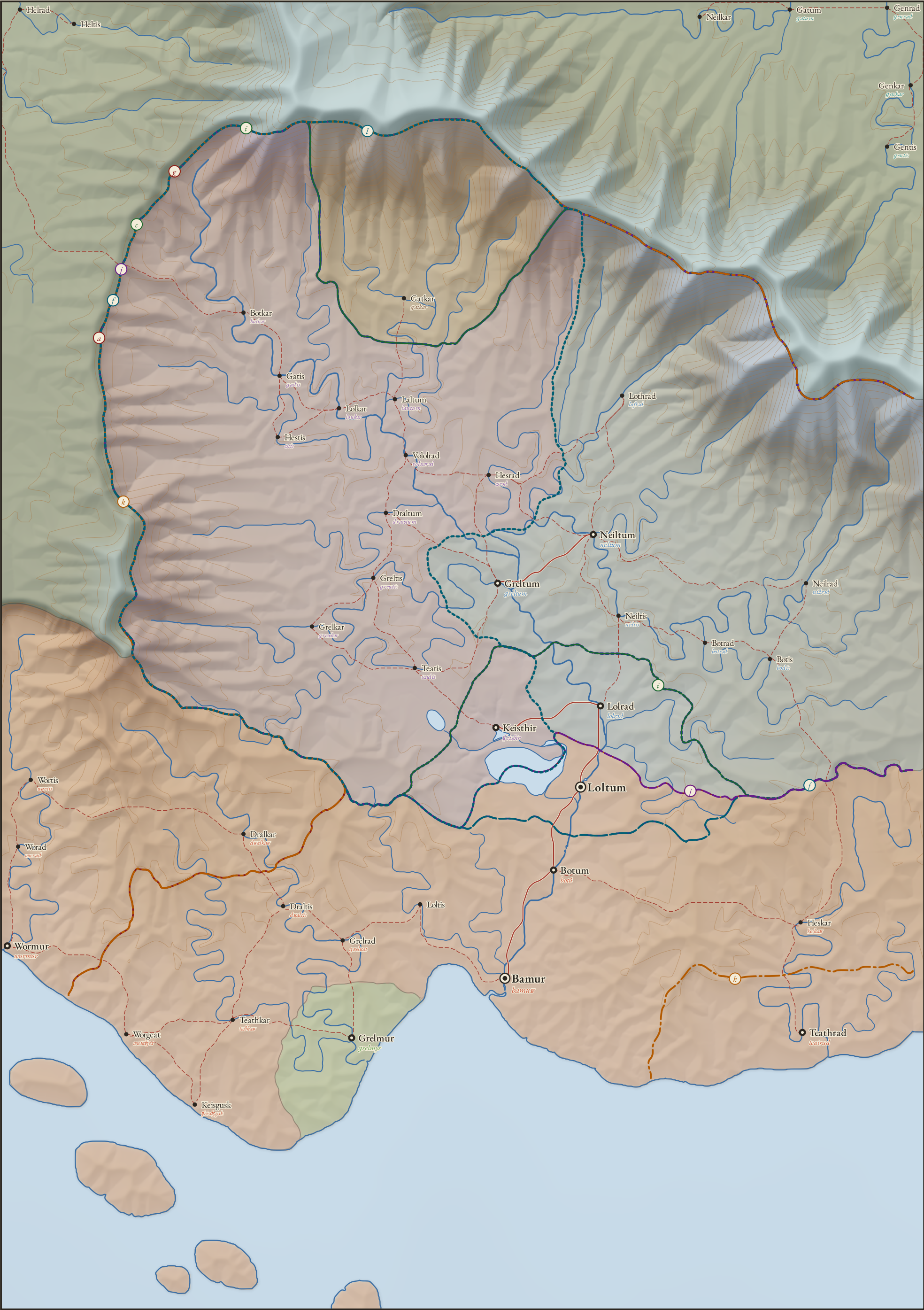


LINGUISTIC ATLAS OF PENLOD

One tongue, 1500 years, 38 sound changes, 44 towns. Scale 1:200,000. Sheet 1 of 2: areas and isoglosses.



Diffusion: exposure from road neighbours, c-folding 14 km of road, threshold per town; innovations spread for 350-800 years, then stop.

THE SENTENCE

"the rain fell on the mountain, and the water ran down the long river to the sea; the cold land holds it"
Old Penlodic (year 0):
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'lote 'lase 'na 'worin 'na 'neila 'loda 'hendas

DIALECT AREAS

- Lolium speech: 15 towns
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'lote 'lase 'na 'worin 'na 'neila 'loda 'hendas
- Neiltum speech: 8 towns
'na 'penda 'olta 'na 'djen 'a 'na 'kada 'loŋta 'na 'lote 'lase 'na 'worin 'na 'nida 'loda 'endas
- Grelmur alone: 1 town
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'lote 'lase 'na 'worin 'na 'neila 'loda 'hendas
- Keisthir speech: 12 towns
'na 'pend 'fowt 'na 'djen 'a 'na 'kad 'loŋt 'na 'lowt 'las 'na 'worin 'na 'neiw 'lod 'endas
- Gatum speech: 7 towns
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'lote 'lase 'na 'worin 'na 'neila 'loda 'hendas
- Gatkar alone: 1 town
'na 'penda 'fowta 'na 'djen 'a 'na 'kada 'loŋta 'na 'lowte 'lase 'na 'worin 'na 'neila 'loda 'endas

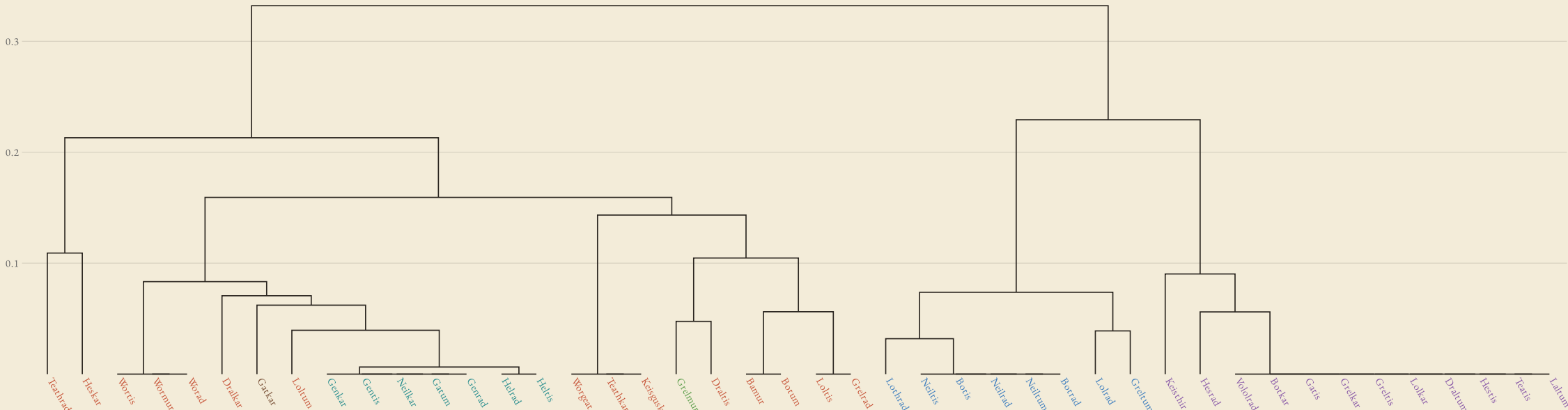
ISOGLOSSES

A line where a sound change stopped. Letters are on the lines. Each change is named for the town it was first heard in, with the year, and how many towns took it.

- a. v > w
v-lenition, first heard at Lolium c. year 90; 32 of 44 towns.
- b. ø > e / #_sC
prothesis, first heard at Lolium c. year 135; 21 of 44 towns.
- c. Vn > V: / _s θ f
nasal loss, first heard at Neiltis c. year 140; 19 of 44 towns.
- d. ei > i:
ei-raising, first heard at Greltum c. year 190; 18 of 44 towns.
- e. p t k > b d g / V_ V
lenition, first heard at Keisthir c. year 205; 20 of 44 towns.
- f. l > ɔ̃ / _i
l-palatalization, first heard at Lolrad c. year 310; 21 of 44 towns.
- g. a e o > ə / unstressed
vowel reduction, first heard at Lolrad c. year 595; 20 of 44 towns.
- h. C{d t k} > C / _#
cluster simplification, first heard at Lolium c. year 755; 18 of 44 towns.
- i. ai > e:
ai-smoothing, first heard at Botrad c. year 765; 18 of 44 towns.
- j. h > ø
h-loss, first heard at Lolrad c. year 820; 21 of 44 towns.
- k. k g > ɣ dʒ / _i e
palatalization, first heard at Lolium c. year 975; 32 of 44 towns.
- l. l > w / V_C, V_#
l-vocalization, first heard at Keisthir c. year 985; 13 of 44 towns.

THE FAMILY TREE

Average-linkage clustering of the towns by how far their words have drifted apart. Height is mean edit distance per word.



Towns are labelled with their name on the Survey (the old tongue) and, beneath in the area colour, what the town now calls itself. Areas are the catchments of the towns, every cell of land assigned to the town cheapest to walk to, grouped by average-linkage clustering of the Levenshtein distance over a lexicon of 160 words, constrained so that an area is always joined by road. The tree has no such constraint, which is why a conservative town far from its kin can sit beside them there.

LINGUISTIC ATLAS OF PENLOD

Sheet 2 of 2: the sentence in every town, and the changes each town took, in the order they arrived.

Loltum *loltum* long confluence; burg, 4,764 people
'na 'penda 'folta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'loltə 'lase 'na 'worin 'na 'neila 'loda 'hendas
v-lenition 90 > prothesis 135 > l-palatalization 325 > palatalization 975

Bamur *bamus* great river-mouth; burg, 5,271 people
'na 'pēda 'folta 'na 'ɟɛni 'a 'na 'kada 'loŋta 'na 'lolti 'laʃi 'na 'woɪf 'na 'neila 'loda 'hēdas
e-raising 35 > final devoicing 125 > v-lenition 130 > vowel nasalization 170 > s-palatalization 645 > r-uvularization 715 > palatalization 1015

Wormur *wurmur* sea river-mouth; town, 2,253 people
'na 'penda 'fulta 'na 'gene 'a 'na 'kada 'luŋta 'na 'lulte 'lare 'na 'wørin 'na 'neila 'luda 'hendas
umlaut 450 > rhotacism 825 > o-raising 890

Botum *botū* west confluence; town, 1,378 people
'na 'pēda 'folta 'na 'ɟɛni 'a 'na 'kada 'loŋta 'na 'lolti 'laʃi 'na 'woɪf 'na 'neila 'loda 'hēdas
e-raising 40 > v-lenition 95 > final devoicing 130 > vowel nasalization 175 > s-palatalization 650 > r-uvularization 710 > palatalization 1005

Teathrad *teatrad* south bridge; town, 1,298 people
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'lota 'na 'loltə 'loʃe 'na 'worin 'na 'neila 'loxda 'hendas
v-lenition 125 > open lengthening 310 > a-rounding 320 > th-stopping 800 > degemination 805

Loltis *loltis* long village; stead, 435 people
'na 'pēda 'folta 'na 'ɟɛni 'a 'na 'kada 'loŋta 'na 'lolti 'laʃi 'na 'woʊɛ 'na 'neila 'loda 'hēdas
e-raising 35 > u-fronting 95 > final devoicing 125 > v-lenition 130 > vowel nasalization 155 > nasal lowering 180 > s-palatalization 645 > r-uvularization 715 > spirantization 785 > θ-mapping 800 > palatalization 1015

Teathkar *te:θkak* south valleys; stead, 384 people
'na 'penda 'fulta 'na 'ɟɛni 'a 'na 'kada 'luŋta 'na 'lolti 'læri 'na 'wøsin 'na 'neila 'luda 'hendas
e-raising 45 > u-fronting 90 > v-lenition 150 > umlaut 470 > r-uvularization 750 > spirantization 775 > θ-mapping 795 > rhotacism 840 > o-raising 900 > palatalization 1040 > ca-smoothing 1055

Grelrad *grelkat* hill bridge; stead, 452 people
'na 'pēda 'folta 'na 'ɟɛni 'a 'na 'kada 'loŋta 'na 'lolti 'laʃi 'na 'woʊɛ 'na 'neila 'loda 'hēdas
e-raising 35 > u-fronting 85 > final devoicing 130 > v-lenition 135 > vowel nasalization 160 > nasal lowering 185 > s-palatalization 645 > r-uvularization 720 > spirantization 775 > θ-mapping 790 > palatalization 1020

Keisgusk *ɟe:isɟysk* inner harbour; stead, 387 people
'na 'penda 'fulta 'na 'ɟɛni 'a 'na 'kada 'luŋta 'na 'lolti 'læri 'na 'wøsin 'na 'neila 'luda 'hendas
e-raising 50 > u-fronting 95 > v-lenition 150 > umlaut 465 > r-uvularization 755 > spirantization 775 > θ-mapping 800 > rhotacism 835 > o-raising 895 > palatalization 1045 > ca-smoothing 1055

Worad *wurad* sea bridge; stead, 627 people
'na 'penda 'fulta 'na 'gene 'a 'na 'kada 'luŋta 'na 'lulte 'lare 'na 'wørin 'na 'neila 'luda 'hendas
umlaut 450 > rhotacism 825 > o-raising 895

Heskar *heskak* east valley; stead, 500 people
'na 'pēda 'folta 'na 'ɟɛni 'a 'na 'kada 'lota 'na 'lolti 'loʃi 'na 'woɪf 'na 'neila 'loxda 'hēdas
e-raising 45 > v-lenition 100 > final devoicing 135 > vowel nasalization 180 > open lengthening 315 > a-rounding 325 > s-palatalization 650 > r-uvularization 710 > th-stopping 805 > degemination 810 > palatalization 1005

Draltis *draltis* middle village; stead, 592 people
'na 'penda 'folta 'na 'ɟɛni 'a 'na 'kada 'loŋta 'na 'lolti 'lasi 'na 'wøsin 'na 'neila 'loda 'hendas
e-raising 40 > u-fronting 90 > v-lenition 150 > r-uvularization 730 > spirantization 780 > θ-mapping 795 > palatalization 1030

Worgeat *wurɟɛt* sea beach; stead, 433 people
'na 'penda 'fulta 'na 'ɟɛni 'a 'na 'kada 'luŋta 'na 'lolti 'læri 'na 'wøsin 'na 'neila 'luda 'hendas
e-raising 50 > u-fronting 90 > v-lenition 150 > umlaut 450 > r-uvularization 750 > spirantization 775 > θ-mapping 795 > rhotacism 825 > o-raising 890 > palatalization 1045 > ca-smoothing 1050

Dralkar *dralkar* middle valley; stead, 438 people
'na 'penda 'folta 'na 'ɟeni 'a 'na 'kada 'loŋta 'na 'lolti 'lahi 'na 'wøsin 'na 'neila 'loda 'hendas
e-raising 60 > debuccalization 350 > r-uvularization 740 > spirantization 790 > θ-mapping 800

Wortis *wurtis* sea village; stead, 476 people
'na 'penda 'fulta 'na 'gene 'a 'na 'kada 'luŋta 'na 'lulte 'lare 'na 'wørin 'na 'neila 'luda 'hendas
umlaut 455 > rhotacism 830 > o-raising 910

Neiltum *ni:ltum* cold confluence; town, 1,884 people
'na 'pendə 'olta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'niɫə 'loda 'endəs
final k spirantization 70 > v-lenition 125 > ou-raising 135 > nasal los 175 > prothesis 180 > ei-raising 195 > lenition 240 > l-palatalization 325 > vowel reduction 620 > f-debuccalization 685 > ai-smoothing 780 > cluster simplification 790 > b-lus 835 > palatalization 985

Lolrad *lolrad* long bridge; town, 2,220 people
'na 'pendə 'folta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'neiɫə 'loda 'endəs
v-lenition 100 > prothesis 145 > lenition 255 > l-palatalization 310 > vowel reduction 595 > b-lus 820 > palatalization 975

Greltum *greltum* hill confluence; town, 1,548 people
'na 'pendə 'folta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'niɫə 'loda 'endəs
v-lenition 140 > nasal los 180 > prothesis 185 > ei-raising 190 > lenition 235 > l-palatalization 330 > vowel reduction 630 > cluster simplification 785 > ai-smoothing 805 > b-lus 845 > palatalization 995

Botrad *botrad* west bridge; stead, 542 people
'na 'pendə 'olta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'niɫə 'loda 'endəs
final k spirantization 80 > v-lenition 105 > ou-raising 140 > nasal los 150 > prothesis 165 > ei-raising 200 > lenition 245 > l-palatalization 330 > vowel reduction 605 > f-debuccalization 705 > ai-smoothing 765 > cluster simplification 800 > b-lus 825 > palatalization 980

Neilrad *ni:ɫrad* cold bridge; stead, 576 people
'na 'pendə 'olta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'niɫə 'loda 'endəs
final k spirantization 85 > ou-raising 120 > v-lenition 120 > nasal los 170 > prothesis 175 > ei-raising 200 > lenition 245 > l-palatalization 335 > vowel reduction 615 > f-debuccalization 700 > ai-smoothing 775 > cluster simplification 795 > b-lus 835 > palatalization 985

Botis *bodis* west village; stead, 325 people
'na 'pendə 'olta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'niɫə 'loda 'endəs
final k spirantization 80 > v-lenition 105 > ou-raising 125 > nasal los 155 > prothesis 165 > ei-raising 200 > lenition 245 > l-palatalization 330 > vowel reduction 605 > f-debuccalization 700 > ai-smoothing 770 > cluster simplification 800 > b-lus 825 > palatalization 980

Neiltis *ni:ltis* cold village; stead, 369 people
'na 'pendə 'olta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'niɫə 'loda 'endəs
final k spirantization 70 > v-lenition 120 > ou-raising 135 > nasal los 140 > prothesis 145 > ei-raising 195 > lenition 240 > l-palatalization 310 > vowel reduction 595 > f-debuccalization 685 > ai-smoothing 765 > cluster simplification 790 > b-lus 820 > palatalization 975

Lothrad *lofɾad* swift bridge; stead, 479 people
'na 'pendə 'olta 'na 'ɟɛnə 'a 'na 'kada 'loŋta 'na 'lołta 'lasə 'na 'worin 'na 'niɫə 'loda 'endəs
final k spirantization 55 > v-lenition 125 > ou-raising 135 > nasal los 175 > prothesis 180 > ei-raising 195 > lenition 240 > ib-fronting 320 > l-palatalization 325 > vowel reduction 620 > f-debuccalization 685 > ai-smoothing 780 > cluster simplification 790 > b-lus 835 > palatalization 985

Grelmur *grelmyr* hill river-mouth; town, 1,805 people
'na 'penda 'folta 'na 'ɟɛne 'a 'na 'kada 'loŋta 'na 'loltə 'lase 'na 'worin 'na 'neila 'loda 'hendas
u-fronting 85 > v-lenition 150 > spirantization 775 > θ-mapping 790 > palatalization 1045

Keisthir *ɟe:isθir* inner ford; town, 2,169 people
'na 'pend 'fowt 'na 'ɟɛn 'a 'na 'kad 'loŋt 'na 'lowt 'las 'na 'worin 'na 'neiɥ 'lod 'endəs
v-lenition 100 > prothesis 155 > lenition 205 > l-palatalization 315 > vowel reduction 605 > apocope 825 > b-lus 825 > palatalization 980 > l-ocalization 985

Teatis *teadis* south village; stead, 323 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 100 > u-forition 120 > prothesis 155 > nasal los 180 > ei-raising 190 > lenition 205 > l-palatalization 315 > vowel reduction 605 > schwa apocope 765 > cluster simplification 780 > ai-smoothing 805 > b-lus 825 > palatalization 980 > l-ocalization 985

Laltum *lawtum* little confluence; stead, 383 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 130 > u-forition 150 > prothesis 185 > nasal los 190 > ei-raising 195 > lenition 240 > l-palatalization 330 > vowel reduction 625 > schwa apocope 745 > cluster simplification 755 > ai-smoothing 795 > b-lus 855 > palatalization 995 > l-ocalization 1015

Hesrad *esɾad* east bridge; stead, 383 people
'na 'pen 'ow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
final k spirantization 70 > v-lenition 125 > ou-raising 135 > u-forition 145 > nasal los 175 > prothesis 180 > ei-raising 190 > lenition 235 > l-palatalization 325 > vowel reduction 620 > f-debuccalization 685 > schwa apocope 760 > cluster simplification 775 > ai-smoothing 780 > b-lus 835 > palatalization 985 > l-ocalization 1015

Hestis *estis* east village; stead, 321 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 140 > u-forition 160 > prothesis 190 > nasal los 200 > ei-raising 205 > lenition 250 > l-palatalization 340 > vowel reduction 630 > schwa apocope 740 > cluster simplification 765 > ai-smoothing 805 > b-lus 865 > palatalization 1005 > l-ocalization 1020

Draltum *drautum* middle confluence; stead, 578 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 115 > u-forition 135 > prothesis 170 > nasal los 180 > ei-raising 190 > lenition 220 > l-palatalization 325 > vowel reduction 610 > schwa apocope 755 > cluster simplification 775 > ai-smoothing 795 > b-lus 845 > palatalization 985 > l-ocalization 1005

Lolkar *lowkar* long valley; stead, 373 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 135 > u-forition 155 > prothesis 185 > nasal los 195 > ei-raising 195 > lenition 245 > l-palatalization 335 > vowel reduction 625 > schwa apocope 740 > cluster simplification 755 > ai-smoothing 800 > b-lus 855 > palatalization 1000 > l-ocalization 1015

Greltis *grewtis* hill village; stead, 419 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 105 > u-forition 125 > prothesis 160 > nasal los 180 > ei-raising 190 > lenition 210 > l-palatalization 315 > vowel reduction 605 > schwa apocope 760 > cluster simplification 775 > ai-smoothing 800 > b-lus 835 > palatalization 980 > l-ocalization 995

Grelkar *grewkar* hill valleys; stead, 447 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 100 > u-forition 120 > prothesis 155 > nasal los 180 > ei-raising 190 > lenition 210 > l-palatalization 315 > vowel reduction 605 > schwa apocope 760 > cluster simplification 775 > ai-smoothing 800 > b-lus 830 > palatalization 980 > l-ocalization 990

Gatis *gadis* north village; stead, 500 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 140 > u-forition 155 > prothesis 190 > nasal los 195 > ei-raising 200 > lenition 245 > l-palatalization 335 > vowel reduction 625 > schwa apocope 740 > cluster simplification 760 > ai-smoothing 800 > b-lus 860 > palatalization 1000 > l-ocalization 1015

Botkar *botkar* west valley; stead, 324 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 140 > u-forition 160 > prothesis 195 > ei-raising 200 > nasal los 205 > lenition 245 > l-palatalization 340 > vowel reduction 635 > schwa apocope 740 > cluster simplification 770 > ai-smoothing 805 > b-lus 860 > palatalization 1005 > l-ocalization 1020

Vololrad *volowɾad* high long bridge; stead, 624 people
'na 'pen 'fow 'na 'ɟɛn 'a 'na 'kad 'loθ 'na 'low 'las 'na 'vorin 'na 'niɥ 'lod 'endəs
v-lenition 120 > u-forition 140 > prothesis 180 > nasal los 185 > ei-raising 190 > lenition 235 > l-palatalization 325 > vowel reduction 620 > schwa apocope 750 > cluster simplification 770 > ai-smoothing 790 > b-lus 845 > palatalization 990 > l-ocalization 1010

Gatum *gatum* north confluence; stead, 445 people
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'loltə 'lase 'na 'worin 'na 'neila 'loda 'hendas
unchanged: the old tongue

Genrad *genrad* mountain range bridge; stead, 527 people
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'loltə 'lase 'na 'worin 'na 'neila 'loda 'hendas
unchanged: the old tongue

Neilkar *neilkar* cold valley; stead, 328 people
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'loltə 'lase 'na 'worin 'na 'neila 'loda 'hendas
unchanged: the old tongue

Helrad *belrad* outer bridge; stead, 501 people
'ə 'penda 'folta 'ə 'gene 'a 'ə 'kada 'loŋta 'ə 'loltə 'lase 'ə 'worin 'ə 'neila 'loda 'hendas
article reduction 520

Heltis *beltis* outer village; stead, 557 people
'ə 'penda 'folta 'ə 'gene 'a 'ə 'kada 'loŋta 'ə 'loltə 'lase 'ə 'worin 'ə 'neila 'loda 'hendas
article reduction 520

Gentis *gentis* mountain range village; stead, 388 people
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'loltə 'lase 'na 'worin 'na 'neila 'loda 'hendas
unchanged: the old tongue

Genkar *genkar* mountain range valley; stead, 459 people
'na 'penda 'folta 'na 'gene 'a 'na 'kada 'loŋta 'na 'loltə 'lase 'na 'worin 'na 'neila 'loda 'hendas
unchanged: the old tongue

Gatkar *gatkar* north valley; stead, 560 people
'na 'penda 'fowta 'na 'ɟɛne 'a 'na 'kada 'loŋta 'na 'lowte 'lase 'na 'worin 'na 'neila 'loda 'endəs
nasal los 205 > b-lus 865 > palatalization 1000 > l-ocalization 1025