

Across-flock connectedness – interpreting output

SIL Technical Note

Relates to: Assessing strength of genetic connections between flocks using SIL tools

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Summary

- SIL produces graphs to visually depict across-flock connectedness (genetic linkages)
- SIL can assess the adequacy of connectedness between flocks using performance data from recent years
- Connectedness is progressively lost over time once link sires are no longer used

This document should be printed in colour to aid explanations

Background

This document is written to aid interpretation of SIL connectedness graphs from an across-flock analysis. It can be used to provide appropriate feedback to participating flocks.

It is assumed the reader is familiar with the principles of across-flock connectedness and with best practice for achieving and maintaining connectedness between flocks. These topics are covered in other SIL technical notes.

Analysis of connectedness

Connectedness is assessed on data from recent years only. Details of this are described in the other SIL technical notes on connectedness.

A connectedness analysis is requested when a genetic evaluation is set up. Connectedness reports can be requested with, or instead of, standard reports once this has occurred.

There are two outputs that can be requested; connectedness graphs and link sire data files. Typically only the connectedness graphs are used.

Interpreting SIL connectedness graphs

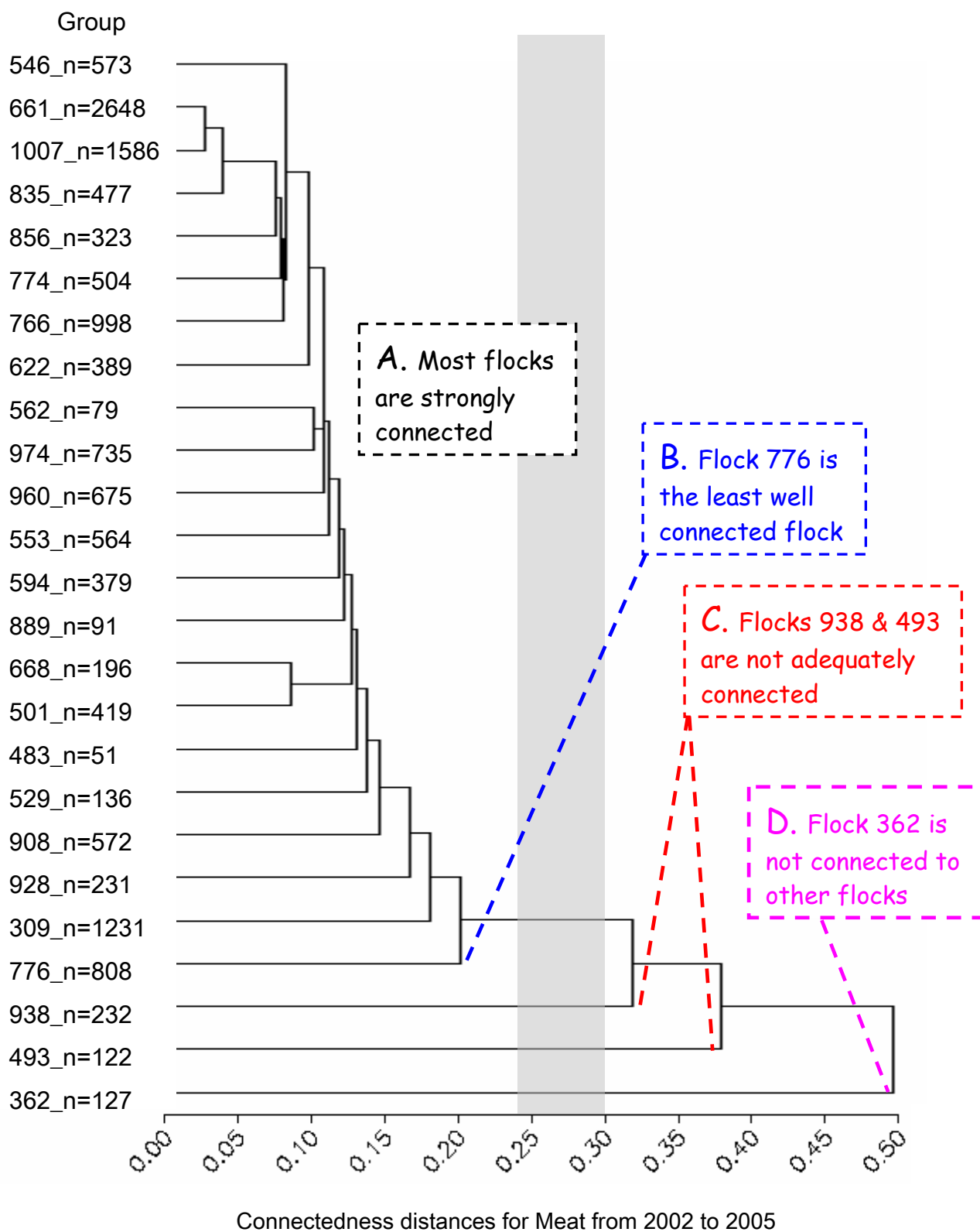
Two examples of connectedness graphs (see following pages) are used to illustrate points in interpretation. Note that flock numbers are not listed in sequence from smallest to largest.

Flocks connected by lines to the left of the grey bar, have good genetic connectedness. Those linked by lines that cross over the grey bar, do not have adequate genetic connectedness. Where connecting lines are near the grey bar, greater use of link sires may be warranted.

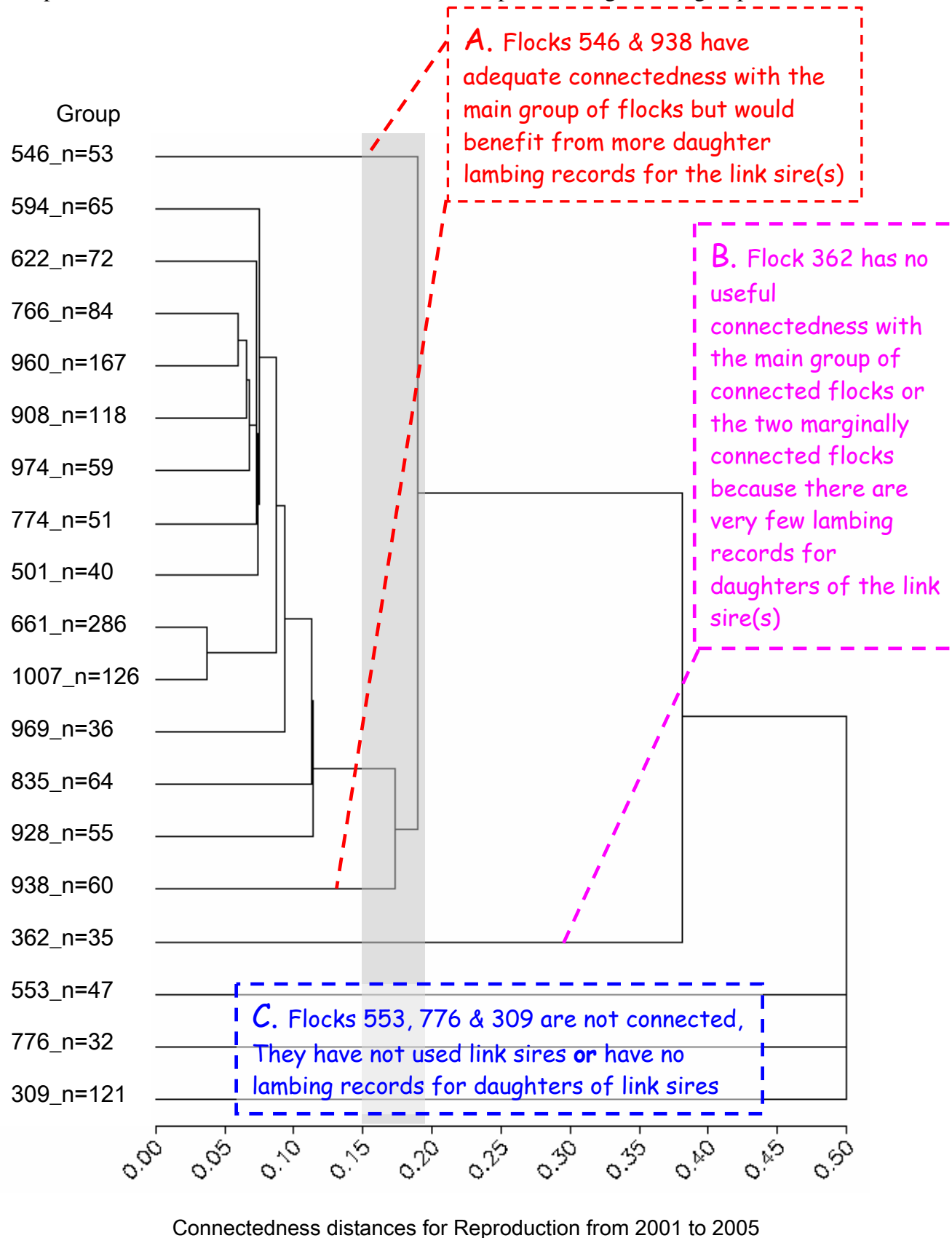
Sometimes the list of flocks on the graph does not match the list of flocks submitted for an across-flock genetic evaluation. A flock may appear on the list that is not part of the genetic evaluation if some ewes from this flock were transferred into a flock that is in the evaluation – the graph lists groups based on birth flock. Flocks in the evaluation may not appear on the graph if there is no performance information stored on SIL for the years considered.

Critical thresholds for connectedness are not the same for all traits. SIL uses different thresholds for Reproduction (which has a lower heritability) than it does for other traits.

Example 1 – Connectedness between flocks for the Meat goal trait group.



Example 2 – Connectedness between flocks for the Reproduction goal trait group.



Example 3 is a section from a text file listing link sires for a group of flocks. This SIL output file can be requested, then imported into Excel. [Import ID fields as “text” format so Excel does not convert them to dates!].

Typically, we do not look at this link sire data file to interpret across-flock connectedness. Rather, we use it when expected connectedness is not apparent from the graphs.

Data in the file are sorted first on year of birth of the sire (Sire YOB), then on birth flock of the sire (Sire flock), then Sire tag and finally the flock in which the link progeny are born (Flock group). “Flock group” is a birth flock for link sire progeny in the period considered by the connectedness analysis.

The two righthand columns contain the number of link sire progeny in the flock group (Sire progeny) together with the total progeny from all sires in that flock group (Group size) within the period studied. Group size is the same for every row with the same Flock group (e.g. flock group 2709 with **text highlighted red**).

For a given link sire, all the flocks with link progeny are listed consecutively. For the example of link sire 101/03 (from flock 2997), **highlighted in blue**,

we see that flock connectedness provided by this sire alone is not adequate for a trait such as Growth (<25 progeny) for three of five flocks. However, more connectedness may be present due to other link sires for some or all of these Flock groups.

Known link sires may not appear on this list for three reasons.

1. They were used in flocks earlier than the earliest year the connectedness analysis considers data for i.e. outside the range of data used for the connectedness evaluation.
2. The sires have not been identified in the same way in the flocks where they were used.
3. They have insufficient progeny. **SIL requires a link sire have a minimum of 20 progeny with performance measurements**, within each flock, to contribute to across-flock connectedness. This minimum is to ensure that sire merit is accurately assessed within each flock.

Need more information?

Contact your SIL bureau or call 0800-745-435 (0800-SIL-HELP).

Example 3 – Selected part of a comma-delimited text file that lists link sires used in across-flock connectedness calculations.

Sire tag	Sire flock	Sire YOB	Flock group	Sire progeny	Group size
23/03	2705	2003	2709	13	3253
23/03	2705	2003	2847	3	405
447/03	2709	2003	2709	22	3253
447/03	2709	2003	4648	9	261
101/03	2997	2003	2872	15	577
101/03	2997	2003	2893	36	455
101/03	2997	2003	2926	22	388
101/03	2997	2003	2997	49	908
101/03	2997	2003	4346	5	3330
260/02	2709	2002	2659	20	426
260/02	2709	2002	2709	13	3253
260/02	2709	2002	2813	53	1247
311/02	2709	2002	2709	19	3253
311/02	2709	2002	3011	2	621
311/02	2709	2002	4648	4	261
2010/02	2893	2002	2893	57	455
2010/02	2893	2002	2926	23	388
2192/02	2893	2002	2893	14	455
2192/02	2893	2002	2926	13	388
44/02	2997	2002	2803	2	1687
44/02	2997	2002	2811	15	690
44/02	2997	2002	2872	19	577
44/02	2997	2002	2997	39	908
44/02	2997	2002	3044	18	2213
5/02	3011	2002	2709	13	3253
5/02	3011	2002	3011	1	621
53/01	2659	2001	2813	7	1247
53/01	2659	2001	2872	2	577
53/01	2659	2001	2965	8	319