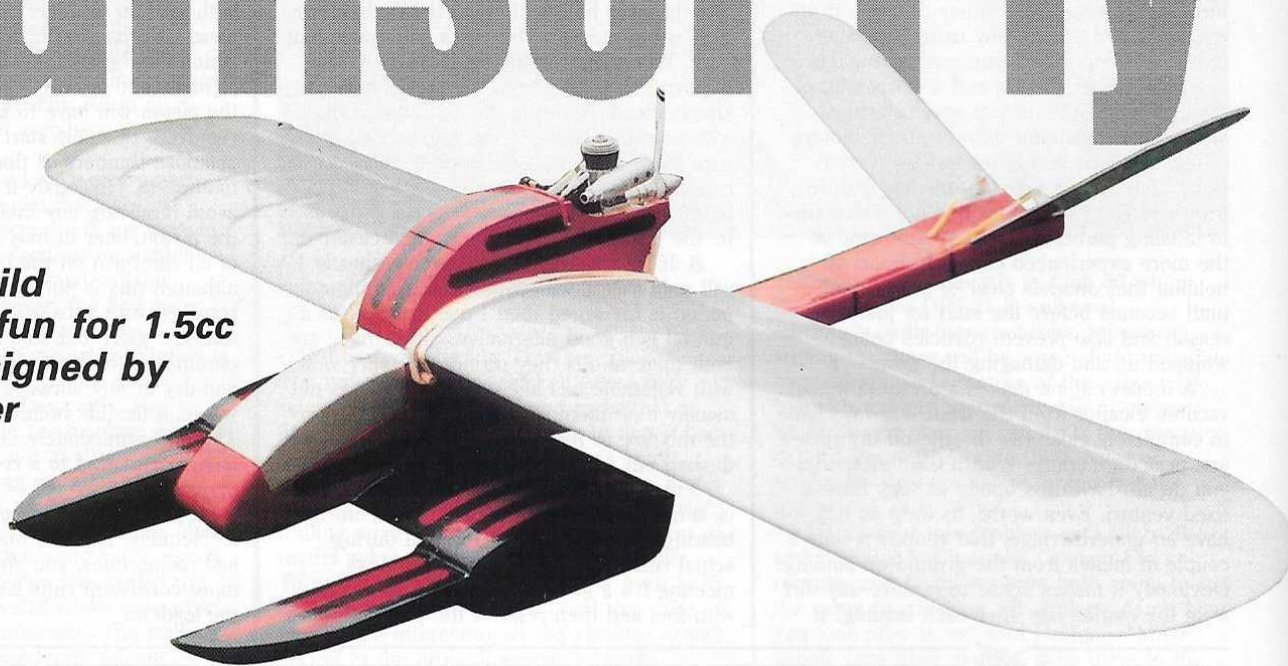


# Damsel Fly

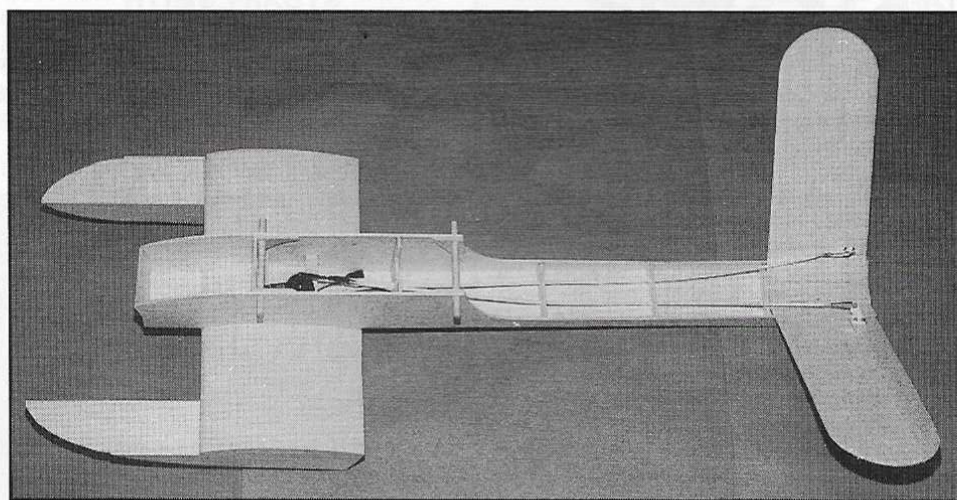
**Easy to build  
floatplane fun for 1.5cc  
power, designed by  
John Rutter**



**D**amsel Fly is the result of a desire to have a 'second model' for last year's Kielder event. I wanted something that would stooge around with little fuss, be mildly aerobatic and 'different'. My usual highly loaded aircraft are not the easiest things to fly off water so I opted for light weight and loads of wing area for the power (1-1.5cc) I had in mind. The model certainly looks different with the twin sponsons (for stability on the water) and vee tail (I hadn't built one for years) but I was a bit dubious of this latter feature as it precludes water steering. As it turned out I needn't have worried about the latter; more on this later. The resulting model presented here is all that I wanted – quite stable and easy to fly and with a much better glide than my models usually have, despite a high drag configuration. I hope you like it.

## Let's start

I started with the tail, it was the easiest bit! The halves are simply cut from light



1/8in sheet and sanded to an aerofoil(ish) section before the elevators are cut off. I blocked the whole thing up to give 120° dihedral before adding the triangular reinforcement. Try to keep this lot light though as the short nose and rear mounted engine will mean a lot of lead in the front to compensate otherwise.

I did the sponsons next as I wanted to see what they looked like. The stub wing is straightforward enough; build it on the bottom sheet and cover it with the top sheet. I used balsa cement for this bit as its sets fairly rapidly, is water proof but gives time to move things around. I used cyano for almost everything else. The floats themselves proved a little awkward to do as drawn on

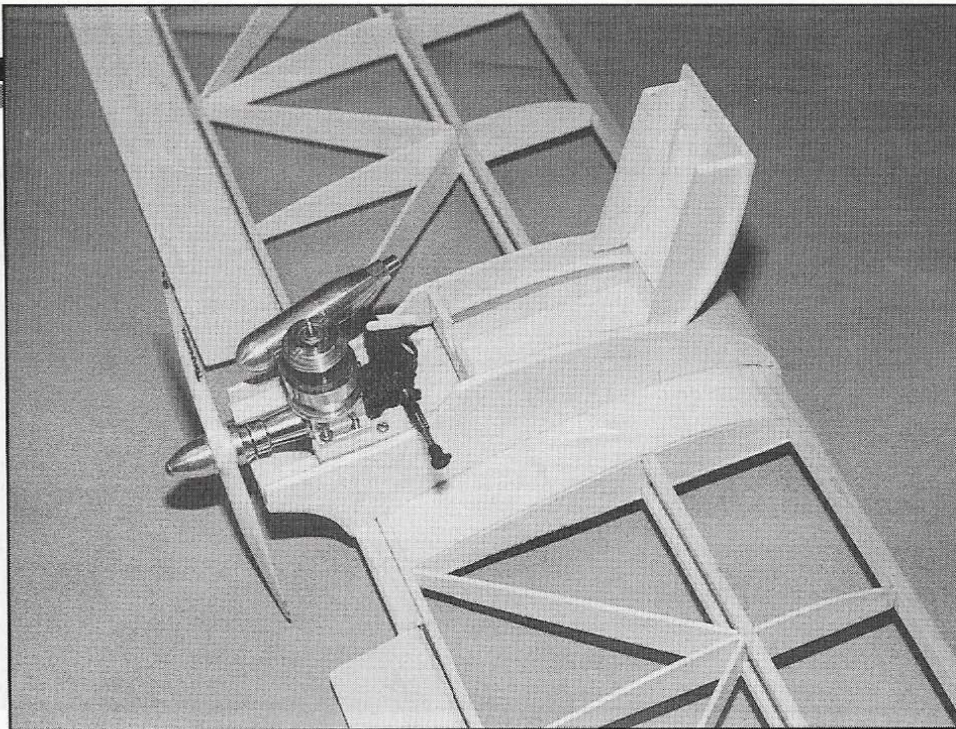
*Fuselage just prior to adding top decking; note twin elevator snakes.*

the plan as there is very considerable twisting of the undersurface sheeting towards the front. This 'veeing' was intended to give cleaner running through choppy water but resulted in very little buoyancy forward.

Unless you are very taken with the shape drawn I would recommend leaving the floats rectangular in section like pontoons. This should stop the model trying to 'crash dive' on opening the throttle! I built the floats inverted on the top sheet shape but didn't finish sheeting the front end until the rest of

**YOUR  
FULL-SIZE  
Waterplane!**





Motor mount and tank bay with hatch in the open position; a PAW 149 later replaced the Cox Queen Bee shown here.

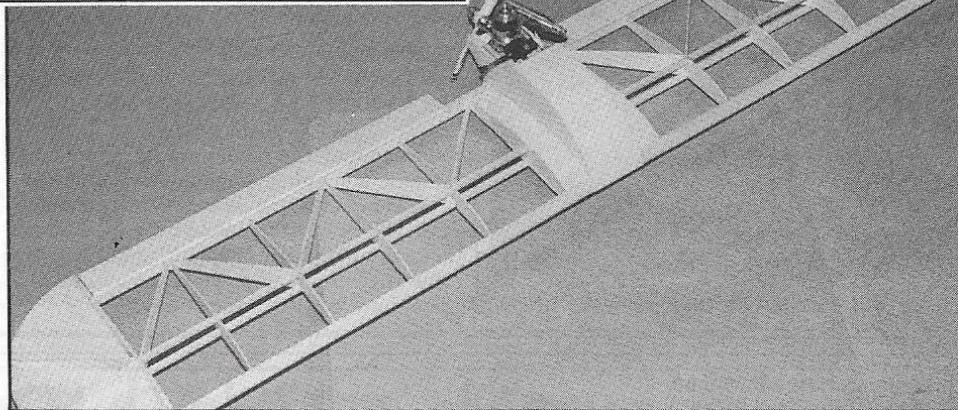
as they add considerably to torsional rigidity. Tissue and dope models didn't have this problem...

I made the engine pod wide enough (just) to allow for the motor to be fitted to a removeable plate; this is because I was unsure just what size of motor I would end up fitting. Once made up the pod is glued to the wing. The aileron and throttle servos are

the model was covered. This gave me somewhere to put sheet lead that was as far as possible in front of the balance point. I needed about 2oz in each float in the end. So much for light weight! The floats are simply glued to the bottom of the stub wing.

### Fuselage

The fuselage should cause no sleepless nights, the construction is very simple and box-like. Two odd bits spring to mind though. The elevator is simply that, I made no attempt to incorporate 'ruddervator' mixing. I decided that the simplest way to do this was to use a thin, yellow SLEC snake to each surface. The inners of these snakes are bound together with a wire pushrod just under the wing so the surfaces move together. This is unusual but easy to do; it does mean having to glue the tail in place and set up the elevator servo before putting the top sheeting on though. The other oddity was the hatch for Rx access. After mulling over several ideas in my mind I finally settled on using a SLEC hatch catch. This takes up a bit of room but is very neat. The



### The wing

You will have noticed by now that I still haven't done the wing. That's because I can't stand cutting wing ribs! Most of the ribs are 1/16in but the two outboard ones and the two under the motor pod are 1/8in. I cut the ribs using the 'sandwich' method which is the easiest way usually. Don't worry about the 'geodetic' ones yet. Once more the

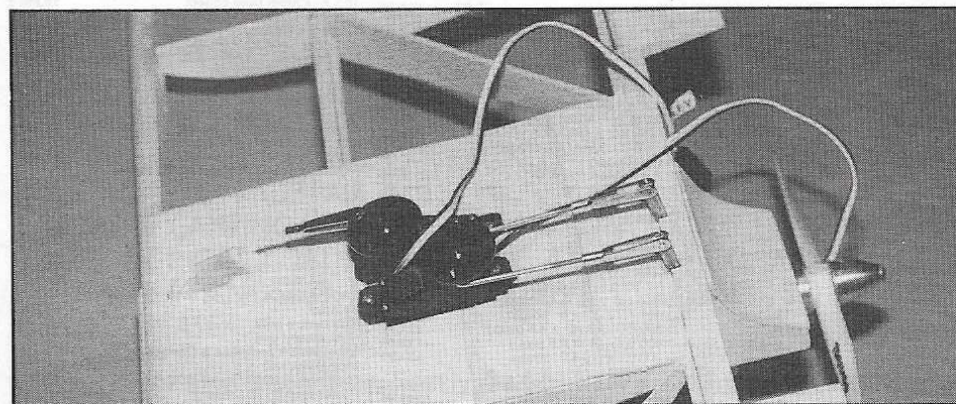
Wing construction is strong and simple.

fitted now. The throttle is interesting in that the snake points towards the front of the wing not the back! This is simply to give room for the remarkably flexible and free moving SLEC snake to bend back on itself to line up with the throttle. It has proven totally trouble-free so far. The aileron pushrods are very short lengths of threaded wire onto 14G piano wire torque rods. All hinging is done with mylar, by the way. I used a 1oz clunk tank originally but this will probably be replaced with a special metal version to make better use of the limited space and give a longer engine run. The tank hatch is held with thin elastic bands over small screws or pins; it is cut in such a way that the front hooks under the fixed sheeting.

### Finishing and power

Give the whole model a coat of Clearcote to help proof it against water/diesel fuel. Without this Solarfilm will wrinkle or even peel off after a short time in the water. (Maybe the water can get to the back of the film after a 'splash landing', the glue seems to be water based.) Once covered check the balance of the model. Add lead as needed to get the balance point shown then finish the bottom of the sponsons. I gave mine a layer of glass cloth as added insurance against punctures and finished this with Solarlac.

Originally the model was fitted with a Cox Queen Bee 0.74 (1cc) and with this was capable of only a very shallow climb at an AUW of 2lbs. It suited its name very well like this as a 'Damsel Fly' is defined in the



Aileron and throttle servos and their linkages.

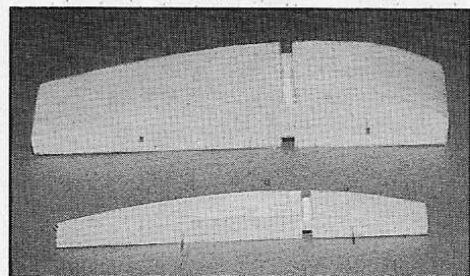
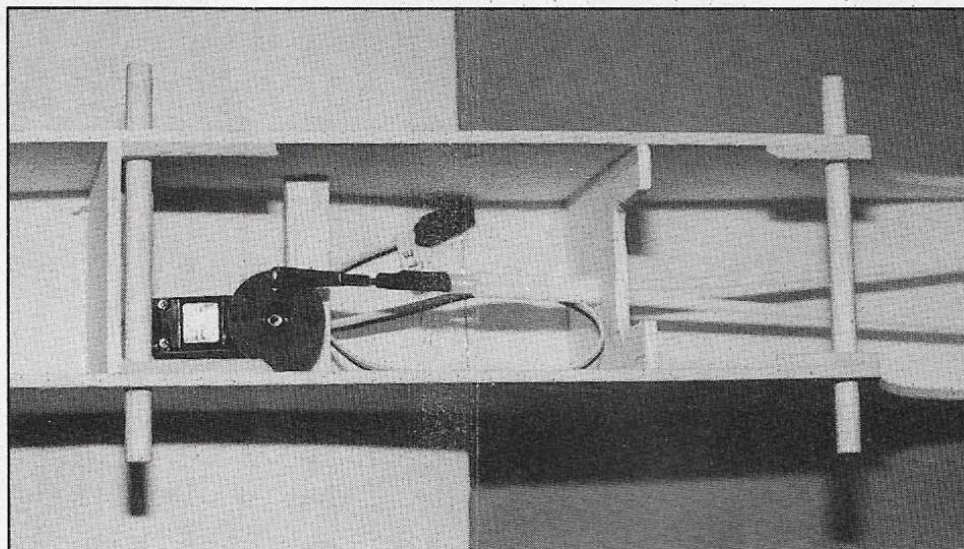
top of the fuselage, just under the wing, must be sheeted to give adequate sealing area for the silicone sealant used to keep everything waterproof. Essential that bit if you use the model from water. The sponson assembly is simply glued in place using plenty of glue around the join to ensure a perfect seal.

construction is very straightforward, all spars are full length and there is no dihedral. Just put a sheet of plastic over the plan and build directly over that. I added the centre section sheeting after everything else was done, underside last of all so that I could fit the throttle snake. Those 'geodetic' ribs can be simple triangular shapes to fit as shown - they don't have to be rib shaped. Don't miss them out though if you are covering in film



Close-up of the snake/servo connection.

nature book I've got as "a weak flying member of the Dragonfly family"! Damsel flies are prettier than Dragonflies though. A PAW 1.49cc diesel was fitted and made the model much more fun. The engine run was no shorter but there was much more power. I used a Graupner 7 x 4in prop for this motor (the Cox will quite happily run backwards and doesn't need a pusher prop!) which is a bit fine in pitch but the motor is happy with it. All launches so far have been hand launches and landings have been on grass. Unfortunately the Kielder event was cursed by foul weather so at the time of writing (Nov. '91) the model has yet to perform from water. As mentioned previously



Wing and sponson rib 'sandwiches'.

I doubt that it will take off from water due to the lack of buoyancy at the front of the floats but it should have no difficulty landing. Touch and goes might produce an instant bunt though! The model can be aerobatted in quite a sprightly fashion considering the limited power available but with the rates switched in is stable enough for my 6 year old son to fly successfully. It certainly looks different but not all comments from fellow fliers have been complimentary!

## Final points

Just a couple of final points. I took the Rx. aerial lead out of the side of the fuselage and to a wing tip. It might be better to incorporate a tube in the fuselage during construction. On reading through the article it sounds as if I am sponsored by SLEC. I'm not but it's nice that a British manufacturer can produce the goods and cheap with it.

