

Breed Analysis Report for Shetland Cattle; November 2013

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I have not prepared a report since 2010 when there was a feeling of optimism in the air. I had just judged at the Cunningsburgh Show as part of the Herd Book Society centenary and been impressed not only by the quality of the cattle but also by the diversity in type and colour. The only item of concern at that time was the decline in the number of registrations on the Islands which had fallen from 89 in 2002 to 37 in 2009. Therefore, it is relevant to use this report to make a review of progress and trends in the last decade (2003-2012).

Population trends

Annual registrations are the best indicator of the health of a breed, and a general overview of registrations of Shetland cattle does not ring alarm bells. Total registrations in 2003 were 178 compared with 172 in 2012 (Table 1) – a fall of 3.4% in a decade. However, these figures (extrapolated to estimate the breeding population as less than 700 cows) still place the Shetland in a vulnerable position. There has been a severe economic downturn during the period in question, and other factors such as crossbreeding or lapsed/delayed registrations may have had an effect, and it would be sensible for these factors to be identified and measured more accurately.

Table 1
Annual registrations of calves

	2003	2006	2009	2012
Islands	83	87	37	57
Mainland	95	100	123	115
Total	178	187	160	172

The other cause for caution is the shifting balance between registrations on the Islands and those on the mainland of UK. In 2003 the ratio was almost 1:1 (83 Islands and 95 mainland). In 2012 the ratio was 1:2 (57 v 115) showing a decline of more than 30% in registrations on the Islands at the same time as a 21% increase on the mainland. The potential danger is even more starkly obvious by reference to 2009 when Island registrations were only 30% of those on the mainland, but the long-term trend is a more important indicator than results from a single year. I have stressed previously the need for the maintenance of an effective breeding population of the breed in its native environment on the Islands and this must continue to be a high priority.

Genetic analyses

Rasmie and Boris

The first report in this series prepared in 2002 drew attention to the potential for a genetic bottleneck resulting from the overuse of Collafirth Rasmie and Templeson Boris and their relatives and descendants. The advice, which has been repeated in

subsequent reports, appears to have had some effect but its impact has been variable (Table 2). It has not had significant effect in the Islands where breeding practice seems firmly wedded to these lines and the danger continues (see ‘Regional Effects’ section below for further discussion). The influence of both Rasmie and Boris has increased in the last decade, while the influence of some contemporaries (e.g. Couster Copper and Isleburgh Dexter) has declined. The reverse applies on the mainland where the influence of Rasmie and Boris has declined significantly while that of Copper and Dexter increased dramatically, albeit from a low startling point. Although Rasmie and Boris continue to exert a strong influence on the Islands it is relevant to note that one or two other bulls, such as Murrister Olympus and Waterloo Charlie, have maintained their position, probably because of their superior genetic merit.

Table 2
Changing influence of four bulls 2003-2012

Bull	Location	2003	2012	Change %
Collafirth Rasmie (1992-1540)	Islands	7.55	8.13	+7.68
Collafirth Rasmie (1992-1540)	Mainland	3.63	2.93	-19.28
Templeson Boris (1993-1680)	Islands	5.38	8.28	+53.90
Templeson Boris (1993-1680)	Mainland	4.46	3.39	-23.99
Couster Copper (1990-0290)	Islands	5.29	5.02	-5.10
Couster Copper (1990-0290)	Mainland	1.33	2.13	+60.15
Isleburgh Dexter (1992-1374)	Islands	4.29	0.66	-84.62
Isleburgh Dexter (1992-1374)	Mainland	1.58	2.70	+70.89

Effective founder number (EFN):

Owners of cattle often are more interested in living animals and may find little enthusiasm for statistics, but nevertheless they do provide a useful background to the genetic health of a breed and breeders of Shetland cattle have shown a strong interest in genetic diversity in the breed. Analyses of founders and ancestors provide indicators and warnings of genetic erosion. The recent gradual improving trend in the influence of a wider group of founders (measured as effective founder number or EFN) may indicate that the danger of a genetic bottleneck is receding (Table 3), and the rate of increase in the number of active ancestors may reflect some stabilisation of inbreeding (Table 3).

Table 3
Measures of within-breed diversity

Measure	2003	2006	2009	2012
Effective founder number	33.96	31.54	31.62	31.73
No. of active founders	80	76	77	76
No. of active ancestors	853	1011	1056	1221

Bull line founders:

Table 4 is included simply as a reference point. The contributions of the four founder bulls remain relatively constant.

Table 4
Contributions (%) of founder sire line bulls to calf crop

Bull	2003	2006	2009	2012
Glebe Wallace	3.00	2.72	2.67	2.67
Heather Marshal	1.46	1.24	1.25	1.15
Knocknagael J4	2.29	2.26	2.44	2.38
Knocknagael Tommy	5.44	5.77	6.22	5.96

Herd Book Volume One:

The Volume One (1981) representatives of the four bull lines in the New Foundation Herd Book (Glebe Rasmie, Heather Chieftain, Stanemore Odin and Araclett Heracles) were born about 40 years or seven generations ago. The contribution from each bull has changed very little during the past decade, apart from a slight decrease for Heather Chieftain and corresponding increase for Stanemore Odin (Table 5).

Table 5
Contributions of HB Volume 1 bulls to calf crop

Bull	2003	2006	2009	2012
Glebe Rasmie	10.14	9.39	9.11	9.63
Heather Chieftain	11.70	9.93	9.96	9.24
Stanemore Odin	6.95	7.75	10.23	8.91
Araclett Heracles	4.95	5.05	5.00	4.63

Note: These contributions are for comparative purposes only between the animals in Table 4. They can not be compared with the % figures in other Tables.

Young bulls:

The positive change in the Islands noted in 2009 has been reversed with a return to concentration of dominant lines. There also is a negative trend on the mainland in this respect, although less severe. The use of a bull in a large herd can influence his impact significantly, especially if he is used for more than a year, or if his progeny spread his impact to other herds. Owners of large herds should be aware of this possibility.

Regional effects

Mainland

Comments made regarding developments on the mainland must be interpreted in the context of the decreasing influence of Rasmie and Boris (see Genetic Analyses above). Additionally, the concern expressed regarding the two most influential young sires in 2008 and 2009, Pywacket Bertgan and Wild Meadows Freddie, appears to have been noted. They still have some prominence (Freddie 2.01 and Bertgan 0.98) but their impact has declined. Bulls recommended in 2009 have made some impact (e.g. Lincwold Fergal 1.96; Randolph Fergus 1.30; Carrbank Morris 1.09) but these welcome developments are counter-balanced to some degree by evidence that the dominant Hillwell line (i.e. Collafirth Rasmie) from the Islands is infiltrating the mainland population. Half of the eight most influential young bulls (born 2008-2011)

were from the Hillwell sire line (Table 6). One (Renwick St Cola) was linebred to Collafirth Rasmie, and Collafirth Viking will remain in service in 2014. Two bulls in the list merit some attention. Templeson Spice is from the Hillwell sire line but his dam is a grand-daughter of the excellent bull, Waterloo Charlie, while Hollins Gustav has Struehill Saturn, Troswick Beach and Hjem Lowrie close up in his pedigree – it would be very good if he could stay in service.

Table 6
Influence of young bulls on 2012 crop of calves on the Mainland

Bull	Born	Contribution	Notes
Collafirth Viking	2010	3.91	Hillwell sire line but also other lines
Templeson Spice	2010	3.48	Hillwell sire line
St Trinians Leroy	2010	3.04	
Renwick St Cola	2008	2.61	linebreeding to Rasmie
Hollins Thor	2009	2.61	
St Trinians Harris	2008	1.96	
Hollins Gustav	2008	1.96	
Collafirth Roanan	2008	1.96	Hillwell sire line

There are several bulls worthy of note that will be working in 2014. If they also have worked in 2013 their progeny deserve close attention when they are born. In particular I would mention **Carn Bhren Gustav** (a son of Gillarunna Innes) and **Blazefield Rufus** (grandson of Carrbank Morris – see above) whose dam is linebred to Waterloo Charlie. Also there are several bulls with a good mix of lines, including **Balearn Tavish** (grandson of Laxness), **Carn Bhren Gigolo**, **Lincwold Fergal** (son of Tivis Hill Keen and still working!), **Lincwold Lowden** and **St Trinians Balou** (an outstanding bull). Special interest should be paid to some bulls that maintain proven lines of quality, including **Wellback Alfred** (combines the Heather Chieftain sire line with Stanemore Odin on dam's side), **Welland Down Claude** (combines Odin and Glebe Rasmie with Foula Dandy and others) and **Aidlew Angus** (a son of an A.I. bull, Garths Adonis, with other special lines).

Islands

The remarkably positive change in the situation on the Islands noted in 2009, with the emergence of bulls such as Trondra Donnie, Knocknagael Charlie, Collafirth Laxness and Schiehallion Hornby, appears to have gone into reverse. Their combined influence has halved since 2009 and they no longer are working, while Hillwell Nonny (Rasmie line) has increased his influence since 2009. Among the eleven young bulls with the greatest influence in 2012, seven have strong Hillwell links (Table 7), and this accounts largely for the increasing influence of Rasmie and Boris on the Islands. Although Hillwell Huxter is from a different sire line, he shares a significant ancestral influence with Rasmie and Boris and three young bulls on the list are closely related to him.

There are some ameliorative features. The list is led by Ustaness Quince, a son of Collafirth Laxness; Lyndthorpe Raymond who will remain in service in 2014; and Minarvi Addie is a son of Knocknagael Charlie, although he has Hillwell on his dam's side.

Table 7
Influence of young bulls on 2012 crop of calves on the Islands

Bull	Born	Contribution	Notes
Ustanness Quince	2008	10.53	son of Collafirth Laxness
Gerraquoy Lulach	2010	6.14	son of Hillwell Huxter
Minarvi Ramsay	2008	6.14	concentrated Hillwell lines
Isleburgh Ertie	2008	3.51	Boris and Rasmie in pedigree
Collafirth Roanan	2008	1.75	Hillwell sire line
Geldron Yatlin	2010	1.75	concentration of Rasmie
Gerraquoy Iolo	2009	1.75	grandson of Hillwell Huxter
Lyndthorpe Raymond	2011	1.75	linebreeding to B. Fearless
Minarvi Addie	2009	1.75	son of Knocknagael Charlie
North House Bill	2010	1.75	Hillwell sire line
Ustanness Runna	2009	1.75	linebreeding to Hillwell Huxter

Please note again: these contributions are for comparative purposes only between the animals in Tables 5 and 6. They can not be compared with the % figures in Tables 3 and 4.

Despite the concentration of the Rasmie, Boris and Huxter lines in the 2012 crop of calves, there is room for optimism looking forward. Bulls used as herd sires in 2013, and/or intended for use in 2014, suggest there will be opportunity to select young bulls from the 2014 and 2015 crops that can restore a better genetic balance in the breed. For example, **Gillarunna Innes**, a very good bull linebred to Murrister Olympus, is now again in his home herd, together with two of his sons, **Carn Bhren Goblin** (a desirable combination of Chieftain and Odin – cf. Wellback Alfred on the mainland) and **Carn Bhren Halcyon** who is linebred to Garths Kirsty and Gillarunna Gordon. There also is **Lyndthorpe Raymond** – linebred to Boxmoor Fearless with a useful mix of lines. These bulls and their sons merit close scrutiny in the next couple of years.

Conclusions

It was noted in the 2009 report that Shetland cattle are thrifty, ideal for conservation grazing and producers of quality (healthy) beef. Their functional efficiency and local adaptation need to be exploited. These values remain in place, and this report has noted some positive factors, insofar as the overall population is holding reasonably steady and the mainland sector has increased its numbers. However, two negative factors loom over the future. The declining population on the Islands is an ongoing matter for concern, which I'm sure has been addressed by the Society. The other is the equally persistent danger of a Rasmie/Boris genetic bottleneck. This has receded a little, but remains a strong threat on the Islands. The solution to this problem lies in the hands of breeders and the selection of young bulls for breeding in the next couple of years will determine the future direction of the breed.