



## Guidance on the use of SPARKS Data Sheets

### INTRODUCTION

These sheets are produced as an aid to Mare owners when selecting prospective stallions. They are based on pedigree & genetic analysis of the studbook using the **SPARKS and GENES** software packages. They do not look at the physical attributes of any stallion or potential progeny. **Mare owners must continue to use their own best judgment regarding this.**

The analysis calculates **Mean Kinships** for every known pure-bred Cleveland Bay in the world population. This is a measure of how related an individual is to every other living Cleveland Bay. It takes into account inbreeding coefficients, but also a variety of other measures of genetic health of the population.

Each datasheet provides a **Mean Kinship figure** for a named mare and assigns the mare to a **Mean Kinship Band** based on this figure.

The table names every licensed stallion and orders them by:

- i** their location Home or Overseas
- ii** their own Mean Kinship band and
- iii** the Kinship Coefficient of the progeny of mating with the named mare. (This is not the same as the Mean Kinship, but is closely related. It is in-fact the inbreeding coefficient of the progeny)

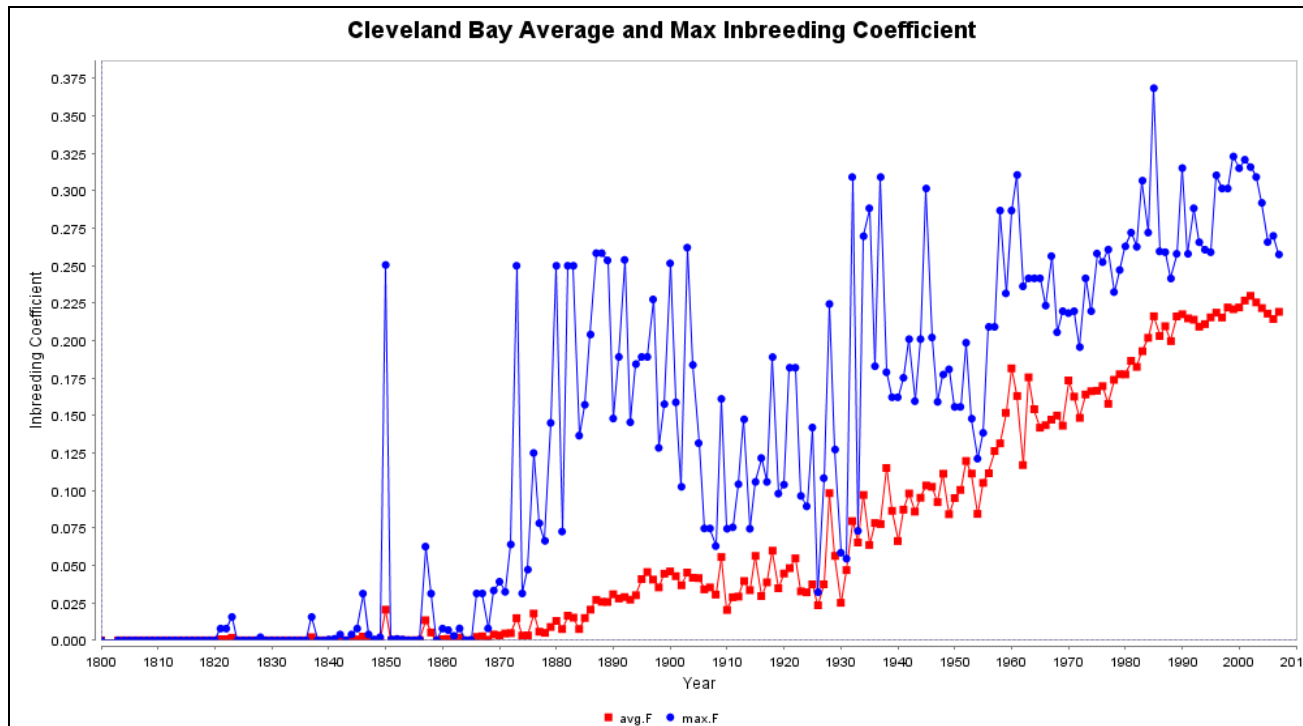
### SELECTION

- a) Mare owners are encouraged to use a stallion from either the same or an adjacent kinship band i.e. a band F mare would ideally be covered by a stallion from bands E to G.
- b) By adhering to this guidance we prevent the bringing together of rare and more common bloodlines, which would be detrimental to the future genetic health of the breed
- c) Having identified appropriate bandings in the previous 2 stages, look at the Kinship Coefficient figures in the 4<sup>th</sup> column of the table against these stallions. This is the Kinship Coefficient of the potential progeny of a mating between the named mare and that stallion. You should choose matings that give progeny of lower Kinship Coefficient than the Mean Kinship of both of the parent animals.
- d) Ideally choose matings giving progeny of Kinship Coefficient lower than the average for the whole population (i.e. less than 0.22468 in 2009).
- e) Avoid choosing matings giving progeny with Kinship Coefficient greater than the Mean Kinship of the parent animals.
- f) To avoid inbreeding steer well clear of matings giving progeny with Kinship Coefficient greater than 0.24
- g) Band D E F G mare owners should avoid the temptation to jump bands “and select a stallion based on the lowest possible Mean Kinship of progeny. This runs the risk of bringing together rare and more common genes but also brings down the average mean kinship of the population too quickly. Whilst this reduction might seem good in the short term it actually reduces the maximum potential reduction in the future.

### THE AIMS AND SUCCESS OF THE PROJECT

- The avoidance of mixing of rare bloodlines
- The maximizing of genetic diversity of the whole population
- This will show through a gradual reduction in the average mean kinship of the whole population. Since its inception and first full year of implementation, the average Mean Kinship of the global Cleveland Bay population has been reduced from 0.2254 to 0.2246. Whilst this change is at first appearances small, it is positive and sustainable progress.
- The reduction of the level of inbreeding in the population without compromising the above. Over the period of the scheme Mean Inbreeding has been reduced from 0.225 to 0.21 and the maximum level of inbreeding in any one animal from 0.36 to 0.25 showing that many genetically damaging matings as occurred in the past are now being avoided.
- Dissemination of information on an annual basis to enable breeders to work towards these goals.
- By adopting these strategies we hope to stop the loss of genetic diversity and increasing levels of inbreeding that are becoming apparent in the population. This in turn should help avoid future problems of increasing infertility, foal mortality, deformity and other genetically linked phenomena.

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### ARTIFICIAL INSEMINATION

The review of feedback from users of the 2004 sheets highlighted the need for information on availability of stallions by artificial insemination. In collating and presenting this information we have tried to indicate whether a stallion is available by fresh or frozen semen, and also which countries frozen semen is available for export to. In some cases stallions were away at collection centres at the time the data was collated, and we have indicated that interested mare owners should make contact with the stallion owner. Contact details can be found in current society publications or on the CBHS website [www.clevelandbay.com/stallions.htm](http://www.clevelandbay.com/stallions.htm) or for North American Stallions the CBHSNA website [www.clevelandbay.org](http://www.clevelandbay.org)

The 2009 datasheets contain some Kinship data relating to some stallions that are now deceased, that are known to or may have frozen semen still available. This information is provided so breeders have the broadest possible picture of mating choices. Please note that appearance of the existence of stored semen on the sheets is no guarantee of availability.

### MEAN KINSHIP OF PROGENY

The use of datasheets since 2004 has highlighted the subtle difference between Mean Kinship of parents and Kinship Coefficient of progeny. Until new animals are registered and entered onto the system we can not calculate their Mean kinship or Kinship Band. This highlights the importance of prompt registration of pure-bred foals. Owners are advised to follow the above guidelines in making breeding choices, as they continue to be the most robust and scientifically validated method of ensuring the genetic wellbeing of the Cleveland Bay breed.

### ANOMALIES

If when studying the datasheets for your mares you recognize information that is not or might not be correct, please let the society know. In past years a small number of cases have come to light which revealed inconsistencies in the SPARKS data, which have since been corrected. The programme can only be as good as the data it contains, so please let us know if, for example, mares with identical breeding do not have identical datasheets.

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