

Breed Analysis Report: September 2005

by Lawrence Alderson

This ongoing annual analysis of the breed is gradually building a valuable picture of its overall genetic stability, but at the same time is defining specific danger areas which merit attention.

I have modified the calculation slightly in this report to allow for the gradual increase in the number of ancestors each year, and have confined the comparisons mainly to the years since 2001 when we started the annual analysis.

1981 Herd Book founders

The bulls that represent the four sire lines have maintained a relatively steady position during the 13 years since the first analysis (1991 crop) and especially in the last four years (Table 1). This is a good symptom of a stable situation. Ideally, the influence of each bull should be transmitted through several sons, and here there is some cause for caution. Stanmore Odin genetics are handed down through several sons (Troswick Beach, Murrister Olympus, Murrister Bonzo, Loversall Beowulf, etc.), but the others are more restricted. Araclett Jupiter descends predominantly through one son (Araclett Heracles) with minor effects through Murrister Dick and Heather Viking, while most of Heather Chieftain's influence comes down through two full brothers (Boxmoor Fearless and Emperor) and Murrister Danny. Glebe Rasmie has two main male lines through Knocknagael Thorfin and Cova Karl.

Table 1
Influence of four founder bulls
on calf crops 2001-2004

Bull line	2001	2002	2003	2004
Heather Chieftain	5.45	7.10	7.06	5.27
Glebe Rasmie	5.63	6.12	5.94	5.28
Stanmore Odin	4.53	4.71	4.25	4.73
Araclett Jupiter	3.66	3.89	3.71	3.58

The 2004 calf crop (Table 1) shows a closer balance between four founder bulls than any of the previous analyses. Whether this trend continues remains to be seen, but it is to be encouraged. It may be the result partly of the effect of some younger bulls which combine the influences of all four founder bulls (see note on Tivis Hill Keen below).

Rather than relying solely on the reassurance provided by the four founder bulls, the results from seven cows of the same vintage were analysed for comparison (Table 2). The cows were chosen at random but ensuring that they included some with significant influence and others with negligible influence.

Cow results tend to confirm those from the four founder bulls, but there remains a volatility which can threaten lines or families that are weakly represented. For example, in the 1991 crop of calves Wykham Gladioli exerted a more powerful influence than Knocknagael Rosemary V, yet by the 2004 crop Rosemary V was a major influence and Gladioli was absent. The powerful ascendancy of Rosemary V is explained because she is the grand-dam

of Templeton Boris, and this reinforces the warnings concerning the continuing danger of the sudden emergence of dominant animals within the breed.

Table 2
Influence of some cows from HB Vols 1 and 2
on calf crops 1991-2004

Cow	1991	2001	2004
Murrister Clara	2.72	3.18	3.00
Knochnagael Rosemary V	0.49	1.80	2.09
Collafirth Sheena	1.44	1.20	1.52
Glebe Bluebell	0.53	0.45	0.46
Darose Alice	0.15	0.19	0.17
Riber Anne	n/a	0.04	0.03
Wykham Gladioli	0.64	0.27	nil

Remote founders

I keep adding more animals to the remote founders analysis (Table 3), because a wider cross-section will give a truer picture. The results mirror those of the cows in Table 2. While there is a general stability, there is a definite pattern of some animals strengthening their influence (Foula Dandy and Hestaford Blackie), while others remain weak (Heather Wizard and Glebe Holly), and Araclett Leda is not represented in the 2004 calf crop.

Table 3
Influence of ten remote founders
on calf crops 1991-2004

Founder	1991	2001	2004
Foula Dandy	1.40	3.13	3.44
Leons Livy	2.12	2.71	2.89
Hestaford Blackie	0.94	1.43	1.73
Queyfirth Sarah	0.72	1.17	1.17
Walls Shetland	0.76	0.77	0.60
Glebe Hebe	0.26	0.71	0.58
Glebe Pansy	0.35	0.23	0.27
Heather Wizard	n/a	0.13	0.11
Glebe Holly	n/a	0.13	0.11
Araclett Leda	0.12	0.02	nil

Recent ancestors:

Even if the influence of the founder animals remains reasonably constant, the genetic health of a breed can be jeopardised by 'bottlenecks' at any stage in the breed's history. Previous

reports have pointed to the potential dangers arising from the strong influence of Templeson Boris and Collafirth Rasmie and their relatives, who represent a type of 'bottleneck'. The dramatic increase of influence of Knocknagael Rosemary V (Table 2) is a good illustration of this. Young bulls, such as Geldron Leonardo who is a Rasmie grandson, and Geldron Jason who is a son of Boris, compound the danger of concentration of these lines.

I have made suggestions in most of the previous report regarding the use of bulls free from Boris and Rasmie influence, and I would refer readers to those reports. For example, St Trinians Mansie counteracts the Boris/Rasmie effect and increases the influence of other lines, such as Collafirth families. Also, Tivis Hill Keen (who is included in Table 4 even though his overall contribution is below 2) combines the influences of all the four founder bulls, and therefore is a bull which would serve to maintain and balance the founder genes in the breed.

Regional

Some bulls (Templeson Boris, Geldron Jason, St Trinians Mansie) exert their influence throughout the breed, but the effect of most bulls is felt more locally. Thirteen bulls are listed in Table 4; five of these are used largely on the Islands (Leonardo, Magnie, Saturn, Arcus and Spitfire), and five almost exclusively on the Mainland (Dillion, Presley, Hadrian, Nandi and Keen).

Table 4
Regional influence of young bulls (born 1993 and later)
on 2004 calf crop

Bull	Total	Island	Mainland
Templeson Boris	4.86	7.22	3.97
Geldron Leonardo	3.10	7.63	0.45
Collafirth Magnie	3.07	6.49	1.17
Struiehall Saturn	2.92	7.79	nil
St Trinians Mansie	2.77	4.46	2.01
Hillwell Arcus	2.68	7.14	nil
St Trinians Spitfire	2.55	5.84	0.67
Geldron Jason	2.40	1.95	3.07
St Trinians Dillion	1.95	nil	3.58
St Clair Presley	1.95	nil	3.58
St Trinians Hadrian	1.95	nil	3.58
Larchfield Nandi	1.82	nil	3.35
Tivis Hill Keen	1.58	nil	2.91

It is significant that only three of the young bulls who figured as strong influences in the 2003 calf crop (Table 5), continued as strong influences in the 2004 calf crop (Table 4), namely Templeson Boris, Collafirth Magnie and his son, Geldron Leonardo. This confirms yet again the danger of the concentration on these lines, but also indicates that there is a healthy use of new young bulls.

Table 5
Regional influence of young bulls (born 1993 and later)
on 2003 calf crop

Bull	Total	Island	Mainland
Templeson Boris	4.63	5.17	4.50
Hillwell Huxter	4.53	9.44	nil
Gillarunna Gordon	4.38	9.13	nil
Lowergreen Edmund	3.97	nil	8.32
Yahaarwell Cuillin	3.97	8.27	nil
Collafirth Magnie	3.66	4.49	3.16
Geldron Leonardo	3.08	3.71	2.73
Schiehallion Fergus	2.60	nil	5.45
Hillwell Gerald	2.46	5.13	nil
Couster Robbie	2.43	4.70	0.36
St Trinians Centurion	2.19	nil	4.59
Lowergreen Caesar	2.12	nil	4.45

As in previous reports, this report has focused mainly on animals that exert the greatest influence, but it has highlighted the very real threat of the loss of some families and lines. It may be premature to announce the extinction of Wykham Gladioli (Table 2) and Araclett Leda (Table 3) because they were not represented in the 2004 calf crop, but they are in imminent danger.
