



# Christmas from the Sea

Dennis Belcher

**M**y search for a Christmas ornament that flows from the sea met success in the form of a series of ornaments using sea urchins.

A quick Internet search indicates there are about 950 species of sea urchins that inhabit the oceans, from the depths to the shallows. Urchins are sometimes called sea hedgehogs and come in many colors—black, green, olive, brown, purple, blue, and red. Sizes will range from about 1"–4" (25mm–100mm), depending upon the specific variety.

There are two different approaches to transforming a sea urchin into a Christmas ornament. The approach you choose is determined by the thickness of the shell. A sputnik urchin has a thick wall. This allows the top and bottom finials to be glued directly to the shell. Thin-walled urchins require a center post running through the shell connecting the top and bottom finials. The shell supports none of the weight of the ornament. It is simply held between the finials.

Your initial decision should be to determine which variety of urchin to use. Size, color, cost, and availability all enter into this decision. An eBay search for sea urchins provides a wide selection. My preference is the purple urchin 1"–2" (2.5–5mm) in size. This size scales well for six- to eight-foot Christmas trees. There are color and size variations each time you order. You should also anticipate breakage both in shipping and in handling the shells.

## The process

Select the specific urchin for the ornament. The size of the top opening of the shells will vary and it is important to know the specific opening size as you create the top finial. Look for symmetry in the shell. Some shells are "lumpy" and do not look good when hung on a tree. Some of the shells have a deeper purple color than others. Try to picture the specific shell against your own Christmas tree as you make the shell selection.

Begin by enlarging the bottom opening of the shell. I use a small round file that comes to a point. Carefully enlarge the opening with the file. A small chainsaw file is also an appropriate tool (*Photo 1*).

The size of the wood blank for the finials is determined by the shell opening and the ornament's length. Check the size of the top opening before selecting your blank. Generally, a 1" × 1" × 5½" (25mm × 25mm × 140mm) blank is appropriate. A dark-colored wood like cocobolo, walnut, black ivory, or jatoba complements the purple of the shell.

Mount the blank between centers and turn a tenon sized to your chuck. I typically use a Talon chuck with step jaws when turning this ornament. For the step jaws, the tenon should be about ¾" (19mm) long. A crisp shoulder significantly improves the holding power of the jaws (*Photo 2*).

Before you start to form either finial, focus on the overall proportions of the finished ornament. Ornaments need to hang properly on a Christmas tree.



**1** Use a small file to open the bottom hole of the shell.



**2** A peeling cut is one way to form the tenon.



**3** Shape the top finial.

While a long, delicate finial may challenge your skill as a woodturner, the total length of the ornament needs to be shorter than 6" (152mm) for it to hang properly on most trees. The scale of your tree should determine the overall length of the ornament.

The second element of proportion is set by the purple sea urchins themselves. To me, what looks well-proportioned is an upper finial of 1¼" (32mm) and a lower finial of 2¼" (55mm) on a 1" (25mm) diameter shell. Increase the length of both finials proportionally with a larger diameter shell.

Mount the finial blank in the step jaws and bring up the tailstock. Mark the length of the upper finial and form the top of the ornament (*Photo 3*). Measure the shell opening and make sure it is fully covered by the base of the top finial.

After the top finial is formed, drill a hole the size of your eye screw (*Photo 4*). I have a series of small drill bits epoxied into handles for the typical sizes needed for eye screws, but you could also use vise grips to hold the drill bit.

The next step is to sand the finial and apply the finish of your choice. I sand through the grits to 600 and then apply a friction polish.

Once the finish is applied, it is time to part off the top finial. A narrow parting tool works well here. Because there are slight irregularities in the

shell, it is important to undercut the base of the top finial as you are parting it off (*Photo 5*). Do this by angling the tool to the right slightly as you proceed with the cut. This will create a slightly concave bottom at the base of the finial, which will allow for irregularities in the shell and facilitate a better seating of the finial to the shell. Test fit the top finial to the shell. A superior fit is achieved when the entire opening is covered and the finial fully seated.

Remove the tailstock and begin to form the lower finial in a way that expresses your own individuality. If you experience "whip" as the diameter becomes smaller (the tendency of the workpiece to turn out of round), place your left hand under the back of the tool rest opposite the point of the tool and use your index finger to support the finial (*Photo 6*). This counter pressure will reduce the amount of deflection in the finial as you apply pressure with the cutting tool. ▶



**4** Pre-drill for the eye screw, using the indentation from the tailstock live center to help position the drill bit.



**5** Undercut the top finial as it is parted off by angling the point of the tool to the right.



**6** Support the lower finial with the left hand.



**7** Undercut as you part off the lower finial.



**8**  
Remove the nub.



**9**  
Drill the finials using a shopmade jig that easily centers the hole.



**10**  
Cut the skewer to fit in the upper finial. Wire snippers are a good option for this job.

When the lower finial is completed, sand through the grits and apply a finish, as with the upper finial.

The lower part of a purple sea urchin shell has an upward curve. For the lower finial to seat well, it is critical that you undercut as you are parting off. Note the angle of the parting tool in *Photo 7*.

Test fit the lower finial. If you experience any gaps in the fit of the two finials, one solution is to select a different shell that is a better fit. It may be necessary to carefully sand down any ridges or lumps in the urchin that interfere with a snug fit.

### Fitting the skewer

The secret to this ornament is the use of a bamboo skewer to connect the upper and lower finials. The skewer starts in a hole in the bottom of the upper finial, runs through the shell, and fits into a hole in the top of the lower finial. This provides the strength needed to hang the ornament on the tree. I use bamboo skewers from the grocery store as the center post. These are the same skewers used for shish kebabs. A typical package of 100 skewers costs about a dollar.

On both the upper and lower finial, remove the nub left from parting off (*Photo 8*). Carefully mark each center with an awl. Drill a hole sized to your skewer. I find that a 1/4" (6.5mm) bit is the correct size. The diameters of the

skewers will vary, so confirm that the drill bit is sized to the skewer.

Most of my ornament failures occur because I have incorrectly drilled the holes in the finials for the skewers. If the holes are not centered, or if they are not drilled parallel, the final ornament is a failure. These failures led me to use a simple drilling jig (*Photo 9*). Measure the flange of the finials and drill holes in scrap wood slightly smaller than the flange. Place the finial in the hole. When you press straight down to drill the hole, the finial will automatically center itself. Drill a hole about 3/8" (10mm) deep into both the top and bottom finials.

Cut about a 4" (100mm) length of skewer. Put a drop of medium or thick cyanoacrylate (CA) glue in the lower finial hole and insert the skewer. It is important that the skewer is straight as the glue sets. Typically, I place the glued lower finial in the drilling jig while the CA glue dries. Double-check for straightness after you place it in the jig.

Give the CA about 20 minutes to set before attaching it to the shell and upper finial. Be warned: If you spray CA accelerator onto the skewer, the blast of spray could move the skewer out of plumb.



**11**  
The "Stumpy" features a short lower finial.



**12**  
Make creative use of urchins that lack color by making a snowman urchin.

Cut the skewer to length and test fit without glue (*Photo 10*). If the skewer is too long, trim it a bit until the upper finial is fully seated on the shell. Put a drop of CA glue in the upper finial hole and mate it with the skewer. Again, use the jig to hold the ornament while the glue sets. Once the ornament is resting in the jig, it is your last opportunity to adjust the alignment. Many times the shell will have a “high” side and a “low” side. A little adjustment may compensate for the irregularity.

## Variations

A variation on this ornament is to replace the lower finial with a shorter one that is simpler to make. I call this the “Stumpy.” In making the stumpy version, it helps to have the lower finial such that you can easily grip it with your fingers during assembly (*Photo 11*).

About a quarter of the shells in a normal shipment are bleached out with little or no purple coloring. Initially I was discarding these shells. Then it struck me that I could incorporate the color variation into a snowman urchin ornament. The steps to make it are the same, but now the upper finial becomes the snowman’s head (*Photo 12*). This is the ornament I reach for when I send one to friends still in the North to remind them that winters by the sea in the South do not have snow. ■

*Photos: Carl Ciervo*

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*After moving from the Midwest to the North Carolina Coast and taking a two-year hiatus, Dennis is back at his favorite pastime—working with wood. More of Dennis’ work can be viewed at [SeaBreezeWoodworks.com](http://SeaBreezeWoodworks.com).*

## A Look at Eye Screws

One of the details that can ruin a Christmas ornament is the eye screw. Eye screws that break when they are screwed into hard maple, or a hole pre-drilled too large requiring the use of glue to hold the eye screw in place, are two of the things that can go wrong when finishing the ornament. Here are some considerations to help you avoid these common problems.

The first key bit of information is the metal used in making the eye screws. Brass eye screws are common but have the issues of higher cost and, more importantly, breakage. Brass is a soft metal and is easy to break as it is being screwed in. A better choice is steel eyes. The steel can be plated either with zinc (silver colored) or brass (gold colored). Whether you prefer a silver or gold look on your ornament, the steel-plated eye screws eliminate the breakage.

The size of the eye hole is another consideration. The diameter of the monofilament fishing line I use to hang the urchin ornaments is  $\frac{1}{32}$ " (0.8mm). If a colored round ribbon is used, the diameter is typically  $\frac{1}{16}$ " (1.5mm). An eye diameter of about  $\frac{1}{8}$ " (3mm) works well with either hanging material.

Wire size used in making eye screws is expressed in gauges. As in electrical wire, the higher the wire gauge number, the smaller the diameter of the wire. For ornaments, wire gauges of 16 or 17 are appropriate, with 17-gauge being the more popular for ornaments.

Pre-drilling the upper finial keeps the finial from splitting when you attach the eye screw. This is particularly important when you use dense wood.

Finding wood bits smaller than  $\frac{1}{16}$ " (1.5mm) can be a challenge. After numerous attempts, I discovered a wide variety of small drill bits available when I moved from the drill bit section of the hardware store to the tap and die section. The only issue is that the size of the bit is now expressed using a different scale.

The appropriate size of the drill bit used will vary with the wood species and the gauge of the eye screw. Test the fit in scrap wood before drilling into your finial. For a 16-gauge eye screw, I use a  $\frac{1}{16}$ " (1.5mm) wood drill bit. If the eye screw is too tight, change to a  $\frac{3}{32}$ " (2.4mm) wood bit or a #50 machinist’s bit. If too loose, switch to a smaller wood bit, about  $\frac{3}{64}$ " (1.2mm), or a #55 machinist’s bit.

For a 17-gauge screw eye, start with a  $\frac{3}{64}$ " (1.2mm) wood bit or a #58 machinist’s bit. For a tighter fit, switch to a #60 machinist’s bit. For a looser fit, use the #56 machinist’s bit.

Remember that wood density makes a difference. When using a 17-gauge eye in Brazilian cherry, for example, a #58 machinist’s bit gives a snug fit. Just moderate force is required to screw it in and the threads bite solidly. Change the wood to a denser variety like black ivory, and it is a struggle to screw in the eye. When you switch to a slightly larger  $\frac{1}{16}$ " (1.5mm) wood bit for black ivory, you will have a solid catch on the threads and it will go in with moderate twisting force.

The final measurement is the total length of the eye screw. This is not a critical factor if you are using a properly sized drill bit to pre-drill. A  $\frac{1}{2}$ "- (13mm-) long eye screw works well. The key is to have an eye screw that securely holds the ornament, without detracting from its beauty.



*Eye screws are available in a variety of sizes and either gold or silver color.*

Photo: Janice Levi