

Judging of JRA Dinghy Competition - August 2021

I have been given the honour of being one of the JRA members appointed to judge this excellent competition. I have found it a fascinating exercise and have learnt a lot about the various shapes of hulls that exist for dinghies in the length range of 2.2m to 2.9m (7' 3" to 9' 6").

There were an impressive ten entries, all of which can be viewed on the JRA website. In the order in which they are presented these are:

1. "Halibut" by Arne Kverneland
2. "Tender to Sibling" by David Tyler
3. "AD" by David Webb
4. "Boxer" by John Pennefather
5. "DD" by David Webb
6. "General purpose pram dinghy" by John Perry
7. "Kiss" by Slieve McGalliard and his grandsons
8. "Oyster" by Mike Howard
9. "Webb 8" by David Webb
10. "Youyou" by Alex Quertenmont

The design brief for the competition is shown on Page 57 of Issue 85 (February 2021) of the JRA magazine.

Two of the key requirements in the brief were that the hull material should be plywood and that the length of the dinghy must be no longer than that which could be obtained from a standard 8' x 4' plywood sheet. All of the contestants complied with this, one of them ("DD") cleverly coming up with the idea of cutting a sheet of ply along the nine-foot diagonal thereby producing a longer boat. Others produced ingenious cutting diagrams that allowed an entire dinghy to be built from just two sheets of ply.

The shapes of the hulls varied enormously and I learnt how the word "plank" is commonly used to describe "hull shape" (e.g. "3-plank" means a hull with a flat bottom and two inclined sides. "4-plank" means a hull with two bottom pieces inclined at a shallow angle and two near-vertical sides). Near to where I live there are hundreds of dinghies upturned on the foreshore. I have found myself studying these with renewed interest.

The overall dinghy lengths (LOA), waterline lengths (LWL), beam (B) and other key dimensions were not always given. Sometimes I had to scale a length off my computer screen (paper entries would have been much easier). From this I estimated what I felt was a "practical" maximum load (termed "PML") that each hull could sustain (one third of the theoretical maximum for dinghies with daggerboards (termed "DB"), and one half of the theoretical maximum for dinghies without daggerboards (no DB)). (I know what it is like to overload a dinghy to the point when water comes through the daggerboard slot!) Additionally, I calculated what I felt to be an indication of the "tippiness" - and thus stability - of each dinghy, this being the maximum vertical load (termed "GL") that can be applied at the gunwale before the dinghy capsizes. Finally, I estimated each dinghy's overall weight (termed "W") including the mast, yard, rudder and other gear necessary to produce a "sailing boat", not just a "yacht tender". I have rearranged the first list as follows:

Name	PML(kgs)	GL(kgs)	W(kgs)	LOA x B	Shape
1. <i>Oyster</i>	320 (no DB)	50	50	2.70m x 1.18m	W-shaped
2. <i>DD</i>	300 (DB)	65	50	2.87m x 1.50m	4-plank
3. <i>Boxer</i>	280 (no DB)	65	50	2.40m x 1.10m	Box-shaped (3-plank)
4. <i>Halibut</i>	250 (DB)	55	45	2.40m x 1.30m	5-plank
5. <i>AD</i>	250 (DB)	55	45	2.34m x 1.42m	3-plank
6. <i>GP Pram</i>	230 (DB)*	60*	55	2.37m x 1.22m	5-plank
7. <i>Sibling</i>	210 (2 DBs)	60	45	2.40m x 1.15m	3-plank
8. <i>Youyou</i>	160 (DB)	25	40	2.30m x 1.12m	3-plank
9. <i>Kiss</i>	140 (DB)	25	35	2.20m x 1.10m	3-plank
10. <i>Webb 8</i>	130 (DB)	25	45	2.74m x 1.22m	7-plank

* In *GP Pram's* case, I have allowed for the effect of the handholds/scuppers when calculating "PML" (it would be 270kgs otherwise) and ignored it when calculating "GL" (it would be 50 otherwise).

I must stress that the figures in the above table are my rough estimates only and based on limited information. But there is a good reason why I needed them: it is so that I can compare each entry not just with each other but also with my junk-rigged dinghy *Mo* (see JRA Magazine Issue 79 Pages 14 to 22). By doing this I can make a practical judgement on the junk rig sailing potential of each of the entries.

Rightly or wrongly, I regard this competition as something more than just a search for the easiest and cheapest-to-build plywood yacht tender that complies with the "basic design brief" (a dinghy that can be "rowed, sculled, used with an outboard, sailed with the ability to reef, transported on a car roof rack, able to have various free-standing mast positions and capable of carrying 2-3 people"). This has been done many times before in other dinghy competitions devised by non-junk-rig sailors.

I feel that the winning entry in this competition should comply not just with the "basic design brief" but also with what is said in the Competition's preamble, namely: "*Back in 2017, a few members proposed to the committee that the JRA supported a project to design a small dinghy that could be used with different types of junk rig.*"

I found on *Mo* that the previous 4.18 square metre lugsail (45 square feet) was inadequate in (1) winds of less than 9 knots when trying to sail upwind (rowing became necessary) or (2) winds in excess of 15 knots (when it could be hard to stay upright). The lugsail rig was changed to a five-panelled junk rig with a taller, 4.40m mast and maximum sail area of 5.70 square metres (61 square feet). On the plus side, the new rig enabled good sailing in most wind strengths whilst still preserving the ease of rowing. On the minus side the new mast did not stow inside the hull, as the original lugsail mast did. Rigging and de-rigging *Mo* was more time consuming. And *Mo* became even harder to pull up the slipway (too heavy).

Mo's details (using the same table) are as follows:

Name	PML	GL	W	LOA x maxB	Shape
<i>Mo</i>	300kgs	55	100	2.82m x 1.30m	curved

I feel that the winning boat in this competition need not have as much sail area as *Mo*, **but its sail area should be at least 4.2 square metres (45 square feet).**

Likewise, the number of sail panels need not be as much as *Mo's* five, **but there should be at least four panels to justify the reefing advantages.** In my opinion, a three-panelled junk sail might as well be the simpler lugsail: the benefit of being able to take in one reef (to two panels) is exceeded by the drawback of having more ropes to think about.

I feel that for a dinghy to carry a junk sail of this description, (1) **the mast length would have to be about 4.0 metres** (consider purchasing a two-part Laser mast and cutting down the top section to the desired length), (2) **its position should be between 0.15 and 0.20 of the waterline length back from the bow** (otherwise there is a danger of the dinghy nose-diving in strong following winds before being reefed sufficiently - which I have done!), and (3) **the "bury" (distance between its upper and lower supports) should be at least 360mm.** Only a very few of entries have the ability to achieve all of this.

It is not easy to judge this competition, as all of the entries are good and full of original ideas. I hope that the winning entry will indeed be built and used extensively (maybe at a school?), but it should be built to its potential, not as it stands. Some ideas could be "borrowed", examples being:

- Daggerboard as a thwart (*Tender to Sibling*)
- Two daggerboards (*Tender to Sibling*)
- Forward facing daggerboard (*AD & DD*)
- Nesting a dinghy in two halves (*Boxer & DD*)
- Leeboards and fenders (*Boxer*)
- Cambered junk sail panels (*Halibut*) (and *Mo*)
- Explaining something in the simplest possible terms, getting to the heart of a design (*Kiss*)

- Stowage of oars so they won't float away (*General Purpose Pram*)
- Two-part aluminium mast (*Boxer*)
- A large and secure storage locker (*General Purpose Pram*)
- The ultimate drainage bung (*General Purpose Pram*)
- The importance of a good name is (*Youyou, Boxer, Kiss, Oyster, Halibut*)

When I looked at the entries originally, I produced four simple tables to help me in the judging. Two were simple Pass/Fail tables, one relating to the entry as it stands and the other relating to the potential. The other two gave points for (1) Safety, 15 points max. (2) Ease of build, 15 points max. (3) Lightness of weight, 10 points (4) Load bearing capacity, 5 points max. (5) Ease of conversion from tender to sailing boat, 10 points max. (6) JR sailing performance, 15 points max. (7) Ease of rowing & towing, 10 points max. (8) Outboard engine setting up and performance, 5 points max. (9) Extra features & ease of maintenance, 10 points max. (10) Looks, 5 points max. Again, one table related to the entry as it stood and the other to the potential.

Three of the dinghies - *Youyou*, *Kiss* and *Webb 8* - scored 54 points, both "as the entry stands" and "as the entry could be modified owing to potential". All three are too small to score highly on certain key criteria. *Youyou* and *Kiss* are undoubtedly easy to build and they would (and "do" in the case of *Youyou*) both serve as simple yacht tenders. *Webb 8* is a classic sailing dinghy already and there are no advantages in changing her to junk rig. Also, she would take quite some skill to build.

Much as I loved *Oyster*, admired the W-shaped hull profile, welcomed the extra length and appreciated the extra load-bearing capacity due to there being no daggerboard slot, she lost marks in certain areas such as sailing performance and potential with junk rig (e.g. the mast being too far forward). Her marks came out as 58 both "as the entry stands" and "as the entry could be modified owing to potential".

Halibut is lightweight and very cleverly constructed from two sheets of plywood, but there were no "extra features" and I felt that both the daggerboard and mast positions were not ideal. If any junk rigged sail is to be carried, I agree that it should be the three panelled sail shown in the drawing (2.53 square metres). But, see my comments above on my preference for the sail being four-panelled and larger in area. *Halibut* cannot be modified to make this change. Her marks came out as 60 both "as the entry stands" and "as the entry could be modified owing to potential".

There were several different ideas illustrated in *Boxer*. Firstly, the shape of the boat - rectangular in cross-section (i.e. "box shaped") except for a sloping bow and stern, thus giving maximum initial stability but poor ultimate stability and recovery after a capsize. Secondly, with no daggerboard the load bearing capability is high (leeboards or small keels are proposed instead). Thirdly, a master-class is given on how to produce a "nesting" boat that joins together and comes apart to perfection - the two upturned halves nestle together and stow neatly on the deck of the parent yacht. A good-looking 5-panelled cambered junk sail is shown with the mast in the correct position. Unfortunately, however, in order to achieve this, the batten lengths could only be five feet long, the sail area just 3.90 square metres (42 square feet) and a bumkin was necessary to give sufficient scope for the sheets. Her marks came out as 62, both "as the entry stands" and "as the entry could be modified owing to potential".

Sibling is a perfect little tender - and sailing dinghy for occasional use - with good overall dimensions, built-in buoyancy, and easily constructed from three sheets of 4mm plywood. The idea of having two daggerboard slots allows two rowing positions to be comfortably accommodated. A three-panel 2.4 square metre (26 square feet) junk-rigged sail is shown, as large as it can be given the limitations on bury and thus mast height. I agree that stays are, unfortunately, necessary. *Sibling* scores both 65 "as the entry stands" and still 65 "as the entry could be modified owing to potential".

AD ticks many of the boxes. She is built from three sheets of 6mm plywood, has good load-bearing capacity, a neat T-shaped thwart that allows two rowing positions, and is shown with a mast with sufficient bury to allow a 52 square foot four-panelled junk sail. Furthermore, she is a tried and tested both as a tender and as a sailing boat with a lugsail. I feel, however, that the mast is too far forward and the leach of the sail is too far aft. Both could be corrected, but at the expense of two modifications that might not be acceptable: (1) move the mast aft and make the daggerboard more vertical to allow this and (2) have a bumkin (which I am not that keen on as this compromises the simplicity of the boat). Or the sail area could be made smaller. I am not altogether sure where the oars are to be stowed when sailing (due to the central cross-frame) and how easy (or difficult) moving up

and down the gunwale might be to balance the boat in stronger winds. AD scores 64 "as the entry stands" and 66 "as the entry could be modified owing to potential".

This leaves the final two entries to consider: *DD* and *GP Pram*.

I have already mentioned the clever means by which *DD* is a longer dinghy than any of the others (by cutting a plywood sheet along the diagonal). This additional length could allow junk battens as long as about 2.0 metres. Furthermore, she has a high foredeck, which allows sufficient mast "bury". A 4.0 metre high mast could easily be supported. Putting these two factors together, I estimate that *DD* could have a four-panelled junk sail 4.5 square metres in area (similar to *Mo*'s but without the bottom panel). A 3.8 metre high mast would be ample for this.

GP Pram's waterline length is 15% less than *DD*'s and so the maximum batten length is perhaps only $0.85 \times 2.0 = 1.70$ metres, but she, also, has sufficient mast bury to allow a 4.0 metre high mast. Putting these factors together in a similar way, *GP Pram*'s four-panelled junk sail would be much smaller - only 3.4 square metres in area, 25% less than my hoped-for 4.5 square metres. Should *GP Pram* carry a bumkin? Or could she carry a five-panelled sail scaled down by the exact proportion of, say, 0.90 and based entirely on *Mo*'s? I think the answer might be "yes". The mast height would be 4.0m, lower panel "heights" 540mm, foot of sail 1620mm long on a 1750mm "boom", yard length 1850mm etc.. The area of "full sail" would thus be an acceptable 4.6 square metres (49 square feet).

In both dinghies, the mast positions as they stand are not quite ideal (in my opinion). But slight alterations could be made without affecting anything too significant. I feel that *DD*'s mast should be moved slightly aft and *GP Pram*'s forward. In the latter case, the forepeak storage locker could perhaps be made slightly smaller. I am very keen on this locker (it almost defines the boat and provides secure storage for key equipment such as an anchor, ropes, bailer, sponge, tools and a waterproof box for personal effects), but I do not feel that the loss would be significant if its deck access hatch was reduced from 450mm x 450mm to say 300mm x 450mm.

DD's hull is relatively simple to build. The main components require just two sheets of plywood.

GP Pram's construction appears much more complex, but this is largely because (commendably) so much detail has been given. Care has been taken to ensure not just that she can be easily maintained, but also that she performs well and looks good. I feel that two areas of complexity could be simplified: (1) omit the launching wheels & (2) replace the centreboard (presently housed in the port buoyancy locker) by a daggerboard. I would favour retaining the long "centre cockpit" as it is (one of the features of *GP Pram* which I like very much: one could even sleep in this space and call *GP Pram* a "cruising dinghy", albeit a small one!) Its length becomes 1.85m if the forward hatch is reduced from 450mm x 450mm to say 300mm x 450mm, as I suggested above) and "borrowing" the idea shown on *Sibling*: having two daggerboard slots. They could be housed just inside - or possibly just inboard - of the two buoyancy lockers/seats.

It is hard not to be "bewitched" by the drawings, details and presentation shown by John Perry in his description of *GP Pram*, but, as Graeme Kenyon writes in his comments: "*Usually the devil is in the details, but in this case that is where the treasure is to be found, and it is all so well documented, there is no hidden detail in which any would-be-devil could possibly lurk.*"

Both *DD* and *GP Pram* accommodate two rowing positions: *DD* with a clever T-shaped thwart and *GP Pram* with two small, moveable thwarts. Oar retrieval and stowage when converting from "oar power" to "sail power" is easier on *GP Pram* than on *DD*.

GP Pram takes an outboard more easily than *DD* as the transom width is 960mm wide on the former as opposed to 340mm on the latter.

I prefer the look of John Perry's *GP Pram* and David Webb's other two designs - *AD* and *Webb 8* - to that of *DD*, but I do appreciate that judging "looks" is very subjective. One person's "beautiful" may be another person's "ugly". The look of a dinghy is very important and will go a long way towards giving any owner that all important "owner satisfaction".

There are still other factors I have considered when comparing *GP Pram* with *DD* (and, indeed, with all the other entries), but I have done enough to come up with some marks! These are:

DD scores 63 "as the entry stands" and 68 "as the entry could be modified owing to potential".

GP Pram scores **66** "as the entry stands" and **75** "as the entry could be modified owing to potential".

And so, in conclusion, I hereby declare that in my opinion the winner is *GP Pram*.