

WoodenBoat

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NIKI

A Downeast lobsterboat goes high tech

by David D. Platt
Photographs by Chris Ayres

Passengers aboard Amtrak's high-speed Acela Express from Boston to New York may have been too absorbed in their newspapers to notice, but had they looked seaward as they passed through Noank, Connecticut, on the afternoon of May 31, they would have seen what looked like a traditional Downeast lobsterboat zooming up and down the Mystic River at speeds nearing 30 knots.

What they couldn't have known about was the kinship between their high-tech train and the little boat out in the harbor to their left: each is designed to achieve speed and efficiency through strength, light weight, appropriate materials and—in the boat's case at least—a highly unusual propulsion system.

Just over 26' long, NIKI is a scaled-down version of an Alvin Beal lobsterboat named NIMBLE once owned by

Mystic Seaport. Reducing a boat in size is no simple matter, notes NIKI's builder, Tom Townsend. "You can't just make everything smaller," he says. "It never works—people don't fit." But Townsend (WB No.189) has a flair for proportions, and he and NIKI's owner worked together to produce a salty little vessel that looks like a lobsterboat, maneuvers like a fast outboard, and goes like hell.

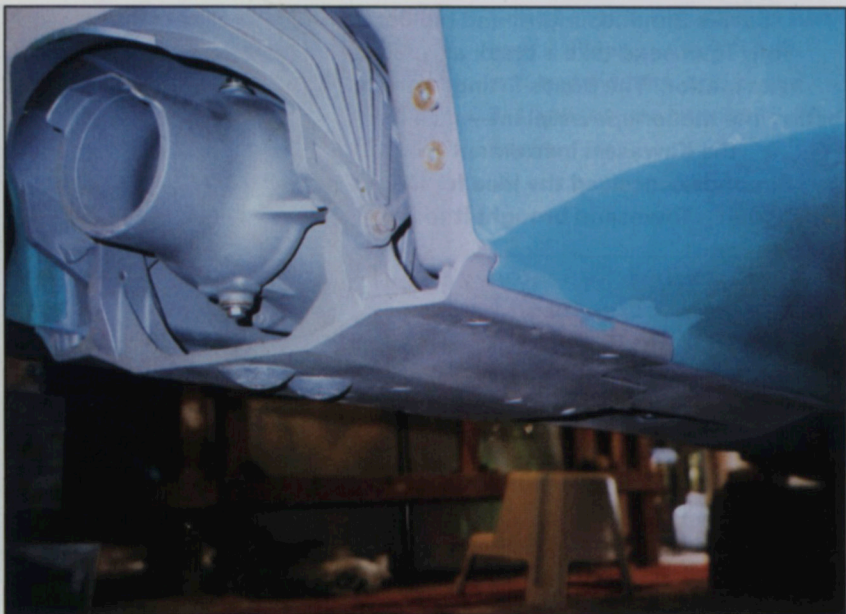
The secret here is a combination of hull shape and propulsion. Instead of a lobsterboat's traditional skeg, propeller, and rudder, Thompson and owner Seville Simonds opted for a small jet drive lifted—literally—from a Kawasaki jet ski, one of those gnat-like machines that so often arouse the ire of boaters such as the writer, who once encountered one in the fog off the coast of Maine and wished the driver would run out of gas and disappear.

NIKI, a new jet-powered lobster yacht from the shop of Tom Townsend, is powered by the business end of a Kawasaki jet ski.



Above—A brand new jet ski was eviscerated to extract a motor for NIKI.

Right—The new boat's running surface and jet nozzle.



SEVILLE SIMONDS (BOTH)

The NIKI project evolved, Simonds explains, from his desire for a powerboat that could ground out on mud (the harbor in front of his house in Guilford, Connecticut, dries out at low tide) without damaging itself. With Townsend, he researched jet drives on the Internet, learning that most are far too large for an application such as NIKI, not to mention far too expensive. In the end, after looking at drives designed for tugboats and Hinckley picnic boats costing tens or twenties of thousands of dollars, they decided to try the jet ski. The \$9,000 they laid out

for the three-passenger model (complete with handlebars, instrument panel, and racing-striped hull) at the local dealership represents a savings of over \$20,000 when compared with the alternatives. And they even got to destroy the little monster so they could remove the engine.

Tom Townsend, an inveterate sketcher and artist, doesn't design boats in the conventional sense. He produces elegant renderings in the tradition of Shingle-style architects, detailed drawings that show what

NIKI, with owner and builder aboard, is put through her paces near Mystic, Connecticut.





With owner Seville Simonds at the helm, NIKI reaches speed. Wide open, she rides on her aftermost 4'.


up sand and clamshells." It's something to remember, even if it can't be entirely fixed.

The adaptations go beyond the "look." A jet ski isn't designed to remain in the water, particularly salt water, at a mooring for extended periods of time. It's raw-water cooled, meaning salt water must pass through the block to cool it. Setting up the engine for life in Long Island Sound, in a boat that's not designed to come out of the water on a trailer after each use, necessitated a few more changes. Simonds and Townsend added sacrificial anodes (like those on saltwater outboards) to protect the jet ski's aluminum underbody from corrosion. They installed a small freshwater tank behind the engine to make it possible to bypass the regular cooling system and "flush" the system with treated water after each use.

Overall, Simonds—who owns ROGUE, a good-sized racing sailboat, as well as NIKI—chose the low-maintenance approach: "all paint and no varnish, everything epoxy coated before painting, no through-hull fittings, no [mechanical] fastening in the hull or anywhere else, except for the fuel fills, running lights, and bow chocks. I have more than enough maintenance with ROGUE!"

Simonds describes his boat as "a cork on the water,"

and didn't expect her to behave like a heavy-displacement lobsterboat. "Being light, she does respond to all wave motion, but one does not get that uneasy feeling of instability," he says. "In fact she seems very stable for her weight, probably because she has an extremely wide flat aft section and her center of gravity is very low, like most lobsterboat designs. I guess they had it right 50 years ago—we only had to reproduce it accurately."

Clad in aluminum and designed to be aerodynamic as well as light, the Amtrak Acela achieves far higher speeds than NIKI, which must contend with water's friction and be content in her old-fashioned but highly functional shape. But as the two sped away on their respective trips on May 31—one along the shore headed for Washington, D.C., the other in the river demonstrating her remarkable abilities—the connections between them were unmistakable. Form, function, beauty, efficiency: two contrasting vehicles designed for very different purposes, each successful in its own way. 

David D. Platt is editor of Working Waterfront, a publication of the Island Institute, Rockland, Maine.



NIKI at speed. She weighs just over 2,000 lbs with full fuel and water tanks, and burns 3-4 gallons per hour at 18-20 knots.

in places, and so they settled on strip planking in cedar. Cedar is a little heavier than some foam-cored systems, but it's stronger, which would be a good idea in an extremely lightweight boat designed to sit on its bottom at low tide.

Townsend and Simonds did some experimenting before beginning to build. "To start, Tom made up a sample of 1/2" cedar with two layers of 10-oz biaxial 'glass cloth set in epoxy on the outside and one layer on the inside," Simonds recalls. "It weighed about 1.3 lbs per square foot and was incredibly tough, stiff, and strong." The finished hull, with no transom and deck, weighed about 290 lbs. "To add further strength," Simonds continued, "we decided to go with the kayak builder's method of using edge-glued bead-and-cove strips, but with 1/2"-thick strips rather than the 1/4" used for kayaks." The bead-and-cove assures a good edge-to-edge fit and adds gluing surface area). The strips were laid over the molds, set up on 2' centers; they were glued together with yellow carpenter's glue.

The concern with weight continued to manifest itself as the project went on. In the flatter (aft) sections of the hull, the 8"-12" deep floor timbers are drilled with 4" "lightening"

and Simonds made test laminates for most of these structures "to verify stiffness and strength." Three layers of 3/8" plywood, also laminated to the curve, make up the transom. Everything was coated in epoxy.

Simonds calculated that the weight of the finished boat would be about 2,000 lbs. "After making the test materials I estimated the final weight at 2,130 lbs wet, and calculated the distribution to compare center of gravity with center of buoyancy," he says. "Fuel tanks, battery, and water tank were positioned to get the trim right. In final form NIKI weighs 1,700 lbs dry, and 2,150 lbs with fuel and water. When launched she floated exactly on her lines and needed no additional weight for trim. Sometimes you get lucky!"

holes to reduce weight. These same holes "also provide ventilation under the cockpit sole and air to the engine," Simonds adds. "No holes needed in the engine box, for water to get in and sound to get out."

Deck, cabin sides, and platforms are all made of 3/8" plywood. Wheelhouse and trunk cabin tops are of two layers of 4mm plywood, laminated to the camber with few beams to minimize weight up high. Townsend



The new boat's aesthetic is pure Jonesport lobsterboat—right down to the diamond-shaped cabin lights.

The big question behind all this focus on weight, of course, was the jet ski engine and how it would perform in a hull it hadn't been designed for. Simonds is unequivocal about the results. "The jet ski [engine] weighs about 800 lbs wet (with fuel) and is supposed to do 65 mph with three people aboard—say, another 500 lbs or about 1,300 lbs total," Simonds stated in an e-mail after our afternoon on the water. "NIKI has considerably greater wetted surface, so I was still concerned with the performance. Although not yet verified with GPS, it appears that NIKI will do about 30 knots and cruises at about 18 to 20 knots at two-thirds throttle, getting about 3–4 mpg fuel efficiency [about 6 gallons per hour]." Running wide open, NIKI rises out of the water and rides on her aftermost 4'.

Great speed for a lobsterboat, in other words; at far less initial cost than would be the case had the boat been built traditionally or powered with a diesel engine. Three to four miles per gallon fuel efficiency, due to the high rpms of the jet ski, might seem like a sacrifice to some, but it's not bad in the context of high-performance powerboats, which NIKI clearly is. (As a jet ski, Townsend notes, the engine would run at 7,500 rpm and use 11 gallons per hour; in the boat it runs at 3,000–5,000 rpm and burns less fuel. Running at 30 knots means full throttle, but Simonds says, "that's faster than I want to go.")

Adapting the jet ski to Simonds's and Townsend's purposes required some ingenuity. Controls that were originally on the handlebars are now at the fingertips of the skipper in a small wheelhouse several feet forward of the engine, where Townsend installed a lobsterboat's spoked wheel and a throttle whose lever rides in notches, just like some older boats. ("The throttle was from the junkpile in my shop," Townsend says.) The jet ski's original instrument panel, showing how much fuel is left and the engine's rpm, is mounted to starboard of the throttle, on the same bulkhead as the wheel. For a boat this advanced in design, NIKI looks pretty prosaic. "Obtaining the Downeast 1940s–50s look was all-important," Simonds observes. "If she didn't look right, neither Tom nor I would have been pleased with the outcome, no matter how well she performed." The tasteful, restrained color scheme is pure Townsend: cream decks, buff house, pale gray hull, darker gray trim.

The scaled-down design seems to have necessitated a wheelhouse that's a little lower than it might be; while aboard I had more than one encounter with an overhead beam at the aft end of the house. Simonds and Townsend seemed to have gotten used to the beam and didn't hit their heads while we were aboard.

Townsend pointed to another quirk that may be common to jet drives: in reverse, in shallow water, the jets "suck

In its life as a jet ski powerplant, NIKI's motor burned about 11 gallons of gas per hour; at NIKI's cruising speed, it burns about half that.





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Seville Simonds (right) and builder Tom Townsend take a break at NIKI's helm station. The boat's fittings don't betray the modern powerplant—save for the Kawasaki instrument panel. Simonds conceived the idea for NIKI; Townsend brought it to life.

a boat will actually look like in the water. It's an approach that has served him well, keeping his small shop busy with a string of custom jobs like NIKI; jobs in which he frequently works closely with his clients.

Such was the case with NIKI, really the brainchild of Seville Simonds, an engineer and a lifetime sailor, woodworker, and tinkerer who set out to create a boat he could keep in front of his house. Two years ago Simonds bought a computer design program and borrowed a set of rough sketches of NIMBLE, the Downeast lobsterboat he had admired. "I did a computer line drawing of the hull I wanted," he recalls. "Tom's a wonderful artist. He sketched various configurations." Together they shortened NIMBLE by about 4', and Townsend came up with a layout for decks, cockpit, and cabin. They knew this would be a project they would "work out" as they went, and that's how it proceeded.

Simonds cut the hull molds himself at home during the winter of 2006. He took them to Townsend's shop in Mystic, where they set them up on a strongback so the hull could be built, upside down, over them.

Townsend cedar-strip-planked and faired the hull over the molds; rolled it right-side up; faired and coated the inside; rolled the hull upside down again; and fiberglassed the outside before stopping work in May, when he went back to his regular boat maintenance work for the summer. At some point the hull was moved from space on the lower floor of Townsend's shop to its upstairs carpentry shop so it could be finished off.

Work on NIKI resumed in October 2006. By this time Simonds had retired from the engineering and surveying firm where he had worked for many years, giving him more time for the project. With Townsend he continued working out the details of the design, focusing on just how the Kawasaki engine and jet drive were to be installed. Over the engine, once the jet ski's outer coverings and other aspects had been cut away, Simonds and Townsend constructed a rectangular aluminum framework to which they could attach items such as a fuel-water separator, throttle and shifting controls, and a freshwater flushing system. The basic engine went into the boat untouched except for the addition of the flushing system (there's a small tank of fresh water behind the engine); the engine sits on its original aluminum frame, which in turn rests on the edges of a 30" x 48" opening at the aft end of the boat's bottom. That opening, plus a smaller opening in the transom to accommodate the jet drive and the elimination of the traditional skeg, propeller, and rudder, is essentially the only concession the hull makes to the jet



ski. Enclosed in an engine box running aft from the center of the cockpit, the powerplant gives very little hint of its unusual character.

Keeping the boat as lightweight as possible was critical to the project, according to Simonds. "There were a number of reasons," he said. "I not only wanted a boat that would be easily driven because of my concern with the ability of the jet drive to provide adequate speed...but also one that could sit on the bottom (lighter would reduce the risk of damage to the hull), one that could be easily trailered without needing a large trailer and tow vehicle, easily handled (during painting and other maintenance tasks), easily docked/fended, and one that would have shallow draft."

Simonds and Townsend were more comfortable working with wood rather than foam for the "sandwich" system they would need to build such a light craft. The hull's radical shape changes necessitated considerable bending