

## Heritage Gene Bank

An important pillar of the Conservation Breeding programme is ex-situ conservation. This means conservation off farm in the form of genebanking. Unfortunately in pigs we only have the ability to freeze semen from boars. Research is on-going into commercial techniques for storing porcine embryos but for now we have to concentrate on genebanking of boars and let on farm conservation programmes take care of the sows.

Since 2002 we have run a genebanking programme in partnership with the RBST and Deerpark pedigree pigs. This programme was established during the Foot and Mouth outbreak of 2001 to ensure that native breed boars were available for Artificial Insemination as movement of breeding boars was restricted. Since then it has developed it into very successful genebanking programme with over 5000 straws of semen frozen in liquid nitrogen.

### What do we want in the Genebank and how do we get there?

The ultimate BPA / RBST target is to have 25 unrelated boars from each breed stored in the genebank. A total of 250 boars. In 2017 we reviewed this target. With 66 boars in the Genebank it was estimated we would need another 30 years to reach this goal. It was agreed that we would set some interim targets that could be achieved within the next few years after which the programme could be reviewed.

Our first target is to have all the named lines in the tank. This is an important consideration for the breeders and the named lines are also an important part of the cultural heritage of our native breeds.

Our second target is to balance the number of boars from each breed. The Saddlebacks have 14 lines, The Welsh have 11 and we have identified 10 lines in the British Landrace and Large White to be prioritised but the Gloucestershire Old Spots only have 4 boar lines as does the Oxford Sandy & Black breed. We agreed to work towards having a minimum of 10 boars from each breed.

As part of the plan we would also need to maintain a boar from each breed in the stud for AI use and turn the boars over quickly enough to stop them getting overused.

The final target is to invest in separating the archive across two locations. Half (35 or 30 straws from each boar) in Northern Ireland and half in GB. This will require investing in additional liquid nitrogen semen storage tanks. We should also invest in additional capacity so that if any of the liquid nitrogen tanks were to fail there would be capacity to transfer the straws of frozen semen into the other tanks. Tanks over 10 years of age should be considered for replacement. A long term plan to finance the storage of the semen archive should be put in place.

### Progress update

Out target remains to have the first phase of the project complete by the end of 2023. To achieve this we will need to collect a further 19 boars from 8 breeds and 8 lines within those breeds. The programme aims to add 6 new boars every year and so we remain on track to have the project completed on time.

Breed	Boars	Total Lines	Lines to Collect	Boars to collect
Berkshire	7	7	0	3
British Landrace	10	10	1	1
British Saddleback	14	14	2	2
Gloucestershire Old Spots	10	4	0	0
Large Black	9	6	0	1
Large White	11	10	1	1
Middle White	7	5	0	3
Oxford Sandy & Black	6	4	0	4
Tamworth	10	8	0	0
Welsh	7	11	4	4
Total Collected	91	79	8	19



## Genebanking Strategy update 2021



The lines still to be collected are.

Breed	Line	2020 survey		Breed	Line	2020 survey	
		Boars	Herds			Boars	Herds
British Landrace	Nekton	1	1	Welsh	James	10	10
British Saddleback	Carl	4	3	Welsh	Leo	14	10
British Saddleback	Guardsman	9	8	Welsh	Victor	6	6
Large White	Prince	6	4	Welsh	Vulcan	5	4
Total Lines to collect						8	

Due to the impact of the Covid 19 pandemic we have not been able to move any tanks from Northern Ireland to England but work has started on preparing the storage tanks to be transferred to the English site.

### Selection Protocol

Boars for addition to the genebank must meet the health protocol. This includes all the requirements of the new EU Animal Health Law which has become UK law post Brexit. They must also comply with the rules for export of breeding pigs from GB to Northern Ireland EHC 927. In addition to that they must also test negative for PRRS.

Boars will then be selected on a number of other criteria to include:

- Breed Standard
- Level of inbreeding with the boars already in the genebank
- Level of inbreeding with the breed population as a whole
- Level of introgression and inbreeding within the pedigree

In order to secure our initial target of collecting all the named lines we may have to compromise on the levels of inbreeding and introgression.

A detailed list of the boars collected for storage in the Genebank by breed is set out below.

## Berkshire

HB Number	Name	DOB	Ear no	IB
HAL/16	Hollybrook Freight Train 2	12/08/1998	HAL/16	0.0122
TMM/783	Smallicombe Namatjira 6	22/03/2002	TMM/783	0.0076
R000682BK	Applegarth Nama Abel 142	02/06/2005	NAE/142	0.0169
R001566BK	Gracebank Orlando 2	12/02/2008	BTS/130	0.0178
R001801BK	Fairoaks Peter Lad 4	15/04/2008	CIM/292A	0.0277
R002609BK	Barlings Lassetter 707	08/09/2009	ASY/707	0.0136
R003217BK	Fairoaks Ambassador 9	06/11/2011	CIM/463	0.0176
<b>In breeding co-efficient of the Berkshire genebank</b>				0.0162

## British Landrace

HB No	Name	Ear No.	DOB	IB
R006560LA	Finnington Hawk	RWB/239	02/01/2013	0.0274
R006762LA	Deerpark Duke	ARJ/9842	14/06/2013	0.0399
R006698LA	Deerpark Hamster	ROA/437N	01/01/2014	0.0116
R006821LA	Denett Candidus	ARJ/9958	01/11/2014	0.0658
R006881LA	Dennett Royal Eros	ARJ/30B	18/04/2015	0.0451
R007031LA	Deerpark Rally 1499N	ROA/1499N	01/06/2016	0.0255
R007049LA	Sunrise Dromus 3610	SLZ/3610	04/09/2016	0.0263
R007266LA	Deerpark Riber 2179N	ROA/2179N	19/03/2018	0.0241
R007297LA	Donagheragh Esmer 40	KBB/40	01/09/2018	0.0424
R007380LA	Deerpark Elias 3380N	ROA/3380N	12/04/2019	0.0262
<b>Inbreeding Coefficient of the British Landrace Genebank</b>				0.0334

## British Saddleback

HB No.	Line	DOB	Ear No	IB
BUK/157	Rajah	06/08/1992	BUK/157	0.0086
BZG/218	Grand Duke	06/10/1999	BZG/218	0.0147
BZG/226	Dictator	07/10/1999	BZG/226	0.0298
R001024BS	Golden Arrow	02/02/2005	WMC/165	0.016
R002792BS	Rajah	03/10/2007	GJB/466	0.0263
R002552BS	Prefect	23/01/2008	SGX/86	0.0104
R003062BS	Dictator	15/05/2008	GJB/11A	0.0319
R005539BS	Stockbroker	12/05/2010	GJB/278B	0.0099
R005818BS	General	09/01/2012	BSX/115E	0.0114
R006428BS	Viscount	02/07/2013	BSX/255E	0.0046
R006465BS	Walter	25/07/2013	NMA/48	0.0091
R007629BS	Tudor Dominator 5	09/03/2017	NPR/71	0.0066
R007701BS	Framfield Consort 110	01/08/2017	NMA/110	0.0071
R008089BS	Kajii Earl Simon	01/02/2019	SDU/39A	0.0106
<b>Inbreeding Co-efficient of the British Saddleback Genebank</b>				0.01380

## Gloucestershire Old Spots

HB No	Name	DOB	Ear No	IB
EXE/30	Greenan Sambo	01/12/2000	EXE/30	0.0589
BSM/484	Kilcot Rufus 4	07/01/2002	BSM/484	0.0507
SSG/80	Whinneyhill Sambo 3	06/02/2003	SSG/80	0.0381
R001685GS	Greenan Rufus 4	20/05/2004	EXE/160	0.0461
R001153GS	Alsa Gerald 451	01/01/2005	KCE/451	0.0176
R003320GS	Windmill Patrick 6	25/01/2007	HCR/1348	0.0254
R004202GS	Deerpark Patrick 2	31/10/2007	ROA/2	0.0244
R009570GS	Donagheragh Sambo 13	15/02/2014	KBB/13	0.0415
R009840GS	Pebblesford Gerald 722	05/07/2014	LHC/722	0.0114
R010731GS	Winterwood Patrick 16	16/01/2017	SJA/1491	0.0142
<b>Inbreeding coefficient of the GOS Genebank</b>				<b>0.0328</b>

## Large Black

HB Reg No	Name	Ear No	DOB	IB
CBJ/190	Westerly Majestic 190	CBJ/190	10/03/2002	0.0374
R000455LB	Bilgrm Defender 14	BBL/14	07/07/2005	0.0372
R000907LB	Sock Attempt 15	SOK/3106	05/03/2007	0.0333
R001442LB	Crane Majestic Eagle 3	CRW/439	05/08/2009	0.0365
R001661LB	Sock Super26th	SOK/3482	02/01/2011	0.0242
R002180LB	Donagheragh Malcolm 61	KBB/61	04/12/2012	0.0388
R002312LB	Donagheragh Super 93	KBB/93	28/10/2013	0.0198
R003103LB	Framfield Majestic 203	NMA/203	01/09/2017	0.0064
R003362LB	Luckygeorge Majestic 2	LGP/33	02/01/2019	0.0134
<b>Inbreeding Coefficient for the Large Black Genebank</b>				<b>0.0275</b>

## Large White

HB No	Name	Breeder	DOB	Ear No	IB
R008527LW	Tates Danny 311	MIS	17/05/2011	MIS/23397L	0.0155
R008579LW	Tates Field Marshal 924	MIS	25/08/2011	MIS/24165L	0.0155
R008724LW	Trepaze Champion Boy 14	CYU	29/10/2011	CYU/527	0.0029
R008627LW	Withersfield Champion Turk 3	KAE	02/01/2012	KAE/1433	0.0075
R008739LW	Tates Danny 314	MIS	05/05/2012	MIS/26222M	0.0159
R009709LW	Bartington King David	MVX	01/10/2015	MVX/1	0.0002
R010213LW	Tates Alpine 809	MIS	03/12/2016	MIS/27574T	0.0186
R010487LW	Bellaghy Dougal 8743D	RAB	10/10/2017	RAB/8743D	0.0088
R010504LW	Donagheragh Danny	KBB	11/03/2018	KBB/47	0.0114
R010928LW	Portbredy Mcflannel 5390	SSL	29/11/2019	SSL/5390	0.0031
R010929LW	Portbredy Royal Turk 5252A	SSL	22/10/2019	SSL/5252A	0.0045
<b>Inbreeding Coefficient of the Large White Genebank</b>					<b>0.0094</b>

## Middle White

HB Reg No	Name	DOB	Ear No	IB
CSC/1	Slievenalargy Revival	10/10/1999	CSC/1	0.004
CVM/297	Westham Captain 297	24/02/2002	CVM/297	0.0332
R000472MW	Degiorgio Rajah 15	30/04/2005	MTE/015	0.0297
R000937MW	Lakeview Captain 1	05/11/2005	TBH/1	0.0256
R000702MW	Westham Mischief 567	20/08/2006	CVM/567	0.032
R002187MW	Solitaire Sovereign	06/02/2012	YFA/16	0.018
R003274MW	Tatton Captain	12/08/2018	TDF/17	0.0124
<b>Inbreeding coefficient for the Middle White Genebank</b>				0.0221

## Oxford Sandy and Black

HB Reg No	Name	DOB	Ear No	IB
R001363OS	Macnean Jack 227	07/08/2009	GGs/227	0.0343
R001469OS	Bissettdown Alistair 11	18/10/2009	RHE/346	0.0494
R003639OS	Hopecottage Clarence 337	02/03/2015	MZJ/337	0.0433
R003866OS	St Piers Alexander 253	26/08/2016	NCY/253	0.0306
R004599OS	Scrubditch Alexander 54	11/08/2018	KLv/54	0.0493
R004693OS	Manorfields Jack 771	18/03/2019	CGH/771	0.0331
<b>Inbreeding coefficient of the Oxford Sandy &amp; Black Genebank</b>				0.0400

## Tamworth

HB Reg No	Name	DOB	Ear No	IB
EXE/10	Greenan Glen 2	03/11/2000	EXE/10	0.0163
MBW/1	Ballywilliam Jasper	07/12/2002	MBW/1	0.035
R000457TW	Elgany Ranger 107	07/03/2005	FES/107	0.0235
R000560TW	Stonemoor Royal Standard 6	26/02/2005	HCE/395	0.0156
R001611TW	Rosser Dream Boy 02	29/07/2009	HZX/02	0.0173
R002444TW	Ramsisland Yorkshireman 37	29/06/2011	BFZ/37	0.03
R003233TW	Beechwood Golden Ball 5	26/05/2014	MLF/546	0.0131
R003786TW	Croxteth Golden Ranger	28/02/2017	MCZ/101	0.0148
R004204TW	Shankend Jasper 4	01/12/2017	RKW/58	0.0159
R004407TW	Fairybank Ranger 13	28/10/2019	YKN/525	0.0085
<b>Inbreeding Coefficient of the Tamworth Genebank</b>				0.0190

## Welsh

HB No	Name	DOB	Ear No	IB
R000530WE	Churchstone Workman 5	09/05/2005	FFA/95	0.0021
R000857WE	Birdcombe Emperor 45	14/10/2006	WYR/45	0.0157
R002204WE	Tates Earl 37	01/08/2009	MIS/62453J	0.033
R001905WE	Tates Ted 19	02/08/2009	MIS/62469J	0.0231
R004288WE	Burry Imperial 6466	28/08/2014	ANX/6466	0.0118
R005085WE	Beechwood Arthur 9	23/02/2017	MLF/957	0.0085
R005407WE	Barlings Ivor 862	01/01/2018	ASY/862	0.0132
<b>Inbreeding Coefficient of the Welsh Genebank</b>				0.0153