

Bush ranger



Intrepid adventurer Sam Rutherford tells why he chose a Maule MX-7 for his aerial safari business

My company prepare2go helps pilots go where they would not consider going on their own; across the Sahara, into the mountains of eastern Turkey, up beyond the Arctic Circle, through central Africa and so on. I need a plane that can take the strain; something that's simple to repair, robust, excellent for range and short-field landings on rough strips – sometimes very rough strips. The Maule, which I call 'Never Say Never' because it's easier than giving it its full name of Maule MX-7 180B Star Rocket, ticks most of the boxes on my wish-list; I might prefer something a little faster, something that would lift a little more, but then, don't we all?

I hadn't intended to buy an aircraft. I wanted to fly to Cape Town, and it soon became obvious that nobody would rent me an aircraft for the trip, so it seemed a good plan to buy one, then sell again afterwards. Only we ended up not selling...

Flying has been something of a family

business. My grandmother was a bush pilot in South Africa, my wife Bea is a pilot, as is her father. Her grandfather flew his plane, a Navion, from Belgium to Cape Town in the 1960s. We recently found that very aircraft in a sad state, being used as an advertising device outside a nightclub in Belgium, and we are negotiating to buy her to hang in our warehouse – she'll never fly again, unfortunately.

I first went solo in gliders at 16, then joined the army and flew helicopters for eight fun-packed years, but I never entertained any notions of flying airliners for a living. I have about 2,300 hours, of which 1,600 are rotary and a little over 700 fixed-wing. I hold an FAA CPL (A) with an IR, and an FAA commercial helicopter licence, a JAA PPL (A) and (H) and I've done the JAA CPL theory exams for rotary and fixed-wing – I just need to do the flight part.

I wanted a robust aircraft for rough strips, and given that I wanted her for the trans-Africa trip the overriding factor was

range, range, range. For its size and cost, the Maule MX-7 with the 180 hp engine has the longest range, well in excess of 1,000 nm – even better than the MX-7-235, which is a bit quicker. The second item on the wish-list was STOL capability. And while looks had very little to do with my choice, I happen to believe the Maule is a nice looking plane. On the downside, it's no rocket ship, and during my research one factor that kept coming up was the Maule's performance on tarmac – it is difficult to handle on hard runways, and I much prefer to land off-piste. But when your purpose is to run flying safaris in remote places, there are few aircraft out there that can match the Maule. It's not like I had a long list of possible aircraft with similar capabilities – I'd been channelled towards the Maule from the beginning.

After a search, I located the aircraft I wanted in Texas, arranged a survey and laid plans to fly her home across the Atlantic. The flight was certainly an

handy in Africa – carries 270 useable litres and can lean to 30 litres an hour and 100 knots. She has an extra-long wing for fuel capacity and STOL performance. As far as kit goes, she's relatively spartan; after all, this is a bushplane.

The mogas STC involved a lot of paperwork and bit of engineering. I added a fuel pump that runs permanently, to reduce the possibility of vapour lock, new steel-braided fuel delivery lines and an air scoop for cooling. It cost about \$1,500 and it enables me to operate in places where avgas is non-existent, which is to say, much of Africa. Apart from the mogas STC I've gone for vortex generators, a VOR/LOC, twin GPS, and big tundra tyres. I've got a satphone plumbed in so I can make and take calls through the headphones, and I've also got a satellite tracker. The vortex generators give me better control at low speed; they don't reduce the stall speed, but you maintain better control at the sorts of airspeeds you'll become familiar with if you're operating out of short strips. As with much else, I got good information on this from the Maule pilots forum, <http://maulepilots.org/forums/>

Seldom do I fly alone; mostly it's with colleagues on safaris or with family,



Top: for STOL capability, long range, rough strip operations and ease of maintenance, there's very little to match the Maule MX-7

Right: the basic airframe has changed little in appearance during the type's 50-year production history

Below right: on the ground, the view over the nose is particularly good for a taildragger

adventure (see sidebar) but it was an adventure I wanted to do, and a very positive experience.

The MX-7 is a full four-seater, so you can load her with four people and full fuel, just. The main thing you have to worry about is C of G, which trumps MAUW in the planning. Everything you add takes the C of G backwards, and she flies slower at aft C of G because the tail-low flying attitude increases the drag. She has a Lycoming 360 with a mogas STC – very



Austin Brown



Austin Brown

although occasionally I do fly solo to meetings. The vast majority of my flights are international. When I'm at home the aircraft is hangared – the fuselage is fabric-covered, the wings aluminium – but I don't worry too much about leaving her outdoors away from base. The finish is as robust as the aircraft.

I'm based at Kortrijk in Belgium, which has over 1800 metres of tarmac, but depending on weight, she's much happier on 400 metres or less of dirt. With one POB and half fuel she's said to be able to take off in less than 100 metres. The walk-around is fairly standard – you can stand on the big tyres to see upper surface of the wing, but to refuel her without drama it's

advisable to fetch something to stand on. There are four tanks with four filler caps and seven drains. If I fill her to the brim I often get quite a bit of fuel venting as the sun gets to work on those big wings, but I'm happy to accept that in order to ensure that I don't leave a single cubic inch unfilled – range, range, range.

Getting into the back is relatively easy; she has three doors, two for the front seats and one on the starboard side for the back seats and baggage area. You need to be fairly small or supple to leap into the front seats; a step is provided but it still takes a body twist to mount up. The spring-loaded door latches need care because you can't slam the door shut – you have to be

pulling the door knob to retract the latch.

The kit is basic but sufficient, with a yoke, four plungers for carb heat, throttle, constant-speed prop and mixture, a basic-T panel and a radio/nav stack, and I've got an EKP IV satnav. The seats are adjustable but not the pedals, and she feels slightly tight because of the narrow fuselage, at 42 inches wide. Visibility is good – remarkably so for a taildragger, with very little nose to obscure forward vision while taxiing – and there are Perspex panels in the lower half of the doors, too.

The manual flap lever is on the floor between the seats and has four settings – fully down is minus 7 degrees, which gives an additional two or three knots in the



After I bought the aircraft in the USA, the flight home across the Atlantic turned into something of an epic. The schedule was optimistic; a combination of poor weather and occasional shake-down troubles meant it lasted from the beginning of June to the end of July, with a side-trip home to Belgium on the airlines. We first got stuck in Laconia, New Hampshire, by a stubborn low over the mountains north of Boston and some issues with the magnetic compass, and when we finally got into the air en route to Quebec the transponder packed up. Delays in getting it fixed meant we arrived in Quebec seven days after leaving Florida. This is when I had to take a leave of absence in Belgium, and I didn't get back to Quebec for more than a month, this time accompanied by Mike McGinty, who'd been on the same Army pilot's course as me.

We waited three days for Mike's lost

luggage, then there was a further delay while we sourced an adaptor for our oxygen system – very frustrating. Eventually we made it to Schefferville, then set out for Greenland. Mike, now a

Colonel, had just come back from Afghanistan where he was flying Apache, and as we coasted out from Canada he looked down at the icy sea below and commented: "I think this is the most dangerous thing I have ever done." In the event we had to divert to Kuujjuak when the weather deteriorated and re-planned via Iqaluit because Greenland ATC is closed on Sundays. Monday's flight to Greenland was perfect, cruising at 8000ft over the broken pack ice, but we collected a tailwind just off the Greenland coast, ending our 'return to Canada' plan; we were now committed, but the weather in Greenland was considerably worse than forecast. We dropped down beneath the cloud and ran the last 90 miles along a fjord with mountains over 6000ft within a mile on either side, under a 300ft cloudbase and with half a mile visibility in rain. With one stage of flaps, we cruised at about 70 kts, and after an interesting hour arrived at Sondestrom where the controller, who flies a 172, asked us with a wink if we'd had fun in the fjord! Quite enough, thanks.

Unfortunately (a word that appears often



Top: sculpted iceberg – only pilots get to see sights like this
Right: Sam (right) and Apache pilot Mike McGinty in the Arctic



Left: Never Say Never, often in unusual places, photographed on the apron in Ankara

cruise. First notch is zero degrees, second notch is 20 degrees, the take-off setting, and the third notch is 40 degrees, for landing.

The fuel arrangement is interesting. The inboard tanks feed the engine by gravity, although I have a permanent auxiliary pump fitted. The contents of the outboard tanks are then transferred to the inboard tanks by electric pumps. It's very important to start the transfer process early on long flights, just in case you have an electrical failure and lose the transfer pumps. But it's equally important to ensure there's enough

in this narrative) the weather refused to play ball and we were reduced to heading south to Narsarsuak, nearer the tip of Greenland, to shorten the leg to Kulusuk – we planned a brief fuel stop in Kulusuk next day before we bolted for Iceland, in order to beat a low that was threatening to sit on eastern Iceland until the end of the week. Fat chance. Two days later we set off over the icecap for Kulusuk with an 'okay' forecast. Unfortunately our forecast 2200ft cloudbase became 1100, then 900, as visibility dropped to 5000m in moderate rain. With temperature and dew point both at 7C on the ground, things were not looking promising. The clincher was the issue of a sigmet – severe turbulence within 15nm of Kulusuk below 7000ft. We turned around and headed back to Narsarsuak.

Next day, in better weather, we flew over the ice cap again, refuelled at Kulusuk and headed out for the four-hour leg to Reykjavik. Mike's time had run out so he hitched a lift on a passing jet to Edinburgh and I went on solo. I flight-planned to Egilstadir on the east coast of



Iceland with the idea of continuing to Vagar in the Faeroes if the winds were kind, which, unusually, they were. All the way I kept a near-obsessive check on the Vagar weather, as it can go from blue

skies to fogbound in minutes. Fortune smiled upon me; but next morning the fog came down and I was stuck again. I spent an hour listening to Atlantic Airways flights failing, one after another, to complete their approaches, while the cloudbase came down to 60ft and the vis dropped to less than 300m. Vagar airfield lies between two fjords, but 400ft above them. I eventually saw my opportunity and took off with an immediate descent (!) to the fjord below. After following the fjord out to the open sea I climbed and found brilliant sunshine at 7000ft, levelling off at 10,000ft. Over Shetland and Norway and into Aarhus in Denmark for fuel before I finally made it to my home base of Kortrijk. It had been an experience, as they say, but I had come to know the Maule well and began to form that bond of trust that you need to feel comfortable in challenging situations. I knew I'd bought a great little aircraft. ■



**Left: on finals for Narsarsuak, with icebergs to avoid
Above: Never Say Never climbs towards the Greenland icecap**

room in the inboards for the fuel you're transferring, because otherwise you'll just be dumping it out of the vents.

It could be just mine, but this is a very easy aeroplane to start. Mixture rich, throttle fully out, then two twists in with the throttle vernier and she'll start on the third or fourth turn of the prop, hot or cold. Noise levels are what you'd expect; you're not in a library and you're not in a hammer mill. Once almost everything is in the green – you can't wait for the oil temperature because the cooling vents from the mogas STC mean it's very slow to come up – you're ready to roll. Power checks are standard, full and free controls, flaps set to the 20 degree notch and you're ready for take-off.

You have to be very busy on the controls as she starts to roll because she's notoriously twitchy. You can't overstress the need for footwork on both take-off and landing – the Maule will ground-loop at the slightest excuse and any drift must be cancelled out. Three-pointers are preferred to wheelers. Maybe it's all those hours on helicopters that gave me good feet, but I've never had a problem. Others, however, seem to have difficulty, and it would be interesting to transition from nosewheel aircraft to the Maule if you'd never flown a taildragger. Even in the air you need to stay on top of the rudder. If you try to turn using only the ailerons you'll discover the meaning of the term 'adverse yaw'. There is in fact an aileron-rudder inter-connection which helps co-ordinate control movements – there's a servo tab on the rudder that responds to aileron inputs – and there's a T-handle on the panel so you can adjust the connection.

I'm generally flying quite heavy, and I find she wants to fly off at about 50 knots and is happy to climb at 500 fpm. The definitive Maule short-field takeoff

procedure is to lift from the three-point attitude and go immediately into a max-rate climb, but even on short strips you can usually afford to be a little more sedate. Best angle of climb speed is 70 knots, best rate is 78 knots. Raising and lowering flap calls for a big change in pitch trim.

Levelling off in the cruise I set her to 23/24 which gives me 100 knots and 30 litres an hour, with flaps set at negative seven. More speed means less range and greater noise levels. Upper air work is remarkably easy; you might think that the big wing would make her ponderous, but not at all; she responds to the controls quite quickly and without requiring great effort on the pilot's part. You do, however, have to add significant amounts of power in steep turns, with that big wing. Stalling is a non-event; pull the yoke back into your lap and the ASI keeps dropping until, around the urban speed limit for cars, she mushes nose-down with very little tendency to drop a wing and settles into a

steep descent. She can easily be trimmed out to fly hands off; in calm conditions I've been able to go for 20 minutes at a time without touching the yoke.

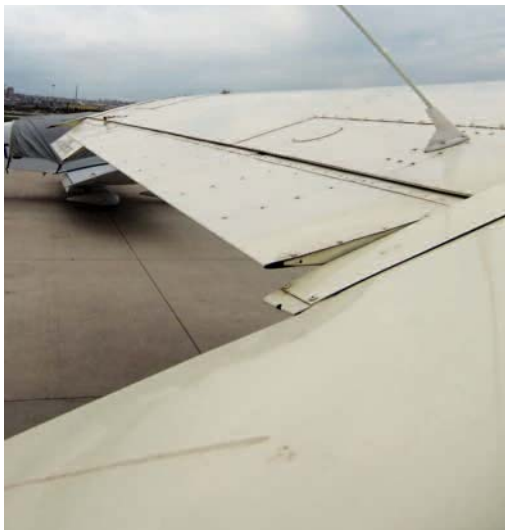
I approach at 60 to 70 knots with flaps at 40 degrees, and she's absolutely peachy to land on grass. On tarmac – aaaggggh! Any crosswind at all and she's a real handful. Lots of into-wind aileron, lots of work on the rudder. Make sure there's no drift, and no crab angle... but if you get it right you can pull up in the length of a tennis court, no problem.

The Maule MX-7 has certainly fulfilled all my expectations. It would be nice to cruise maybe 20 knots faster – every pilot's desire – and have something that behaved in a civilised manner on tarmac. In fact I have drawn up a wish list for the aircraft that will eventually replace her, and I've discovered it doesn't yet exist. It would be diesel-powered, with six seats. My next purchase will probably be a Robinson R44, but that would be to complement rather than to replace the Maule.



Right: bush-plane spartan, the Maule's front office is utilitarian rather than plush
Below: left-seater faces a basic-T panel and little else, but it's enough
Below right: the fuel transfer controls and Ts and Ps fall to the right-seater





B.D., the relentless tweeker

The name Belford D. Maule – who was forever known as ‘B.D.’ – should rank alongside those of Clyde Cessna and William T Piper in aviation history, but his unorthodoxy and individualism set him apart. An entrepreneur and inventor, he prospered not only in the aviation field but made a success of designing and building electric starters, devices to improve TV reception, and a non-destructive fabric-tester, among other things. He designed, built and flew an ornithopter – a flapping-wing aircraft – having taught himself to fly in a more conventional aircraft of his own design, which he’d built while in the Army between the wars.

B.D. conceived the current line of Maule aircraft in the early 1950s to meet a need for rugged aircraft that would go anywhere, land anywhere, and be simple to maintain. He favoured a high wing monoplane taildragger with a welded steel tube fuselage and metal spar wing. STOL characteristics and long range were built in. The Maule M-4 came to market in the early 1960s and the modern MX-7 differs little in appearance from the M-4; indeed, progress in the world of Maule has been a matter of relentless tweaking of a good basic design. It’s got bigger and stronger, and performance has been enhanced with flap, aileron, wingtip, and landing gear improvements.

The MX-7 Star Rocket has a lengthened cabin with improved baggage space – or you can opt for a third row of ‘kiddie’ seats. It comes with a Lycoming O-360 as standard but is also available with the O-540 as the MX-7 235. The 235 has a slightly better turn of speed, but range is compromised. They come in both nosewheel and taildragger configurations. Maule has delivered nearly 2,000 airplanes in countless versions of the original design, with variations in horsepower, wingspan, seating capacity and number of doors. There’s even a Rolls-Royce 420 shp turboprop version.

2013 Maule Aircraft Buyer's Guide
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MX-7 Series Performance Specifications

MX-7 Series 180HP Models	Maule MX-7 180C	Maule MX-7 180
Engine (Lycoming) (2000 hp TBO):	O-360-C1F	O-360-C1F
2500 lbs (1134 kg)	2500 lbs (1134 kg)	2500 lbs (1134 kg)
1438 lbs (654 kg)	1483 lbs (674 kg)	1528 lbs (694 kg)
1002 lbs (456 kg)	1017 lbs (462 kg)	1017 lbs (462 kg)
40 mph (64 km/h)	40 mph (64 km/h)	40 mph (64 km/h)
300 ft (91 m)	300 ft (91 m)	300 ft (91 m)
700 ft (214 m)	700 ft (214 m)	700 ft (214 m)
1000 ft (305 m)	1000 ft (305 m)	1000 ft (305 m)
15,000 ft (4572 m)	15,000 ft (4572 m)	15,000 ft (4572 m)
9 gph (34 lph)	9 gph (34 lph)	9 gph (34 lph)
138 mph (120 kts)	138 mph (120 kts)	138 mph (120 kts)

MX-7 Series Aircraft Specifications

Engine (Lycoming):	Horsepower: 180	Wingspan: 33 ft 6 in (10.21 m)	Wing Area: 165.6 sq ft (15.39 sq m)	Wing Span: 33 ft 6 in (10.21 m)	Wing Area: 165.6 sq ft (15.39 sq m)
O-360-C1F					
2500 lbs (1134 kg)					
1438 lbs (654 kg)					
1002 lbs (456 kg)					
40 mph (64 km/h)					
300 ft (91 m)					
700 ft (214 m)					
1000 ft (305 m)					
15,000 ft (4572 m)					
9 gph (34 lph)					
138 mph (120 kts)					

Performance That Counts!
 *Optional equipment not for O-360. For O-540, see O-540. *Standard equipment. (2013) Use the Right Plane. Right Plane.

Above: part of Maule's brochure
 Below: floats are a popular option on Maules



Left, top to bottom: vortex generators on the wing improve control at low speeds
 Two-thirds span flaps can be set to minus seven degrees
 Big tyres are essential for African bush strips
 Harzell constant-speed prop gets the most out of the Lycoming 180