Reinstatement of a sportsboat class by D.B.S.C

Discussion document

Purpose

The purpose of this document is to help explore the possibility and modalities of introducing a “mixed” sportsboat class (or classes!) in DBSC Club racing from 2016 onwards.

The document covers:

- The definition of “Sportsboat”
- Various arguments for providing a racing prospect to a mixture of sportsboats
- The further refinement between “high performance” and “low performance” sporstboats
- Resulting considerations on handicaps and classes
- A broad but non comprehensive view of “the world of sportsboats”

Definition

The term sportsboat first appeared in the late 1980s and early 1990s to describe high performance trailer yachts with major compromises in accommodation and weight compared to traditional designs of the same size.

They tend to be characterised by historically large sail areas for a given length (especially under downwind sails), light weight construction and a heavy reliance on crew weight to counterbalance heeling forces. They usually feature lifting keels (for easy trailerability) of a modern fin and bulb design and planing hull designs. Most sportsboats are self-righting as opposed to skiffs.

Sportboats are generally characterised by a tall mast for their hull length, a correspondingly large main sail and non-overlapping jib.
As with the large mainsails, spinnakers (asymmetric in the vast majority of designs) are also generally much larger for a given hull size than had previously been used for keelboats, including racers.

Sportboat hulls have many elements in common with skiffs such as an almost flat bottom, a fine bow and a flat aft section - in short, a planing hull form.

This very efficient, low-drag shape, combined with the large, powerful rig and sail design and the light weight construction of most sports boats is what gives them their significant speed advantage over traditional designs.

To offset the large sail area and the resulting significant heeling momentum there are 3 main design philosophies: 1. a deep and heavy keel; 2. a way to get the crew further off the centreline by using wings, racks, hiking aids or trapezes; and, 3. a reduction in sail area, leading to a reduction in displacement, leading to less need for sail area and thus a reduction in heeling momentum. Many modern sportsboats use some combination of 1&2 or 2&3 also, with option 1 tending to favour upwind legs, and option 3 tending to favour downwind; option 2 being an advantage in all respects except rating.

Most sports boats use the modern fin and bulb design, which may also be lifting for ease of storage, as most sportsboats are designed to be taken out of the water on a daily or regular basis.

Most sportsboats have no or very little on-board accommodation as they are primarily intended to be sailed in short races around laid courses on sheltered waters. They are intended only for use in races for limited durations. A typical club sportboat race would be between 2 and 3 hours long and the biggest regattas would usually feature 3-4 races a day, each of only 1 to 1.5 hours duration.

Cockpits are usually fully open and the only covered area is a very small and spartan fore-cabin (cuddy), usually used only for storing sails and essential safety equipment. Even larger sports yachts which often do have a proper cabin below are often missing all the usual features of a yacht. Sinks, toilets, bunks, water tanks and cooking equipment are usually missing. Often a moulded hard plastic seat on either side of the cuddy and a removable chemical toilet are the only amenities.

In summary:
From the defining characteristics of “what is a sportsboat”, a few self-evidences emerge:

- 1. They are ideally suited to take part in the type of racing organised by DBSC
- 2. They are far removed in terms of design and sailing characteristics from the “traditional” keelboats designs which the IRC Rating System is ideally suited to “regulate and time compensate” in mixed fleets
- Though broadly fitting the design principles above, they hugely vary in terms of LOA, performance, built materials etc etc…(see the “world of sportsboats”).
- All sportsboats are conceived, designed and marketed as “one-designs” though, to the notable exception of the Cork 1720 and SB3 in the past, it is difficult to see the establishment of a new Sportsboat one-design class in Ireland and furthermore in Dublin Bay alone. The latest example being the initial “hype” around the J70 when it was launched which only translated in 1 being purchased and campaigned…

Why is DBSC considering a mixed sportsboat class?

- There is now a good number of non SB20 sportsboats based in Dun Laoghaire; privately owned J80s & J70s, Clubs' 1720s, others...

- There is maybe also a renewed interest among "younger" waterfront Clubs' members to acquire a keelboat and go racing in DBSC…

- However, gone are the boom times when a string of J109s appeared in Dublin Bay…would be competitors are looking at a maximum capital outlay of €15k to €20k for "something exciting"…

- Due to their lack of unnecessary (for day racing) equipment (costly inboard engines, fridges, showers etc…) and lack of accommodation, second-hand sportsboats offer great value for money compared to "affordable" cruiser-racers. Below are 2 boats for sales ads (besides each other) from apolloduck.co.uk under the category "racing boat":

Hunter 707 - £4,750

The first one (Hunter 707) having not been conceived and designed as a "cruiser-racer" has either no "cruiser" class to comply with and compete in or would not be competitive at all under IRC rating.

The 2nd one (Corby 25) would be of interest to anyone wishing to have a go at the Cruiser II class…however it is 7.9 times the price!!! (Are they THAT different? Is it 7.9 times the boat?!?).

- The only possibility currently to race a sportsboat (other than SB20) in Dublin Bay is to enter a 1720 in the Ensign Class on Tuesday evening…

CORBY 25 - £37,500

- Providing a mixed sportsboats class in DBSC next year would not only cater for the existing boats (SB20 & 1720s in the main) but also foster and encourage new buyers to source "fun" affordable day racers (see the world of sportsboats)

How to cater for a huge potential diversity of sportsboats in a "sporting fair way"?

There is a huge difference in LOA, sail area and design between various sportboats.

Can they be mixed in the same class, on the same start?

Introducing clear, non-arbitrary definitions and "class rules" is paramount to gain traction and acceptance from all parties.

To this end, a very interesting case scenario exists in the UK:

The Forth Yacht Clubs Association (FYCA), the forum for clubs on both sides of the Firth, came to the following solution when faced by a similar issue:

As seen before, Sportsboats are lightweight planing yacht designs that have distinctly different performance characteristics compared to conventional displacement yachts. If race conditions permit hydrodynamic planning then standard handicap values, that are mainly based on displacement performance, are not representative.

Yachts with RORC Sportsboat Ratings (SBR)[1] range from those that plane readily such as the Melges 24, Cork 1720 and Laser SB3, to more conventional designs that do so only rarely.

FYCA clubs organising separate classes for sportsboats and displacement yachts, to promote better and fairer competition whatever the wind and sea conditions, required a sportsboat definition to differentiate between 'high performance' and more conventional sportsboats. The FYCA Handicap Committee proposed a sportsboat definition based on design analysis rather than arbitrary classification.

After consultation with Mike Urwin, Technical Director of the RORC Rating Office that provides IRC and SBR certification, the following '**high performance' sportsboat definition** was recommended:

- **Downwind power to weight ratio >= 0.50**
(SA/D^0.67 based on total downwind sail area m^2 [Main+Spin] divided by total displacement Kg^0.67 [Including crew weight])

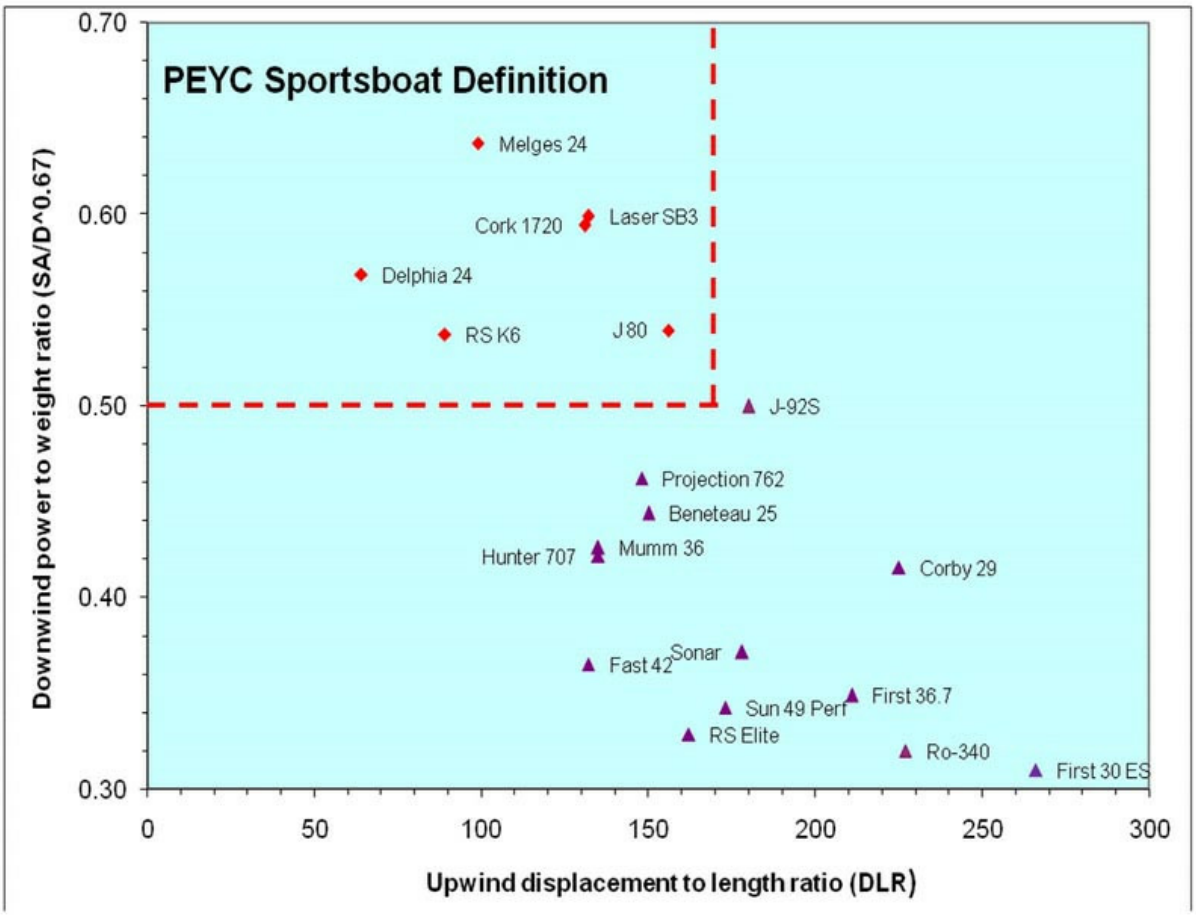
- **Displacement to length ratio <= 170**
(DLR = (27.87 x IRC Displacement)/LWP^3 as defined by RORC measurement rules)

[1] More on rating system below

The table below details the analysis of sportsboat designs compared to conventional displacement yachts.

	P	E	MHW	MAIN	SPA	SA	BW	Crew	DISP	SA/DISP^0.67	DLR	Pole/Bowsprit
	m	m	m	m^2	m^2	m^2	Kg		Kg			
Melges 24	8.81	3.80	2.70	21.45	55.96	77.41	822	4	1292	0.64	99	Bowsprit
Laser SB3	8.10	3.30	2.33	17.06	47.26	64.32	685	3	1075	0.60	132	Bowsprit
Cork 1720	10.02	4.04	2.63	24.61	69.37	93.98	1365	5	1915	0.59	131	Bowsprit
Delphia 24	8.65	3.60	2.57	20.01	50.08	70.09	850	4	1320	0.57	64	Bowsprit
J 80	9.14	3.81	2.48	21.17	65.00	86.17	1473	4	1943	0.54	156	Bowsprit
RS K6	7.09	2.94	2.08	13.32	29.57	42.89	300	3	690	0.54	89	Bowsprit
J-92S	11.90	4.25	2.70	30.32	81.35	111.67	2575	6	3205	0.50	180	Bowsprit
Projection 762	9.35	3.62	2.36	20.60	50.82	71.42	1300	5	1850	0.46	148	Pole
Beneteau 25	9.41	3.65	2.37	20.85	44.47	65.32	1249	4	1719	0.44	150	Pole
Mumm 36	13.63	5.02	3.21	41.17	75.53	116.70	3558	8	4348	0.43	135	Pole
Hunter 707	8.80	3.76	2.46	20.18	37.80	57.98	1083	4	1553	0.42	135	Pole
Corby 29	11.70	3.94	2.55	27.93	77.27	105.20	3154	7	3864	0.42	225	Pole
Fast 42	14.50	5.82	3.78	51.24	97.97	149.21	6560	11	7590	0.38	178	Pole
Sonar	8.34	3.41	2.28	17.57	29.95	47.52	925	4	1395	0.37	132	Pole
First 36.7	13.85	4.75	3.00	39.30	83.45	122.75	5441	9	6311	0.35	211	Pole
Sun 49 Perf	16.50	5.40	3.65	55.40	145.97	201.37	12400	13	13590	0.34	173	Pole
RS Elite	7.80	2.98	2.22	15.33	26.39	41.72	990	3	1380	0.33	162	Pole
Ro-340	11.95	4.19	2.69	30.20	62.51	92.71	4100	7	4810	0.32	227	Pole
First 30 ES	11.30	3.72	2.39	25.36	57.81	83.17	3510	7	4220	0.31	266	Pole

In turn, using Mike Urwin definition of high / low performance sportsboat, it is possible to plot the following graph:



"Plotting" boats show categorically that, in fact, SB3s and Cork 1720s are extremely close in their designed performance! Maybe the fact that both boats were designed by Tony Castro is no coincidence?

Also, it is made much clearer that:
The following SBR rated designs are classified as 'high performance' sportsboats:
• Melges 24
• Cork 1720
• Laser SB3
• Delphia 24
• RS-K6
• J-80

The following SBR rated designs are not classified as 'high performance' sportsboats:
• Projection 762
• Beneteau 25
• Hunter 707
• RS Elite
• Sonar

In conclusion to these considerations:

- The existing "sportsboats" based in Dun Laoghaire naturally form a "homogenous" (by designed performance) group which, following Mike Urwin's classification, could be amalgamated in a new "High Performance Mixed Sportsboats Class"
- There is also potentially room to create a "Low Performance Mixed Sportsboats Class" to foster the acquisition by "new comers to DBSC" of great value for money and great sailing boats such as Hunter 707s, Beneteau 25s (=Farr Platu 25), Projection 762s and, speaking from my own experience, Brenta 24s and 747 ODs

OK, but which handicap system?

Sportsboats at first raced in existing class divisions under existing handicapping systems. As the number of sportsboats continued to grow specific divisions for them have become increasingly common at all levels of racing.
In Europe and the USA, the trend has been more for One Design racing.

Sportsboat-specific handicapping systems include:
- RYA/RORC Rating: Sportsboat rule SBR
- Individual country rule systems such as the New Zealand Sportsboat box rule and Australian SMS system.

SBR:
The RYA/RORC Sportsboat Rule (SBR) was introduced in 1996 as a joint venture between the RYA and the RORC. The numbers of individual boats rated each year have fluctuated largely as a result of popular classes using the rule prior to becoming Recognised One Designs with the highest number rated in any one year being around 250.
Over the successive years, the number of individual boats rated has fallen to just 48 in 2009, therefore the RYA and the RORC have taken the decision that SBR will be discontinued with effect from 1st January 2011 (1st June 2011 in Southern hemisphere countries)

In 2004 and 2010, Cork Week had a mix sportsboat fleet with results calculated using SBR rating certificates.

Both the RYA and the RORC were however concerned that the sportsboat fleets should continue to be able to race. To ensure this the RYA promoted and establish Portsmouth numbers for as a few standard sportsboat designs:

Below is a table of compiled of "older" PY ratings found and compiled on an "ad-hoc" basis:

Boat Type	**PY number**
Cork 1720	836
RS K6	903
SB20	911
Soling	914
RS Elite	938
Sonar	940
Tempest	942
Dragon	986
Flying Fifteen	1020
K1	1062
Yeoman	1108
Hawk 20	1115
Yare and Bure	1117
Squib	1142
Sandhopper	1197
2.4 m	1250

However, only a few are officially listed as a class with a maintained PY handicap on the RYA website for 2015 (http://www.rya.org.uk/SiteCollectionDocuments/technical/Web%20Documents/PY%20Documentation/2015%20PN%20List%20v6.pdf)

RYA PN List - Keel

Class Name	No. of Crew	Rig	Spinnaker	Number	Change from 2014	Races
2.4	1	S	0	1240	-8	169
FLYING FIFTEEN	2	S	C	1013	-4	2153
K1	1	S	0	1065	1	783
K6	2	S	A	906	0	311

In conclusion, for the purpose of producing fair results in a mix-sportboat class (or classes) in a Irish / Dublin context, we can neither use the defunct SBR (based on boat measurement) system nor its PY "successor" based on results averages in club races in the UK.

We need to look further afield in racing "jurisdictions" where sportsboats are numerous, varied in design and regularly raced.

The Australian SMS system (http://www.raceyachts.org/)

The Sportsboat Measurement System (SMS) was introduced in 2008 and during the years has grown substantially. It is now being adopted in a number of other countries and includes many different classes that fit the definitions of a sportsboat.

For example, in Turkey, an active fleet has been established at Kalamış Sailing Club and Sukru Sanus has measured an inaugural fleet under the SMS system.

The Australian SMS system is also in use in Hong Kong; The sportsboat fleet in Hong Kong voted to adopt SMS and has measured Magic 25's under SMS as a One Design fleet (ie one a boat is rated, all other boats compliant with the particular sportsboat class measurements can use the same rating – see rated boats below)

With new technology and innovative designs, it is impossible to remove all of the inequities on a permanent basis, so the SMS rating formula is updated on a 4 year cycle in line with the issue of each new Racing Rules of Sailing (so updated in 2012, next update in 2016) to accommodate modern designs.

A complete guide / rule book for competitors and measurers regarding the SMS rating system (and its keelboat equivalent used in Australia, the AMS (= IRC here)) is attached to this discussion document.

Pricing is also very reasonable. The fee structure was as below for 2015:

	AUS$	€
Initial Certificate	$75.00	€47
Review of Rating	$65.00	€41
Revalidated Certificate	$65.00	€41
Amended Certificate	$65.00	€41
Copies of Certificates	$40.00	€25
Test Certificate	$40.00	€25
Change of boat name/owner	$35.00	€22

SMS system – empirical assessment

The SMS system was first used at the 2008 Meridien Marinas Airlie Beach Race Week, pictured below.

The event had been the test track for new design concepts in this rapidly expanding and exciting class of yacht racing , giving race officials a problem in equating a fleet that ranged from Elliot 7s through to the hi-tech Stealth 8s and a one-off sports boat designs (see pictures below)


Elliot 7


Stealth 8

With the exception of one boat - the smallest and least expensive in the fleet - corrected time results under SMS have been 'quite equitable' across the fleet, resulting in generally close handicap results, according to Australian Sport Boats Association (ASBA) secretary Cam Rae.
'We are very pleased with SMS,' Rae said. 'If you look at the results in each race to date you will see close results on corrected time. In race one the top nine boats were less than four minutes apart. In that race we saw two of the fastest and most expensive boats, Vivace, an original Bethwaite 8, and Conquistador, a new sports 8 xx, split by Quantum Sailing, an Egan 6, and probably the least expensive boat in the fleet.'

Boats rated under SMS:

There are currently 117 sportsboats rated under the Australian scheme…
Some avail of a "Recognised One Design" handicap (ie all boats compliant with their OD class measurements use the same handicap), some have been measured individually as either once off or modified from their original one design measurements.

Below is a sample of European boat types rated; the exhaustive list of boats rated under SMS is attached as an xls sheet.

Boat Name	Sail No	Cert Date	Rating	Design	Note
GUARANA	TUR6362	15/04/2015	0.796	BENETEAU FIRST 7.5	individually rated
HEDEF YELKEN 8	TUR 878	13/08/2015	0.761	BENETEAU FIRST CLASS	individually rated
MILD OATS	SP241	02/10/2014	0.766	DELPHIA 24	Class rating
VIRA YELKEN 3	TUR 1921	19/03/2015	0.773	DELPHIA 24 MOD	individually rated
NAFIZ 2	TUR 2502	17/03/2015	0.794	FARR 25	individually rated
RUFFLES	TUR 2501	17/03/2015	0.797	FARR 25	individually rated
DAZIBAO	HKG2169	26/02/2015	0.726	J70 ONE DESIGN	Class rating
ACCREWEDINTEREST	AUS807	26/03/2015	0.800	MELGES 24 OD	Class rating
FB2	TUR21907	14/04/2015	0.753	PLATU 25	Class rating
BIANCA II	TUR 456	19/03/2015	0.807	REFLEX 28	individually rated
GIDDYUP	3364	01/10/2014	0.745	SB3	Class rating
HEAT	AUS185	31/08/2015	0.778	VIPER 640	Class rating

Conclusion on Sportsboats rating system considerations:

The Australian SMS is available for DBSC to use as an affordable, well documented, user friendly and up-to-date, sportsboat specific handicapping system.

It is also notable that the freeware and well known result calculating software "Sailwave" natively support calculating results under the Australian AMS handicap system (and by extension the SMS one by simply inputting the SMS values for each boat in the rating field of the series file)…for an example of such results, please click here: http://lcyc.info/files/2015_SB5_SMS.html

Key recommendations for consideration by DBSC

This document advocates:

- The creation of a mixed-sportboat class
- The use Australian SMS rating system and Sailwave for results if unsupported by YR3
- Eventually / potentially, depending on numbers, the creation of a "high performance" sportboat class and a "low performance" sportsboat class using Mike Urwin defintions or a SMS Rating band in line with the IRC bands used by DBSC.

Notes:

- There is no equivalent of "endorsed certificates" in the SMS system
- For practical, speed of introduction of the rating system and to limit the costs to owners, it is therefore possible to:
    - Allocate an already existing SMS rating for previously measured one design boats (J70 etc)
    - Measure 1 boat representative of a group of boats (thinking of the modified 1720s in use by the RIYC, RSGYC and NYC) and allocate the same SMS rating to all
    - "fine" tune rating for individual boats at the request of individual owners…

The world of sportsboats

I have compiled a non exhaustive online database of common sportsboats and their characteristics here: https://www.jotform.com/table/52645757315057

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