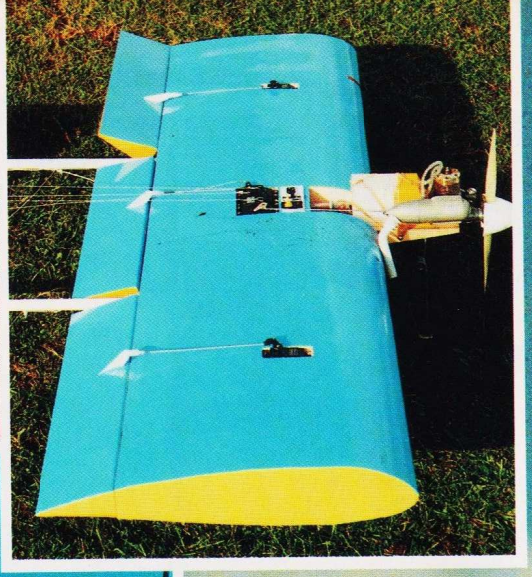
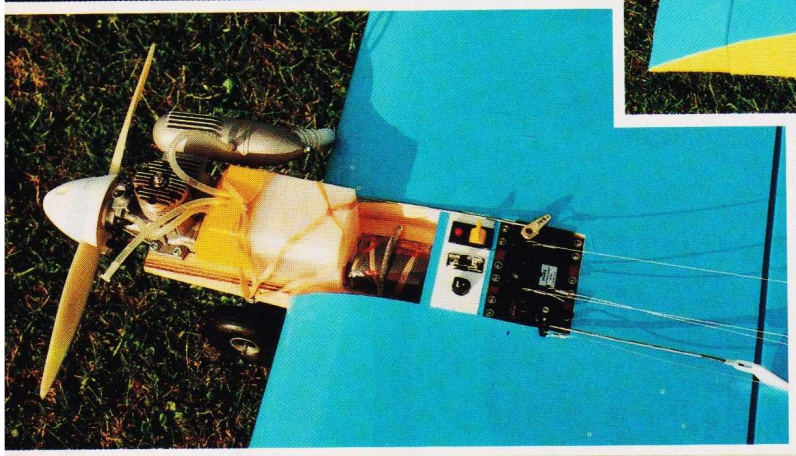
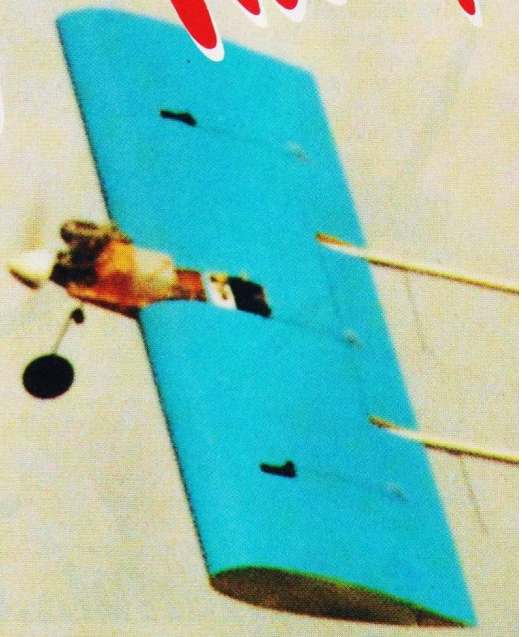




Clockwise on left: Jeff holds prototype number two after another session of fun frolics. Design uses aileron differential to keep rolls axial, note also that the wing section is not completely symmetrical – inside manoeuvres are tighter than outside ones! With lower power, say a .32 or .25, and reduced throws, Wild Thing is completely tamed. Engine and R/C installation is dead easy but do fit an exhaust deflector to keep everything clean. Right: Plans for Wild Thing are available from the ASP Plans Service for £5.75 plus 85p postage. Special MPA price £5.20. Please quote RC 1675.

Wild Thing



David Boddington's radical fun flyer, built and flown by Jeff Barringer

Wild Thing is a 'radical' aircraft designed to give very high levels of manoeuvrability by employing extreme aileron movement and using flap/elevator combination.

Materials

All wood is balsa unless otherwise stated. The Wild Thing uses a very small range of materials, especially if you invest in a balsa stripper so that you can cut the strip materials from sheet. Pay attention to the weight of balsa, especially at the tail where firm but light wood should be used. Remember that the wing is 4 feet wide and so, if you can, buy the material for your mainspars, leading edge spar, and false trailing edges in four feet lengths. If, like me, you can't find any, buy the normal length and learn to splice, but certainly buy your 0.4mm ply for the leading edge in one piece or you'll really make problems for yourself.

A piece of 1/2in. x 1/2in. balsa is very useful to support the trailing edge during initial wing build.

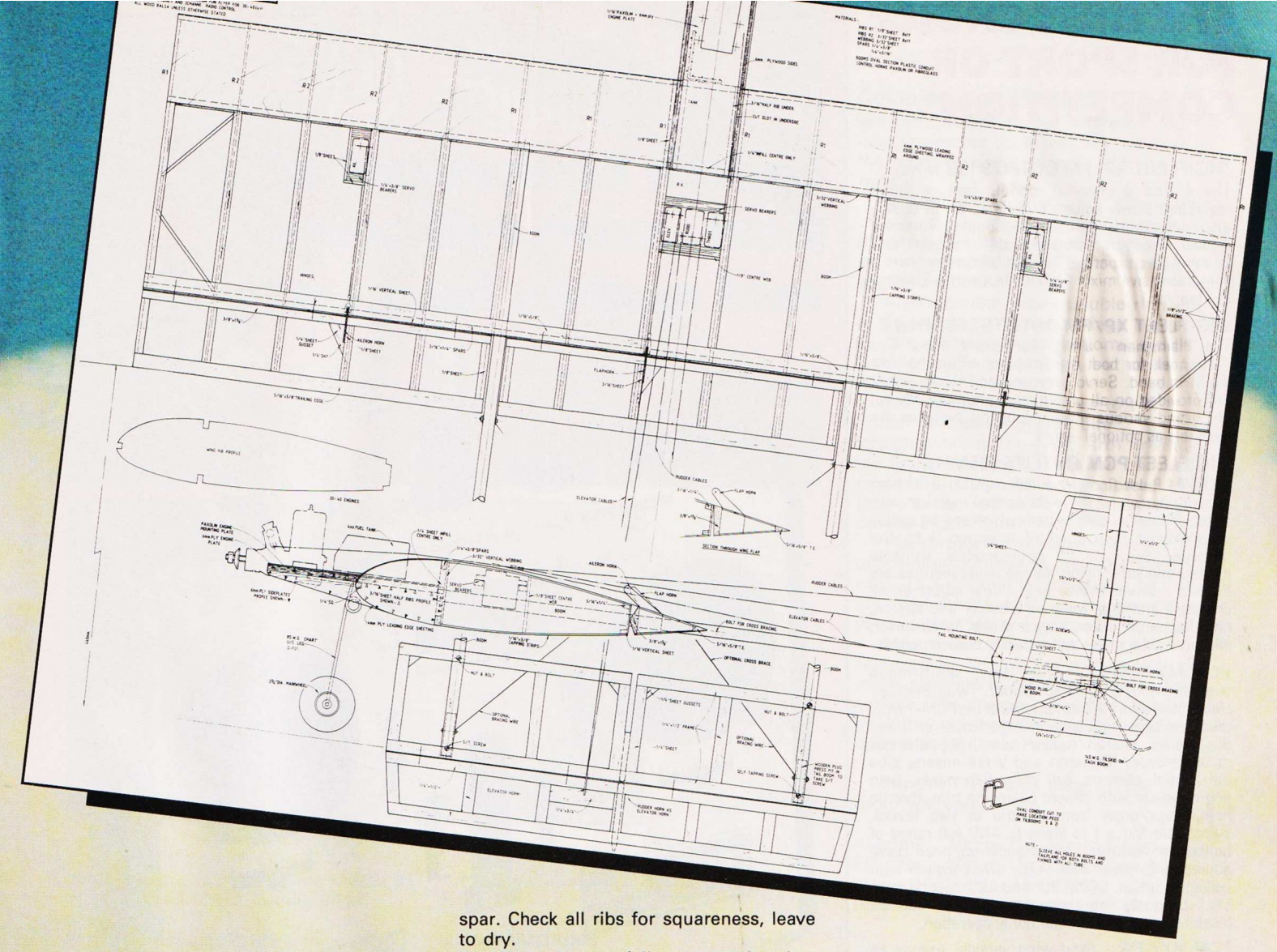
Construction

Use White Glue unless another type is specifically mentioned.

1) Splice if necessary all the spars and leave to dry thoroughly.

2) Cut all ribs, noting that eight are 1/8in. and eight are 3/32in. Cut two

Ribs –	1/8 in. sheet x 8 3/32 in. sheet x 8
Webbing –	3/32 in. sheet
Rib and Trailing Edge Capping –	1/16 in. sheet
Spars –	1/4 in. x 3/8 in. 1/4 in. x 3/16 in.
Leading edge Sheet –	0.4mm ply
Aileron/flap Leading and Trailing Edge	3/8 in. sheet
Tail –	1/4 in. sheet
Engine Plate –	6mm ply and paxolin
Tailbooms –	Oval section plastic conduit
Control Horns –	Plasticard or Fibreglass or Paxolin
Undercarriage –	Chart D-P21
Adhesive –	White Glue, small amounts of Cyano and Epoxy
Tools –	Nothing special needed, Scalpel, sandpaper, straight edge and lots of enthusiasm.



3/16in. extra half ribs for the engine plate support. In all ribs, make a hole for the aileron servo leads. Be generous, as they will be difficult to thread when the model is covered.

3) Select two 1/8in. ribs and mark the path of the booms along their lengths. This aids alignment of the booms when they are fitted.

4) After covering the plan with Clingfilm, lay down and pin the bottom mainspar.

5) Pin down the 1/2in. x 1/2in. trailing edge support along the line of the trailing edge.

6) Glue the ribs into place along the spar, taking care to put the correct thickness ribs into the correct locations, and the pre-marked-marked 1/8in. pair where the booms will be fitted.

7) Glue the top mainspar into place, followed by the leading edge spar, then the 3/16in. x 1/4in. upper trailing edge spar. Check all ribs for squareness, leave to dry.

8) When dry, carefully remove the plan, invert and fit the 3/16in. x 1/4in. lower trailing edge spar. At this point, the wing will not be very rigid, so take care, and pin down for drying.

9) Carefully sand the upper and lower trailing edge and then fit the 1/16in. x 5/8in. capping along the top and the bottom, pinning regularly along both lengths.

10) Sand smooth and then fit the 1/16in. vertical grain sheet all the way along the trailing edge.

12) Sand smooth the ribs and spars at the front of the wing in preparation for fitting the leading edge sheeting.

13) Wrap a piece of masking tape around the leading edge from spar to spar and mark the positions of the spars so that, when removed, you know the length of 0.4mm ply needed to cap the leading edge.

14) Cut the correct rectangular shaped area of ply and soak thoroughly using water to make it pliable. Wipe off any excess water, but leave damp (it helps the cyano to take).

15) The next part will be easiest with an accomplice. Run thick cyano along the upper spar, the leading edge spar and down each rib to the leading edge spar. Place the 0.4mm sheet accurately along the upper spar, invert the wing, and pressing down onto the sheet, slowly rotate the wing, forcing the ribs to meet the sheet until the leading edge spar is attached to the sheet. Take particular care during this operation to keep the wing square.

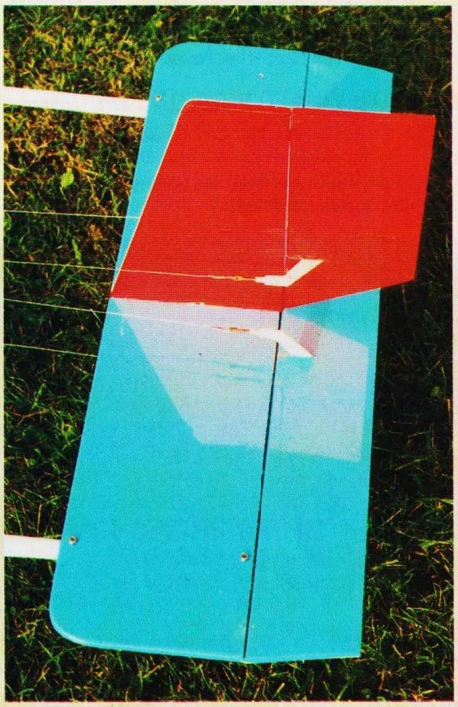
16) Now run cyano onto the lower spar and along the ribs, and then continue to rotate the wing until the leading edge capping is completed.

17) Take a break, you've earned it.

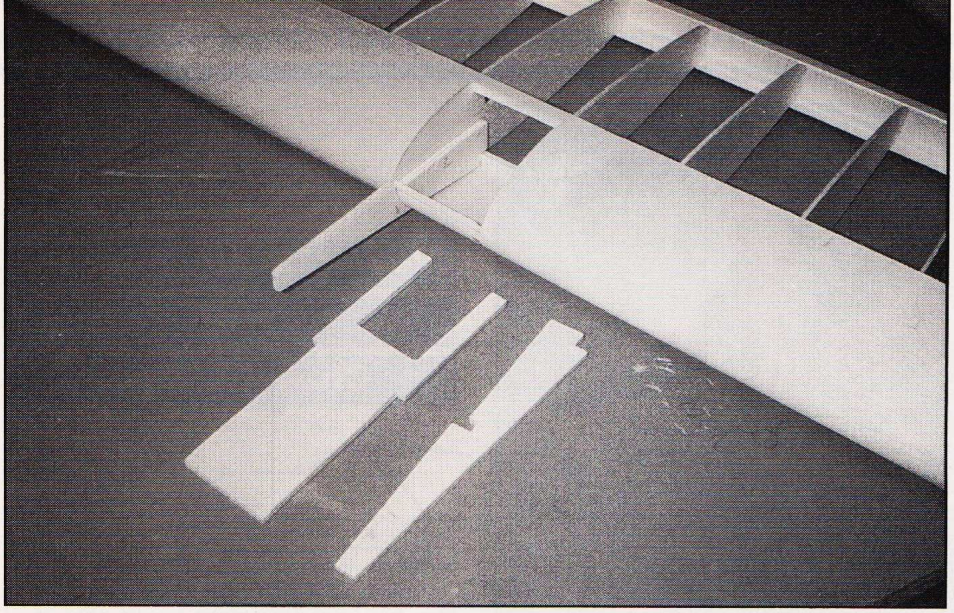
18) Inspect the fit of all ribs to sheeting, and run white glue into any areas missed. Set aside to dry.

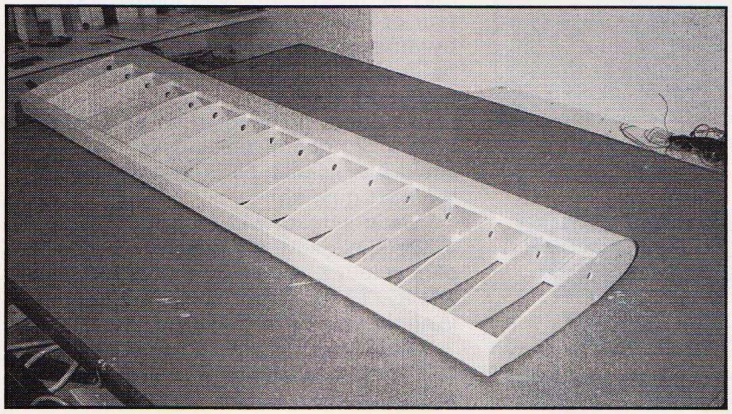
19) Fit 3/32in. vertical grain webbing between the rears of the upper and lower spars and 1/8in. wingtip bracing.

20) Cut out the upper section of the centre leading edge sheeting and cut



Main use for rudder is during take off – it is too effective in flight!





Above: Leading edge sheeting is .4mm rolled ply, cut out to form engine and radio bay. Strong stuff! Left: Simply wing structure is really quick to build.

two slots for the engine plate braces in the underside of the leading edge capping.
21) Using epoxy, fit the engine plate braces, and then secure these further by fitting the 3/16in. half ribs made earlier.
22) Epoxy the engine plate onto the platform made at stage 21.
23) Depending on the weight of your engine, you may need to mount the battery, the receiver, or both forward of the mainspars, so it is worth fitting the 1/4in. sheet infill between the innermost pair of ribs with a hole cut into it for wiring later.
24) Cap all ribs, make up and cap servo bays to suit your servos.
25) Fit wingtip bracing pieces (to prevent covering distorting the tips during shrinking.

Ailerons and Sub-elevator

1) Cut the riblets as shown on the plan; they are not exactly symmetrical, so mark their upper edges.
2) Lay down and pin flat 3/8in. x 1.3/8in. sheet onto the plan for ailerons and sub-elevator.
3) Glue and pin vertically the riblets, making sure that they are the correct way up.
4) When dry, glue the trailing edge pieces along the line of riblets. Pin and set aside to dry.
5) Remove from the building board, make up and fit the control horns, and then fit the capping strips as shown on the plan.
6) Using a razor plane, shape the leading edges of the ailerons and the leading edge of the sub-elevator. Note that the hinging lines are near the top for the ailerons, in the centre for the flap.

Tail Surfaces

These are made up from 1/4in. balsa and are quite straightforward. If you've reached this far and have enough sanity left to read, you need no help from me.
1) Build the tail surfaces according to the plan.
2) Make up and fit the control horns.
3) Splice the tail fin and tailplane together, but do not glue until after covering.

Tail Blooms

I used 15mm x 11mm plastic conduit from my local electrical supplier. Although quite flexible, it seems very adequate for the job. Also shown is an option for stiffening wires if you deem it necessary. You could use aluminium tubes, for example helicopter tailbooms, or even carbon fibre tubes, depending on your pocket.
1) Cut the two booms to the length shown on the plan plus 1/4in. to allow for the key into the vertical spar webbing.
2) Carefully mark the false trailing edge of the wing using the end of the conduit as a template, and cut out with a scalpel.
3) Trim the ends of the booms as shown, push them through the holes cut until they mark the webbing.
4) Cut the webbing to accept the booms, insert the booms and check for squareness.
5) When satisfied, epoxy the booms into place.
6) Mark up the tailplane to fit the booms, drill, and fit sleeves for fixing screws.

Covering and Finishing

We used Solarfilm, but whatever you use, remember its a radical model, so the covering design should also be radical!

The Wild Thing flies very adequately on a 0.40 two stroke, and will need no more power. You will note a small amount of sidethrust is built into the engine mount.

After bending into a double right angle shape, the undercarriage leg is held in place with conventional saddle clamps on the prototypes, but could be 'stitched' on if desired.

The closed loop controls to the rudder and elevator are quite straightforward, the servo arm driving the lower elevator horn is the one used to drive the flap. We used approx. 1/2in throw to the sub-elevator, but by all means experiment!

The throws for the ailerons are differential in order to maintain axial rolls. This differential effect can be obtained mechanically or electronically, if your electronics are up to it.

Mechanical differential can be achieved by driving the surface with the servo arm nearly pointing towards the surface. The aileron movement in either direction will then be different, and differential will result.

Control Throws as used on the prototype are:

Ailerons – 40mm Up, 15mm Down
Elevator – 20mm Up, 20mm Down
Flap – 10mm Up, 10m Down
Rudder – 40mm Left, 40mm Right

Flying

Prepare yourself and your model for all eventualities – you're in for an experience.

After the usual thorough checkout, align the model into wind and open up. You can hand-launch by holding the undercarriage leg, but she goes off the ground quite well. There can be a tendency to drop a wing due to the single wheel during the ground roll, avoid the temptation to overcorrect. Rotate firmly and smoothly and climb to a safe height, remember that the roll rate is going to be high.

After trimming for reasonable straight and level flight, try a loop. You will find that full elevator loops are tiny and very fast while less than full elevator will open them up nicely. The roll is very quick and quickens with more aileron deflection almost ad infinitum. The stall is a total non-event, with the nose up at an alarming angle, either erect or inverted, the Wild Thing just mushes. Violent control movements slow the model appreciably, but the handling at low speed is so benign we found that the model became an absolute pussycat.

Landings are best flown with power. You will soon gain confidence, and find that you can accurately predict the approach and flare to a nicety. With the huge draggy wing, and the wire tailskids, the ground roll on landing in a light wind is less than a metre – or perhaps you can do better?

Have FUN.