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On the cover: Lars Fellman flies his Bearhawk 4-Place over Kaipara Harbour's South Head, northwest of Auckland, New Zealand. Photographed by John King.

FLIGHT REVIEW

Bearhawk Duo

In the Land of the Long White Cloud

Jonathan Battson and Lars Fellman build the first two 4-Place Bearhawks in New Zealand.

BY MIKE TAYLOR

New Zealand is known for its epic beauty. It was the last land to be inhabited by modern citizens, due in part to its remoteness. Situated to the east of Australia, across the sea of Tasman, even the occasional Ozzie admits a preferential desire to living in New Zealand.

What's NZ got over OZ, or any place for that matter? All the beauty contained within, without all the beastly bantering about. And while there's economic advantage on the continent of Australia, there's an equally intangible yearning to escape from it all in New Zealand.

New Zealand also happens to be a place well suited to Bearhawk aircraft and their best-in-class claim on utility, STOL, speed, and handling. For pilots with an inclination to build their own plane, the Bearhawk has a lot to offer.

The Bearhawk Duo launched in New Zealand when Jonathan Battson built the first Barrows-designed 4-Place. A mechanical engineer and a tinkerer, Battson said he finished his Bearhawk in about 18 months, "including all the mucking around near the end." This was his first time doing "anything like it," not counting balsa wood models, which he owns up to never finishing.

Lars Fellman is the other half of the duo. It took him 31 months to complete his Bearhawk, and the first flight took place in November 2015 in Helensville, a town on the North Island of New Zealand. As the less expeditious of the duo, Fellman, admitted he's not in the airplane building business. He was in his retirement years when he built his plane, while Battson is in his early 30s.

Battson's Bearhawk

"Despite its long sea voyage, the kit arrived in great order," said Battson. Upon unwrapping, which took hours because it was so well packaged, he was very impressed with the quality of the workmanship. "The welding especially is very tidy. The paint is also really great—the same

When he built his Bearhawk 4-Place, Jonathan Battson was aiming for the lightest possible backcountry plane with super-short takeoff and landing capability.

MIL-SPEC stuff that goes on naval warships; you need a file to remove it!" he explained. "Sure there were one or two minor parts that had small imperfections, but the important thing was that the factory support was unbelievably good. The replacement parts, plus some extras, were shipped immediately at no cost to me. I also found the Bearhawk community to have a very strong builder support network and a growing builder base."

The Bearhawk kit is an interesting mixture of steel parts and fabric over steel, as well as alloy wings and fabric over the control surfaces. Certainly the kit comes at a high level of completion, probably as high as possible. "There's very little chance of making major errors because all the big and difficult parts are done," said Battson. "The wings are straight and true, as is the fuselage. All the critical holes are already pilot drilled. Still, it leaves enough room to give the builder freedom to make a lot of choices," he concluded.

Battson opted for a fuel-injected engine, looking to evade the nemesis of carburetor icing. He also fabricated a custom air inlet system to achieve a ram-air effect. As a byproduct, the design affected a more streamlined nose on the cowling.

Jonathan Battson pays a visit to Lars Fellman in April 2016, taking his yellow Bearhawk 155 miles (250 kilometers) northeast of its Wellington base.

Photos: Jonathan Battson and Lars Fellman. Air-to-air photos: John King.

Custom-fabricated air inlet system achieves a ram-air effect.

Cowl flaps provide plenty of control over cylinder-head temps.

Other personal touches include vortex generators, larger tires, and a "simple modification" to strengthen the tailwheel bracket. Much of Battson's flying is off-airport, regularly carting hunting and fishing equipment, including an inflatable boat for spear fishing from beaches. "Last weekend, we were in the Southern Alps watching a large family of deer, including a roaring stag, just 400 meters from our tent camp under the wing of the Bearhawk," he said.

Adding a Skylight and Cowl Flaps

During the build, Battson also introduced some quantity of meddling. He would often become preoccupied with time-consuming modifications. Examples include flattening the "Bearhawk humpback" to accommodate a skylight. He also added windows in the lower half of the doors, as well as a baggage tube in the aft fuselage.

"I wanted a skylight for my particular mission," said Battson. "I do a lot of mountain flying, which puts me down in the valleys, often in tight spaces looking to turn around. Maybe I'm lining up to land on some tiny airstrip or gravel bar, or maybe it's just a reciprocal turn due to weather or terrain. Being able to see where you're going during a turn makes the whole process a lot safer. I have never regretted the skylight; I use it all the time. It's also great in formation flying, or flying in a large group of friends. It's all about safety and visibility."

The skylight was adapted by shortening and realigning the top stringers. The result was a slightly lower profile over the cabin. The assembly bolts on. Battson also installed twin cowl flaps and a custom inlet baffling system for more efficient engine cooling. "All those mods worked out really well, and having flown about 450 hours in the last 24 months, I am happy with them all. The engine runs very cool, and I wanted to be able to close those flaps down further to warm it up in winter," he explained.

Battson is not the first builder to try installing cowl flaps on a Bearhawk, and he says he's had great success with the mod. "They give me a large amount of control over the cylinder head temps. Whereas others have installed a larger single flap, I opted for two flaps on each side of the cowl outlet. These are operated by the same control, and change the cowl outlet area by about 30% when open."

Showing its skylight from above, Jonathan Battson's Bearhawk rests in its home hangar in the New Zealand capital of Wellington.

A large baggage tube is installed in the Bearhawk fuselage.

Increased visibility comes with a skylight and Plexiglas doors.

Although Battson is a mechanical engineer, he didn't feel his technical background amounted to a meaningful advantage. He was able to devote about 1800 hours to the project during the year and a half he was building, and he further qualified that number as "quite high" and "including a lot of wasted time and rework because I was learning."

Battson's build was supported by his wife Niki. He noted that she obtained her pilot's license following their project. During the build they got engaged, grew the family, and he started a new job, all adding to the time crunch. They now travel with their daughter Emily in their Bearhawk.

The Other Half of the Duo

"Sorry for taking my time building my Bearhawk, but you know I'm retired and we retired people are always so busy doing a lot of things," said Lars Fellman. His 4-Place Bearhawk was the second to be completed in New Zealand.

Fellman started flying Piper Cherokees in the '60s then gradually worked up to multi-engine IFR, with some competition aerobatics and helicopter flying on the side. In order to satisfy a desire to fly helicopters, Fellman realized he'd have to build one himself. While living as an expat in Denmark, with time on his hands, he bought a Rotorway kit.

The Rotorway was Fellman's first build project, not counting a pedal plane Christen Eagle he built for his grandson. Confessing the Rotorway was an easy step-by-step kit, in two years he was test flying it. The Rotorway followed him all over the world with his job. Twenty years later it now resides in New Zealand, "still in working order."

Retired in 2006, Fellman moved to New Zealand to be a lifestyle farmer together with his Kiwi wife Alison. At one point, he built a fixed-wing Savage. Going back to his aerobatic roots, he imported from France a Stampe SV.4A biplane originally built in 1946. "Getting it set up and flying in New Zealand,"

Two Ways to Build the Same Airplane

How is it possible that what took Jonathan Battson 18 months took more than twice the time for me to achieve? On top of it all, he was juggling a job and getting married, and I was just being a retiree, with all the time in the world. The answer points to Jonathan's incredible motivation to get flying, endless energy and talent, and super-sharp focus on the project.

Even more incredible, Jonathan did the work in his townhouse garage, while I had my hangar on the farm with all the necessary facilities. Maybe it has something to do with the fact that when you are young, it is all about the flying, but when you get older, you really start enjoying the tinkering.

It's also interesting to compare our conceptual bases for our projects. Jonathan was aiming for the lightest possible backcountry plane with super-short takeoff and landing capability, adding functionality and modifications that he deemed necessary for that role. Jonathan is a passionate hunter and fisherman, and his plane is set up to support these activities in the New Zealand backcountry.

I fly a comfortable cross-country mount that also goes into tight places when needed. My private strip is 300 meters (just short of 1000 feet) with a very challenging profile and no flat parts. I included instrumentation for IFR and some nice interior cosmetics. The teak paneling and liners look very good, but the purists frown on them. I also ended up with a 100-pound weight difference, which of course makes me blush at times.

I think the niceties of customization reveal one of the really good sides of the Bearhawk design and kit: It can be tweaked for the mission that you see for your flying and the role you want the plane to have. The fun part, and maybe also sometimes the tricky part, is that you have to design a lot of the stuff yourself, source the parts, and build to your liking.

—Lars Fellman

BEARHAWK 4-PLACE

Kit Price	$41,500
Estimated completed price	$75,000–$110,000
Estimated build time	850–1200 hours
Number flying (at press time)	130
Powerplant	Lycoming O-540, 250 hp @ 2700 rpm
Propeller	Hartzell two-blade constant-speed
Powerplant options	Lycoming O-360, 180 hp @ 2700 rpm

AIRFRAME

Wingspan	33 ft
Wing loading	13.89 lb/sq ft
Fuel capacity	50 gal (72 gal optional)
Maximum gross weight	2700 lbs take off, 2500 lbs landing
Typical empty weight	1350 lbs–1500 lbs
Typical useful load	1300 lb
Full-fuel payload	1000 lb
Seating capacity	4
Cabin width	42 in
Baggage capacity	200 lb

PERFORMANCE

Cruise speed	150 mph @ 62%
Maximum rate of climb	1700 fpm
Stall speed (landing configuration)	40 mph
Stall speed (clean)	50 mph
Takeoff distance	250 ft–400 ft
Landing distance	300 ft–400 ft

Specifications are manufacturer's estimates and are based on the configuration of the demonstrator aircraft.

Lars Fellman's Bearhawk can be flown from the left or right seat with its dual Dynon glass panels. The cutout in the center houses a Garmin GTN 650, making the aircraft IFR capable.

said Fellman, "taught me a lot about the red tape department. I've also learned to appreciate the incredible level of engineering skills that prevailed between the wars."

Later, Fellman turned his attention toward "a sturdier backcountry mount. That's when I decided on the Bearhawk. I felt it was in the Cessna 185/Maule category, more robust than the Savage, and I liked that it was kitbuilt." Fellman's kit arrived in the same shipping container as Battson's in May 2012.

Fellman's Bearhawk

FHR was the second completed Bearhawk to come online in New Zealand. Like Battson's plane, it runs a Lycoming IO-540 with a similar induction system and the same exhaust. "My engine came from a Piper Aztec that I sourced locally," said Fellman. "By removing the rpm restriction and going to 2700 rpm max, you get 260 horsepower, which is plenty. There's no lack of power.

"The Hoffman three-blade happened to be lying around in Finland, having been discarded some 20 years ago in my aerobatics days. Hoffman restored it beautifully for the Bearhawk," Fellman noted. "When you first fly the Bearhawk, I think the sense of abundant power is really the main thing that hits you."

Fellman covered his Bearhawk in Oratex, the second 4-Place to be covered so. He believes the product is a

At Otane, Lars' home base, FHR and NJB sit parked in the April sunshine. It's autumn down under.

Room for everyone: A little extra alloy was added in the cabin to dog-proof the cargo area.

Lars Fellman flies his newly built 4-Place Bearhawk near his home airstrip on South Head, North Auckland, on an overcast day.

game changer with numerous advantages—pre-applied coatings including sealer, primer, paint, and UV protection. Prior to selecting Oratex, Fellman visited the factory in Germany and spent a day with the inventor/owner, Friedrich Lanitz, doing tests and looking at case studies.

For his panel, Fellman chose the Dynon SkyView Touch with dual 10-inch screens, a two-axis autopilot, and a central radio stack. He flies from the right seat, dual controls, with throttle in the center. Having considered Garmin and MGL, Fellman reasoned the Dynon had the right level of plug-and-play, plus expandability.

He installed the system himself, pleased with its operation from day one. This was his first glass panel—no round instruments—with all the backups in the Dynon configuration. First flights were performed with a six-pack analog display on the screen. However, he quickly converted to the default EFIS display and says he's not looking back.

The electrical system is built on a Vertical Power VP-X electronic circuit breaker system fully integrated with the Dynon. He calls it, "a very neat solution with a lot of advantages and less clutter on your panel."

Among the available options, Fellman installed two 11-gallon auxiliary fuel tanks, providing endurance of five-plus hours with reserves. "That's flying at altitude averaging around 120 knots true," he said. "The same 18-inch wheels as Battson's Bearhawk feel quite good in the paddocks." Other mods include electric trim with a clutch enabling both manual and electric trim at the same time.

Fellman has his aircraft, FHR, on the CAA register for New Zealand, where the prefix is ZK. However, many in NZ do not display the ZK due to the physical impossibility of most aircraft flying to another country.

The first flight from his short farm strip proved uneventful, and shortly thereafter, he had his airworthiness certificate. Some tweaks have been made to optimize engine cooling by working on the baffling. The autopilot also went through some tuning and is reportedly providing a smooth ride.

Fellman commends his wonderfully supportive wife, a native New Zealander. Though not a pilot, Alison is a former sailboat racer, having competed in the America's Cup. She penned her version of the build experience in the owner group's "Beartracks" newsletter.

Bearhawk Fly-In

In March 2016, Battson and Fellman pulled off an impromptu get-together of New Zealand Bearhawkers. "We had

GA in NZ

Since first adopting aviation for agriculture, New Zealand has produced an estimated 1000+ light aircraft. Its growing general aviation sector today uses innovative materials common in the yachting industry, such as advanced composites and light metals. A range of civilian and military trainers, utility aircraft, microlights, sport aircraft, and gliders are all manufactured in New Zealand.

Aside from omnipresence of security, safety, governance, and cost, general aviation in New Zealand is ripe for adventure flying. Pilots come in two varieties, professional and private. While pressures prevail on the commercial side of flying, the private pilot is able to partake in flying at its roots—as pure expression, freedom.

—M.T.

Remembering Lars Fellman

Editor's Note: Shortly after this story was written, Lars Fellman passed away. Fellow Bearhawk builder Jonathan Battson and Mark Goldberg of Bearhawk Aircraft both have fond memories of Lars, which they share here.

Lars and I met when we both purchased Bearhawk kits. Mark Goldberg let us know that both were shipping to New Zealand at the same time, and it would be wise to share shipping costs. That was the beginning of our friendship.

We started our Bearhawk projects in parallel, staying in close contact from that point onward. The two kits are consecutively numbered, and by the end we were flying our pair of Bearhawks in formation over the Kaipara Harbour.

Lars was an exceptionally friendly man who you couldn't help but like. Easy-going and generous to a fault, he had a dry sense of humor and was the superlative host. He was also an excellent pilot who had no trouble operating his Bearhawk and vintage Stampe biplane with no brakes from his tiny home airstrip that is little more than a mown undulated ridgeline. Lars will be sorely missed by all those who knew him.

—Jonathan Battson

Lars bought his Bearhawk quickbuild kit in February of 2012. We met for the first time in person when Lars and his wife Alison came to Oshkosh 2014 so Lars could fly the Bearhawk. According to our demo pilot, Lars was ready to do the demo flying himself after just one flight. He was that skilled a pilot.

When my wife and I traveled to New Zealand in February 2016, Lars met us at the airport despite the very early arrival hour. Their hospitality and generosity to us was totally off the scale and beyond expectations. It was at lunch at their farm that Lars mentioned he had been ill and could not join us in drinking the great New Zealand wine that Alison and my wife were enjoying. Later we learned that Lars was seriously ill and might not have but a couple more years. It was quite a surprise as he seemed very happy and full of life. We hoped Lars would continue enjoying life and that the doctors were mistaken about the seriousness of his illness and time he had left.

Alison emailed in June 2016 that Lars had succumbed to leukemia. All too often it seems the very nicest people are taken from us too soon. Rest in peace, Lars. The world is a better place from your presence.

—Mark Goldberg

full representation of the [Bob] Barrows lineup, including owners of kits for the LSA, Patrol, and all the flying 4-Places in NZ—all two of them!" declared Battson, adding that there are two scratchbuilds, well advanced, and numerous other Bearhawk plans holders.

The fly-in started at Dannevirke Aerodrome and moved to Otane to a private airstrip and home of the first New Zealand Bearhawk LSA. Battson illuminated, "It is a reasonably challenging spot, but not too bad in a Bearhawk. The strip is 600 feet long with deer fences at each end and power lines at the uphill end. There is a drain running through the middle, with a narrow bridge you have to land across, perhaps twice the width of the landing gear. Both times I landed there, I could easily have stopped before the bridge if I applied any brakes."

Strong Builder Support

There's a very strong and friendly Bearhawk support community. One gets the impression that all variations have been tried and evaluated. The know-how is easily available online and in manuals. "On top of all that, the kit manufacturer, namely Mark Goldberg, generously and patiently answers all questions, pointing you in the right direction," said Battson.

The online Bearhawk forum *(www.bearhawkforums.com)* is robust with builder discussions, news, classifieds, safety notices, product reviews—and most importantly, building tips/techniques. Fellman, for example, posted a question on finding a location for installing his ADAHRS, which generated multiple replies. Battson is a frequent contributor to the site. There are areas on the forum for each Bearhawk model for both plansbuilt and quickbuild kits. Flight testing experiences are discussed, as well as places to fly.

The Bearhawk seems to have found a home in New Zealand, and its numbers are growing. Examples can also be found in a wide range of countries around the globe, and the U.S. is flooded with Bearhawks from east to west. For more information visit *www.bearhawkaircraft.com.* ✚