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One for the Road

A 15′ 4″ sailing dinghy that nests inside an SUV

by James Guzzwell

To take my grandchildren sailing on Utah's mountain lakes, I needed the largest dinghy that I could easily transport in a vehicle capable of carrying a standard 4′ x 8′ sheet of plywood. This became the baseline for determining the maximum size of each half of LINACH, a sailing and rowing dinghy named after the first two letters of each of my first three grandchildren's given names, by order of birth. This would be a "nesting" boat, meaning it could be disassembled into two more or less equal sections.

I knew that a boat that could be separated into two nesting halves would offer several advantages. I wouldn't need to buy a large trailer to transport the boat. Parking would be much easier without that trailer, and weeklong road trips to various lakes in other states would be greatly simplified. In addition, the two sections of the dinghy could be conveniently stored indoors by leaning them against the walls of my garage.

At the same time, I wanted a dinghy that would row and sail well, carry at least two adults and two children, and be relatively simple and fast to build—and it would still have to have a hull shape that I would find attractive. None of the existing designs that I found for nesting dinghies met my requirements. They were either too beamy and therefore wouldn't fit inside my Chevrolet Suburban or they lacked the length and load-carrying capability I needed.

The design that came closest to what I was looking for wasn't a nesting boat at all. It was the Duckling 14, a three-panel-per-side design by Devlin Designing Boat Builders in Olympia, Washington. I believed it could be modified to meet my requirements by increasing the length and beam slightly. By modifying the hull for single-chine construction with a topsides flare of about 20 degrees, I could also simplify construction and make it easier for the hull sections to nest. Increasing the boat's beam amidships and at the transom would also allow for the installation of small side seats aft, which is a nice feature for sailing. Another benefit of greater beam is that it significantly increases the boat's load-carrying capability and form stability.

Above—**The author set out to find an attractive nesting dinghy and settled on a design by Sam Devlin, who helped rework it into a hard-chined hull. The two hull sections of the Linach 15 fit neatly in the back of the author's Chevrolet Suburban, as they would within most vehicles that can carry a standard 4′ × 8′ sheet of plywood.**

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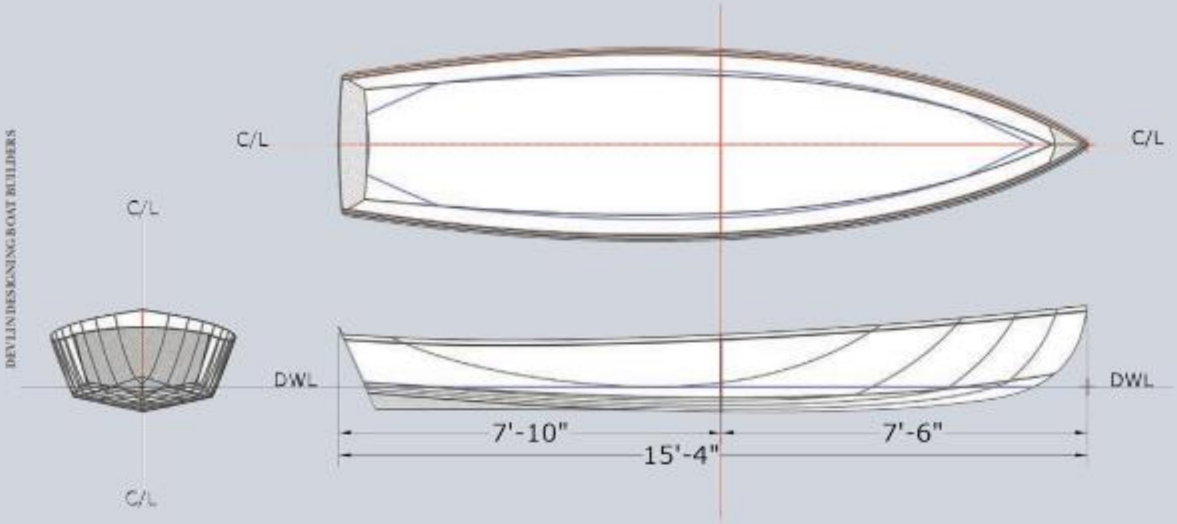

Linach 15 Particulars	
LOA	15′4″
Forward hull	7′6″
Aft hull	7′10″
Beam	4′
Hull weight	144 lbs
Sail area	(small) 63¾ sq ft
	(large) 69 sq ft

After drawing out his concept, the author submitted a draft to Sam Devlin (www.devlinboat.com), who faired the lines on his computer and established a corrected table of offsets for what became the new Linach 15 design.

Photo 1. I built the boat upside down over molds set up on a strongback. The chine and sheer stringers and the inner keel were let into a combination of permanent and temporary bulkheads, which were notched to receive them. By using full-length pieces for the stringers and inner keel, it was easy to create fair curves that spanned the critical hull joint at station 7.5, which is 7′6″ aft of the bow between stations 7 and 8. Because the hull was later cut in half at this point, there was no need to scarf full-length plywood hull panels—all the hull panels were deliberately kept shorter than 8′. Although large portions of the bulkheads were later cut away after the hull was turned over, their interior profiles were initially left uncut in order to give adequate rigidity during planking.

During fairing, the stringers and edges of the inner keel and bulkheads were beveled fair, with the bulk of the work being done by a small electric plane.

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Photo 2. At the planned joint of the two hull sections, I set up two ½″ plywood bulkheads. Shown here before fairing, these two bulkheads were temporarily screwed to one another and were stood up on the building grid as a single unit to ensure precise alignment during planking. Plastic sheeting between the bulkheads prevented them from being glued to each other by stray epoxy. I also drilled pilot holes for the hull-connection bolts before erecting these bulkheads on the building grid. The end result was a perfect fit between both hull sections.

The wooden framing around the edges of these two bulkheads greatly stiffened the plywood and provided a strong connection for the hull planking and later for the hull connection bolts. I used the same perimeter reinforcement in the other plank-to-bulkhead joints; however, for most of the bulkheads, epoxy fillets and fiberglass tape, as used in stitch-and-glue construction, would have sufficed for strength and would have simplified fairing the setup and made the hull lighter. The bulkhead at the far right of this photograph is temporary and helps maintain hull shape during planking.

Photo 3. Once the framing setup was completed and faired, I started planking with ¼″ plywood screwed and glued to the keel and bulkheads. In this photograph, the starboard aft bottom panel is glued in place and the forward one is being installed, with clamps of various kinds holding it in place until the glue sets up.

The hull panels butt against each other at the centerline between the two bulkheads at station 7.5, with a gap of about 1⁄16″ between them. Plastic sheeting prevented them from being inadvertently bonded together. Also, I placed masking tape over any bulkhead edges that were "temporary"—those portions of the bulkheads that would be removed after the hull was turned over.

After completing all of the planking and attaching the skeg, I sheathed the exterior in 4-oz fiberglass cloth set in epoxy. For the sheathing, I used 4′-wide panels of cloth athwartships, from the keel to the gunwale, installing them one at a time. I worked opposite sides and opposite ends to speed the application. The reason for this orientation was that due to the curved hull shape I didn't want to waste too much fiberglass cloth by running it fore-and-aft, and I only wanted to work small areas of epoxy at a time, since even slow-cure epoxy cures very quickly in Utah's summer heat. I masked each fresh edge first, cut it with a sharp utility knife before the final cure, then returned the next day to sand the edge lightly and install the next piece with a small overlap. I butted the fiberglass at station 7.5, using masking tape to carefully tape off the small joint between hull panels to prevent resin from seeping into the gap.

(The exterior faces of the bulkheads at station 7.5 were also sheathed in 4-oz fiberglass cloth set in epoxy, but that sheathing had to wait until later, after the bulkheads were given their final shape, as seen in photo 4, and after the hull sections were cut apart, as visible in photo 6. They were sheathed just as any fiberglassed transom would be, with the sheathing extending a small distance onto the topsides and bottom panels of their respective hull sections.)

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Photo 4. After removing the hull from the strongback and turning it over, I finished out the interior, including the seat tops and the daggerboard trunk. This photograph shows that the excess portions of the bulkheads have been cut away, although at three stations some of the remaining bulkhead framework extends up to the inwale at the sheerline at three stations. This helps maintain the hull's shape after it is removed from the strongback. Amidships, note the triangular shape in the bulkheads next to the seat, which adds significant rigidity and support where the uppermost bolts hold the hull sections together. Additional blocking and plywood gussets reinforce each of the bolt holes (also visible in photo 10, page 28).

At this point, the hull sections were still held together by the full-length stringers and inner keel, as well as the temporary screws between the two bulkheads at station 7.5. While the hull sections were still securely in alignment, I faired the sheer with an electric plane. Only after all the major structural components were installed did I proceed to the next step, which was to cut the hull in two.

Photo 5. Finally, the critical moment came to carefully saw the hull into two sections (with two grandchildren as assistants). At the station 7.5 joint, I removed the temporary screws holding the two bulkheads together. I then cut through the chine and sheer stringers and the inner keel. Because both the hull panels and the fiberglass sheathing butted at this joint and were not glued, they didn't need to be sawn.

Photo 6. In the finished-out forward hull, seen here, the amidships seat and daggerboard trunk had been finished, and the aft face of the bulkhead was fiberglass-sheathed and painted. Note the five bolt holes for connecting the two hull portions together; the holes were epoxy-coated on the inside before the hull was painted. Black-rubber gasket material seals the joints between the hull sections. The 2″-wide plywood extension of the daggerboard cap on the centerline of the seat helps to align the hull halves vertically when bolting them together, and adding metal tabs at the sheer would help with this, too. For those more interested in fishing than in sailing, the daggerboard trunk could easily be eliminated in favor of a long storage compartment and live well.

Photo 7. Each hull connector consists of a ⅜″ stainless-steel bolt, a tightening knob, and hybrid rubber-and-metal washers. These washers are critical, so any water getting past the hull gaskets will not find its way inside the boat. This system is inexpensive and does not leak.

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Photo 8. The maximum nested height of the two hulls is approximately 2′4″, with some blankets placed between the hulls to prevent scratching. Together, the hull sections weigh 144 lbs, and they can be slid into place in the back of my Suburban as a nested pair. As an alternative, the aft section could go in first, then the bow section maneuvered in over the top of the stern section—but doing so requires about 2′10″ of vertical clearance. For times when I am heading out by myself, I have built a small plywood ramp to aid in loading the sections, nested together, into the Suburban.

The carbon-fiber mast separates into two pieces, so it also fits inside the Suburban, along with the single-piece boom. They were ordered from Forte Carbon Fiber Products of Ledyard, Connecticut (www.fortecarbon.com), as a complete assembly, with the gooseneck and other fittings already attached.

Photo 9. As built, each hull section weighs 72 lbs empty and can be carried short distances to a launching ramp if needed; however, a small kayak cart helps if we can't get as close to the water as we'd like. As noted earlier, the hull sections could be built a few pounds lighter by using fiberglass-tape-and-epoxy fillets. Some of the stringers and other wood framing pieces also could be slightly thinned. (It's also possible to use the stitch-and-glue technique to eliminate the inner keel entirely, and these construction options are included in Devlin's plans.) Portability is a key asset, and a lighter hull would be even easier to move around.

Photo 10. The ability to nest the two hull sections together imposes some requirements on the interior fit-out. The plywood seat panels amidships must be removable for access to the three lower hull-connection bolts. Shock cords keep the lids in place in case of a capsize, and a rubber perimeter gasket on the underside keeps the compartments dry. The triangular seat panel amidships at the stern is removable; taking it out clears the narrow space aft to receive the sharp bow of the forward section when nesting. It also has proven useful to remove it when sailing, to provide more space in the cockpit.

The removable foam flotation panels strapped in along the sides, which don't get in the way of nesting, take up less space than buoyancy bags and are much lighter than built-in side tanks. In the event of a capsize, this additional flotation greatly limits the amount of water entering the boat and is an important safety factor when sailing or rowing in cold water. This flotation, along with the built-in buoyancy tanks under the foredeck and under the sternsheets, make this a very safe dinghy.

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Photo 11. Despite the design limitations imposed by having a hull only 4′ wide, the load-carrying capability of this design is excellent. Even with an adult in the after seat, almost all of the transom remains out of the water. A small outboard motor could easily be attached for fishing. The bow and stern hull sections line up perfectly, and the hull joint is almost unnoticeable except at close range; the hull sections assemble easily and can be bolted together in about five minutes.

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Photo 12. In our family outings, the boat sailed very well with three adults and one child aboard and proved quite stable despite the narrow beam. The maststep allows fine adjustments in the mast rake. During a test sail, I set the rake in the middle range, and the boat performed capably, with a well-balanced helm.

Because our grandchildren will eventually sail the boat by themselves, the boom was set slightly higher than normal to ensure safety in case of an unplanned jibe. With the boat's beam being comparatively narrow, we also deliberately kept the sail area low for a boat of this length. Northwest Sails in Port Townsend, Washington, built the sail that we used for the initial sailing trials in winds of 13 to 15 knots. Later, they built a slightly larger light-air sail that can be used on the same mast and boom. The final plans include an alternative rig for a traditional spritsail with wooden spars.

Sam Devlin and I are both extremely pleased with this dinghy. Its versatile design greatly simplifies some of the challenges of boat ownership, and it is well suited for sailing, rowing, fishing, or simply messing about.

James Guzzwell is one of the sons of the noted offshore sailor and boatbuilder John Guzzwell, who sailed his 20′ TREKKA around the world in the 1950s. James sailed extensively and worked in his father's boatbuilding business before serving 24 years as a U.S. Air Force pilot. He retired to Washington State, where he and relatives built three houses for family members. Later, he moved to Utah to live closer to his children and grandchildren—and is now returning to his family's boatbuilding traditions.