

Clumber Spaniel Litter Analysis for the year 2014

INTRODUCTION

All puppies and litters in this report are listed according to their date and year of birth, and the 2014 data has been checked against the information in the KC Breed Supplement. **There were 194 puppies registered with a date of birth in 2014 from 37 litters.**

The first section looks at the number of Clumber Spaniel puppies registered with the Kennel Club and born in the 10 years from 2005 to 2014 inclusive (with thanks to Jackie Crawford for supplying the data). Diagrams are included to show the trends in the number of puppies born, the number of litters, and the number of puppies per litter.

The second section concerns the Coefficient of Inbreeding (COI) which is one of the key measurements used by the KC to calculate the breed's estimated Effective Population Size (EPS). If the overall objective is to increase the EPS, there will be a need to reduce the breed average COI. The COI was calculated for each litter born in 2014 using the KC Mate Select tool, and comparison was made with the current breed average COI as published by the KC.

Section three notes that the Breed Health Plan 2014 includes a recommendation to limit the number of puppies per sire to 54 in a 5-year period. However the plan was not published until the early 2014, and so could have had no impact on breeding decisions taken prior to that time. It then includes an analysis of the number of puppies per sire using a '5-year rolling total' calculation.

Section four includes a list of 2014 matings that had occurred previously and resulted in registered puppies.

The last section has been included to illustrate how an annual calculation of 5% of the '5-year rolling total' of puppies born could be used to support the Bateson recommendation that "Over a five year period no dog should have more offspring than 5% of the total number of puppies for that breed."

1 Number of puppies and litters

The total number of puppies born in the 10 years up to 2014 was 2111 giving an average of 211 puppies per year. The actual number of puppies born in each year is shown in Figure 1 which shows that 2014, with 194 puppies born, is one of three years in the period where less than 200 puppies were born. The blue line represents the number of puppies, and the red dotted line represents the trend over this period, which shows a very slight decrease.

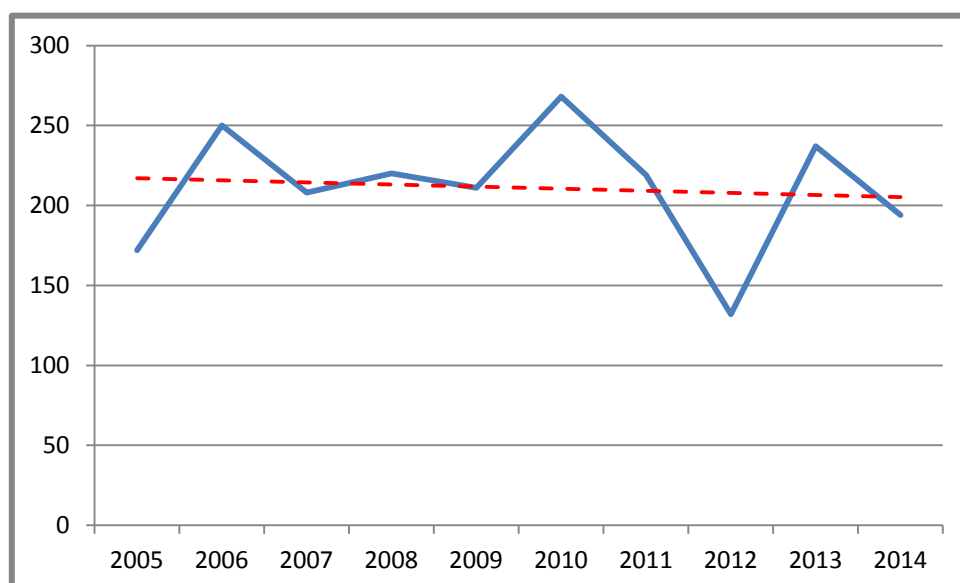


Figure 1: Number of puppies born in each year from 2005 to 2014

There were 412 litters during this 10 year period (2005-2014), with 37 litters in 2014. The average over the 10 years is 41 litters per year. The number of litters each year is shown in Figure 2 where the blue line represents the actual number of litters, and the red line shows the trend which shows a very slight increase over the period.

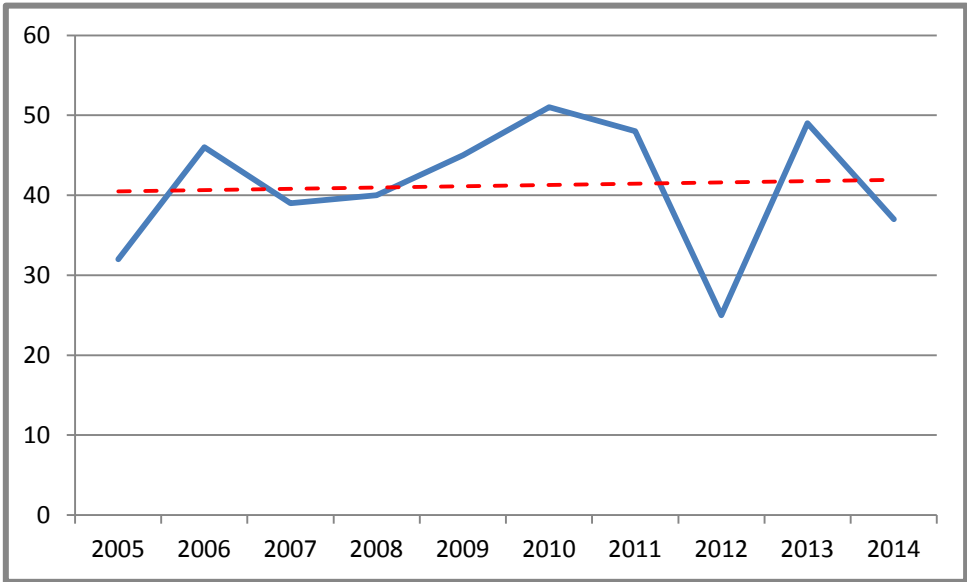


Figure 2: Number of litters per year

The average number of puppies per litter in 2014 was 5.24 which was slightly above the average for the 10 year period which is 5.14 puppies per litter. However as is shown in Figure 3, the average number of puppies per litter has fallen slightly over the whole period.

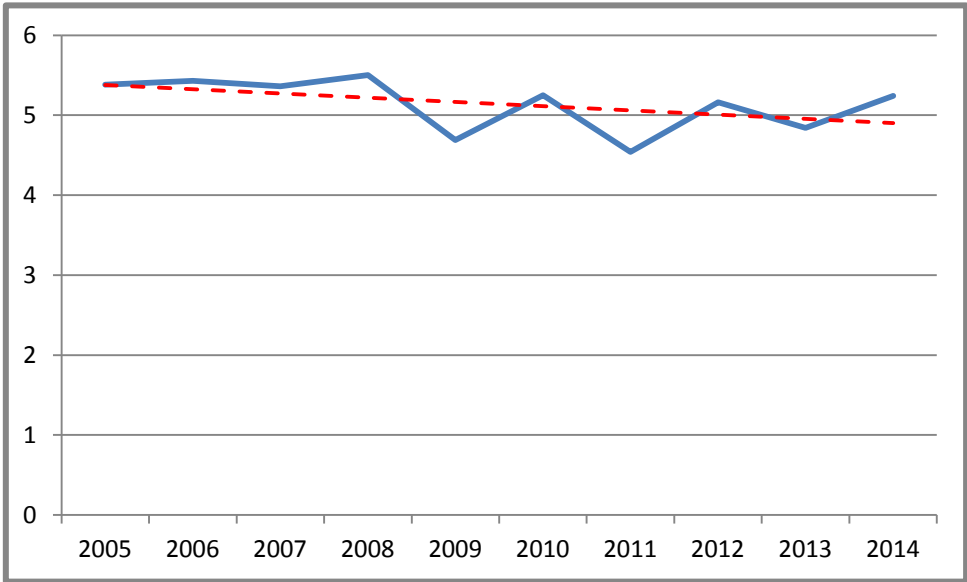


Figure 3: Number of puppies per litter

2 Coefficient of Inbreeding

If a breeder uses the KC Mate Select tool to calculate the COI of a potential mating they will read that the current KC breeding guidelines state that “where possible, breeders should produce puppies with an inbreeding coefficient which is at, or below, the annual breed average” “and ideally as low as possible”.

The 2014 the Clumber Breed Health Plan suggests breeders “should take into the account the resultant COI for any litter and strive to at least be below the current breed average”. However as the plan was published in early 2014 it may not have had any impact on breeding decisions prior to that time.

For this analysis the COI was calculated for all litters born in 2014 using the KC Mate Select tool. This has been used for the following analysis and is referred to as the KC COI to avoid any confusion.

The graph below shows the KC COI plotted against the date of birth of each litter born in 2014. The trend line is shown in red which shows a welcome reduction during the year.

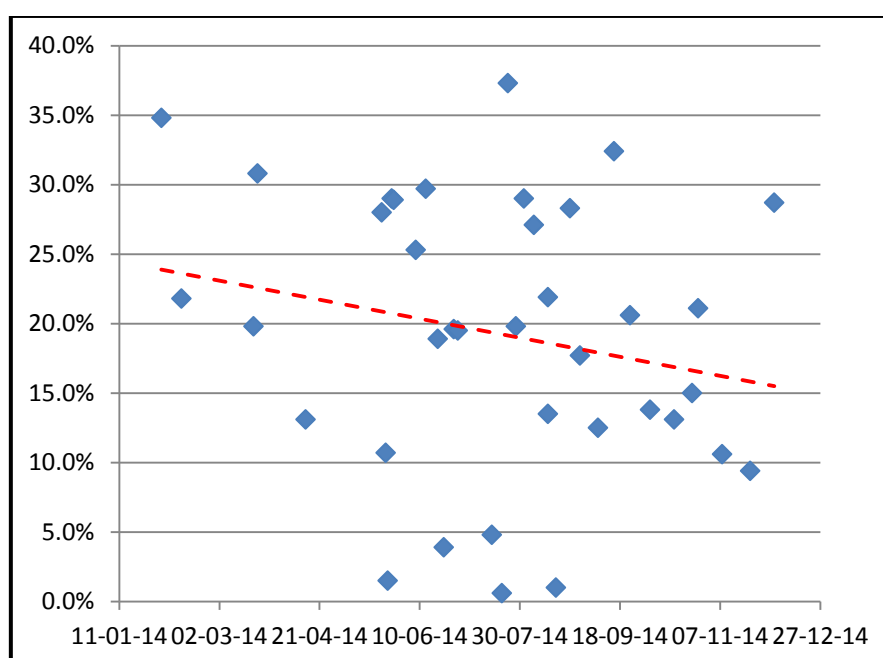


Figure 4: KC COI plotted against the date of birth of litters in 2014

The next figure on the following page shows the KC COI for each litter born in 2014 and also the number of generations that were used when the calculation was done.

The KC recalculated breed averages in June 2014, and the average COI for Clumber Spaniels was reduced from 21% to 18.2%. Extra rows are included to show the cut-off point for each of these two averages.

The average of the 37 litters born in 2014 is 19.3% which suggests there could be an increase in published breed average when the KC releases the next annual figure. The table on the following page shows that just over half (21 = 56.8%) had a KC COI of less than the earlier breed average of 21%.

Sire	Dam	KC Mate Select COI	Complete Gens	total gens
SUGAR LOAF WASHINGTON WHISSGIG*	VENATICUS HENRIETTA	0.6%	3	12
SUGAR LOAF WASHINGTON WHISSGIG*	MICKLEMESS SPICED PEACHES FROM WHISSGIG	1.0%	3	13
ABBYFORD CENTAURUS	CHERWOOD'S SNOW CHARON OF KNOTT	1.5%	5	12
TWEEDSMUIR DAMBUSTER	SLINKETT ANTONIA	3.9%	6	13
TWEEDSMUIR DAMBUSTER	NOAILLES DUCHESSE MICHELE	4.8%	6	12
WHISSGIG DADDY COOL	ERINVEINE EVER FAITHFUL TO DELSAUX	9.4%	5	13
TINGLESTONE SPARKLER	ABBYFORD SNOW QUEEN	10.6%	5	12
TWEEDSMUIR DAMBUSTER	MAURSETT MATILDA	10.7%	6	13
TWEEDSMUIR DAMBUSTER	VANITONIA BUMBLE	12.5%	6	13
MOONLIGHT PRINCE	JUBILWELL ROUGH DIAMOND	13.1%	5	14
TWEEDSMUIR MIKADO	MAURSETT MELISANDE	13.1%	7	14
MACGIRIAGHT VINDICATOR OF WHITSCLEAVE	NOAILLES DUCHESSE YVONNE	13.5%	6	12
ETHERIDGE PADRAIGE	MACGIRIAGHT MILLY	13.8%	5	13
TWEEDSMUIR DAMBUSTER	TWEEDSMUIR BEAUTIFUL DREAM AMONG SUELYNDA	15.0%	6	13
TWEEDSMUIR MIKADO	TWEEDSMUIR KRUSHED ICE	17.7%	7	14
KC Breed Average COI = 18.2% as from June 2014				
TWEEDSMUIR KLASSIC EDITION AMONG SUELYNDA	TWEEDSMUIR DUCHESSE	18.9%	6	14
ICKYTICKER HAMISH	HALESTAN REDCAR	19.5%	5	12
TWEEDSMUIR KLASSIC EDITION AMONG SUELYNDA	SUELYNDA HEAVEN SENT	19.6%	6	14
VENATICUS HERCULES	NOAILLES DUCHESSE AMELIE	19.8%	6	12
CLUMBERDALE ROYAL WULFF	NETHERCOTE JOCASTA	19.8%	6	13
ANBROOK MOONLIGHT	WINHAMPTON NAUGHTY BUT NICE	20.6%	5	14
KC Breed Average COI = 21% prior to June 2014				
SEDGEHURST PADDY	CROWNES STONEHILLS OSLIN	21.1%	5	12
SEDGEHURST TEMPEST	NOAILLES DUCHESSE EUGENIE	21.8%	6	12
MACGIRIAGHT VORACITY OF SPIDERWICK	SEDGEHURST ENYA	21.9%	6	14
CARYDAN FINIGAN	SEDGEHURST BLANCHE HUDDLESTONE	25.3%	6	14
SPANAFFY VOULEZ VOUS	DOES YOUR MOTHER KNOW	27.1%	7	14
WINTERHOLT OLIVE GREEN	WIGEON OF KENT	28.0%	5	13
SPANAFFY VOULEZ VOUS	BABBINSBRIAR HOLLY	28.3%	7	14
NETHERCOTE LOKI	SEDGEHURST BLISS	28.7%	6	14
VENATICUS HERCULES	ICKYTICKER PEGGY SUE	28.9%	6	12
ICKYTICKER HAMISH	SEDGEHURST CIARA	29.0%	6	14
BADGERSMOON RAZZLEDAZZLE	BADGERSMOON LIBERTY BELLE	29.0%	8	12
ICKYTICKER GORDON	WOODLANDEAVE HONEYSUCKLE	29.7%	9	14
TINGLESTONE SPARKLER	KIDSTY KLIFTON BELLE	30.8%	9	13
SEDGEHURST BYRON	VENATICUS HERA	32.4%	9	12
FLINTWOOD FROSTY	SEDGEHURST ISLA	34.8%	9	13
WYNDHAMMAX ZEUS	SHARPENHOE JUNO OF FLINTWOOD	37.3%	9	13

Figure 5: Table showing the KC COI for all matings with puppies born in 2014

On the Kennel club website, in its section on breed averages for COI, it highlights three key measurements for COI which are:

0% which indicates that the offspring have an unrelated sire and dam

12.5% which is the “genetic equivalent” of a mating between a grandfather and granddaughter

25% which is the “genetic equivalent” of a mating between a father and daughter

Figure 6 shows the proportion of matings with puppies born in 2014 that fall into categories between these key measurements.

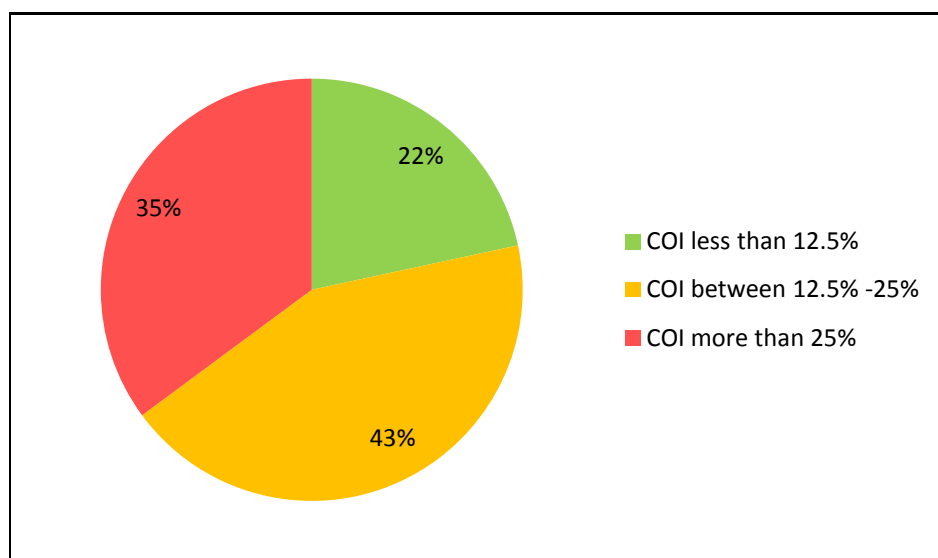


Figure 6: Diagram showing the percentage of matings which fell into the three categories identified by the KC

3 Popular Sires

The Bateson report published in 2010 included a recommendation that “Over a 5-year period no dog should have more offspring than 5% of the total number of puppies registered for that breed”. The 2014 Breed Health Plan advised stud dog owners that “no dog should produce more than 54 puppies in a 5-year period”.

It must be born in mind when looking at the following data that the Club’s recommendation was not publicised until early 2014 and so might have had no impact on breeding decisions taken prior to that time.

The 37 litters born in 2014 had been produced by 26 sires. The table below shows all dogs that had sired a litter in 2014 and the number of litters and puppies sired by each one during the year.

Sire	no litters	total puppies
SEDGEHURST BYRON	1	1
BADGERSMOON RAZZLEDAZZLE	1	2
ICKYTICKER GORDON	1	2
WINTERHOLT OLIVE GREEN	1	2
CARYDAN FINIGAN	1	3
ETHERIDGE PADRAIGE	1	3
SEDGEHURST PADDY	1	4
WHISSGIG DADDY COOL	1	4
WYNDHAMMAX ZEUS	1	4
ANBROOK MOONLIGHT	1	5
CLUMBERDALE ROYAL WULFF	1	5
MACGIRIAGHT VINDICATOR OF WHITSCLEAVE	1	5
SEDGEHURST TEMPEST	1	5
FLINTWOOD FROSTY	1	6
MOONLIGHT PRINCE	1	6
MACGIRIAGHT VORACITY OF SPIDERWICK	1	7
NETHERCOTE LOKI	1	8
ABBYFORD CENTAURUS	1	9
ICKYTICKER HAMISH	2	9
TINGLESTONE SPARKLER	2	9
TWEEDSMUIR MIKADO	2	11
SUGAR LOAF WASHINGTON WHISSGIG*	2	12
TWEEDSMUIR KLASSIC EDITION AMONG SUELYNDA	2	13
VENATICUS HERCULES	2	13
SPANAFFY VOULEZ VOUS	2	20
TWEEDSMUIR DAMBUSTER	5	26

**Figure 7: Sires that produced a litter in 2014
and the number of litters and puppies each one had during the year**

Using a '5-year rolling total' of the puppies produced, it is possible to identify whether any sires are close to or have exceeded the recommended total.

Of the sires listed in Figure 7, only three had been producing puppies for five or more years which would allow this calculation to be made. Figure 8 on the following page shows that none of these dogs sired more than 54 puppies in any 5-year period.

	SEDGEHURST TEMPEST		CLUMBERDALE ROYAL WULFF		SEDGEHURST BYRON	
	actual	5-year rolling total	actual	5-year rolling total	actual	5-year rolling total
2005	14					
2006	14					
2007	0					
2008	0		5			
2009	6	34	4			
2010	23	43	7		7	
2011	5	48	10		11	
2012	0	48	7	31	8	
2013	12	46	11	39	10	
2014	5	45	5	30	1	37

Figure 8: puppies produced by three sires with the '5-year rolling total' for each

Amongst the other sires listed in Figure 7 there were four that had had litters registered for four years up to and including 2014. These are shown in the following table with the total puppies they had produced up to the end of 2014.

	VENATICUS HERCULES		FLINTWOOD FROSTY		ETHERIDGE PADRAIGE		TWEEDSMUIR DAMBUSTER	
	actual	4-year total	actual	4-year total	actual	4-year total	actual	4-year total
2011	4		7		7		3	
2012	0		6		13		6	
2013	9		7		5		22	
2014	13	26	6	26	3	28	26	57

Figure 9: total puppies produced by four sires over the four years up to 2014

4 Repeat Matings

Of the 2014 litters with puppies registered in 2014 there were three that were repeat matings, which are shown in the table below along with the total number of puppies produced.

Sire	Dam	total puppies produced from the two matings
TWEEDSMUIR DAMBUSTER	SLINKETT ANTONIA	13
TWEEDSMUIR DAMBUSTER	TWEEDSMUIR BEAUTIFUL DREAM AMONG SUELYNDA	8
TWEEDSMUIR KLASSIC EDITION AMONG SUELYNDA	TWEEDSMUIR DUCHESSE	9

Figure 10: 2014 matings which had previously occurred and produced puppies

5 Calculation of 5% of the total number of puppies

Bateson's recommendation was that "Over a 5-year period no dog should have more offspring than 5% of the total number of puppies registered for that breed".

If a '5-year rolling total' is to be used to measure the number of puppies per sire, it would be appropriate to use a similar calculation to measure 5% of the '5-year rolling total' for the breed. This would take into account fluctuations in the number of puppies born and registered in each year which is shown in Figure 1 of this report.

The table below illustrates how this can be calculated on an annual basis using the number of puppies born in each calendar year. Note that the numbers for the years prior to 2005 have been hidden to make the table fit on the page, but they are included in Figure 12 which shows how 5% of the rolling total has decreased since the peak year in 2010.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of Puppies born	172	250	208	220	211	268	218	132	237	194
5-year rolling total	779	911	962	1021	1061	1157	1125	1049	1066	1049
5% of 5-year rolling total	39	46	48	51	53	58	56	52	53	52

Figure 11: Calculation of 5% of the 5-year rolling total of puppies born each year

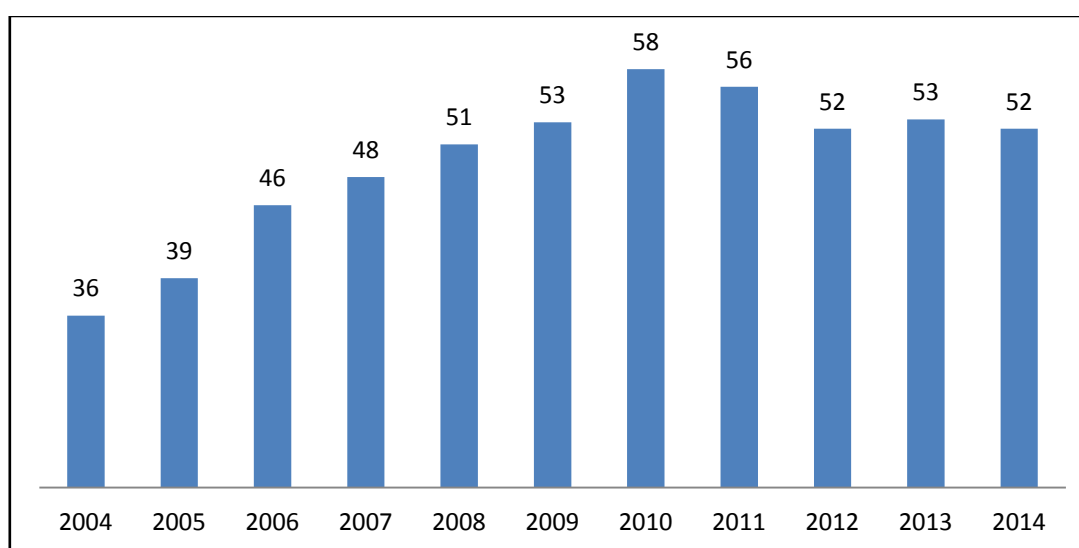


Figure 12: Graphic illustration of the 5% of the '5-year rolling total' of puppies born each year

CONCLUSIONS

1. The number of litters, and the number of puppies born in 2014 were both lower than the respective averages of the previous 10 years, and there appears to be a slight decline in puppies born over the last 10 years.
2. The 2014 Health Plan suggested that breeders should “strive to at least be below the current breed average” COI which refers to the KC published average. This analysis shows that:
 - a) Of the 37 litters born in 2014 just over half (21) had a KC COI of less than the breed average at the beginning of the year (21%).
 - b) The average of all matings in 2014 is 19.3%, which is slightly higher than the published average which was revised in June 2014 to be 18.2%.
 - c) Also, 43% of all litters were, by KC definition, the “genetic equivalent” of a mating between a father and daughter.
3. It should be noted that there are different methods available to calculate COI which could cause confusion. The KC COI is preferable because it is readily available to the general public, and is likely to be the one by which future progress to reduce inbreeding will be judged by the KC and others.
4. Using the ‘5-year rolling total’ for puppies produced by each sire provides a convenient way to show whether any dogs have sired more puppies than the current recommendation. For sires that have a breeding history of four years, their rolling total for those four years provides an indication about whether they might exceed the recommended total in their fifth year.
5. A 5-year rolling total of puppies born is a convenient way to calculate the 5% of total puppies born on an annual basis which can then be used in the Breed Health Plan.