Sail parameters: Curlews and Pintails are heavy-displacement yachts with easy sea motion (high comfort ratio's according to Brewer), relatively long roll periods (> 4 sec) and relatively low accelerations due to roll, heave and pitch (< 0.2 G). The roll angle and the period in combination with the acceleration determine well-being, see the figures below.

	Folkboat	**Midget 31**	**Pintail**	**Curlew**	**Vancouver 32**	**Forna***	**Atlantic 36**	**Victoire 933**	**HR 312**
LOA [m]	7.68	9.55	8.31	9.75	9.8	11.15	11.9	9.33	9.42
LWL [m]	6.00	7.80	7.01	8.10	8.00	9.50	10.25	7.6	7.7
Beam [m]	2.60	3.10	2.66	3.15	3.26	3.65	3.80	2.95	3.08
Displ [m^3]	2.16	5.40	5.28	7.30	4.50	7.00	7.70	4.4	4.9
Sail area [m^2]	30.0	49.5	44.6	56.3	61.7	75.5	84.0	56.4	55.0

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SA-D ratio	18.0	16.1	14.7	15.0	22.6	20.6	21.5	21.0	19.1
D-LWL ratio	281	320	431	387	247	230	201	282	302
Hull speed kn	6.1	7.0	6.6	7.1	7.1	7.7	8.0	6.9	6.9
Comfortfactor	20	31	41	39	23	27	26	27	28
Roll period s	2.3	3.4	4.4	4.3	2.7	3.0	3.0	3.1	3.2
Roll accel. G	0.1	0.07	0.03	0.04	0.12	0.10	0.11	0.07	0.08
Pitch period s	2.0	2.8	2.6	2.8	2.3	3.0	2.5	2.8	2.8
Pitch accel G	0.23	0.16	0.17	0.17	0.26	0.18	0.29	0.16	0.16

Sa-D: Sail area to displacement ratio $= \frac{SA}{D^{\frac{2}{3}}}$ <14 for motorsailers, 14-17 for (heavy) cruisers

D-LWL: Displacement-waterlinelength ratio $= \frac{D}{(0.0327*LWL)^3}$ Categories, from Marchaj (1986):

150 and below	Very light
200	Light
250	Medium light
300	Medium
350	Medium heavy
400	Heavy
450 and above	Very heavy

Hull speed: max attainable speed for (non-planing) boats

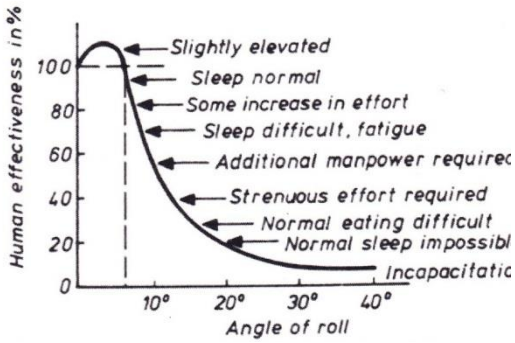
Comfort factor, according to Brewer $= \frac{D}{4.697*(0.7*LWL+0.3*LOA)*Beam^{1.33}}$ <30 light, less motion comfort;

>40 heavy, more comfort

Roll and pitch accelerations according to Marchaj (Seaworthiness, the forgotten factor, 1986):

Roll period in s (< 2 sec: stiff ship, > 4 s tender ship)
Roll accelerations [in G], when beating at about 10° heel
Pitch period in s
Pitch accelerations [in G] at the foredeck at 5° pitch motion

Effect of roll angle on well-being



Effect of roll period and G level