

Elegant Utility

Flying the CLASS R-80 BushCaddy

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On May 17th, 2005 I made a flight to the Les Cedres Airport just west of Montreal. The Environment Canada forecast had predicted a nice day with some sunshine and a bit of cloud with a temperature of 16C. Instead, we had a lot of cloud cover and a high of barely 10 degrees. With the northwest winds, it seemed much colder all day.

BushCaddy History

The story of the BushCaddy designs is an interesting one. The first BushCaddy model was the R-80, so named because it was powered by a Rotax 80 hp engine. Jean Eude Potvin of Lac St-Jean, Quebec, designed the original R-80. Potvin was an ultralight flight instructor who wanted a better aircraft to teach ultralight flying in. The R-80 first flew in 1994 and was produced by the school that Potvin taught at, the Club Aeronautique Delisle Incorporated or CADI in the Lac St Jean area. In English it would be the Delisle Flying Club, but CADI makes a better acronym for a plane than DFC!

Potvin produced about 60 CADI R-80 kits over the first four years of production and the aircraft created a strong following amongst those who had flown it.

Marlene Gill originally came to Canada from Trinidad and for many years was a painter. Then she became an ultralight

The trip to Les Cedres was at the invitation of Marlene Gill of Canadian Light Aircraft Sales & Services. The purpose was to fly the R-80 BushCaddy powered by the Rotax 914 turbo on floats. Who could resist an invitation like that? I couldn't.

instructor, teaching at St Lazare, just west of Montreal and that was where she met Sean Gilmore. The two of them became business partners in the school and operated one of Potvin's CADI R-80s. They were impressed with the plane and decided to become distributors for the CADI aircraft. This move kept them in close touch with Potvin and they became very involved in helping Potvin market the two-seater outside Quebec.

By 1998 Potvin was getting ready to retire. Gill and Gilmore decided to take on the project of keeping the R-80 in production and also expanding the line, based on the original design. They bought the complete company, including the intellectual property of the aircraft design and moved production from the Lac St Jean to St Lazare. Potvin continued to provide them design advice and also fabricated many parts for them as they got the new company on its feet.

CLASS is Born

The new endeavor was named Canadian Light Aircraft Sales & Services or CLASS for short. By 2001, they had taken over all the parts fabrication from Potvin which allowed him to actually retire. Parts are now made at CLASS, with a few specialized items contracted out.

The aircraft's identification package and logos were updated and the name of the aircraft line changed to "BushCaddy". The new name plays on the old CADI acronym and conveys the concept for

which the aircraft are built – carrying a load of people and freight into the Canadian bush. More recently CLASS moved to its new, larger facility at Les Cedres.

There, Gilmore handles the design and engineering side of the business and Gill handles the marketing and financial aspects. They have a total staff of five, with COPA member Mike Boisvert filling the position of Production Manager.



Mike Boisvert- Production Manager

CLASS Models

The R-80 has not remained a static design, as Gilmore has turned his hand to a number of evolutionary improvements to the basic design, keeping it up with the constantly changing Canadian ultralight rules.

The second aircraft was the L-160, a bigger two seater, designed to be powered by a Lycoming 160 hp engine.

Since then the numbers have become a bit more arbitrary – today the "R" models are the smaller two seaters and the "L" models are the larger aircraft.

The aircraft line has grown in recent years and now features a total of four

models, with a fifth one, the L-162 Max, to be added this summer.

<u>Model</u>	<u>Horsepower</u>	<u>Seating</u>	<u>Gross weight</u>	<u>Number produced</u>
R-80	80-120	2	1232	84
R-120	80-120	2	1500	12
L-160	160	2	2200	6
L-164	160-180	4	2500	26
L-162 Max	200	2+2	2650	prototype under construction
Total aircraft				128

The L-162 will be essentially a shortened L-164 and will seat two adults along with a lot of baggage in its 58” x 43” baggage compartment or two adults and two children with a bit of baggage.

2004 was the tenth anniversary of the first R-80. The very first one has now logged over 2500 hours and is still flying. CLASS celebrated the tenth anniversary with a fly-in of BushCaddys.

Touring the Facility

Gilmore and Mike Boisvert gave me a complete tour of their new production and assembly facility, which is adjacent to the Les Cedres airport, at the north end. At that time they had the first US Light Sport Aircraft version of the R-80

under construction. This one will be a completed aircraft for a customer in Ohio. The prototype L-162 Max was also coming together on the assembly line.

Construction Methods

All the BushCaddys are built in a similar manner. The heart of the design is a welded aluminum cage of square 6061-T6 aluminum tube, constructed on CNC jigs at the factory. This makes the design strong and very crash damage-resistant, providing complete protection for the occupants.

rudder horns. The 2024 costs more than 6061 and so this philosophy keeps the costs down. Since the 6061 is much more corrosion resistant this also means that the BushCaddys are able to operate in a floatplane environment which fewer corrosion problems.

The tail boom is conventional semi-monocoque construction. The wings have 6061-T6 ribs and spars. The structure uses 2024-T3 for critical parts where extra strength is required, like spar, float and strut attachments as well as other critical components like the

The whole structure is skinned with 6061-T6 sheet of varying thickness, as the structure requires. For instance on the R-80 model the wing bottoms are 0.016” while the top is 0.020”. The wings are supported by conventional “V” struts.

Airfoil

The BushCaddys all share the same airfoil, a NACA 4413 (mod). The modification is to remove the undercamber on the bottom of the wing. This modification makes construction much easier, without giving up much low speed performance. This airfoil was selected because it gives a good speed range, excellent low-speed handling and

Kit Availability

CLASS is all set up to produce basic aircraft kits, quick-build kits and completed aircraft, where the national rules allow.

In Canada all the BushCaddy models are currently in the amateur-built category, except the R-80, which with a 1232 gross weight fits the advanced ultralight category or the amateur-built category.

A slightly different version of the R-80, the R-80LSA, will be sold in the USA as a Light Sport Aircraft at 1320 lbs gross weight. These AULA and LSA aircraft can be delivered

The Missing Demonstrator

CLASS currently lacks a factory demonstrator R-80. They seem to suffer the same fate that dogs many kit plane manufacturers – as soon as you get a nice demonstrator aircraft, someone offers you cash for it!

To solve the problem Gill and Gilmore prevailed upon one of their customers, Daniel Langevin of Montreal, to bring his R-80 C-IGSU down to fly. He is

a gentle stall. The wings are all non-tapered, which also makes construction easier.

There is a lot of commonality of parts between BushCaddy models, which helps keep costs and development times down.

as completed aircraft. CLASS also offers builder assistance to help builders complete their aircraft more quickly.

Gilmore reported that a realistic build time for a first-time builder working part-time to construct an R-80 is about 1200 hours.

Lead times are generally 12-14 weeks for a standard kit and 6 months for a quick-build kit.

Finishing our tour of the factory, it was time to go flying.

based on the St Lawrence River not far from Mascouche. Langevin's AULA R-80 is powered by a Rotax 914 turbo-charged engine that puts out 115 hp. His R-80 is equipped with Full Lotus "straight" floats, which provided a challenge as Les Cedres airport has only asphalt to land on. We decided to rendezvous at Vaudreuil on the St Lawrence River. Langevin plonked the

R-80 down into the wind and beached it on a small sand beach there.

The Full Lotus floats are an amazing accessory – Langevin reports having no problem running it up onto rocky beaches, something no floatplane pilot flying on aluminum or composite floats would try!



Full Lotus Floats

Langevin originally trained on Cessna 152s and 172s when he completed his Private Pilot Licence three years ago. He says that the R-80 is a world apart from flying those sorts of aircraft. He has owned GSU, a 2001 model, since finishing his PPL, buying it completed from a builder who has constructed a number of BushCaddys.

I watched Langevin do his walk around without getting too wet. The aircraft looks very conventional sitting on the beach; I was interested to see if it flew like it looks.

Langevin pointed out that he had installed vortex generators on the wings of his R-80, but after some experiments removed them. He found they didn't really do much except cost him almost 10 mph cruise speed. As the person currently responsible for the aircraft's design, Gilmore feels that the airfoil is

already optimal and therefore any high-lift devices added will just decrease performance on one end of the speed range or the other. After his experiments with the VGs Langevin agrees!

After the walk around and a tour of the aircraft's features we settled into the cabin. The centre "Y" stick makes getting in and out a breeze. Floatplane pilots especially like it as it makes for quick docking without the gymnastics of individual floor-mounted sticks.



The aircraft is wide for a two seater, certainly with more elbowroom than a Cessna 150. The legroom is also generous, as I am 6'4" and had to slide the seat forward a notch to reach the pedals. The headroom was just about on

the limit for me – so I would say that the R-80 would fit someone up to about 6'3" before changes would be needed to the seat installation to make more room.

Weight

Langevin reports that GSU weighs 780 lbs empty including the floats. The two 10 US gallon (37.9 liters each) wing fuel tanks had about 9 gallons of premium auto fuel in each for a total of 108 lbs. With my 175 lbs and Langevin's 160 we were at about 1223 lbs for take-off, about 9 lbs under the R-80's AULA gross weight. Our power-loading would be about 10.6 lbs/hp on take-off – about 50% better than a Cessna 150's.

10-15 knot winds blowing out of the northwest. The R-80 clearly has enough rudder and fin area without additional vertical surfaces for float operations.

We started the 914 and taxied out. The turbo-charged Rotax is very smooth at idle and with the water-rudders down gave Langevin lots of control even in the

In a calm spot on the bay Langevin opened the throttle and the R-80 accelerated briskly. The lack of waves probably cost us a few seconds on take-off as we lifted off after a 17 second run. Later, on his solo departure in slightly rougher water, he was gone in 10 seconds. The Full Lotus' lack of a classic float "step" doesn't seem to hurt their take-off performance or maneuverability on the water.



The R-80 climbed at a steady 700 fpm at 68 mph IAS. Even in the climb the noise levels were quite reasonable.

Once at altitude we did a stall. The throttle was pulled back to idle and speed was bled off at a steady rate. At 40 mph IAS the nose dropped and the plane flew away – no rudder input needed to keep it straight. No surprises there at all. Next we set up for cruise flight. At 1500 feet the engine was set to 5200 rpm and the manifold pressure to 32". The indicated speed settled down at 98 mph – quite respectable for a floatplane of this horsepower.

Next we did some maneuvering flight. Sideslips are great fun as the plane comes down like the proverbial brick, at 1200 fpm, with the controls crossed. I can see why flaps are not needed on the R-80, although they are an option on the larger BushCaddys.

Doing shallow banked turns I found that little rudder is needed on the R-80 – the frise ailerons do most of the needed work in dealing with the adverse yaw. When the bank gets steeper, or the roll rate is increased, you do need a bit of rudder in the turn, but that is to be expected. The plane handles just like it looks.

The controls are light in all axes. The stick gives a light and quick response in pitch and roll – the control surfaces are large on this aircraft and work well at slow speeds. While the stick is light the controls never felt overly sensitive; they seem just right for the R-80. The rudder requires more of a push, but it is still light and nicely balanced. I can see why Langevin can't go back to flying C-172s – the R-80's handling has spoiled him!



Next I assessed the R-80's stability. Trimming for 90 mph I then dropped the nose 10 degrees and let go of the controls – it just stayed there. Returning to cruise attitude I tried the same thing by raising the nose a similar amount. Again the plane just stayed there – neutral stability. The same thing was found in roll – put it in a bank angle up to 30 degrees and let go of the controls and it just stays there. The aircraft was notably stable in yaw – quickly returning to coordinated flight after the rudder was displaced and then neutralized.

Overall the stability was pleasant and easy to work with in flight. Combined with the light stick forces the aircraft has a low workload to keep it going in the direction you want it to go – very nice handling.

The central “Y” stick is a good feature. Gilmore reports that some people new to them are a bit apprehensive, but after an hour or two find them very natural to use. The “Y” stick certainly makes entry and exit easy and also saves installation weight.

We spent some time doing turns and just enjoying the flight. The day was a bit blustery and overcast with middle cloud. The ceiling wasn’t a factor, but the winds were mixing up the air a bit and making it bumpy. Considering the fairly light wing loading of 7.4 lb/sq ft the R-80 did very well in the bumps, never making me work to keep it going where I wanted.

The seats are quite far back under the wing, so it is very necessary to look for traffic or even lift a wing in the intended turning direction before you turn. As soon as you start the turn you are blind in that direction until you roll out.

Finally it was time to go and rejoin Gilmore and Gill on the beach at Vaudreuil and so we descended for a low pass to check the landing area for obstacles. All was clear, so Langevin held the R-80 at 80 mph IAS on final and did a textbook landing. The wind was slightly across and the waves about 6-10 inches high in the bay. Langevin put the R-80 down on the upwind float and then deftly lowered the downwind float. The landing distance was short as the Full Lotus rubber floats plane on the water a bit and then quickly settle down to displacement mode. Taxiing in the crosswind was easy and we quickly beached the plane back where we started, the metal runners on the bottom of the floats protecting the rubber from the odd rock on the sand beach.

Owner Impressions

Flying with Langevin it is easy to see that he is hooked on his BushCaddy. He knows the little plane very well and has had some great adventures flying it, going fishing and camping. It was pretty plain that he wouldn’t trade it for any other type of aircraft. He seems to have no reservations about the R-80 at all. That is a pretty good endorsement.



Pricing

So what would it cost to get into an R-80 BushCaddy? That really depends on how you want to approach it. CLASS sells partial kits starting with the cabin kit for \$6322. The basic airframe kit runs \$20,596 with the quick-build airframe kit at \$40,500. A factory completed AULA R-80 will run between \$72,950 and \$78,500 depending on options. The option list is very long, so have a look at

the CLASS website for complete details on pricing.

Building from the basic kit and using the Rotax 912 80 hp engine you could probably complete a spartan R-80 for about \$50,000, depending on your options chosen.

Pros

So how does the R-80 BushCaddy stack up as a whole? I was genuinely impressed. This two seater is very strongly built, handles very nicely and is very comfortable to fly. It has the great

“ramp appeal” of a classic taildragger bush plane, all in an efficient modern design. The ergonomics are fairly good, particularly if you are less than 6’4”.

Cons

There isn’t a lot to complain about with the R-80 – just a very few minor notes. A little more headroom would be nice – but then again I am in the 99.9 percentile

for height, so most people should find the headroom just fine. Adjustments to the seats can be made to increase the headroom, too.

The visibility in the turn is pretty poor, as is common with many high-wing aircraft. Gilmore has a fix for that, as skylights are available. That is one option I would definitely recommend after having flown the plane.

wheels. If I were planning to put an R-80 on floats, particularly rather draggy inflatable ones, then I would opt for the Rotax 914 turbo of 115 hp or perhaps the Jabiru 3300 of 120 hp.

The only other comment I have is regarding horsepower. The R-80 is available with the Rotax 912 80 hp engine. Given that Langevin’s plane had the 115 hp Rotax 914 turbo, I would guess that the performance with 80 hp would be “less than exciting” on floats, although it would probably be fine on



Conclusions

Other than those few minor, and very solvable, items this is a very fine little airplane. If you are looking for a two seater to use as a weekend “get-away” plane this may well be the aircraft for you.



Danny Langevin and Sean Gilmore

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