Stout family history project phase one

Narrative and findings as of February 2020

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Introduction

There have been Stouts in Orkney and Shetland for several centuries, especially in Dunrossness parish in Shetland, including Fair Isle, and in the parish of Walls and Flotta in Orkney. In the early nineteenth century many Fair Isle Stouts were moved by the laird to the North Isles of Orkney, especially to Westray and Stronsay.

This surname project is using genetic analysis to go beyond the written record in order to discover something of the origins of the Stout surname in Orkney and Shetland.

The project has now been running for over 15 years. It is still making new discoveries about the Stout family as new participants make contact and new technologies become available, and costs are reduced.

In the first phase, Y-DNA analysis using a 37 STR marker protocol is being used to find which lines of the Stout family, identified by traditional genealogy, share a near common ancestor. This has succeeded so far in showing:

1. Many Stout lines originating in Shetland do share a near common ancestor
2. There may be one or more lines from Shetland which form separate groups
3. The extant line of Stouts of Walls, Orkney origin do certainly form a separate group

Testing in the first phase is conducted using the Y-DNA37 service product of Family Tree DNA. The Scotstout project defined there has attracted a number of joiners who are probably not of Scottish origin. However, some of the results produced have been interesting in themselves.

Background

Our traditional society was patrilineal, meaning that the kinship relationship between father and son defined other social relationships. Customs such as inheritance were based on the father to son relationship, for example. Even now, when customs surrounding patrimony and primogeniture are fading into history, surnames are still mainly transmitted in the male line. Family histories researched using family sources and public records usually focus on surname-defined groups.

The entry for "Stout" in Gregor Lamb' book, "Orkney Family Names"[1] reads as follows:

Henry Stout, Dritness, Stronsay, 1633; pronounced 'Stoot'; from the nickname 'stout' with its original meaning 'firm' or 'bold'; the place-name Stout Farthing in Holm recorded in 1500 suggests that this family name had been long established in Orkney; a common family name in Orkney but with a limited distribution; Westray and Stronsay account for almost half the Stout families in Orkney; Stouts of Orkney origin are found in Canada; Stout is also an English family name.

In the above entry Lamb omits some of the more speculative or contentious content of the Stout entry in his earlier book "Orkney Surnames"[2]. For example, he there suggests a more colourful derivation for the nickname: *"…the OE word 'stot' meaning a young ox has been suggested but it is likely to stem from ON 'stóth', a stallion since horse nicknames were common but cattle nicknames were rare"*. He also includes Stoddisyord in Sandwick (1500) as place-name evidence for the antiquity of the name.

Lamb also states that many of the Westray Stouts came originally from Fair Isle at the beginning of the 19th century. He suggests that *"Stout is certainly a native Orkney surname too however, possibly in the case of the Stronsay Stouts and very likely in the case of the Stouts of South Walls: Stout is also found as surname in Cumberland"*.

On the latter points, Lamb is not quite right, as can be demonstrated from the historical record. In fact, *all* of the Westray Stouts originated from Fair Isle in the early nineteenth century, as did *all* of the Stronsay Stouts, either directly from Fair Isle or via Westray. The name did not originate independently on either of these islands. However, the same cannot be said for South Walls, where the question remains an open one. The surname is found in several English counties, most numerously in Lancashire.

In 1841, with a count of twenty-two heads, there were more Stouts living on the tiny island of Fara in the parish of Walls and Flotta than on any other Orkney island. Taking Shetland into account, only the Shetland Mainland, with sixty-four Stouts and Fair Isle, with twenty-three each had a larger Stout population. Of the Shetland Mainland Stouts, twenty-seven were clustered in the Quendale area of Dunrossness at the southern end of the isle. Twenty-two were living in Lerwick.

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[1] "Orkney Family Names" Gregor Lamb; published Bellavista Publications 2003

[2] "Orkney Surnames" Gregor Lamb; published Paul Harris Publishing 1981

To complete the distribution picture of 1841, Westray, Stronsay, Sanday and Eday also had Stout populations, all recently established by migration from Fair Isle at the behest of the laird, who wanted to transfer fishing skills to his estates in the North Isles of Orkney as well as to alleviate population pressure on Fair Isle. In the South Isles, in addition to Fara, there were also Stouts on Walls and Hoy. Kirkwall and Stromness as yet had no Stouts. In Scotland as a whole, outside of Orkney and Shetland, there were only thirty-five Stouts, many of whom were migrants from the isles.

Note that although there were Stouts on Stronsay in 1633 when the poor crofter, Henry Stout died at Dritness, the population there had disappeared by the mid-eighteenth century, when proper records began to be kept. The current Stronsay Stout population all has a nineteenth century Fair Isle origin, via Westray. There were Stouts originating directly from Fair Isle in Stronsay, but their remaining male line descendants are now living on the Scottish mainland.

One of the frustrations of researching family history is the closeness of the historical horizon. We are seldom able to see back beyond the mid-eighteenth century. Very few earlier documents survive and the paper trail comes to a sudden stop.

There are now, however, ways of doing family history by other means. We may not be able to put names to individuals or places to names, but we are nevertheless able to ask and to answer interesting questions about the group history of our family. Genetics and population studies are a means to this end.

For example, how did the distribution of Stouts reach the point it did in Orkney and Shetland in 1841? How long have Stouts lived on the islands? As suggested by Lamb, "Stout" probably belongs to the class of surnames derived from nicknames. Was it coined independently in Orkney and Shetland (as well as elsewhere), or was the name brought to Orkney by an incomer – or were there elements of both? If coined in Orkney was the name invented once or many times?

There have been speculative attempts to construct a relationship between the three Fair Isle couples listed above based on oral tradition, land tenure papers and pre-1841 census documents. However, it cannot be reliably concluded from these sources that there was indeed such a relationship. Of course it would not be any surprise if there were. But was there?

The Dunrossness Stouts were part of a community in relatively close contact with Fair Isle, probably providing marriage partners and new blood from time to time. There was a large number of Stout families in the Quendale area of Dunrossness in the latter half of the eighteenth century. Due presumably to the impact of emigration and possibly high mortality, only one line, that of John Stout and Margaret Aiken of Corston, survived in the isles into the latter half of the nineteenth century. Prima facie it would not be surprising to discover that the Fair Isle and Dunrossness Stouts were related. But were they?

The case of the Stouts living in Lerwick is not so clear, albeit they too had a Dunrossness origin. Even in the eighteenth century they were well established among the merchant class of the town, socially fairly far removed from the fishermen and crofters of Dunrossness and Fair Isle. It was one of their number, a great-grandson of Thomas Stout and Katherine Young, who was eventually to become Prime Minister and later Chief Justice of New Zealand. Were these folks, including a grocer & spirit merchant, a postmaster and a building contractor related to the Dunrossness families?

In common with the rest of Scotland, Orkney and Shetland are fortunate in having very well organised and accessible public records of births, marriages and deaths. Since 1855 the statutory records have been very detailed and these allow relationships over several generations to be traced very easily. The major limitation placed on access (especially over the Internet) is closure of the most recent records on privacy grounds.

Before 1855 the records are much less detailed and, in general, are limited to the Old Parish Registers of births, christenings and marriages. These registers were kept with varying degrees of rigour. For most parishes, registers are extant from the late eighteenth century onwards but there are damaged pages in some of the older registers.

Using these resources, together with census records, land tenure records and other documents in the public domain it is quite straightforward to construct family trees which originate with individuals who were born in the mid-eighteenth century onwards.

For most families, however, there is no way to do classic genealogical research back in time beyond the early eighteenth century. There may be isolated records which show the presence of members of a surname group in a specific location, for example a parish or township, but there is insufficient information to show any linkages between them.

Genetic information can be used to establish some such linkages. With current testing techniques it is not possible (at reasonable cost) to determine the precise relationship between two individuals using genetic methods but it is possible to say whether any two individuals had a common ancestor in the male line. Estimating when the most recent common ancestor (MRCA) lived is still very imprecise at the current state of the science. Even so, by carrying out a genetic test of two carefully selected individuals who represent different family trees it is possible to draw conclusions about whether the two trees are, in fact branches of a single tree.

This kind of study is sometimes known as “deep genealogy”. It is also possible to use genetic analysis to study the movement of populations over very long historical periods. The Stout surname project is associated with the work of Professor Jim Wilson of Edinburgh University, who is a co-administrator of the project.

The focus of the project is therefore on transmission of the Stout surname in the male line, which means that any DNA testing is Y-chromosome dependent.

In the first phase of the project, which is still ongoing, relationships have been tested using Y chromosome STR analysis.

Project overview

Using traditional methods of genealogical research it has been shown that there are three or four Stout family lines originating in Fair Isle which are still extant; two or three from the Mainland of Shetland; and two or three from the South Isles of Orkney. Other lines may also be extant overseas but are not known to be so in Orkney or Shetland.

As well as strong circumstantial evidence, there are family traditions which suggest that the Fair Isle lines are in fact branches of a single tree. This tradition suggests that in the early eighteenth century a Thomas Stout was sent to Fair Isle as a schoolmaster by the Scottish Society for the Propagation of Christian Knowledge and that all of the Stouts of Fair Isle are descended from him. The records of the SSPCK are extant and confirm that there was a Thomas Stout in their employment in Fair Isle between 1756 and 1767. However, there are land tenure records which may conflict with a simple interpretation that this teacher was the sole patriarch of the Stouts of Fair Isle.

There is some circumstantial evidence and similar traditions about the Stouts of Mainland Shetland. Indeed it would be surprising if they were not also related to the Stouts of Fair Isle. The Mainland Stouts have strong Dunrossness connections, Dunrossness being the Mainland parish which Fair Isle now belongs to and the main centre of population of Stouts in Shetland at the end of the eighteenth century. (An interesting question, incidentally, is what became of the very large numbers of Stouts who were living in Dunrossness at that time. Emigration and disease no doubt contributed to their disappearance.)

The Stouts of the South Isles of Orkney mostly originated from the parish of Walls in Hoy. However, of the four identified trees one originated in Fara. It seems likely that all of these Stouts are related – but do they have any connection with the Shetland Stouts?

There are many entries in the Old Parish Registers and in land tenure records which cannot be reliably assigned to any of the main trees discussed above. The earliest known record is the will of Henry Stout in Stronsay, dated 1633. The will of Giles Stout in Hoy, dated 11 May, 1660 is also extant.

Members of all of the families mentioned above are scattered to the four winds, many in Canada and New Zealand, including descendants of Sir Robert Stout, an early Prime Minister of that country, who belonged to one of the families of Mainland Shetland and emigrated from Lerwick to Otago in 1864.

Scope

In line with the objective of the project, the families of prime interest were those originating in Orkney and Shetland. However, in practice the use of Family Tree DNA to carry out testing allowed us to use their project structure in parallel with our own and we attracted participants with no known connection to the Northern Isles. This allowed a broader secondary scope to the project.

For the period prior to the beginning of statutory registration of births, marriages and deaths in Scotland, in 1855, the main source of information for genealogists is the collection of Old Parish Registers, in which births or christenings and marriages were recorded. For many parishes the recording was incomplete at the best of times. Most registers began to be kept only in the eighteenth century and many registers were damaged by dampness or crumbling at the edges of the pages. The census of 1841 was the first record of the Scottish population with a serious claim to completeness, although even there some data was not collected and some individuals were absent from home on the night of enumeration.

The earlier parts of the parish registers allow us to develop many fragmentary family trees which don't connect with each other, and many of which have a very shallow depth of generations, often only two ie they just define a nuclear family. Bearing in mind that this is a patrilineal exercise, the reason may be that a family consisted entirely of girls. More often, infant or childhood mortality played a part, as did maternal death in childbirth. Then, finally, there was emigration, mostly to New Zealand and Canada. In both Dunrossness in Shetland and Walls in Orkney there were large Stout populations in the eighteenth century but by the beginning of statutory registration these populations were very much depleted.

Emigration is important to this project because many Stout family lines which are extinct in the Northern Isles and Scotland are known to flourish overseas. There are probably other lines which we are unaware of which continue to flourish.

It was decided to use the 1841 census as an arbitrary filter for targeting specific lines to study. If a line was not represented in the 1841 census then, de facto, with exceptions to be explained below, it had become extinct in Scotland. Descendants of emigrants from before 1841 could be picked up anyway if they made contact, but there would be no way of targeting them.

The basic genealogical research using the paper records had been completed and the 1841 census could be treated as a time slice across the set of trees developed. The root of each tree was defined in a way which was intended to be non-controversial. Some family history experts might have speculatively gone back a further generation or two.

In the event fifteen lines were identified as extant in 1841. There were also nine individual male Stouts who could not be identified. These included two in Dunrossness, one in Lunnasting, one in Eday, two in Thurso, one in Shettleston, Glasgow and two seamen in Leith. One of the seamen, a twelve-year-old, was said to have been born in

Midlothian but it would be plausible to assume most of these individuals had a Northern Isles origin. Adam Stout in Shettleston could be an exception.

Two additional lines were included although not represented in the census:

- Gilbert Stout from Lunnasting was a seaman and probably at sea on the evening when the census was conducted. (There are other similar cases.)

- John Stout of Gosport, Hampshire wasn't represented in the 1841 census for Scotland either. His descendants were still in Hampshire and possibly London. He is included here because a descendant who did the test matched the Shetland lines tested.

Two lines are not definitively of Shetland origin:

- John Stout in Mull probably came from Fair Isle. His family was in Iona in 1841 and subsequently emigrated to Canada. It is not clear whether the male line is still extant but the family in Quebec have a tradition that they have a Fair Isle origin.

- William Stout, who married Mary Russell in the county of Stirling possibly originated in Shetland. The line is extant in Canada, Ireland and Scotland. There is a family tradition of a Fair Isle, or at least Shetland, origin.

The analysis of the 1841 census is here: link to 1841 index

Other individuals, notably thought to have been living in Glasgow, are missing from the census, but these belonged to lines DT and SW, otherwise represented. This includes Thomas and George Stout, sons of William and Marjory Leask of Lerwick, and some of the family of William Stout and Mary Russell.

The fifteen lines identified, augmented by two, as explained, were:

Dunrossness/Lerwick
DJ: John Stout c. 2 July, 1765, m. Margaret Aitken; Corston
DR: Robert Stout m. Christina Burgher, son George b. 1775; Hillwell
DT: Thomas Stout b. ~1730 m. (1) Katherine Young, daughter Katherine b. ~1752;
m. (2) Ellen Gaudie, daughter Barbara b. ~1777; Brows
DW: William Stout m. Janet Black, daughter Christian b. 27 May 1764; Hestingott

Delting
DtM: Malcolm Stout b. ~1755 m. (1) Janet Anderson, son John b. 1779 Scatsta;
m. (2) Catherine Humphrey, son Thomas b.1792; Garth,Scatsta

Fair Isle
FG: George Stout b. ~1756, m. Ann Wilson
FL: Laurence Stout b. ~1760, m. Marjory Williamson;
son Magnus m. Mary Brown 1809
FT: Thomas Stout b. ~1756, m. Girsy Smith
FW: William Stout b. ~1770, m. Grizel Irvine;
son Oliver m. Louisa Williamson 1850 in Lerwick them moved to Aberdeen

Mull
MJ: John Stout b. ~~1765 putatively moved from Fair Isle to Iona

Lunnasting
LG: Gilbert Stout b. ~1820 m. Phillis Hughson 1844; Greenha, Nesting

Stirling
SW: William Stout b. ~1770 m. Margaret Russell son John b. Denny 1796

Walls/Fara
WfJ: James Stout b. ~1760, m. Isabella Mowat; son Harry b. ~1790; Fara
WJe: James Stout b. ~1770, m. Elizabeth Bain; son William b. ~1802; N. Walls
WJi: James Stout b. ~1785, m. Isabella Bremner; daughter Mary b. ~1815; N. Walls
WW: William Stout b. ~1760, m. Elspeth Cromarty; son James b. 1791; Misbister, Walls

Hampshire
HJ: John Stout b. ~1775 m. Ann Gray, Gosport

As explained, the project was in effect open to all-comers with a Stout surname. However, the particular family lines identified were those considered to be of most interest to link genetically since they are known to have, or most likely to have, living representatives. It was possible to facilitate targeting using the family trees already developed for these lines.

More detail of the lines is held here: link to lines in scope

Y-DNA37 testing strategy

It is difficult to separate pure methodology from results since early results directed subsequent strategy.

In practice, the project began with DNA tests of the FT and FL lines using the Family Tree DNA Y-DNA37 test protocol. It was quickly apparent that an ancestral haplotype linking the initial participants could be developed. The genetic distance between any two individuals was at most 4. Lines FG, DJ, DT and HJ were subsequently found to share the same modal haplotype.

A modal haplotype was also developed for the line WJi by testing descendants of three sons of James Stout and Isabella Bremner. The other three lines from Walls and Fara have not been tested but there is confidence that the haplotype for WJi has been well-established, even though linkages to any other lines are outstanding.

Three individual representatives of SW have been tested and share the same haplotype. The point of known common ancestry is one generation downstream from William and Mary Russell at Robert Stout, born in Doune in 1816.

One individual of the LG line has been tested. A test of a third cousin would be required to establish a modal haplotype for the line.

The following lines have not been tested: DR, DW, DtM, FW, MJ, WfJ, Wje and WW. It is to be hoped that volunteers from some of these lines will present themselves in future. New Zealand would seem to be a promising place to do any proactive work.

Conclusions so far

The detailed results of Y-DNA37 testing so far is here: link to full Y-DNA37 results

Some assistance with understanding the results is provided at Appendix 1: Y-chromosome DNA STR markers and measures of relatedness.

Each line in the table of results represents one individual participant, either targeted by the project or a general volunteer. The 37 numeric data columns each indicate the value of one STR marker.

Other than the miscellaneous collection of unmatched individuals of haplogroup R-M263, the entries are grouped by close STR match. (The haplotype is inferred from the STR values by Family Tree DNA.)

In the Shetland group it is very clear from the table that there is a close match among six of the lines tested (represented by nine individuals). That includes the three from Fair Isle, the two from Dunrossness and the one from Hampshire. One member of the group has had explicit SNP testing done and the haplotype for the group is established as Z9.

The three descendants of James Stout and Isabella Bremner also have a very close match among themselves, giving us confidence that the modal haplotype is close to the ancestral haplotype for the group. It is also clear that it is remote from that of the Shetland group.

The Lunnasting line is represented by only one individual but the indication is that the Stouts of Lunnasting had a separate origin from those of Dunrossness. The inferred haplotype is I-M223.

Three descendants of Robert Stout of Doune have a close match among themselves, giving us confidence that the modal haplotype is close to the ancestral haplotype. They also belong to the haplogroup I-M223, as inferred by Family Tree DNA, but they are remote from the Lunnasting Stouts.

The nine individuals of haplogroup R-U198 are thought to be descended from Richard Stout of Nottingham and Penelope van Princis. They were North American pioneers in the seventeenth century. Some genealogists have claimed that Richard had Scottish ancestry from Aberdeen via Peebles but evidence has not been forthcoming. In any case, there is no match with any other group.

The individual of inferred haplogroup I-M253 claims ancestry from William Stott and Jean Burns of county Angus in Scotland. William’s grandson, also William Stott, died in Tennessee in 1914. The family now uses the "Stout" spelling of the surname.
Stott was clearly a separate surname in Scotland, however, even if the family in Angus was not quite consistent in its spelling. (There were 123 male Stotts living in Scotland in 1841.) Anyhow, the individual from Tennessee has so far remained unmatched with any other project member. There are other family members in the US, particularly Tennessee

but the line is extinct in Scotland. No connection with Orkney or Shetland has been claimed or established.

In terms of answering the questions we set out to answer, we have the following conclusions:

- The three Fair Isle lines, together with the two Dunrossness lines do have a common ancestor in the not too distant past, say three or four hundred years ago.
- The Lunnasting Stouts appear to have a different origin from the Dunrossness Stouts.
- The extant Orkney South Isles line of Stouts is not related at all in the male line to the Stouts of Dunrossness, Fair Isle or, most probably, Lunnasting.

The implication of this is that most of the Stouts of Shetland, Fair Isle and the North Isles of Orkney are not only related to each other, but are all descended from the same man, bearing the name Stout, who probably lived in Shetland perhaps about five hundred years ago.

In practice it has not been possible to work out from the data in phase one how the various Shetland lines are related to each other. Do the Fair Isle lines form a closer group, for example, than the Dunrossness lines?

Neither are there any indications as yet where the Stout lines of the Northern Isles and the Stout name originated.

There are still unanswered questions about how the surname originated, how often it was separately coined and whether it was brought to the isles from elsewhere. There is no clear evidence whether it is a native Orkney or Shetland surname or not, although it is quite possible. If it is, then it arose independently in parallel with the appearance of the name in other parts of the United Kingdom and Europe, notably in Lancashire and Yorkshire in the UK, and in the countries of the mediaeval Hanseatic League. Today most of the large population of Stouts in the US have English or German ancestry. Family tradition in Fair Isle has it that the first Stouts in Shetland came from Yorkshire. It should be possible to use genetic testing to show whether that is true.

Next Steps

To continue phase one, it would be interesting to find and test a descendant of the Delting Stouts to determine whether they are related to the Dunrossness or Lunnasting Stouts. Confirmation of the Lunnasting haplotype with further tests would be useful.

Phase two of the project, which will be separately described, is using SNP analysis to attempt to discover the degree of the relationships among the Dunrossness lines.

As to the origin of the name, it will require matches to be discovered with Stouts with a deeper origin elsewhere in the UK or Europe.

Appendix 1

Y-chromosome DNA STR markers and measures of relatedness

The genetic testing service currently used by the Stout project is run by Family Tree DNA in the US. Details are provided on their web site at

http://www.ftdna.com

Our project is registered as "Stout (Scot origin)". It is affiliated to the Shetland Surnames project.

Y-DNA testing makes use of the fact that a small part of the genetic makeup of a man is passed on to each of his sons, more or less unchanged, in particular without any combination with genetic material from the mother. At the molecular level this is a stable pattern of chemical units (called nucleotides) in the DNA of the Y (male) chromosome. The stable molecular pattern of the Y chromosome for any individual man is called his haplotype. This pattern, part of the genetic blueprint of the individual, can be found in every cell in the body and can be sampled easily, by scraping some cells from the inside of the cheek for example.

By discovering the pattern at selected places in the haplotype it is possible to record enough of the pattern to characterise the individual and compare him with others. Because of the stability of the pattern it will be identical or almost identical to that of his father.

Changes do occur in the transmission of the haplotype from one generation to the next but these changes are very infrequent. In the areas of the haplotype which are used for standard comparisons there might be only one change every three to six generations. The changes are essentially transcription errors which have no biological or health significance. The fact that changes do occur is as useful to genealogy as the relative stability since it allows degrees of relatedness to be analysed.

An exciting aspect of haplotype analysis is the capability it provides of tracing relationships which go back hundreds and thousands of years. It has been shown that there are very large groups of individuals, called haplogroups, whose members each share a common patrilineal ancestor who lived thousands of years ago.
Some of these haplogroups are specifically associated with Scandinavia, while others, for example the group known as R1b, is extremely common and ubiquitous over Europe and the Middle East.

The y-DNA markers which we currently test are the first 37 standard markers offered by Family Tree DNA. The markers have different characteristic mutation rates which make them useful for tracing stability over time as well as tracing divergence. This allows degrees of relatedness to be measured.

Each marker is a site on the Y-chromosome where a piece of "junk" DNA has been repeatedly copied a number of times. Each new copying error (mutation) typically adds or takes away an iteration of the junk sequence of nucleotides. We use the number of repetitions of the sequence to evaluate the marker.

If two men are closely related in the male line then most of the markers will exactly match. If they are distant cousins in the male line then there will be a substantial match; but a few of the markers may differ by a count of 1 or 2 or perhaps more. By adding up the differences at each marker we arrive at the "genetic distance" between the two men for the set of markers used.

Numbers of large scale studies have been completed which allow statistical statements to be made about the mutation rates of individual markers and groups of markers. Using the measure of genetic distance between two men, it is possible to estimate the distance to their "most recent common ancestor" (MRCA) in generations or years (TMRCA, the time to the most recent common ancestor) .

It must be borne in mind that there are many assumptions involved in this estimate. Technically, any statistical statement must be made with a stated degree of confidence. In the case of TMRCA estimates the degree of confidence is very low when considering data from only two individuals. As a larger sample of related data is built, more confidence becomes possible.

A useful theoretical construct is the "modal haplotype". To derive the modal haplotype for a given set of haplotypes we take the most commonly occurring value in the set for each marker; where there is a tie we take the highest value occurring. If the set of haplotypes is fairly homogeneous and we know it probably represents a group of men related in the male line then the modal haplotype is a first approximation to the ancestral haplotype of the group. By examining the haplotype patterns in more detail in the light of record-based research it may be possible to refine the model of the ancestral haplotype.

Genetic distance and TMCRA can be stated with respect to the modal haplotype for a data set since it offers a statistical standard for comparison.