

FITTING OUT FOR HIGH LATITUDES

by

Beth A. Leonard

What does it take to outfit a production boat for a summer season in northern Norway, Iceland and Greenland, or a one- or two-year voyage south to Patagonia and Antarctica? High-latitude veterans John Gore-Grimes, Hamish and Kate Laird, David and Judy Lomax, John Neal and Amanda Swan-Neal and Alvah and Diana Simon agreed to share their perspectives. Their boats range from the *Zenie P II*, a plywood 31-foot Golden Hind the Simons wintered aboard in Patagonia, through *Pelagic*, Skip Novak's 54-foot steel cutter purpose-built for high-latitude expeditions and skippered by Hamish Laird for six years. These cruisers demonstrate the wide range of approaches to preparing and equipping for high latitude sailing.

For those hardy enough, the bare essentials can be basic indeed. Judy Lomax described their production Beneteau First 345, *Cloud Walker*, at the time of their first high-latitude voyage as "a very basic boat, with a trailing Walker log, VHF, Loran and autopilot. We added a Force 10 paraffin heater, a sprayhood, and radar." The only additions since have been roller furling, a Garmin handheld GPS and Navtex for weather. Most would consider this list basic for any type of cruising, but each piece of equipment the Lomax's have added reflects the specific challenges of sailing in higher latitudes – the constant cold, the extreme and fast-moving weather systems, the navigational difficulties and the dangers inherent in encountering ice.

STAYING WARM

As one would expect, a heater topped the Lomax's list of equipment. But no matter how good the heater, its effectiveness will be determined by the quality of the boat's insulation. Further, once the temperature inside the boat appreciably exceeds the temperature outside, condensation results – "one of the very big problems of Arctic sailing" according to Gore-Grimes.

Insulation. "Very few production boats are built for the cold," said John Neal, "though some of the northern European boat brands come close to the ideal." On his Halberg-Rassy 46, an air space separates the wooden battens lining the cored-fiberglass hull. For boats that lack adequate insulation, it can be retrofitted in key living areas by removing the ceilings and gluing in closed-cell foam to flat patches. Hamish Laird, who has seen this done on other boats, suggested using a hole saw to cut holes into the foam after it has been applied, then gluing wooden cylinders into the holes so that they stand proud of the surrounding insulation by a half-inch or so. The headliner and ceilings can then be reattached to the wooden plugs. "This increases the insulation by creating an air space between foam and ceiling through which you can also run wires."

Even with a properly-insulated hull, condensation will form on un-insulated metal surfaces, including the frames of portlights and hatches. Almost everyone recommended some form of "double-glazing" to address this problem. Tight-fitting Plexiglas inserts set on the hatch surrounds below each hatch effectively insulate the metal from the warm air inside the boat. The Neals apply 3M heat shrink plastic wrap with a heat gun to each hatch or port surround. "Even heavy fabric curtains velcroed over hatches can prevent condensation while helping the crew to sleep when it's light almost 24 hours a day," suggested Kate Laird. "Plus, it allows you to open the hatch for fresh air on good days (which there are, even on the Antarctic Peninsula)."

Heater. While everyone agreed on the importance of a heater, the group split over the type of heater recommended. Gore-Grimes and the Neals both preferred powerful forced-air heaters of the type made by Ebsprecher or Webasto. These circulate large volumes of air throughout the boat, reducing condensation and preventing mold or mildew. They also heat the boat evenly if set up properly. The rest of those interviewed relied on some sort of drip diesel or paraffin heater, citing their simplicity and reliability. The Lairds and Simons both preferred the Danish-built Refleks heater described by Hamish Laird as “no frills, practically bulletproof and fixable with rudimentary tools.” Even after being put out during a knockdown, “it was going again in fifteen minutes.”

One downside of the drip diesel heaters is the smokestack. John Neal explained, “To prevent backdrafts in cold or windy conditions, the drip diesel heaters need a length of pipe to raise the chimney some distance above the deck.” On *Pelagic*, the stack is raised only a foot and a half over the doghouse, but still Hamish Laird cautioned, “This chimney must be fixed to the deck rather than removable or it will blow away in the winds typically experienced in higher latitudes.” On many boats, the warm air from the drip diesel heaters need to be circulated throughout the boat using strategically placed fans. But the forced-air systems will not operate without electricity to run fans and glow plugs, leaving crews without heat if the engine, batteries or charging systems fail. All of these heaters rely on either diesel or paraffin, which means the boat’s fuel capacity will need to be re-evaluated if a heater is installed.

John Neal also recommended installing a “bus heater” plumbed into the engine cooling water. This provides “free” heat whenever the engine’s on, and the powerful fan circulates a large enough volume of air to dry the boat completely while motoring twenty minutes into an anchorage.

No matter what type of heater they preferred, everyone recommended finding a way to direct warm air into an enclosed space to dry foul weather gear. The Neals string a clothesline across their engine room. Gore-Grimes said, “Part of the air heating system goes in to the oilskins locker and this has proved an invaluable comfort.”

MANAGING WEATHER

After two seasons crewing aboard *Pelagic* in Patagonia and Antarctica, Kate Laird summed up her experiences with high-latitude weather this way: “In the Southern Ocean, you can expect fifty knots plus once a week. Fifty knots stops being an extreme condition and starts being normal sailing conditions.” That transition, she said, “requires rather a different approach” for everything from sailhandling to anchoring.

Weather forecasting. In such an environment, reliable, accurate and timely weather forecasts are vital, as illustrated by Judy Lomax’s comment, “What would we like ideally? Better weather information and communications - the ability to get ice charts and weather maps, to be able to talk to others in the area we are attempting to approach.” While most of the boats were equipped with SSB, they reported that signals and propagation became unreliable at higher latitudes. The Neals and the Lairds both relied on forecasts received through SatCom-C as a backup and to supplement the SSB weather faxes. They have also both used professional weather routing for crossing the Drake Channel to Antarctica. “You can never have too much weather information,” Hamish Laird concluded.

John Gore-Grimes used a Mini-M satellite phone to download weather faxes and ice charts to the ship's computer. The system was expensive – “about \$10 a minute” – but it worked up to 80°N though it stopped thereafter. “We also have SSB but we have found the fax signal and transmissions unreliable. The result is that although much cheaper, we cannot get the definition we need on ice charts.”

But everyone cautioned against relying too heavily on forecasts no matter the source. Gore-Grimes said, “All in all we have found weather forecasting in the higher latitudes to be somewhat unreliable and we usually hazard a guess at our own weather chart made up from the barometer movement which is recorded every hour.”

Sails and sailhandling. If fifty knots becomes normal sailing conditions, then storm sails become normal sails. Kate Laird recommends buying a new set of sails before heading south to Patagonia or Antarctica and equipping the mainsail with four deep reefs. Better sail shape allows more efficient sailing in the enormous range of wind conditions encountered. The storm sails need to be smaller than the ORC regulations suggest. “Looking at pictures of the Sydney Hobart storm, the first thing we noticed was that the storm trysails were HUGE. Far bigger than the 4th reef on *Pelagic*,” Kate said. “A strong Dacron sail with a deep 4th reef is a lot more convenient to use than a trysail. You don't want to struggle with a trysail once a week.” While *Pelagic* carries a trysail “to replace the main in a catastrophic failure,” they don't use it for routine sailing.

John Gore-Grimes converted his Nijad 44 to a cutter rig to increase her capabilities when beating in heavy weather. If the “self-furling jib is rolled up too high the slot between it and the mainsail renders progress less effective,” he explained. “It is far better to sail with two or three reefs in the main and an inner stay-sail.” Under this sail combination, *Arctic Fern* can make headway into a Force 8 gale. While he carries a trysail for lying ahull in extreme conditions, “We have not had to do this in *Arctic Fern* since I acquired her in 1998.”

Anchoring and mooring. To sit out storm-force winds on a weekly basis, any boat must be equipped with lots of over-sized anchors, plenty of chain and a powerful windlass. But many anchorages in Patagonia and Antarctica are subject to williwaws, gale- or storm-force downdrafts off nearby glaciers or mountains. Securing the boat in these conditions requires a spider web of lines tied ashore instead of or in addition to putting down an anchor. *Pelagic* carries four 120-meter spools of floating polypropylene line. “Spools are a good way to store line,” said Hamish Laird. “You can have permanent fixtures on deck, or store the line below and use a bar or a deck brush as a spindle when you need them.” While the Neals agree that spools are convenient, they find stuff bags easier to stow. “We have six, 100-meter long polypropylene lines which we flake into and out of the bags.”

Rock strops and ice strakes can be used to attach lines to the shore. A loop of wire cable held together with bulldog clamps or a section of chain fixed with a shackle make good rock strops. Some people use spliced eyes in their shorelines to shackle to the rock strop, but the Lairds prefer a plain end. “It's more easily adapted to different mooring situations - we use the same lines on the pier, tying around trees, tying to rocks, etc.”

The lines must be taken ashore using the tender, and for this purpose *Pelagic*'s inflatable dingy is equipped with a powerful outboard engine. “A 15-25 horsepower outboard gives you a huge safety factor,” Hamish points out. “If the main engine fails, it can be used as a quick standby with the dinghy lashed to the side or towing or even on a bracket astern the main boat. It can also

be used as a bow thruster to get the boat out of a tight anchorage.” He prefers an inflatable to a rigid inflatable because it can be stowed below when conditions warrant but it can also be quickly and easily launched when approaching an anchorage. “We stow the dinghy right side up on the foredeck with the engine in place when coastal cruising in normal conditions,” Hamish explains. “Make sure to take the dinghy out of the water whenever you’re not using it, as the Leopard seals eat dinghies. We know of three or four which have been destroyed by seals.”

Alvah and Diana Simon managed for close to a year in these kinds of anchorages with a small hard dinghy and no outboard. “Sometimes it took us an hour to get the boat set for the night,” Alvah said. “But it can be done.” Any dinghy should be equipped with “an emergency box containing signaling equipment, water, food, and fire materials for crew stranded ashore for the night,” Alvah continued. “Also life jackets, and use ’em, because the best swimmers go down in seconds if not minutes in cold water.” As a precaution, it also makes sense to wear a survival suit in the dinghy during williwaws

Enclosed cockpit. In cold, windy conditions, “a dodger or pilothouse, which we have neither of, adds tremendously to comfort,” said Alvah Simon. “But a remote steering system of any kind is a god-send.” Judy Lomax agreed. Their autohelm can be “operated from the top of the companionway from under the sprayhood – absolutely essential in cold climes.” John Neal felt it preferable to enclose the cockpit somehow. They sailed much of the time aboard their Hallberg-Rassy 42 with the extension up and the cockpit fully enclosed. In addition, even at anchor “it may well be blowing from astern - anchoring with lines ashore that’s often the case. An enclosed cockpit reduces heat loss through the main hatch.” On the other hand, Hamish Laird wants his helmspeople to “steer with the wind in their ears.” Especially sailing in gale- or storm-force conditions, it’s essential they “feel the wind and know exactly where it is.”

NAVIGATING SAFELY

In an area where magnetic variation, fog, gales and extreme sun angles made navigating by sextant far more challenging than elsewhere, the GPS has greatly eased position finding. From the Lomax’s Garmin handheld to the fully integrated C-map system aboard Gore-Grimes’ *Arctic Fern*, the GPS offers crucial information at the push of a button. “Interestingly enough,” Gore-Grimes reports, “the ship’s GPS stopped at 79°30’N but the Garmin hand-held kept going to 80°44’N.” More than that, the accuracy of the charts is often considerably less than the accuracy of the GPS. The Neals found the most updated Chilean charts to be off by almost a mile in places, and many large areas have never been surveyed at all. A good depth sounder and radar provide essential information the GPS cannot in these situations.

DEALING WITH ICE

The potential of damaging the hull in a too-close encounter with ice represents the biggest hazard of higher latitude sailing, especially for glass boats. For the most part, limiting the damage ice can do must be designed and built in to a new boat (see sidebar). But locating and avoiding ice or maneuvering in it can be made easier by having certain equipment aboard. Ice maps play an essential part in knowing when ice will first be encountered, and all the boats obtained them from the same sources where they obtained their weather information. In addition, they carried the following equipment for dealing with ice once they reached it.

Radar. Already mentioned as a navigational tool, radar's primary function aboard every boat was to navigate through ice. While it cannot be depended upon to pick up growlers, truck-sized pieces of ice that float low in the water, Gore-Grimes found it "extremely good for larger ice and particularly for bergs in fog." But the equipment has its limits, and it takes some time to learn to use it effectively, especially when there's clutter from rain or high seas. Practicing on small targets in calm weather and learning how to tune the set helps. Gore-Grimes summed up the sentiments of most of those interviewed when he said, "Radar does take a lot of practice to recognise the different targets but I would no longer sail without it."

Bergy poles and ice picks. To maneuver within or pole the boat through an ice field and to fend off bits of ice, the Neals used boat hooks until one broke in the middle. They were then given 11-foot long, carbon fibre poles by another boat leaving Antarctica, and these proved invaluable. Gore-Grimes started out using spinnaker poles for this purpose, but found them cold, awkward and subject to damage by the ice. He now carries "two 7-foot long carbon fibre poles which are light and manageable and are not too cold on the hands." Gore-Grimes also uses 5-foot long galvanized steel ice picks to hack off aprons of ice that come in under the hull and threaten the rudder and propeller. Both Gore-Grimes and the Neals sail fiberglass boats. The Lairds don't carry such equipment aboard and consider it unnecessary on a steel or aluminium boat.

Weaponry. In the Arctic, encountering ice also brings with it the possibility of encountering polar bears. The officials on Svalbard now require boats visiting Spitsbergen to carry a high caliber rifle. Gore-Grimes experiences demonstrate the necessity for the requirement: "In 1998 we had no weaponry but had seven visits from polar bears. In fact there were no incidents and we never felt threatened... This year we took weaponry and I would have to advise it in Arctic conditions. I am talking of a major calibre rifle such as a .375 or else a good shotgun with rifled barrel and rifled slugs at the end of a cartridge."

Though the boats and equipment employed by these high-latitude sailors varied widely, their voyages all demonstrate an extraordinary self-reliance and self-sufficiency. In addition to the specific equipment for dealing with ice-strewn seas and gale-force winds, therefore, crews who want to experience the special challenges of sailing in higher latitudes will need to take on the additional responsibility. For those who choose to do so, the voyage will be likely to change them irrevocably.

ADVICE FROM HIGH LATITUDE VETERANS

John Gore-Grimes: "Read what others have done, carefully study the charts and receive ice charts for the area for some years prior to your visit. Arrange to receive ice charts every day at sea. If going to Spitsbergen, read the rules and regulations, which are now fairly strict. Spitsbergen is perhaps one of the best places to visit for beginners. Both Spitsbergen and Svalbard are extremely rewarding and usually ice free on the west coast. You can always put your nose in to the ice by going up to Moffen Island North of Spitsbergen."

Kate Laird: "To summarize: (1) Be prepared to be totally self-sufficient. (2) Keep the crew warm and dry. (3) Prepare for and expect fifty-plus knots as a routine event both at sea and at anchor."

Judy Lomax: “Reef early, be prepared to retreat, don’t dice with ice. Never push into ice, or proceed towards it in adverse weather conditions. Stock up with cuppasoup, and wear thick-soled boots (walking rather than sailing).”

DESIGNING FOR ICE

John Gore-Grimes built *Arctic Fern* with the intention of taking her into ice. He designed in a number of features to limit the possibility of ice damage. A watertight compartment forward protects the main part of the boat from flooding if the bow is damaged. The bow section from the bow to the mast is reinforced with Kevlar. “We have had some spectacular bumps against ice flows without doing the smallest bit of damage.” The bow thruster has proven useful in tight corners in ice though it must be used with great caution.

Though pleased with how the Najad 44 has handled her forays into the ice, Gore-Grimes would probably recommend metal for a purpose-built ice expedition boat. “Depending on the sort of ice sailing you are doing, I believe (having sailed in *War Baby* and having seen the build of Paddy Barry’s new boat with which he intends to take through the North-West Passage next year) that aluminium or possibly even steel is a better material than composite fibre or Kevlar. Nothing will give you a guarantee and if you are going to be caught in the unhappy location where two large floes decide to swivel or push for position there is every chance that your boat will be destroyed irrespective of the material from which it is made.”

Hamish and Kate Laird agree and are in the process of designing a 60-foot aluminium boat for exactly that use. The boat will include watertight bulkheads and integral diesel tanks which will provide significant collision protection. Water tanks will be self-contained, as integral water tanks freeze in metal boats. The pivoting lifting keel will be designed to absorb impact, and the lifting rudder will allow them to snug up against land, out of the wind and drifting ice, even in shallow anchorages. The boat will be able to carry food, water and fuel for eight people for two and a half months without restocking. For more information, visit the Laird’s website at www.expeditionsail.com.

BIOGRAPHIES:

John Gore-Grimes has spent three decades planning and executing sailing voyages to some of the highest latitudes pleasure sailboats have ever reached. His voyages have taken him repeatedly to the Faroes, Iceland, Greenland, Jan Mayan Island and Svalbard. He has tried to reach Franz Josef Land on three occasions, the first time in 1989 and the last time last summer. In 1998, on his second attempt, he and his crew were trapped for five and a half days in the ice beyond 78°N. Last summer he and his crew landed on the tiny island of Ostrov Viktoriya and then sailed beyond to 80°44’49”N 36°25’E. While the majority of his sailing in ice was done aboard his Nicholson 31, in 1998 he purchased a Najad 44, *Arctic Fern*, and fit her out specifically for high latitude and ice voyaging.

Hamish Laird has spent the last six years as full-time skipper of Skip Novak’s yacht *Pelagic*, running expeditions to Antarctica, South Georgia, the Falklands, Tierra del Fuego, and Cape Horn. He holds an RYA Ocean Yachtmaster Commercial certificate and has sailed over 80,000 miles, including 12 voyages to Antarctica. **Kate Laird** has crewed for Hamish aboard *Pelagic*

for the past two years, after meeting him on an assignment to Antarctica three years ago. She has spent the last decade either sailing or writing about it in New England, Nova Scotia, and the South Pacific, and was a foredeck hand in the Southern Ocean from New Zealand to South Africa in the 1996-97 BT Global Challenge. She holds a USCG 100 ton/200 miles master's license and has sailed over 35,000 miles. They are currently building an aluminum boat with a lifting keel, designed for operating in remote areas and providing logistical support for scientific and adventure expeditions.

David and Judy Lomax have spent the summer seasons for close to a decade cruising the high latitudes of the North Atlantic aboard their Beneteau First 345, *Cloud Walker*. Their first real Nordic venture took them from the USA to Norway via Newfoundland, Labrador, southwest Greenland and Iceland. They visited Svalbard in both 1994 and 1995. Judy said, "If we had ever imagined we'd be doing serious arctic sailing we probably would not have bought a basic, lightweight, off-the-shelf racer cruiser... We have, however, had no problems."

John Neal and Amanda Swan-Neal combine adventure charters with sail training aboard their Hallberg-Rassy 46, *Mahina Tiare III*. John's sailing career began in 1974 when he logged 15,000 miles through the South Pacific aboard his 27' Vega sloop. Amanda grew up cruising the Pacific with her family, and she served as rigger aboard *Maiden*, the first all-women Whitbread entrant. John has now logged 167,000 offshore nautical miles, and Amanda 137,000. They spent three seasons in Alaska and two in Patagonia conducting sailing expeditions aboard their previous boat, the Hallberg-Rassy 42, *Mahina Tiare II*, including sailing to Cape Horn six times and visiting Antarctica once. Next season's itinerary will take them to northern Norway and Svalbard. The Neals' anchorage list for Patagonia and Antarctica with GPS coordinates can be requested through their website at www.mahina.com.

Alvah and Diana Simon spent close to a year in the Chilean channels at the end of their 11-year westabout circumnavigation aboard their 31-foot, plywood Golden Hind, the *Zenie P II*. Upon Alvah and Diana's return to Florida in 1992, they purchased a 36-foot Damien steel cutter, the *Roger Henry*, which they outfitted so they could live aboard while frozen in to the Arctic ice for a winter. Alvah's book, *North to the Night*, chronicles their 17-month adventure north of the Arctic Circle, near Bylot Island.