

CARACARA

From the deserts of the Southwestern United States comes this 126" span sailplane that can hold its own in competition circles or provide the ultimate in performance for the sport soaring enthusiast.

BY LEONARD OAKLEY

The national bird of Mexico is the very striking, black and white, eagle-like Caracara. This is the same bird pictured in the Mexican coat of arms standing on a cactus devouring a snake. With my own competitive model building and flying, originating in the Southwestern desert, where these beautiful predatory birds can be found, the symbolism in the name for this very successful sailplane is obvious.

This Caracara is the sixth in a series of models built during the last three flying seasons with minor revisions tried on each. Number one in the series was a

120" design which won six club contests and placed 2nd or 3rd in six others. In three seasons it has never placed lower than fifth. Models two through five were experiments in an attempt to improve upon the original. These included a 14',

ABOUT THE AUTHOR

Leonard Oakley is a Biology teacher at Chugiak High School in Chugiak, Alaska. He is 39 years old and has been involved in modeling for over 30 years. A charter member of SWAT (Southwest AeroTeam) Free Flight Club, Leonard has, in the past 3 years, devoted much of his free time to R/C soaring. In fact, he is currently working on LSF Level Three, but finds accumulating four more 10 Contestant contests somewhat difficult, living in a remote area of Alaska.

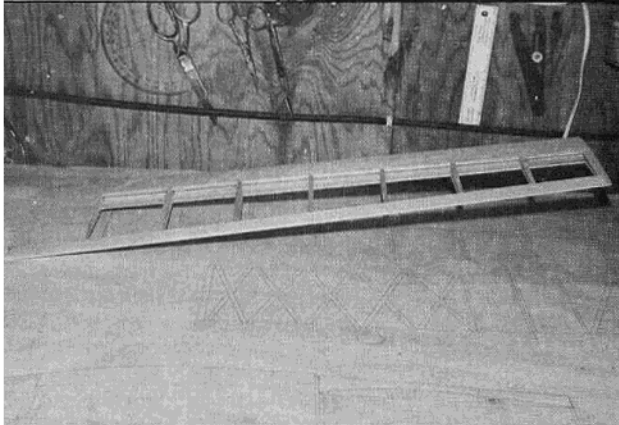
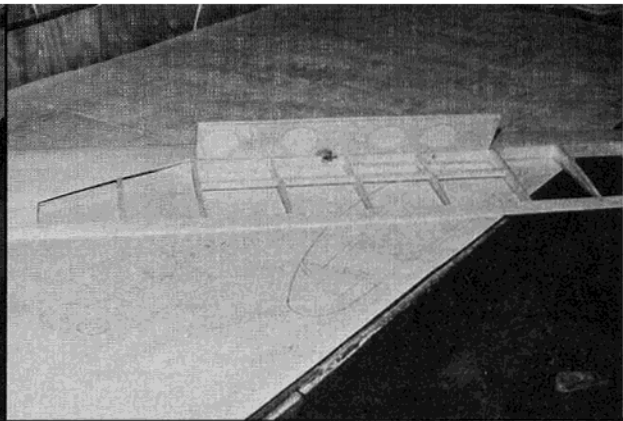
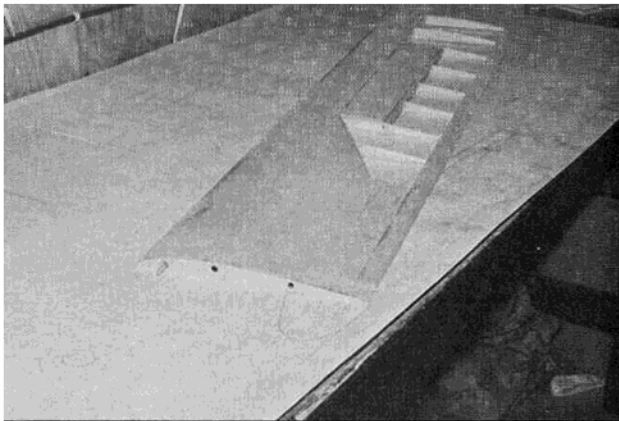
1500 square inch behemoth; a 10', 1100 square inch job with lower aspect ratio (12.8:1); a 100" Standard Class without polyhedral; and a 72" straight dihedral slope soarer.

Model number six is the easiest hand-

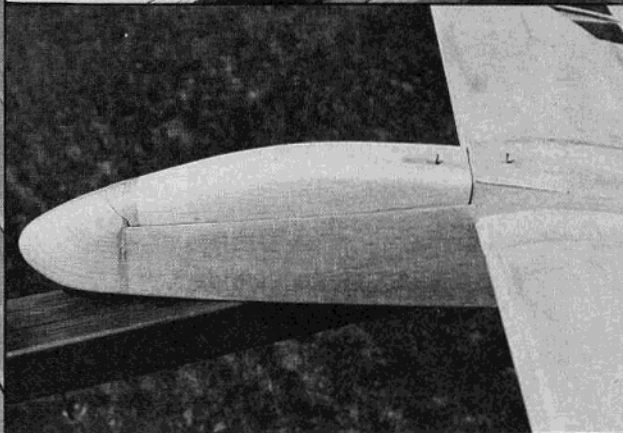
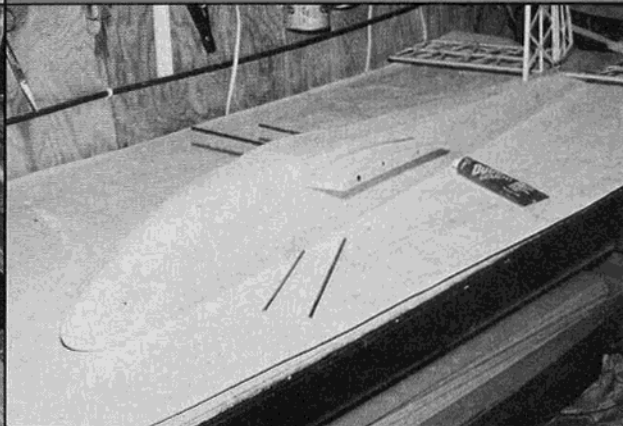
ing and best flying design of the series. In my opinion, the main factors contributing to the success of this design are: (1) the relatively low wing loading (6.3 oz./sq. ft.) for minimum sink, (2) the short tail moment arm for smooth, tight, flat turns, and (3) the thin 7.5% flat-bottomed airfoil for good penetration. The design has consistently outperformed well-known kit models flown by good, experienced pilots. Perhaps its best feature is its ability to thermal hands-off in very light air when others won't. Under these conditions, every control surface movement tends to decrease efficiency and increase sink. This model's ability to turn into, and maintain, tight free flight-like circles in thermals make it unnecessary to send it continuous duration killing signals. Hi-start launches are easy because the model climbs straight and true and consistently gets as high as any design on the field. A controllable towhook would probably be a desirable addition, as obvious thermals are sometimes missed by not getting off the line soon enough.

LEFT: Jane Oakley with a 14', 1500 sq. in. version of the Caracara taken on Fourth of July Lake, north of Anchorage Alaska. The mountains are the Chugach Range. BELOW: The version of the Caracara described in this article.

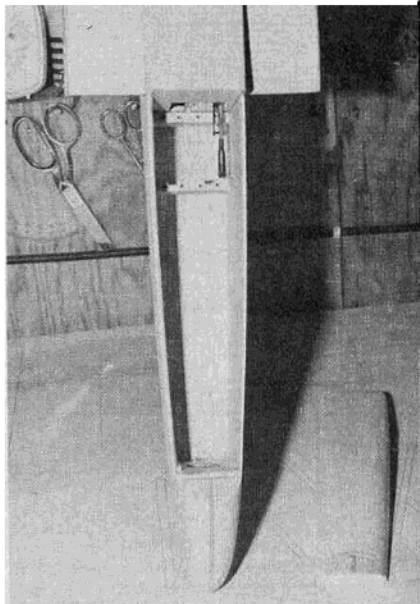




LEFT, ABOVE: Right main wing panel showing spoiler pushrod end, tongue tubes, and spoiler. **ABOVE:** Right main wing panel with spoiler full deflected. **LEFT:** Right wing tip. **BELOW:** Fuselage showing left wing tongue removed from tubes and carved pine noseblock.



ABOVE: Fuselage nose section with canopy and servo hatch in place and wings mounted. **LEFT:** Fully assembled model ready for covering.



Fuselage nose section with canopy removed showing servo rails.

Construction, except for a few innovations, is straight-forward and should present no problems for the experienced builder. The main structural considerations are strength and weight. A little extra time spent in proper wood selection and in making sure components are built accurately, will pay dividends at the flying field. The four removable wire wing tongues provide secure wing connection and support, as well as safe transportation and storage.

The large spoilers are quite effective, providing insurance against killer thermals and aiding in spot landing descent control. With a little practice, a good flyer can use these spoilers to hit the spot consistently. It is much easier to set up a spot landing approach too high and be able to kill altitude without picking up excess speed by using the spoilers than to come in too high and dive disastrously at the spot. The only alternative to diving at the spot is to approach from a lower altitude and try to nurse it along and take the chance of landing short.

I would be most interested in how your Caracara performs. Please send any

CARACARA

Designed By: Leonard L. Oakley

TYPE AIRCRAFT

RC Sailplane

WINGSPAN

126 Inches

WING CHORD

8" Center Panels

WING ASPECT RATIO

16.58:1

TOTAL WING AREA

960 Square Inches

WING LOCATION

Shoulder Wing

AIRFOIL

Flat Bottom

WING PLANFORM

Tapered Tip Panels

POLYHEDRAL

2½" Center - 6" Tip

O.A. FUSELAGE LENGTH

42½ Inches

RADIO COMPARTMENT AREA

(L) 9" X (W) 2" X (H) 3"

STABILIZER SPAN

24 Inches

STABILIZER CHORD (incl. elev.)

7 Inches

STABILIZER AREA

162 Inches

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top of Fuselage

VERTICAL FIN HEIGHT

8¼ Inches

VERTICAL FIN WIDTH (incl. rudder)

9½ Inches

REC. NO. OF CHANNELS

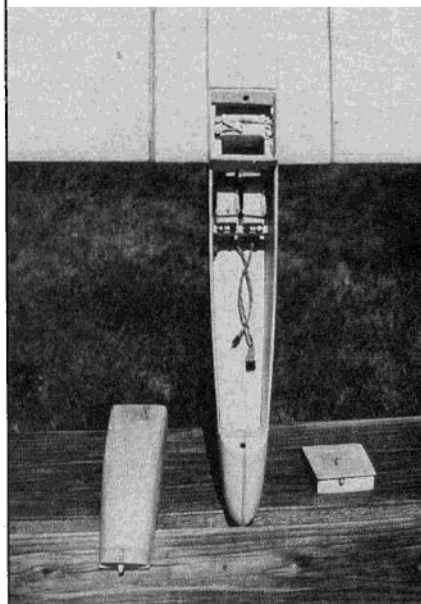
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CONTROL FUNCTIONS

Rudder, Elevator & Spoilers

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	.....	Balsa, Pine & Ply
Wing	.....	Balsa, Spruce & Ply
Empennage	.....	Balsa
Wt. Ready-To-Fly	.....	42 Oz.
Wing Loading	.....	6.3 Oz/Sq. Ft.



Fuselage nose section with canopy and spoiler servo hatch removed with servos in place.

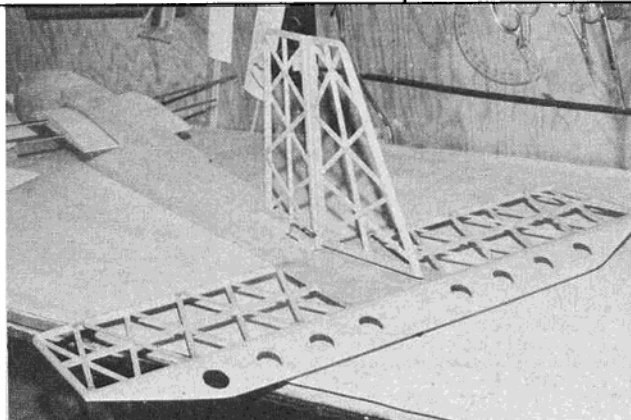
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CONSTRUCTION

The materials used in building the Caracara were balsa, plywood, spruce, and pine. Conservative amounts of good quality cement and five minute epoxy were used on the original; but for speed, the cyanoacrylates could be employed. If you are like me, you will begin by building the component you enjoy least. I usually build the wings and tail first, leaving the more pleasurable fuselage for last. However, it makes little difference where you begin. Just follow the plans and enjoy yourself. Only those items not specifically detailed on the plans will be explained in the text.

Wing: Begin construction by accurately cutting two root rib templates and one tip rib template from 1/16" plywood. These are used to stack-carve all balsa ribs. Cut twelve 5/8" by 8" rib blanks from 1/8" medium density sheet balsa for ribs R-1 and R-2 and eighteen similar sized 1/16" sheet blanks for ribs R-3. Use long T-pins to sandwich R-1 and R-2 blanks between the root rib templates. Carve away excess balsa and sand smooth. Remove the ribs and add notches and holes as required. The ribs for the tip panels must be stack-carved one set at a time. Use one root rib template and one tip rib template with eight 1/16" sheet balsa blanks in-between. Carve, sand, and notch appropriately for the left tip panel and then repeat the operation for the right tip panel.

The short root panels are build first. It is important to very carefully locate the wing tongue tubes, as final wing alignment depends upon accurate placement of these tubes. Block up under the tubes as shown and use plenty of epoxy.



Empennage showing lightweight, warp-proof construction.

The dihedral braces DB-1 and DB-2 are epoxied into place next. Do not add the top sheeting until the otherwise completed root section is glued to the fuselage so that the spoiler servo and 1/4" I.D. aluminum spoiler actuator ahead and use your favorite covering method.

FLYING

Balance the model as shown and hand glide to obtain a flat, slow glide. The original required no nose ballast due mainly to the light tail structure and short tail moment arm. Of course, this helps in keeping the wing loading down and in improving performance.

I hope the Caracara performs as well for you as it has for me. Good luck and many happy thermals. □

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