



P-51 MUSTANG SLOPE SOARER

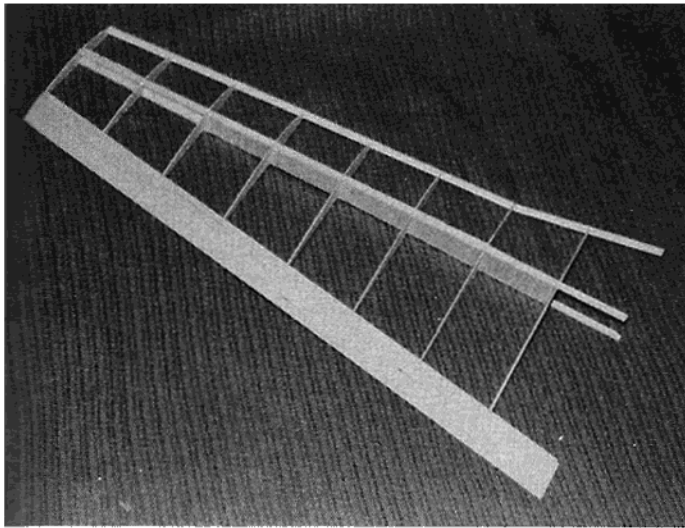
This model was inspired by the increasing popularity of scale jet and piston engined slope soarers featured in European model magazines, and by the author's recent discovery of a Torrey Pines-type soaring site right here in southern Ontario!

After much looking and thought about which design I wanted to do, the Mustang was chosen for a number of reasons. Not the least of which was the fact that the P-51 is probably the best known fighter plane of World War II.

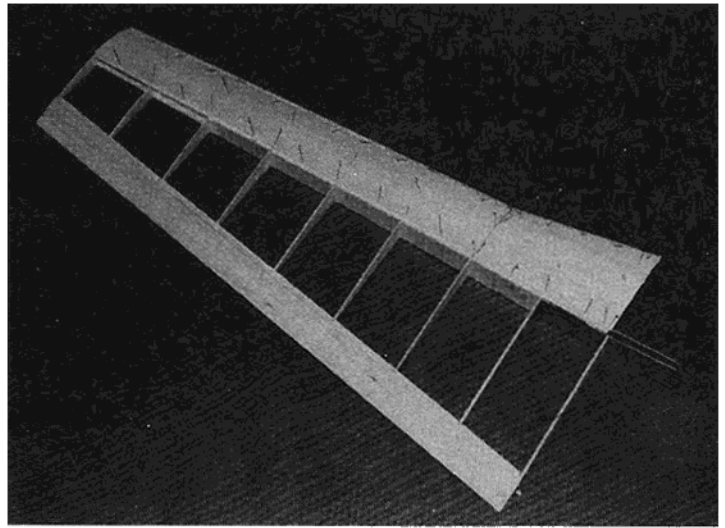
It also lends itself very well to modeling, and to slope soaring in particular. Unlike many of the modern jet fighters, the Mustang's wingspan is actually longer than the fuselage, so the modeler doesn't have to "cheat" on the scale proportions by extending the length of the wings. Also, the moment arms of the P-51 are pretty good, with a long nose to hold most of the radio gear (no engine or fuel tank, remember?), while the tail moment is better than that of many jet planes. These often have more fuselage ahead of the wing than behind it! Finally, the Mustang's color schemes, especially if the builder opts for the dazzling paint job of a post-war racing version, are more varied than those of other WW II fighters. The



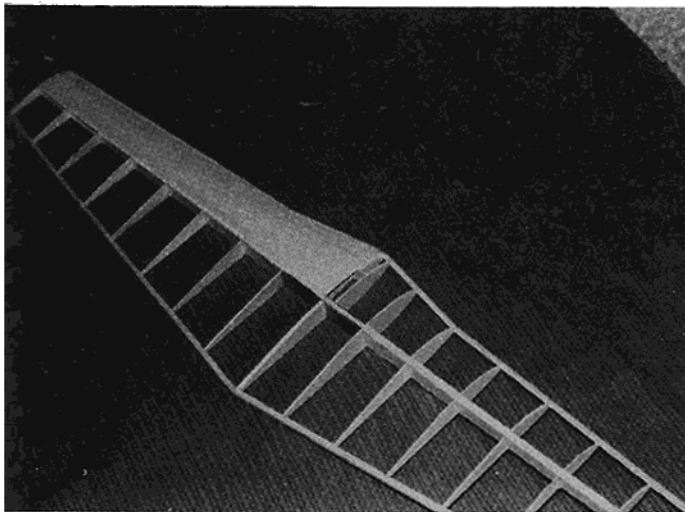
By Mike Hollison



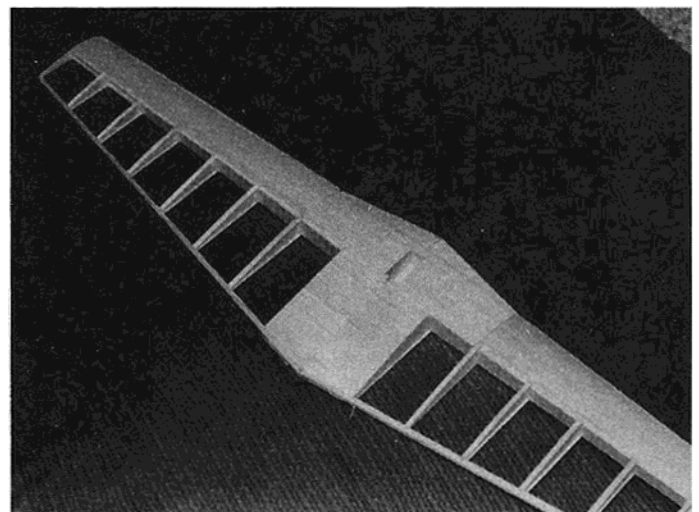
Left wing panel structure with shear web glued in place.



Left wing with dihedral braces in place and leading edge skin pinned in place.



Left and right wing panels joined. Ailerons have been cut off from T.E. stock.

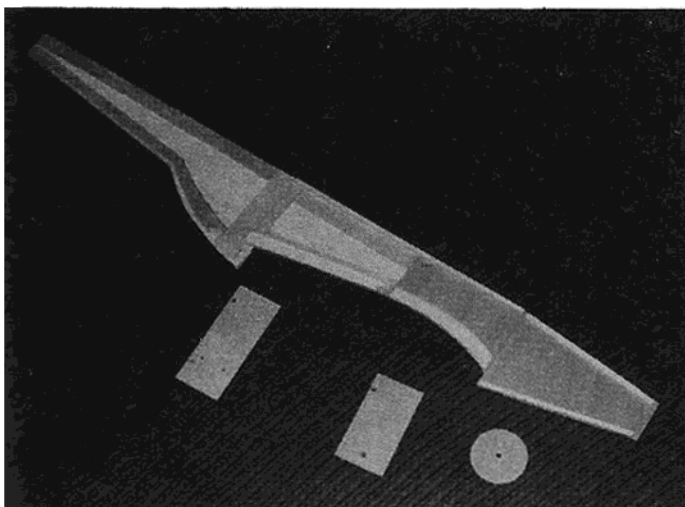


Wing structure ready for assembly of ailerons and servo.

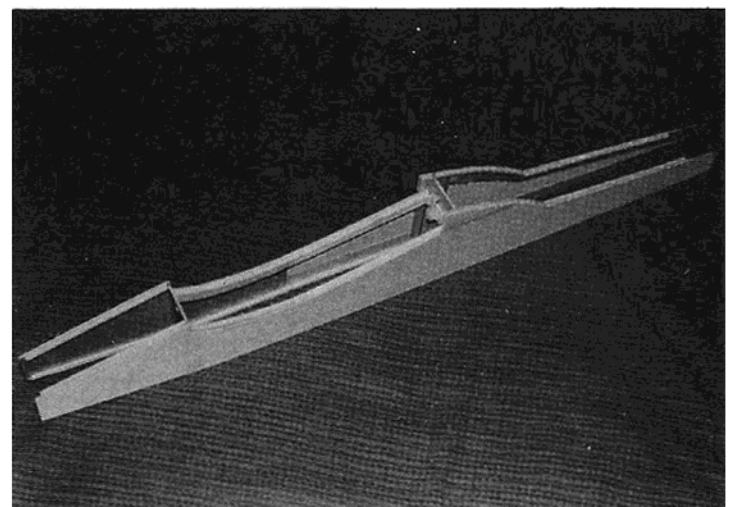
latter usually employed a conventional camouflage pattern. And while this difference hardly matters for a power model which is

usually seen from below, a slope soarer will often disappear below the horizon when flown from a hilltop. Unfortunately, a brown and green

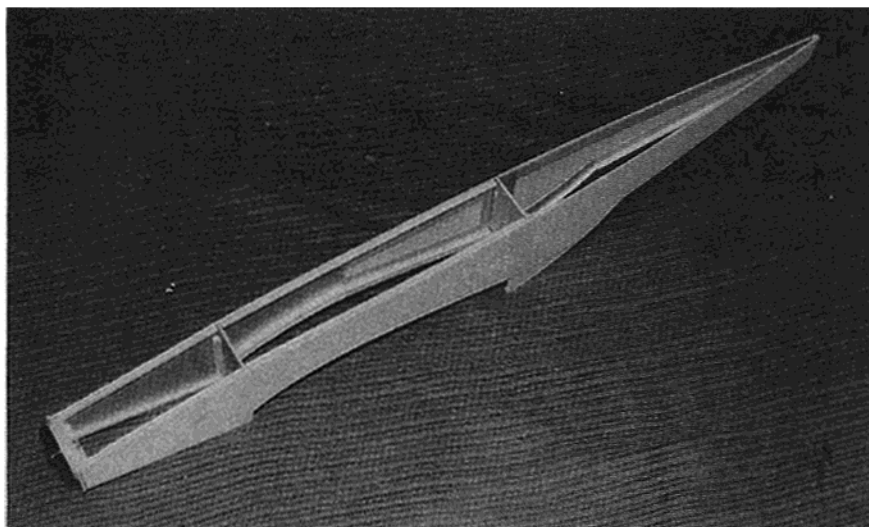
color scheme can blend all too nicely with the fields and tree tops of the valley below making visibility of the model somewhat difficult!



Fuselage left side with 1/32 ply doublers, corner stringers and wing saddle glued in place.



Sides aligned and glued to formers F3 and F4. Du-Bro nylon wing bolt bracket can be seen on forward face of F4.



Top view of fuselage with F1 nose ring, F2 former, and tail post glued in place.

The model features a 50" wingspan, and should present no difficulties to anyone who has built at least one sailplane or powered aircraft previously.

CONSTRUCTION

Wing:

Begin by cutting all the wing ribs as shown on the plan.

(1) Cut the 1/4" square spruce leading edge to length and epoxy at the correct sweep angle between ribs W1 and W3. Cut the 1 1/2" x 3/8" tapered trailing edge stock to length, and notch for the wing ribs. Place both leading edge and trailing edge over the plan.

(2) Cut the 1/4" x 1/8" spruce lower wing spar to the correct length and lay over the plan as shown. Glue ribs W2 and W9 in place, making sure to slide a piece of 1/4" scrap balsa under the wing tip trailing edge to provide the necessary washout. Add ribs W3 to W8.

(3) Next, glue the top wing spar in place and add the 1/16" balsa shear webs between each rib with the grain running vertically. Notice that the webbing between ribs W7, W8, and W9 is cemented to the front of the spars only.

(4) Cut two dihedral braces W10 from 1/16" ply and epoxy in place. Glue the rear portion of rib W1 between the brace and the trailing edge and add rib W1A as shown. Use the template included in the plan to set W1 at the correct dihedral angle.

(5) Sheet the top leading edge with 1/16" balsa.

(6) Next, cut the 1/4" aileron from the trailing edge stock, and slot the remaining 1/4" trailing edge strip for the aileron and control horn hinges as indicated.

Repeat steps 1 to 3 for the other wing panel. Join the two halves and repeat steps 5 and 6.

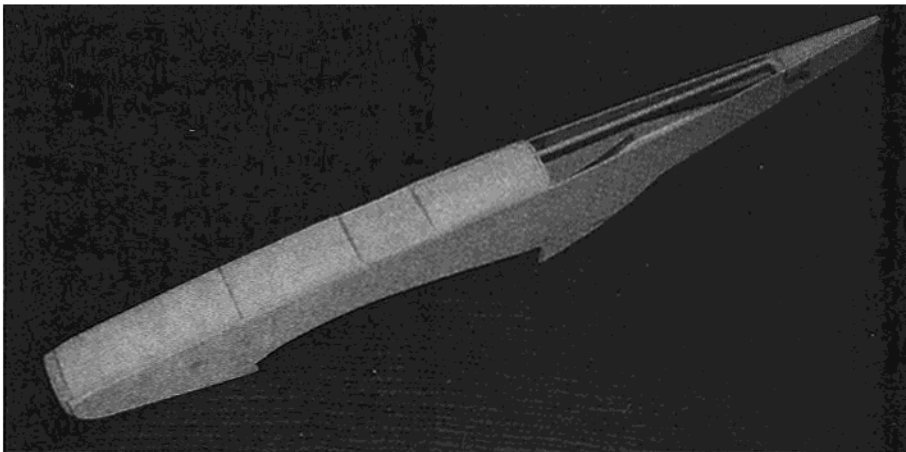
(7) Now sheet the top center section between W1 and W2 aft of the main spar with 1/16" balsa; install the strip aileron linkage, and cut out a hole in the forward center section for the aileron servo.

(8) Turn the wing over and add the forward portion of W1 and, using pieces of scrap 1/16" balsa, make a box to house the aileron servo.

(9) Add the bottom center section sheeting as shown.

(10) Slot the aileron hinges. Cut off the fixed center section portions of the ailerons and glue these to the wing over the control horn assembly. Make sure no glue sticks to the aileron horns. Epoxy the hinges into the wing, then install the ailerons.

(11) Cement the 1/16" balsa capstrips to ribs W3 to W8, top and bottom. Add the carved balsa wing tips, and fiberglass the wing center section top and bottom with 3" wide tape. Epoxy the 3/16" locating dowel to the front of the wing, drill a hole for the wing retaining bolt at the rear, and epoxy a square of 1/16" ply to the bottom of the center section trailing



Blocks for hatch and forward turtledeck glued in place and sanded to shape. Elevator NyRod in place. Fuse is ready for rear turtledeck sheeting.

P-51 MUSTANG

Designed By:

Mike Hollison

TYPE AIRCRAFT

Stand-Off Scale

Slope Soarer

WINGSPAN

50 Inches

WING CHORD

Root 12", Tip 6 1/4"

TOTAL WING AREA

400 Sq. In.

AIRFOIL

Semi-Symmetrical

WING PLANFORM

Double Taper

DIHEDRAL EACH TIP

1 1/2 Inches

O.A. FUSELAGE LENGTH

40 Inches

RADIO COMPARTMENT SIZE

(L) 6 1/2" x (W) 2" x (H) 3"

STABILIZER SPAN

15 Inches

STABILIZER CHORD (incl. elev.)

4 1/4 Inches (Avg.)

STABILIZER AREA

60 Sq. In.

STAB. AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top of Fuselage

VERTICAL FIN HEIGHT

7 1/4 Inches

VERTICAL FIN WIDTH (incl. rud.)

5 Inches (Avg.)

REC. ENGINE SIZE

NA

FUEL TANK SIZE

NA

LANDING GEAR

NA

REC. NO. OF CHANNELS

2

CONTROL FUNCTIONS

Elev. and Ail.

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage Balsa & Ply

Wing Balsa & Spruce

Empennage Balsa

Wt. Ready To Fly 32 Oz.

Wing Loading 11.5 Oz./Sq. Ft.



Finished — ready for launch.

edge as shown. This completes the basic wing structure.

Fuselage:

(1) Cut the fuselage sides from 1/16" balsa and glue the 1/32" ply doublers in place. Add a second 1/32" doubler between F2 and F3.

(2) Cut all formers from the appropriate sizes of ply and balsa as indicated on the plan, and drill where necessary for pushrods, alignment dowel, etc. Bolt the Du-Bro wing mounting bracket to the 1/8" ply extension plate on F4.

(3) Glue the 3/16" balsa stringers and wing saddles to the inside of each fuselage half.

(4) Epoxy F3 and F4 to one side, then add the second side. Glue F2 and the tailpost in place.

(5) Cement the 1/4" triangular stock immediately in front of F3 and behind F4. Epoxy F1 to F2 and bolt the rear spinner plate in place. Add the 1/4" balsa nose fillets immediately behind F2.

(6) Cement the 3/4" balsa top decking between F3 and F4, place a similar block between F2 and F3 to serve as the removable nose hatch, and glue a 1/2" block of balsa to the underside of the fuselage between F1 and F3. Carve and sand the blocks to shape.

(7) Install the elevator pushrod.

(8) Glue the 3/16" balsa stabilizer platform in place, remembering to leave a 3/8" gap for the elevator ply joiner.

(9) Notch formers F5 and F6 for the 3/16" square balsa spine and glue in position. Add the fuselage spine and cover with 1/16" sheet balsa.

(10) Sheet the fuselage bottom with 1/16" balsa and build a ballast box from scrap 3/16" balsa. Cement this in place as suggested on the plan immediately ahead of the C.G. This completes the basic fuselage structure.

(11) Temporarily bolt the wing in place and, using scrap balsa, build up the center section of the wing immediately behind F3. Similarly construct the air scoop from 1/4" balsa and epoxy to the underside of the wing. Sheet the bottom of the scoop with 1/16" ply, after drilling a hole for the wing retaining bolt.

(12) Cut the pilot headrest from 3/16" balsa and glue in place. Paint the cockpit interior black, and add a Williams Brothers' pilot, suitably decorated. Cut the Sig 9" P-51 canopy to fit, and epoxy it to the fuselage.

(13) The nose hatch is secured by dressmaker's snap fasteners as shown. All that remains to be done now is to

cut the stabilizer, elevator, and rudder from 1/4" soft balsa. Join the elevator halves and hinge them to the stabilizer. Align the stabilizer and rudder and glue them to the fuselage. Install the elevator horn.

Your Mustang is now ready for covering.

The author's model sports a silver gray MonoKote finish, with a black stripe on the nose, a black spinner with the propeller holes MonoKoted over. A bright red tail and wing tips improve visibility.

Add the 1/4" balsa dummy exhaust stacks, install a radio, balance as per plan, and you're ready for the slope.

Flying:

The P-51 is not a floater, so pick a good slope and a fairly strong breeze for that first flight. The author's first attempts were made without ballast, and the model danced around quite a bit. The third flight, however, took place at a different site. This time, with ballast installed, the Mustang promptly hitched a ride on a passing thermal until it became a speck in the sky. A fair amount of looping and rolling was needed to bring it down after a ten minute flight, and the final approach was made downwind at approximately 30 kilometers per hour! Have fun, gentlemen. □