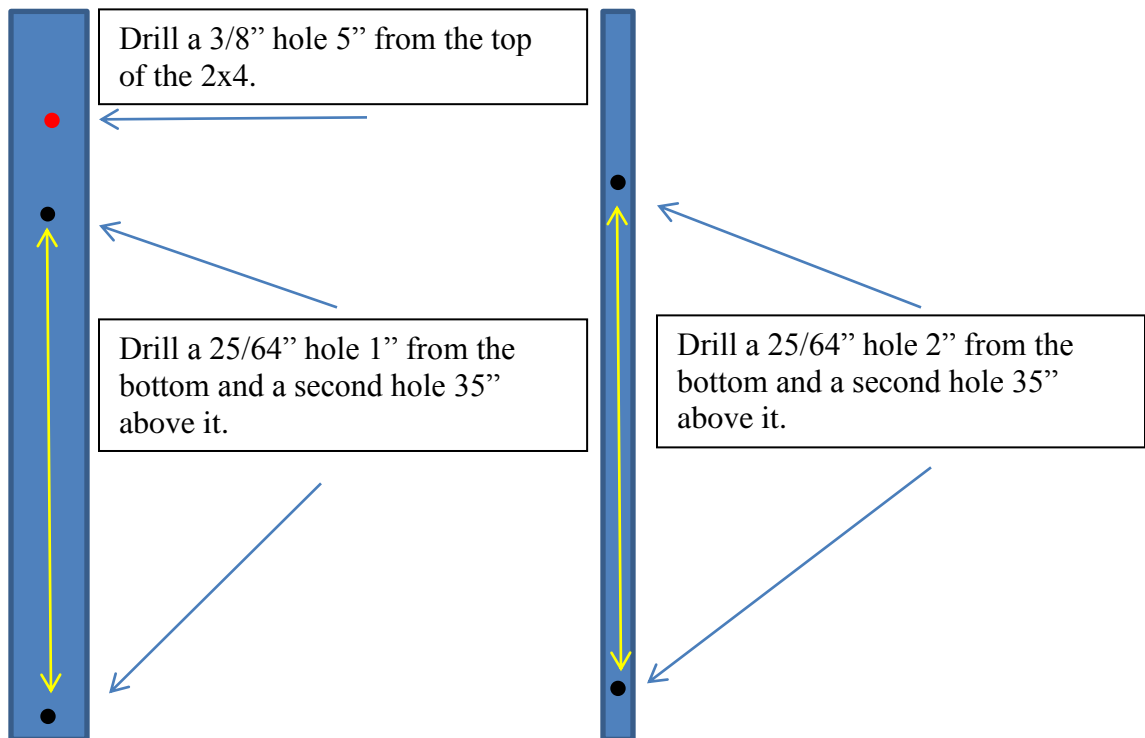
3. Cutting the sails [Parts: vinyl sail material, glue]

- A. Cut the sail material to 19" wide and 41" long. Make four sails of this size.
- B. On the dull side of the material, draw a horizontal line across the width of the sail 5" from each end.
- C. Fold the end over to meet the line and make a crease mark in the material where the fold should be.

- D. Apply vinyl cement (using the width of the glue brush as a guide) along very edge of the sail and just above the line and along the outer edge. [Read gluing instructions below before you glue.]
 - HH-66 should be applied by brush. Apply one coat to each surface. Application should be made bonding coated surface to coated surface using roller pressure to mate the surfaces. Although the material may be bonded while wet, optimum results are achieved when waiting 3 to 5 minutes before bonding the surfaces together.
- E. Fold edge over and match the edge to the line. Press firmly along entire glue surface to ensure a complete contact.
- 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 (5 minutes).

4. Drilling spar holes in the mast and add the sails [Parts: four 3/8" fiberglass spars, mast, sails]

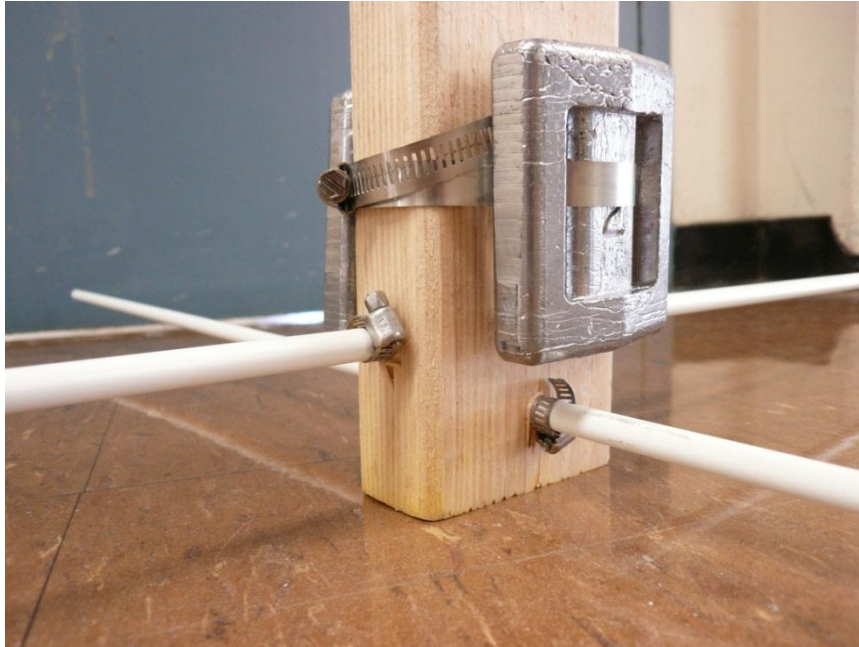
- A. Using a 25/64" drill bit, drill a spar hole 1" on center from the bottom of the 2x4.
- B. Rotate 2x4 90° and drill a second 25/64" hole 2" (on center) from the bottom of the 2x4 (one hole is through the narrow part of the 2x4 and the other hole is through the wide part of the 2x4.)
- C. Measure 35" from each of the drill holes and drill two more holes, one through the narrow and a hole through the wide part of the 2x4.



- D. Using a 3/8" drill bit, drill a spar hole 5" from the top of the mast through the wide part of the 2x4 (we will use this hole in step 7.)
- E. Insert the 3/8" spar (48' long) into each of the two holes.
- F. Insert all four fiberglass spars into the holes in the mast and center.

5. Preparing the ballast [Parts: 2 divers weights, 5" hose clamp]

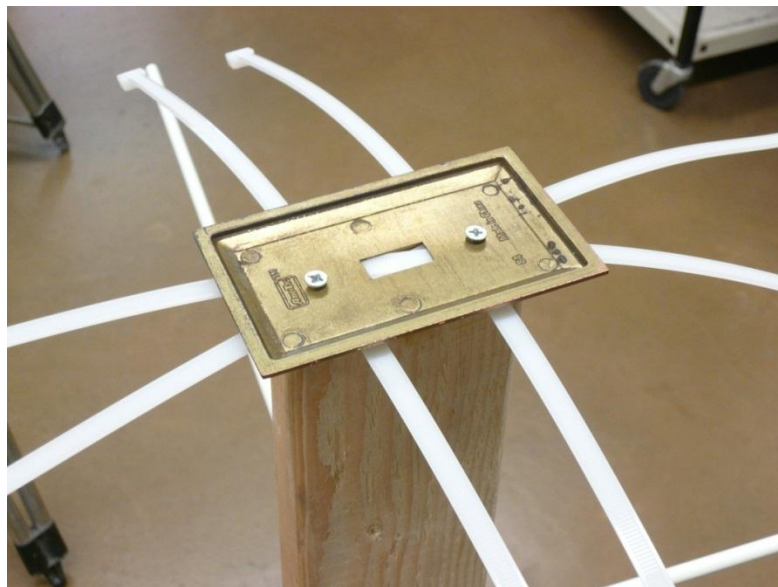
- A. Take the two 2lbs diver weights and secure them to the bottom of the mast just above the spars using a 5" stainless steel hose clamp.



6. Attaching the transceiver mount

[Parts: brass electric switch plate, 2 stainless screws, 4 large zip ties]

- A. Mark two drill holes on the top of the 2x4 using the switch plate as the template and drill two holes using a 1/8" drill bit.
- B. Attach the switch plate to the top of the 2x4 using two stainless screws but don't screw down all the way, allow enough space to feed 4 large zip ties underneath.
- C. Slide four zip ties under the brass plate, 2 each direction and then tighten the screws so the brass plate is secured to the 2x4.

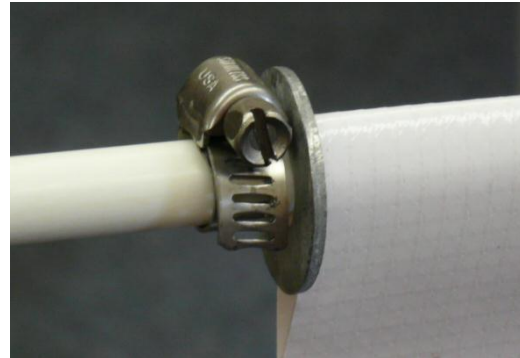


7. Securing the flotation [Parts: 4 toggle floats, one 8" stainless steel hose clamp, one 9"-3/8" fiberglass spar]

- A. Run a 8" hose clamp through the holes of four toggle buoys
- B. Secure to 2x4 mast approximately 5 inches above the uppermost spar holes
- C. Before tightening hose clamp, insert the 9" fiber glass spar into the hole 5" from the top of the mast, move the floats up to where they are touching the spar and tighten the hose clamp. (see photo below)



See 9.D for instructions on this photo.



8. Protect the transmitter in one of many ways:

- A. Seal with a food saver vacuum packer (use 2 bags), we like this method best because it is neat and allows you to insert your laminated ID tag that you created in side. You can also
- B. Using marine caulking (such as 5200 or 4200) to seal the seams, and/or
- C. Wrap electric tape around the seams, ir
- D. Make a small bag for the transmitter with extra sail cloth
- E. ***Make sure to put your laminated ID tag inside the bag describing your project, your contact information and ask finders to mail transmitter back.***

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.

9. Final assembly

- A. Make sure ballast (dive weights) are secure.
- B. To prevent the spars from sliding, use 5/8" hose clamps to secure the spars adjacent to the mast. [See photo under #5.]
- C. Slide the sails onto the spars.
- D. On the outer end of the spar, next to the sail, slide a washer and attach another hose clamp to hold the sail in place. (See photo above.)
- E. Turn transmitter on and secure it to the brass switch plate using the heavy duty zip ties. **Make sure you secure the transmitter with the top facing up or towards the sky using the heavy-duty zip ties.**