Comparative study of archaeological contexts of silver hoards c. 800-1050 in Northern and Central Europe

Volume 3 – figures

Jacek Gruszczynski, Wolfson College, University of Oxford

A thesis submitted for the degree of

Doctor of Philosophy

Trinity 2016

Figures

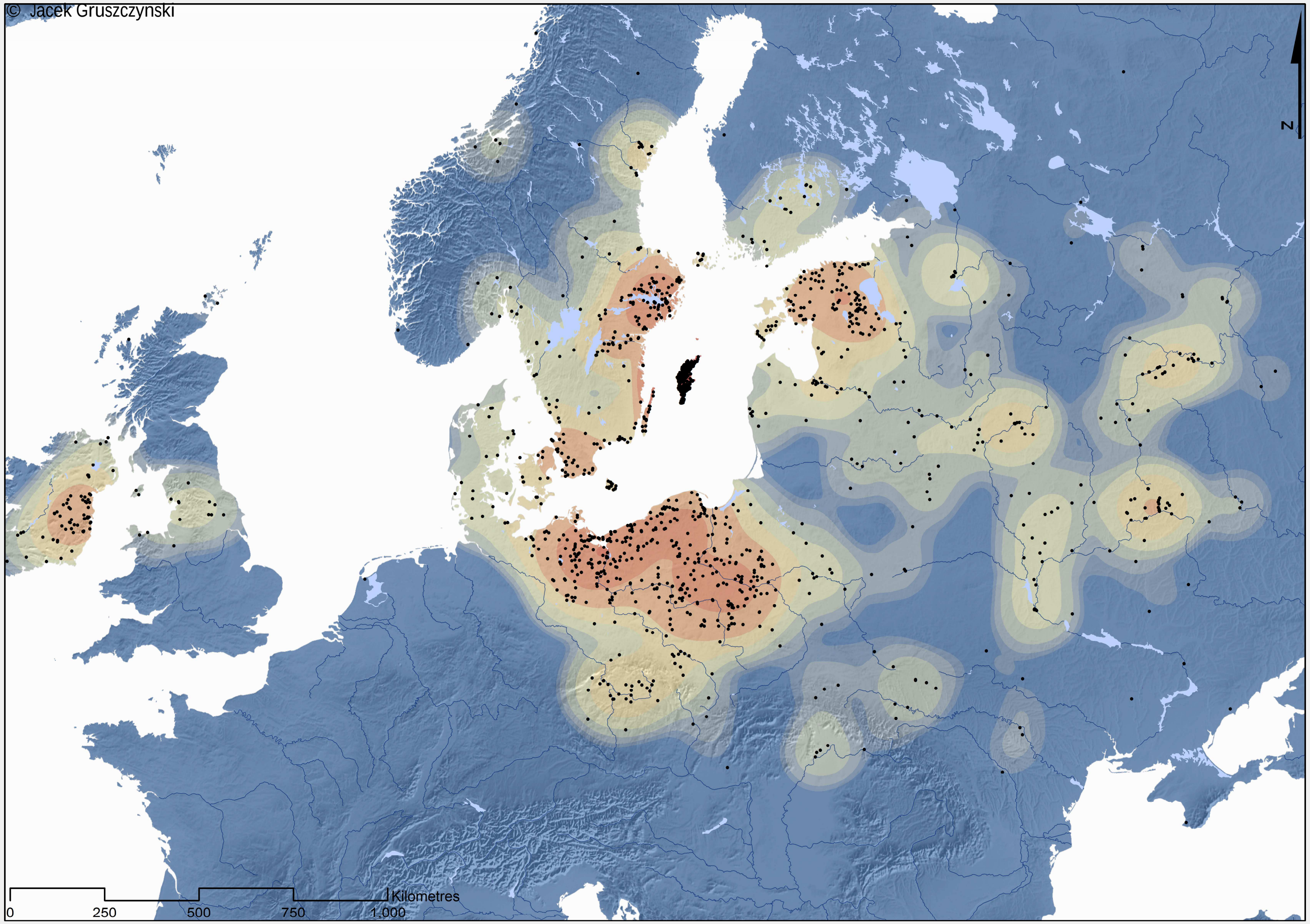


Figure 1.1 Map of Viking-Age silver hoards in Europe. The kernel density overlay highlights Pomerania, Gotland and Svealand as hoarding 'hot-spots'. The map may not register all recorded hoards beyond case studies.

Figure 1.2 Examples of Oriental coins pierced and looped to be worn as ornaments, subsequently fragmented (or marked for fragmentation) and turned back to hacksilver (Scale approximately 1.5:1 at A4; Fot. Kungliga Myntkabinetet, Stockholm)**.**

1. Ammor I hoard, Gotland; 2. – 5. KMK systematic collection; 6. Filborna hoard, Skåne; 7. Gandarve II hoard, Gotland; 8. Västra Skällö hoard, Blekinge

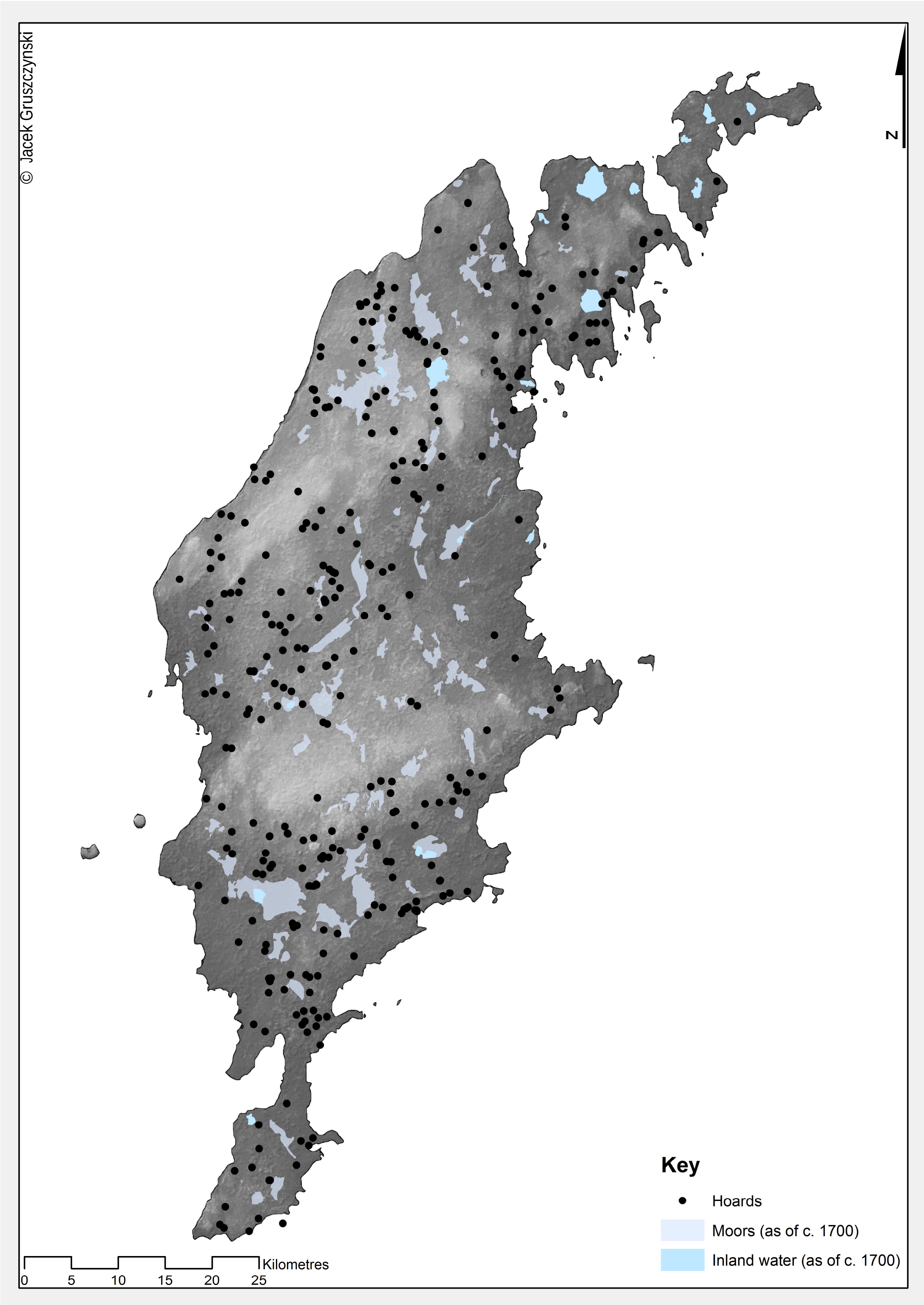
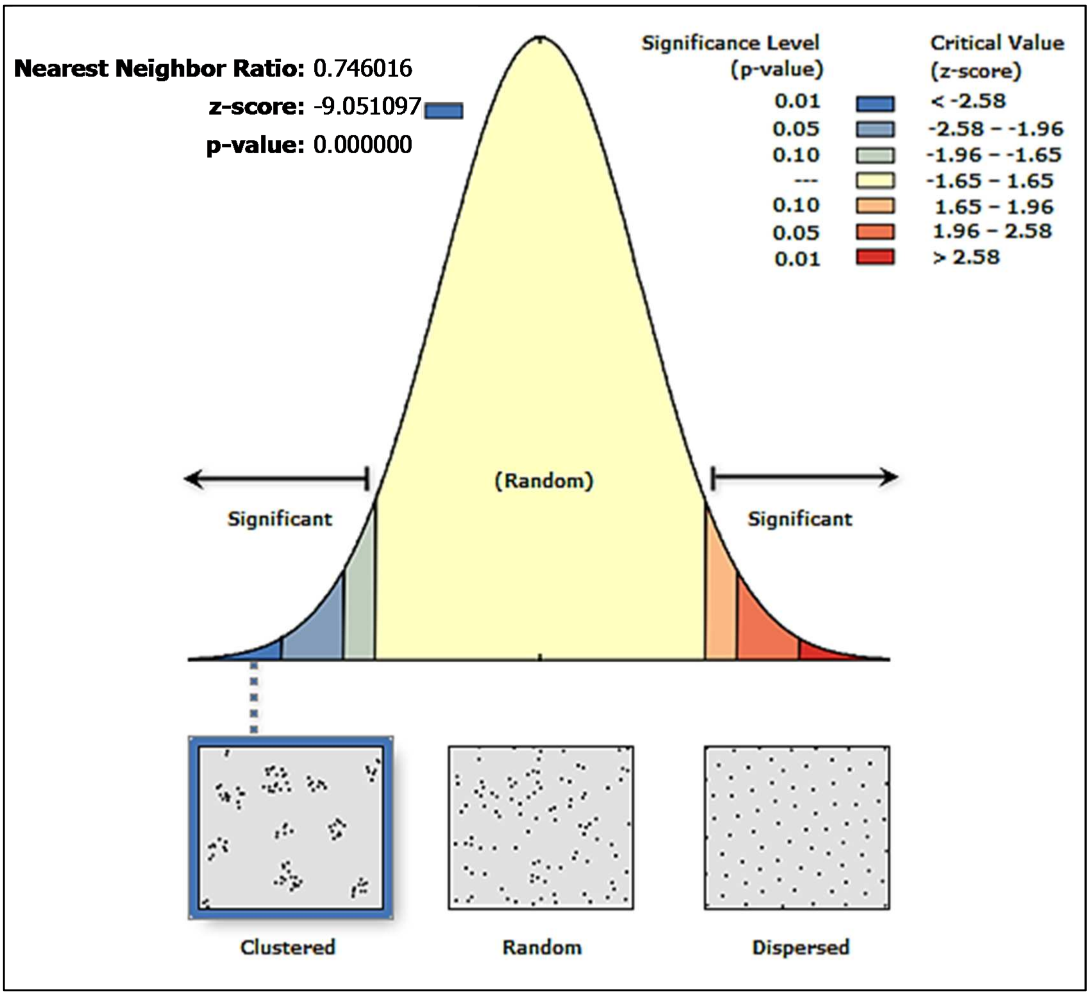


Figure 2.1 Distribution of silver hoards c. 800-1050 in Gotland. The coastline in this and following maps represents the sea level at c. 900. The extent of bodies of water and moors is based on cadastral maps from c. 1700.



Observed Mean Distance:	1110.4883 metres
Expected Mean Distance:	1488.5574 metres
Nearest Neighbor Ratio:	0.746016
z-score:	-9.051097
p-value:	0.000000
Study Area:	30,755 km2 (the area of Gotland in c. 900)

Figure 2.2 Results of Average Nearest Neighbour analysis in ArcGIS of clustering of the Gotlandic hoard findspots.

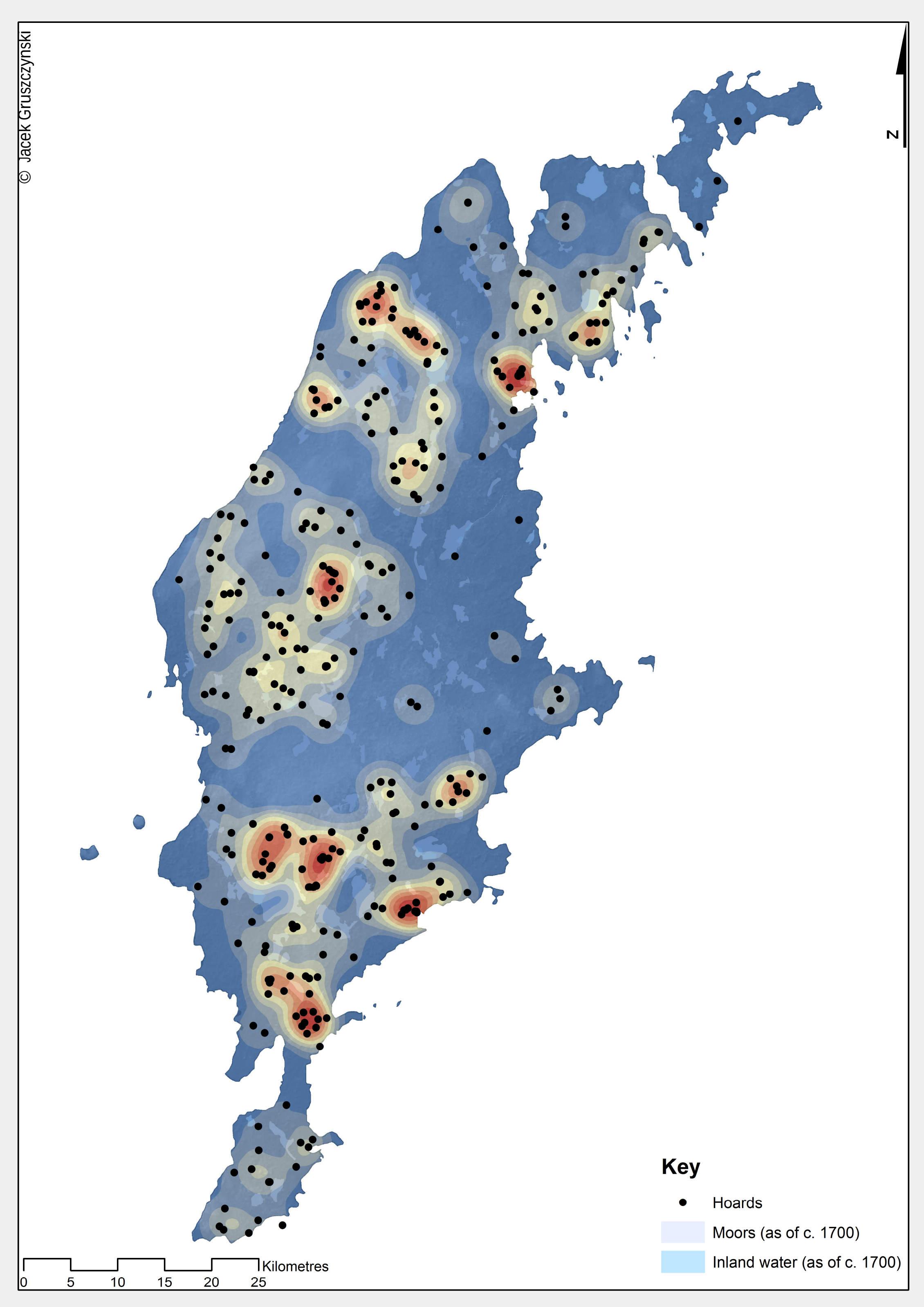
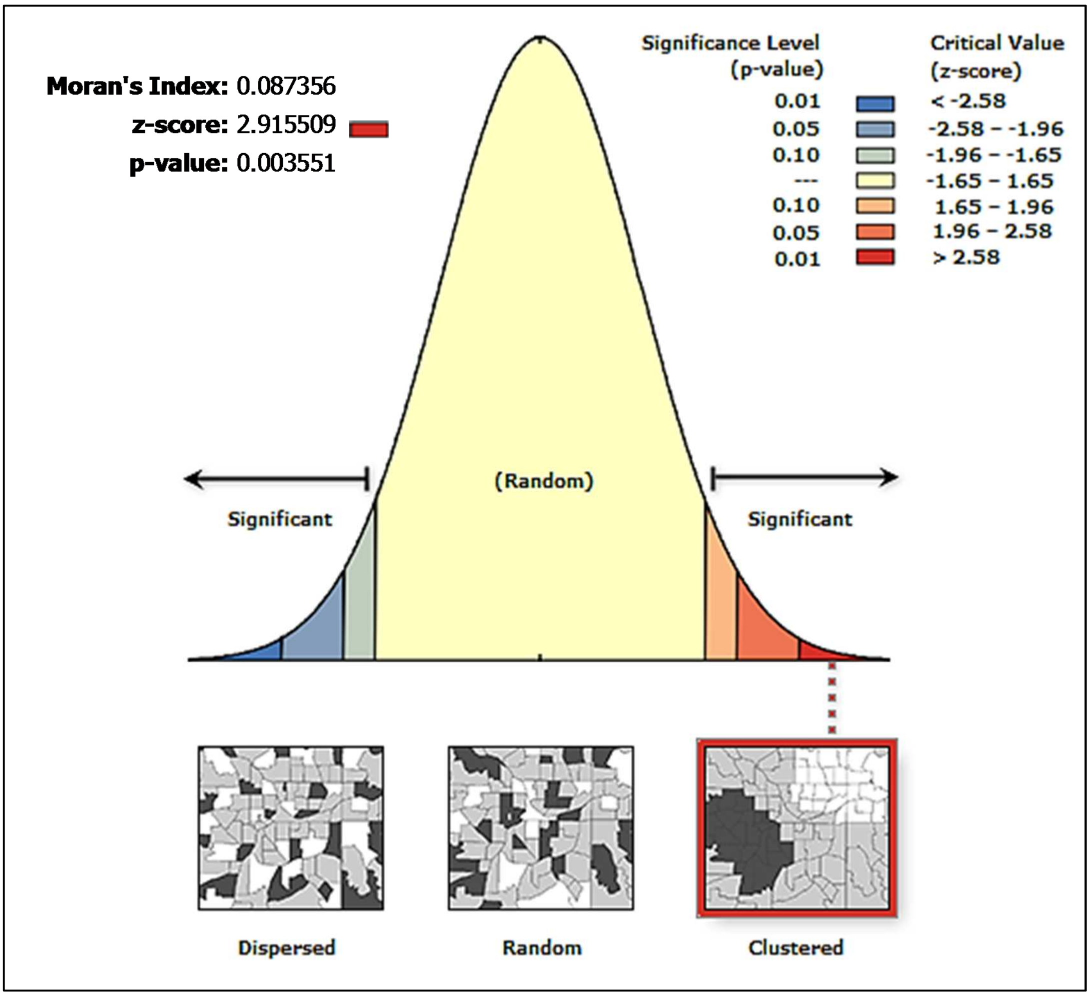


Figure 2.3 Kernel density heat map of Gotlandic hoards. Density classification by 9 equal intervals.



Moran's Index:	0.087356
Expected Index:	-0.002890
Variance:	0.000958
z-score:	2.915509
p-value:	0.003551

Figure 2.4 Results of Spatial Autocorrelation (Moran's I) analysis in ArcGIS of the weight of silver clustering in the Gotlandic hoards.

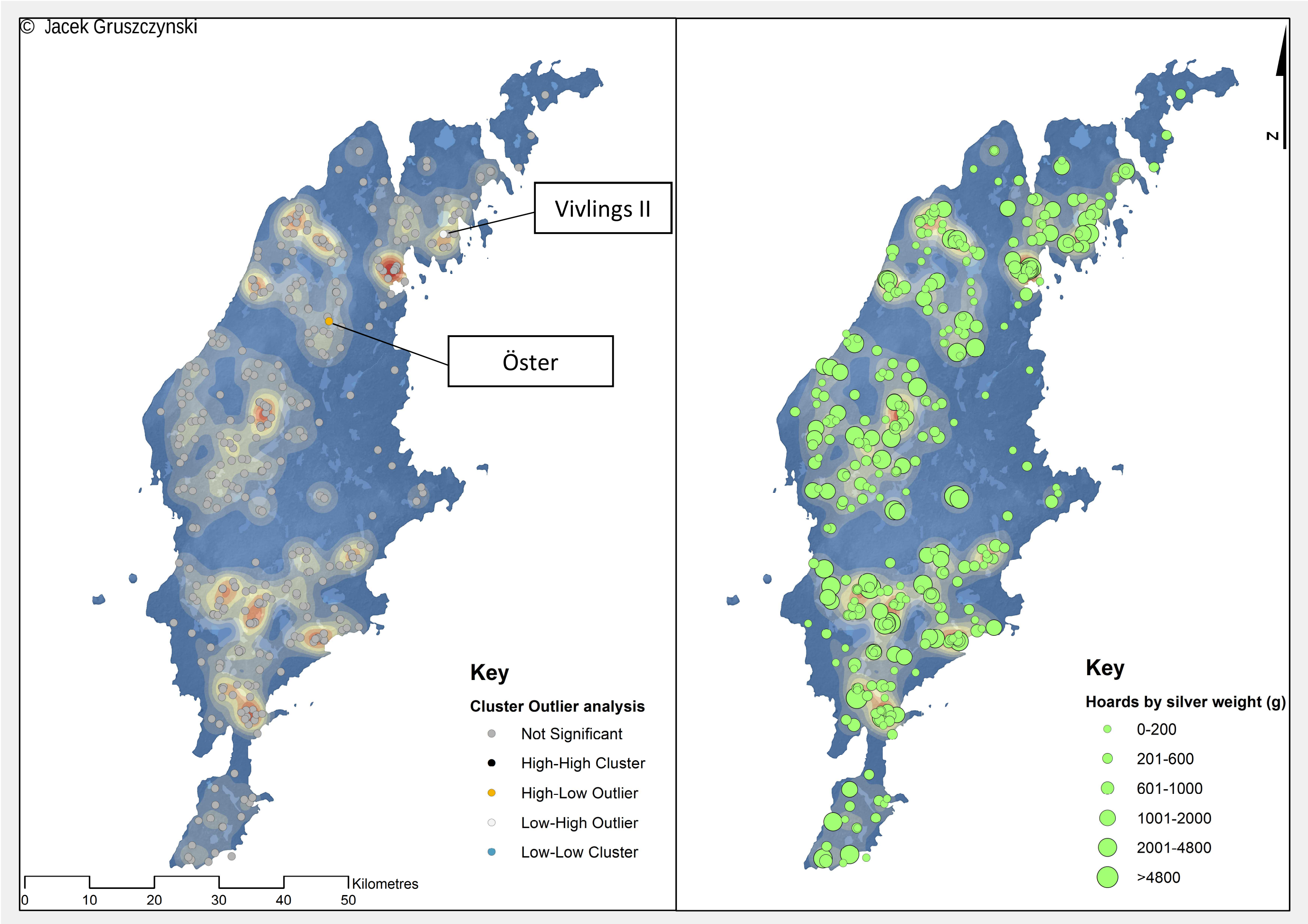


Figure 2.5 Results of spatial autocorrelation analysis on silver weight in Gotlandic hoards. The kernel density of silver weight underlay classified by 9 equal intervals clearly reflects the underlying pattern of hoard findspots density (Figure 2.3). The results of cluster-outlier analysis indicate that with only two exceptions (outliers at Vivlings II and Öster Ryftes) the weight of silver had no significant influence on hoard clustering (**A**). This random pattern can be illustrated by plotting the weight of silver at individual findspots as graduated symbols (**B**).

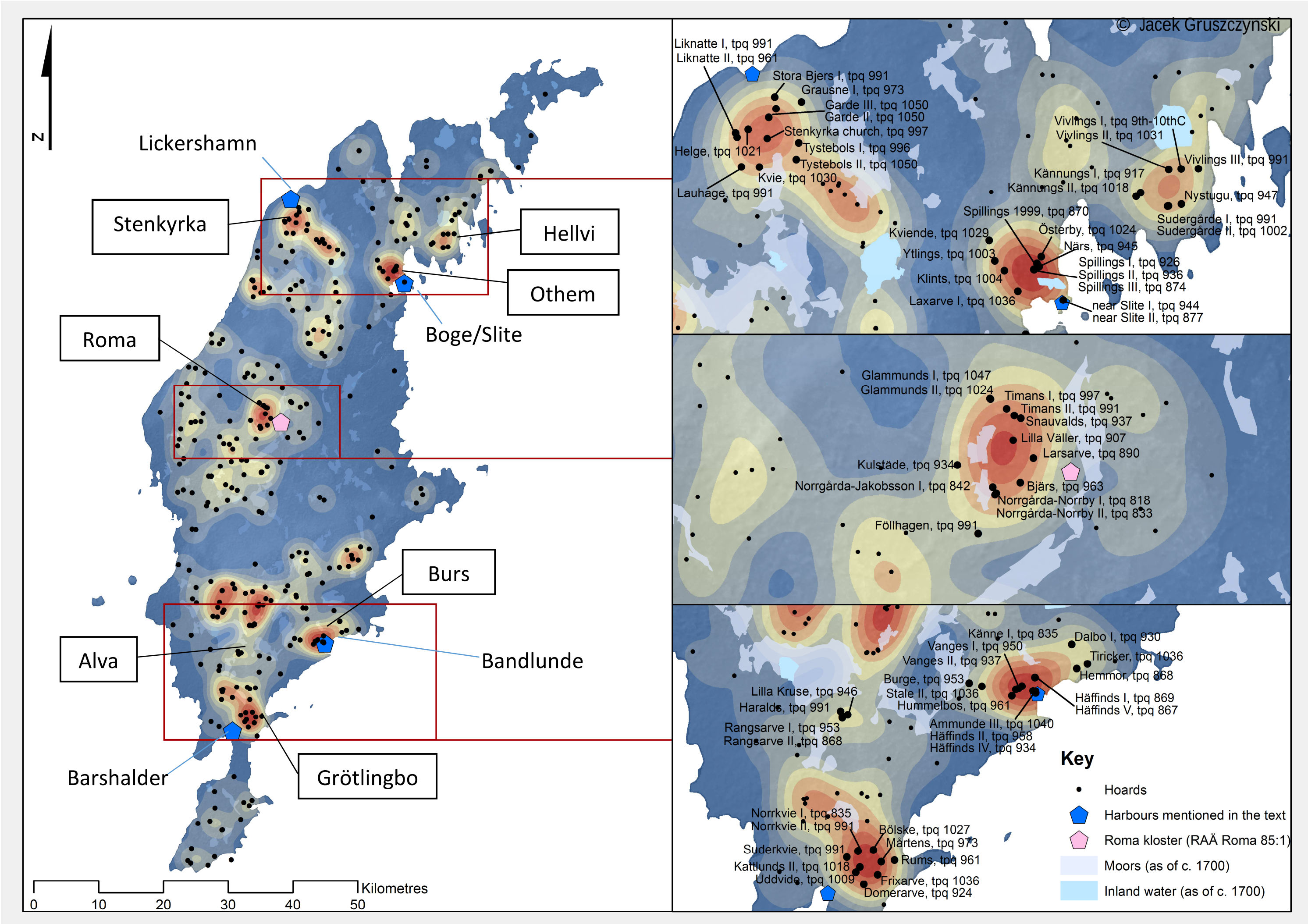


Figure 2.6 Hoard concentrations discussed in Chapter 2.3. The kernel density of hoard findspots underlay is classified by 9 equal intervals.

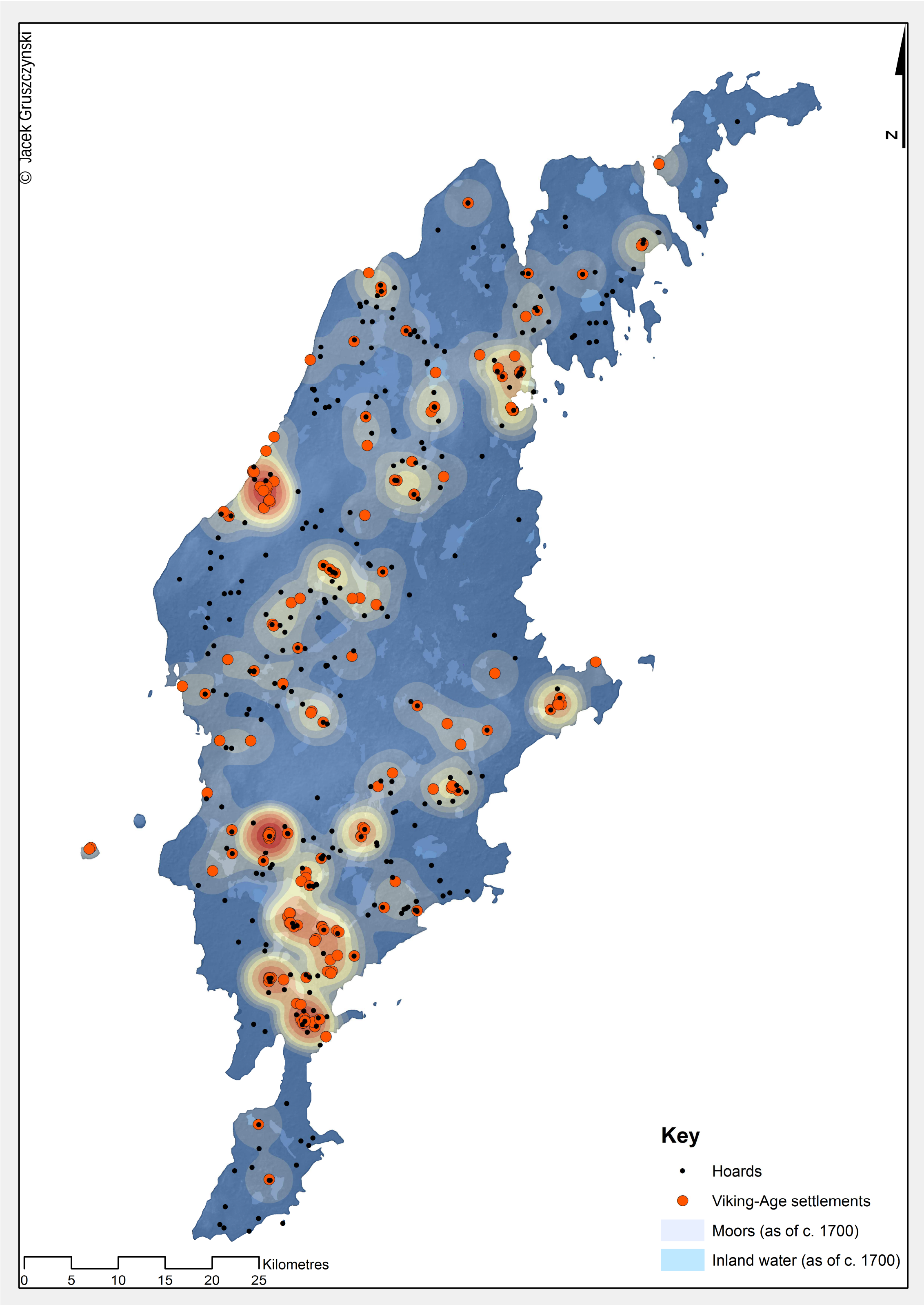


Figure 2.7 Kernel density heat map of Viking-Age settlements in Gotland. The density is classified by 9 natural breaks (Jenks) to account for the low number of known settlements and to facilitate visual comparison with Figure 2.3.

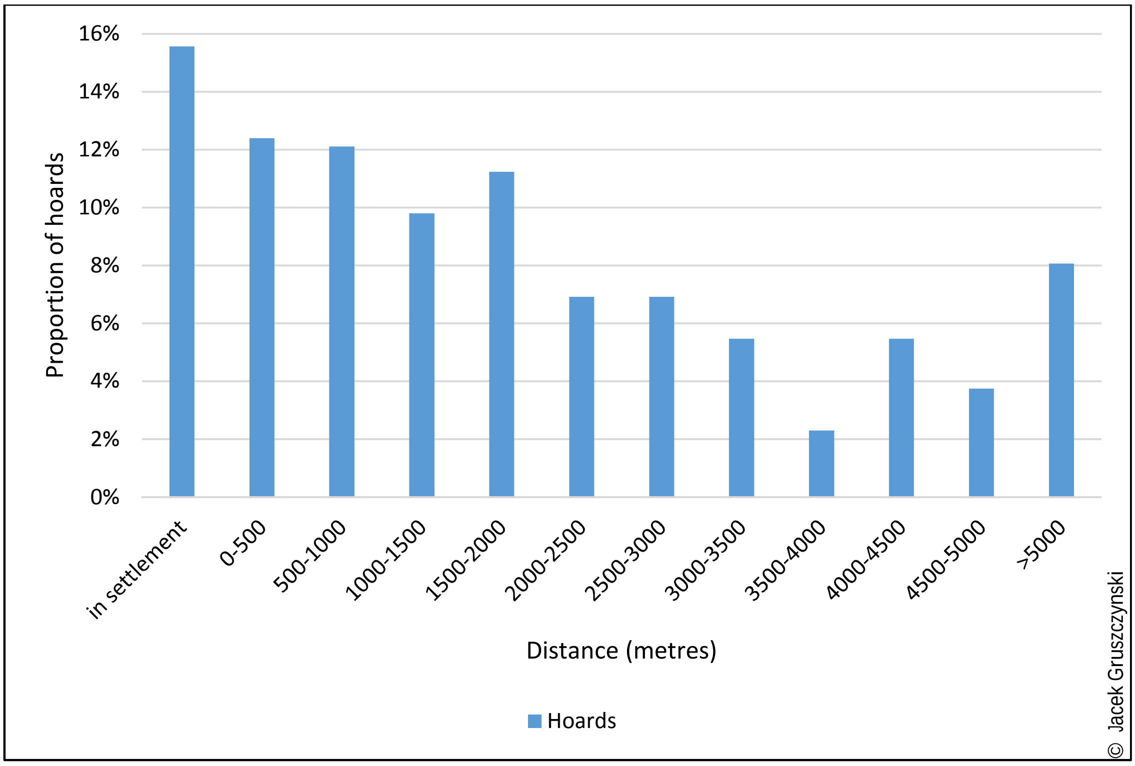


Figure 2.8 Distance from Gotlandic hoards to the nearest Viking-Age settlement.

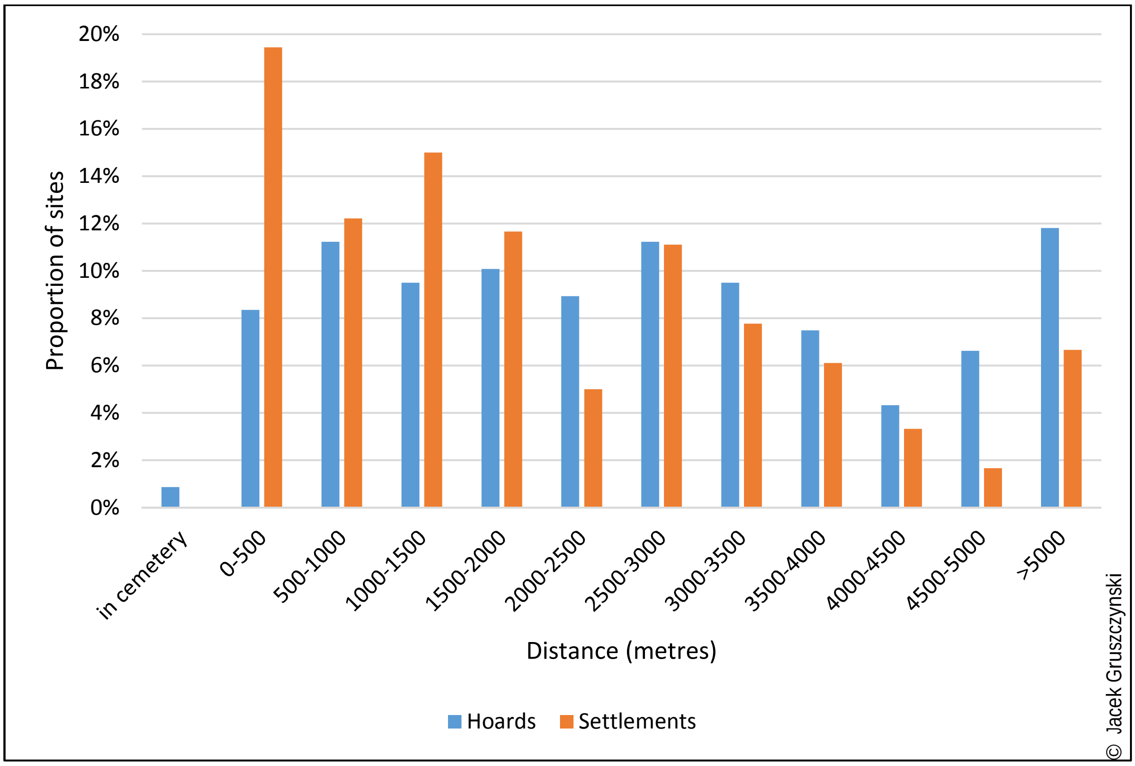


Figure 2.10 Distance from Gotlandic hoards and Viking-Age settlements to the nearest contemporary cemetery.

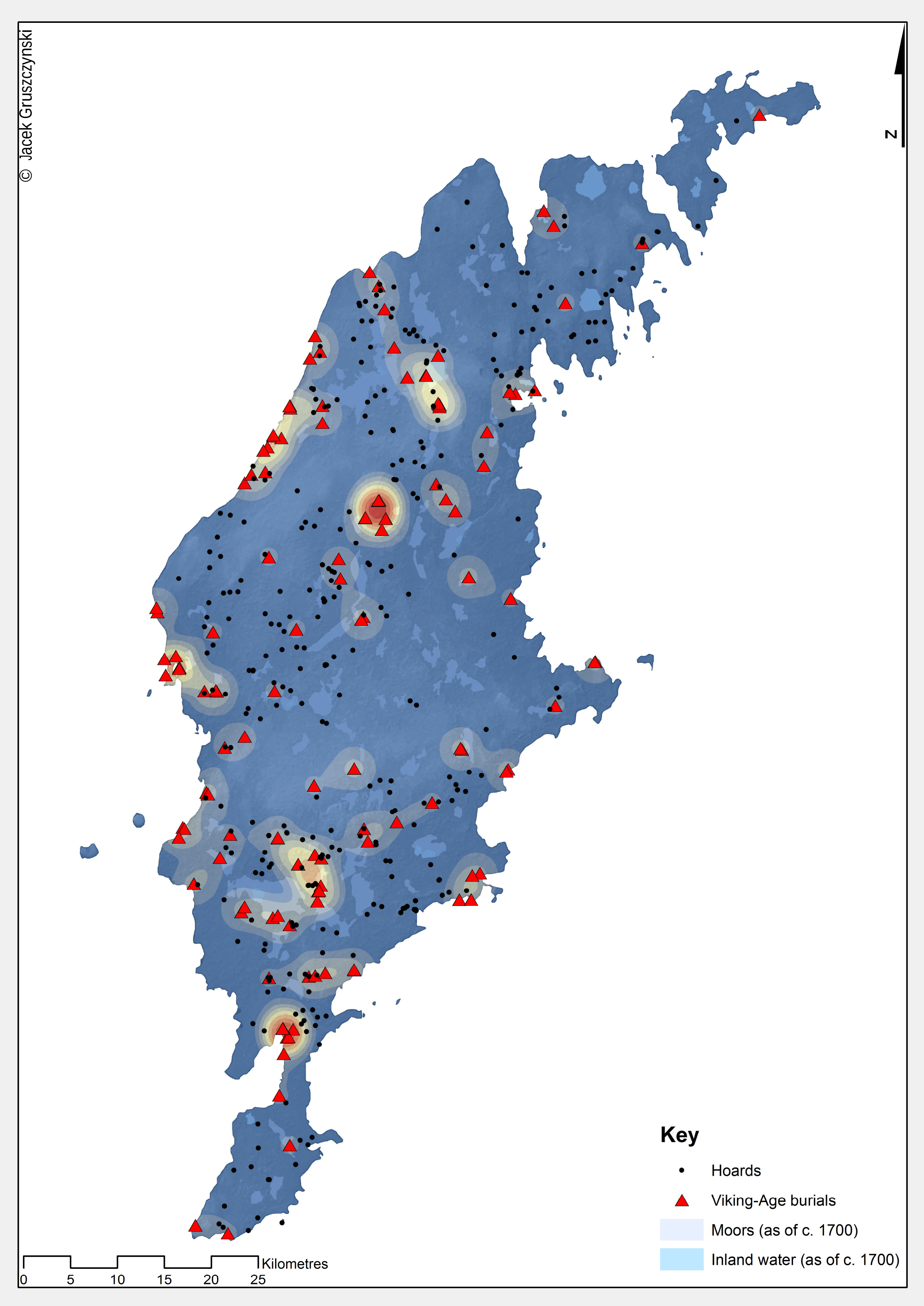


Figure 2.9 Kernel density heat map of Viking-Age burial sites. The density is classified by 9 natural breaks (Jenks) to account for low number of known burials and to facilitate visual comparison with Figure 2.3.

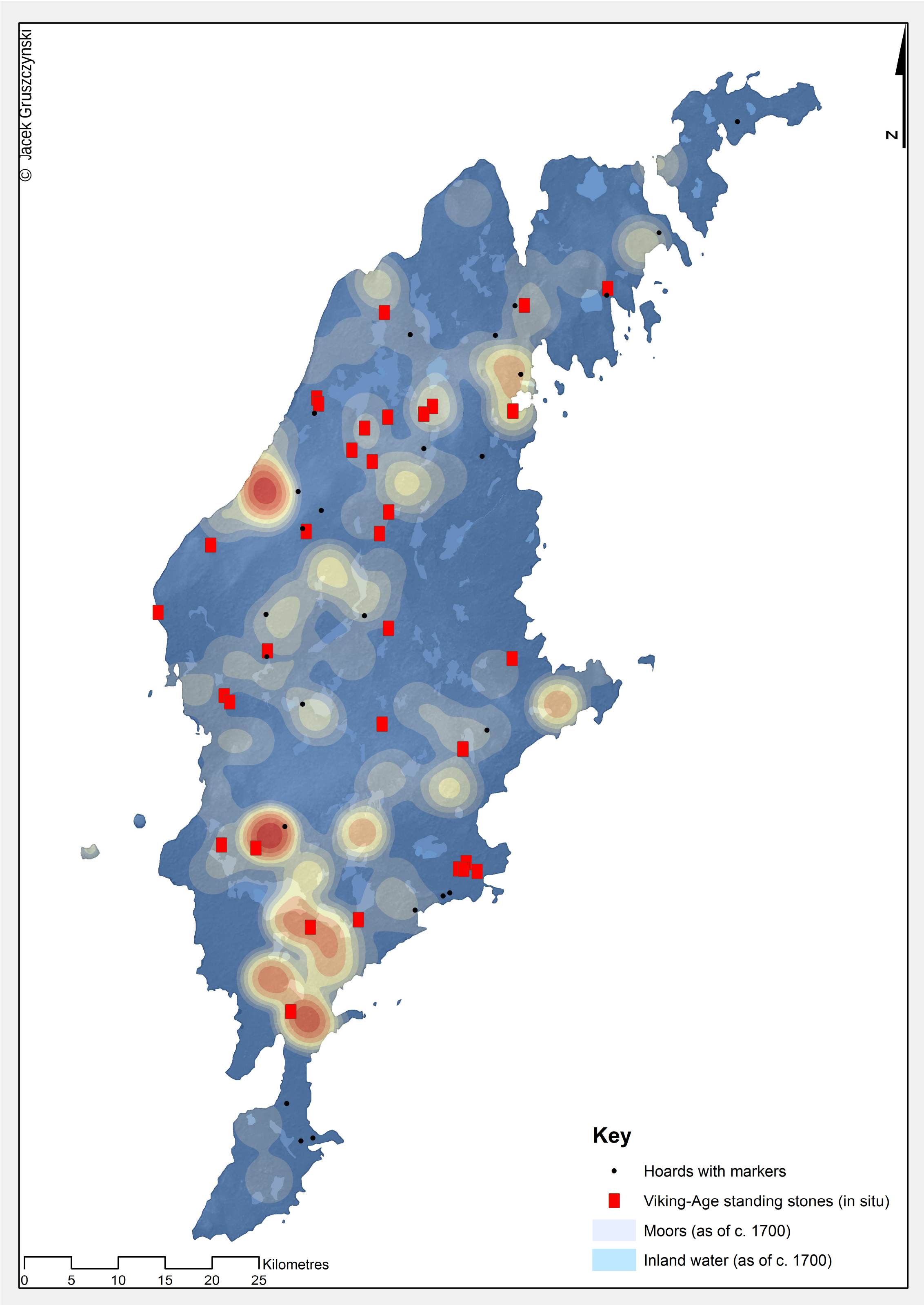


Figure 2.11 Gotlandic hoards associated with markers and standing stones overlain on density heat map of Viking-Age settlements classified by 9 natural breaks (Jenks). The map also includes Ammunde III (cairn) and Hejde vicarage (landmark) deposits.

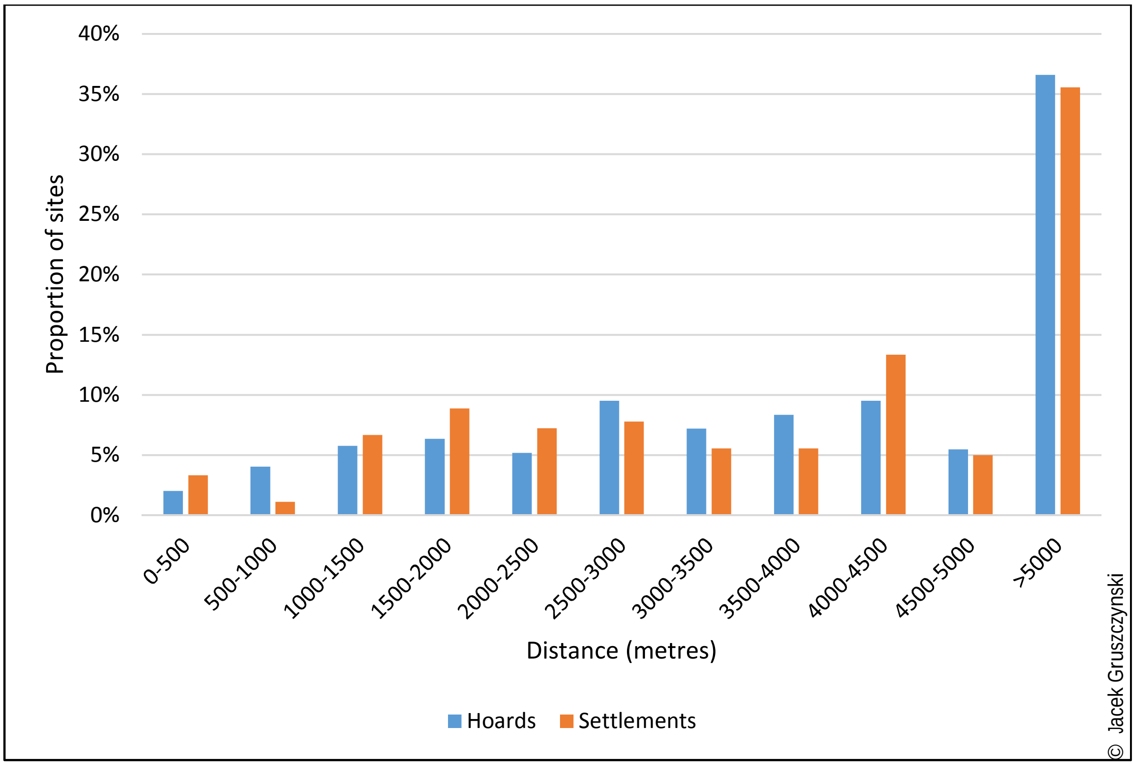


Figure 2.12 Distance from Gotlandic hoards and Viking-Age settlements to the nearest standing stone in situ.

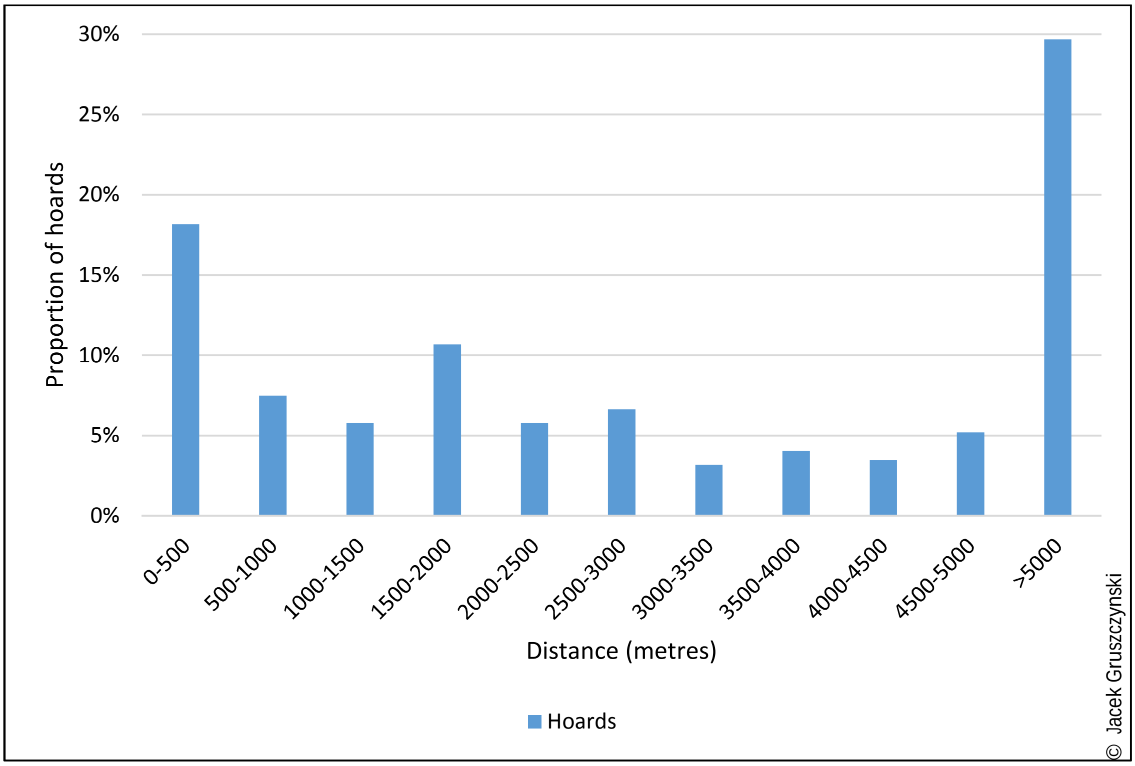


Figure 2.14 Distance from Gotlandic hoards to the nearest site with evidence of metalworking.

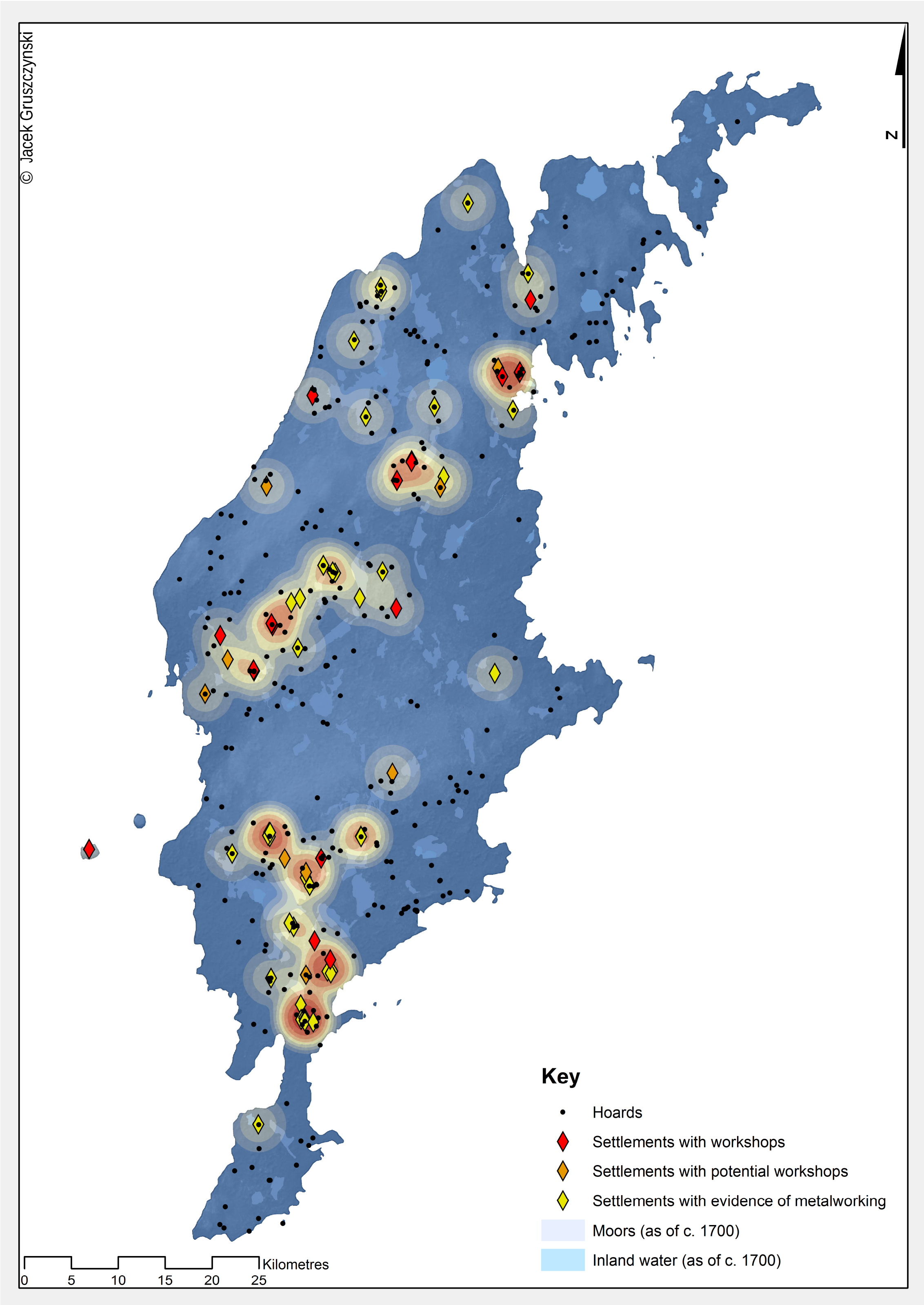


Figure 2.13 Kernel density heat map of Viking-Age sites associated with metalworking. The density is classified by 9 natural breaks (Jenks) to account for low number of known burials and to facilitate visual comparison with Figure 2.3.

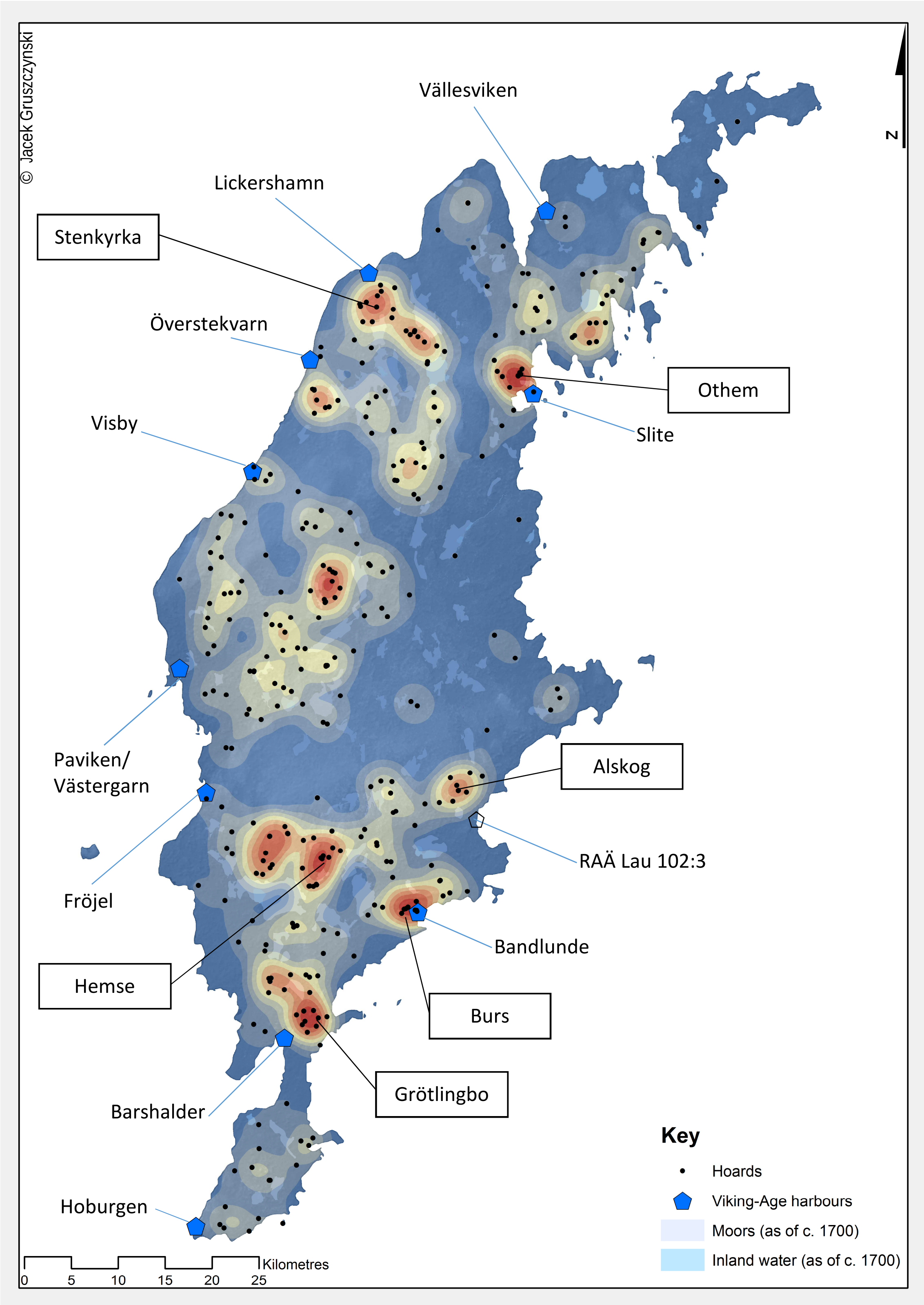


Figure 2.15 Map of Viking-Age harbour sites (landing places) and hoards. The underlay of hoard kernel density is classified by 9 equal intervals.

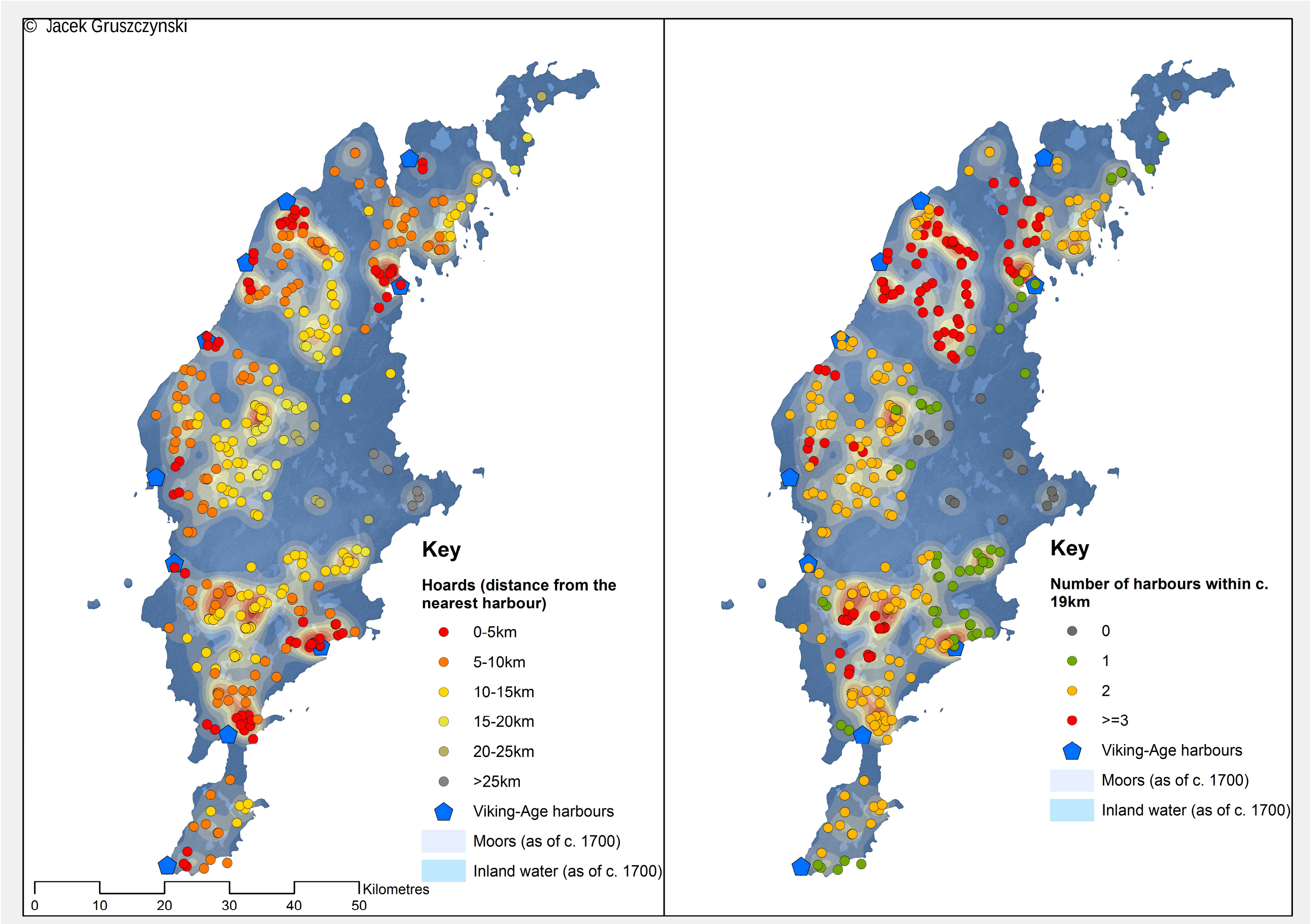


Figure 2.16 (A) Hoards classified by distance from the nearest Viking-Age harbour site (landing place) (B) Hoards classified by a number of available Viking-Age harbour sites (landing places) within c. 19km radius. The underlay of hoard kernel density heatmap is classified by 9 equal intervals.

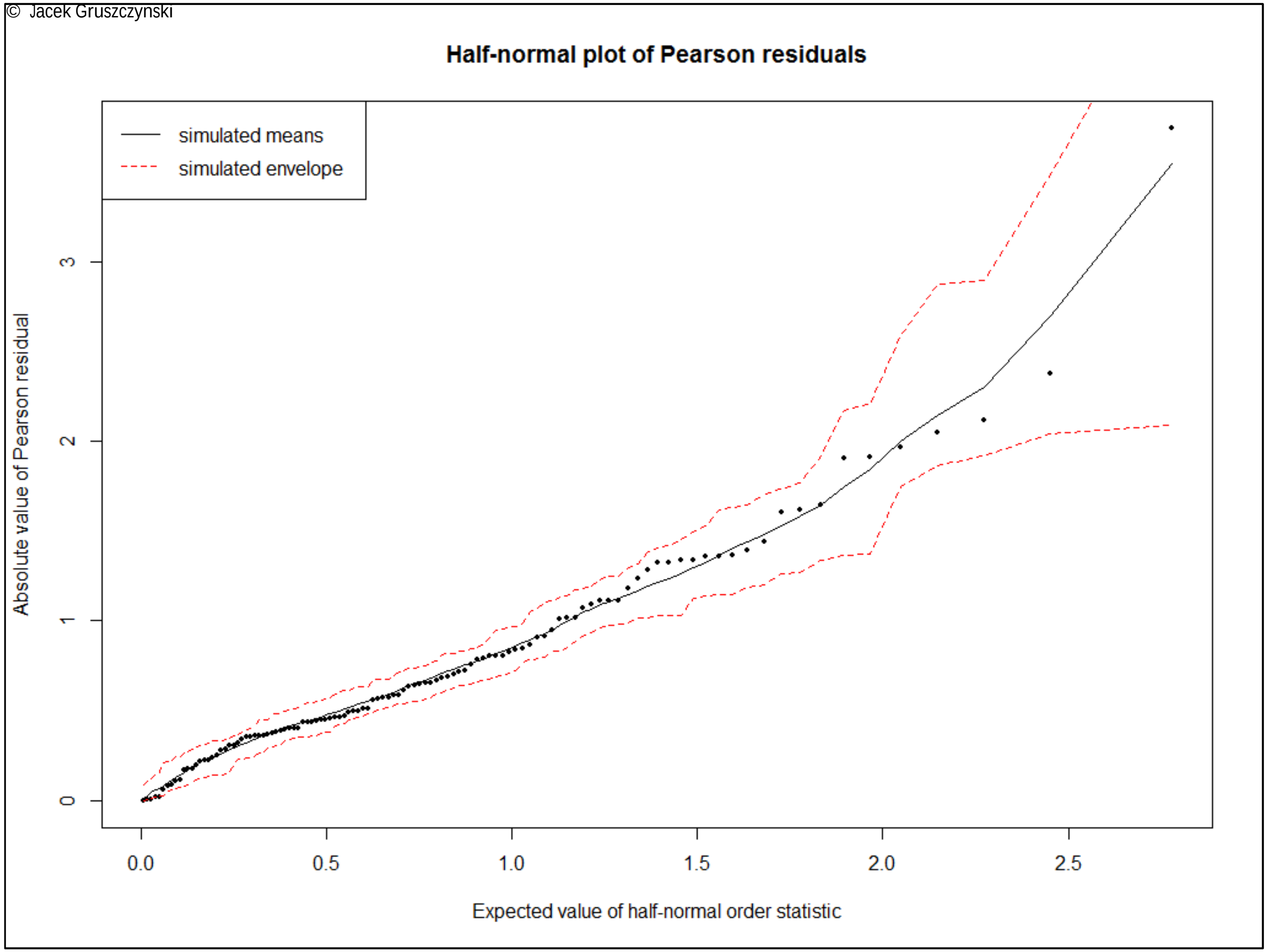
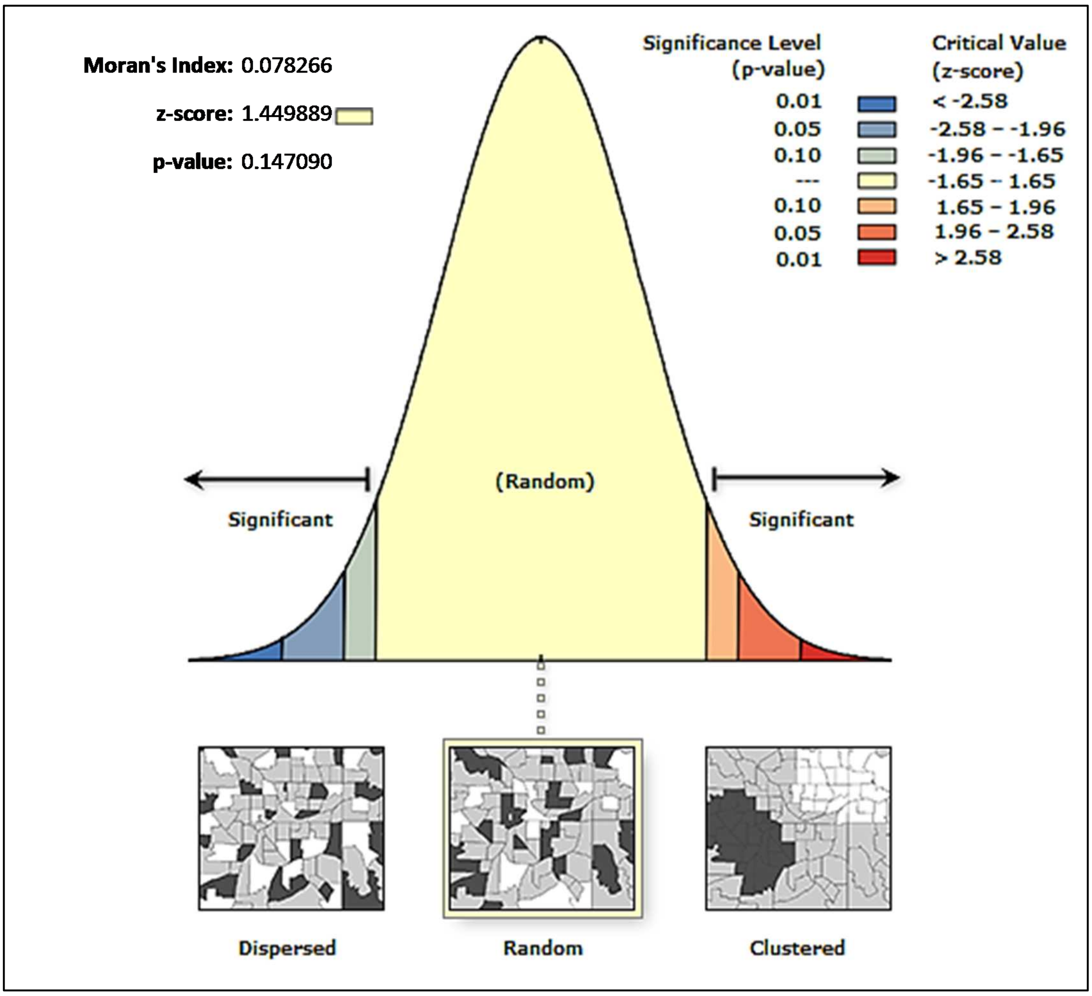


Figure 2.17 Half-normal plot of Pearson residuals versus simulated residuals in the GLM model for Gotlandic case study (mod8.1).



Moran's Index:	0.078266
Expected Index:	-0.008850
Variance:	0.003610
z-score:	1.449889
p-value:	0.147090

Figure 2.18 Results of Spatial Autocorrelation (Moran's I) analysis in ArcGIS of Pearson residuals in Gotlandic regression model (mod8.1).

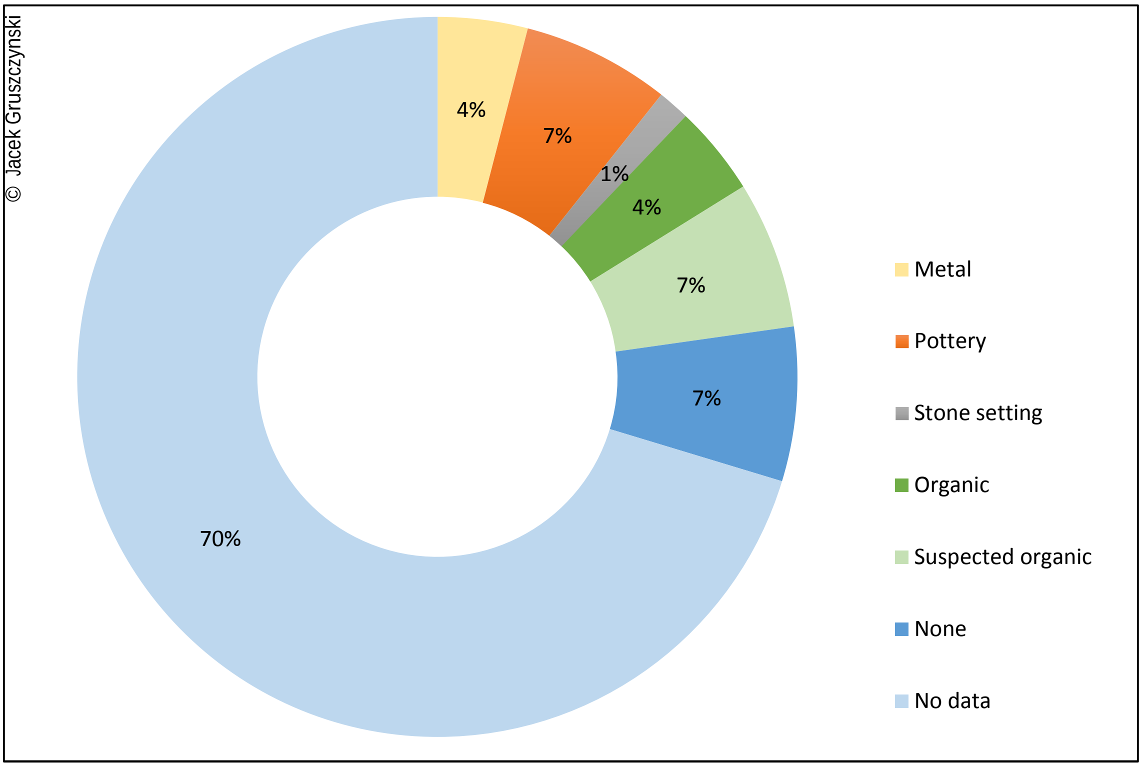


Figure 2.19 Deposition of Gotlandic hoards in various types of containers.

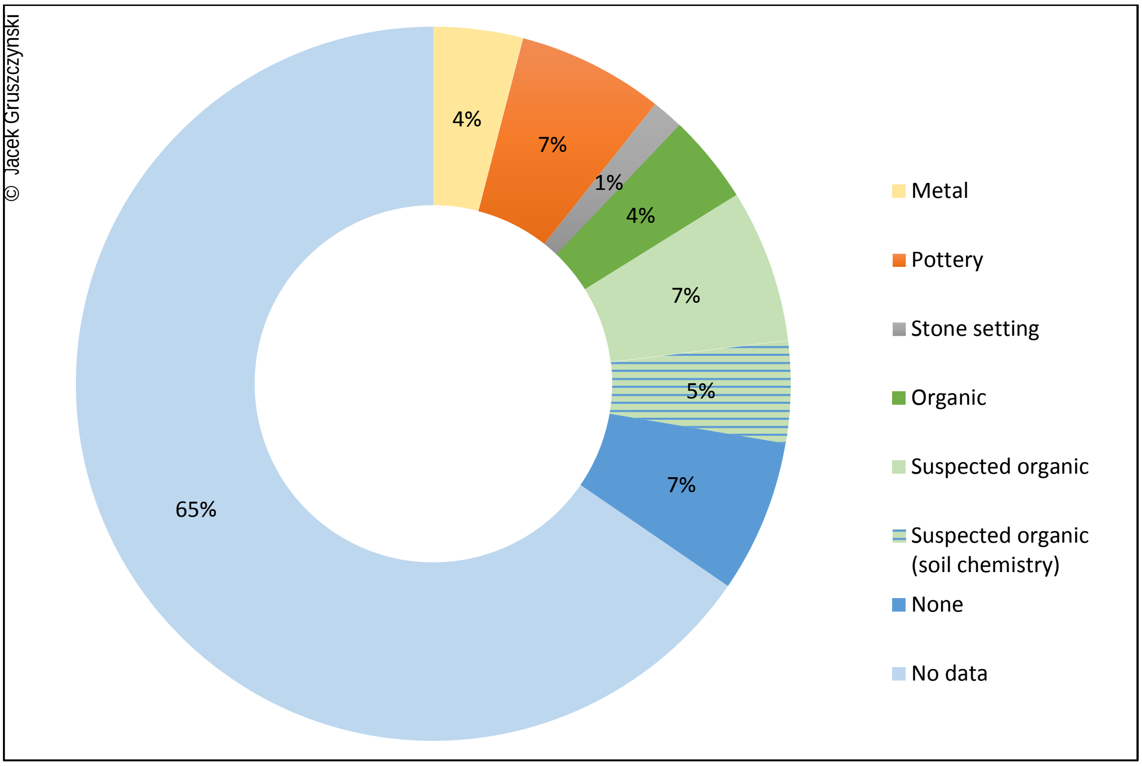


Figure 2.20 Deposition of Gotlandic hoards in various types of containers including 'No data' deposits reclassified on the basis of soil chemistry analysis.

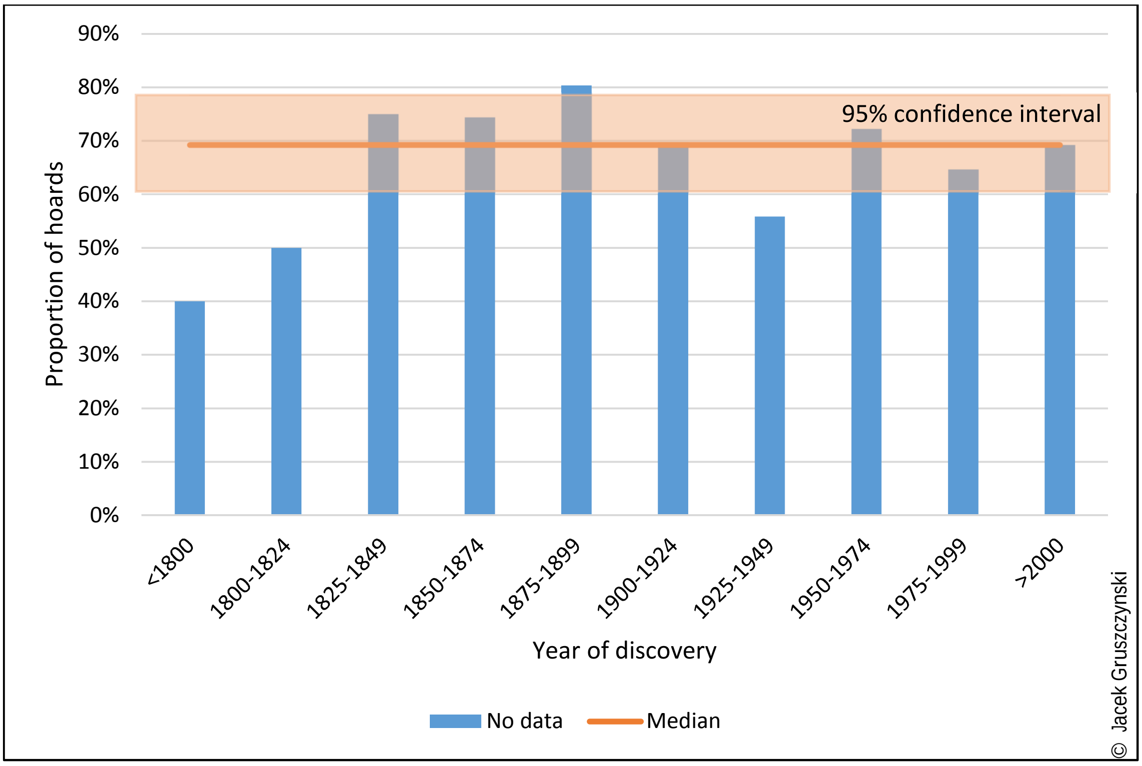


Figure 2.21 Proportion of hoards without the explicit information on the presence/absence of a container. The median average proportion of all 'No data' hoards is 69% and the statistical 95% confidence interval for the median lies between 65% and 83% (calculated using bootstrap method described in A2.3).

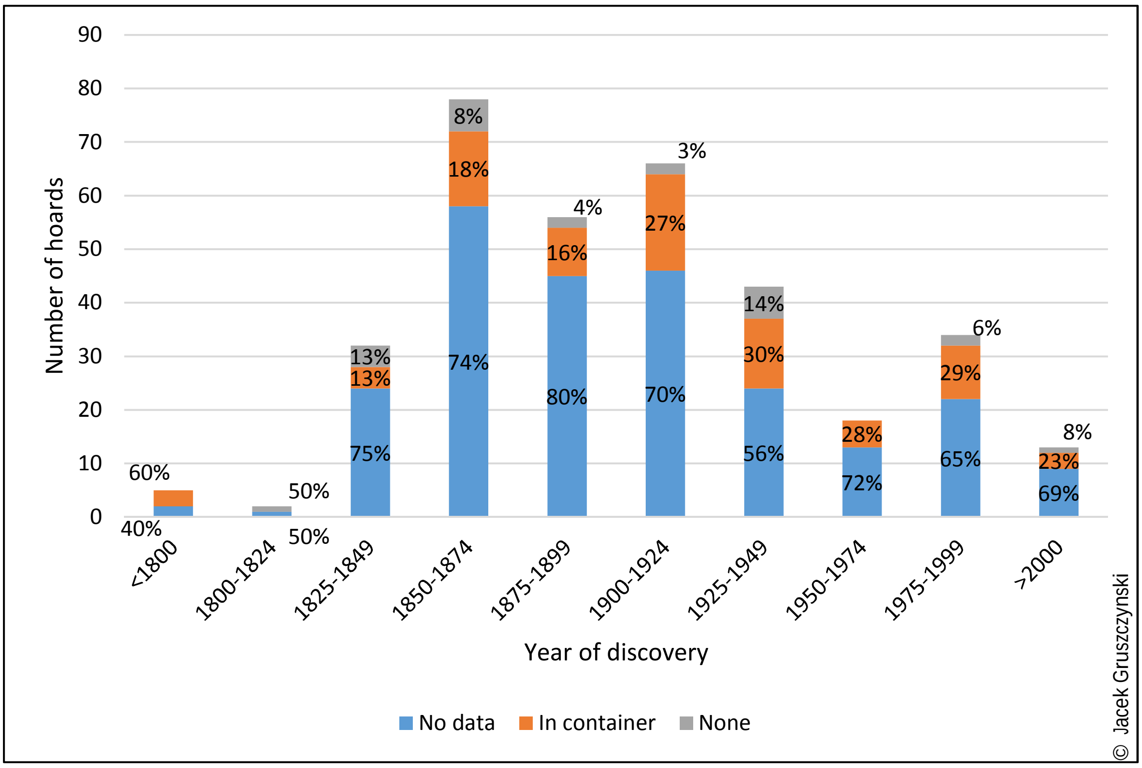


Figure 2.22 Chronological structure of all hoard discoveries in Gotland.

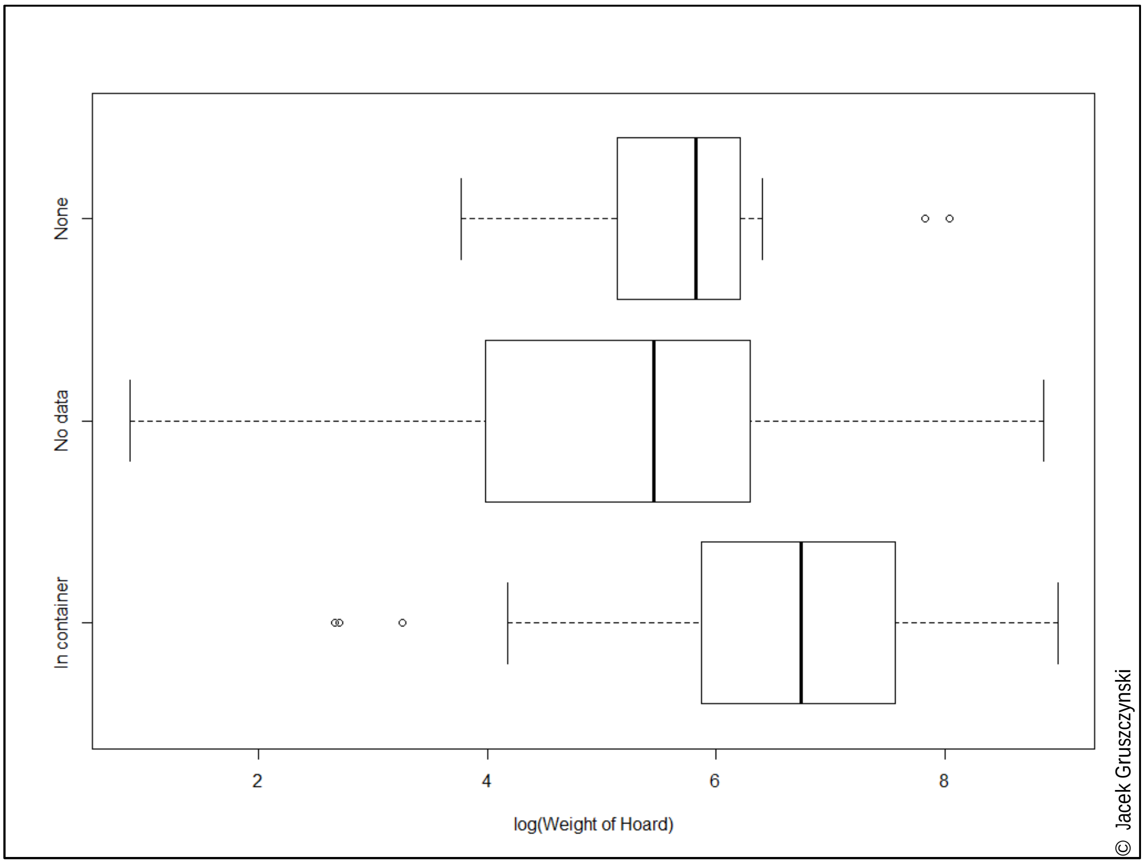


Figure 2.23 Comparison of silver weight distribution between different categories of Gotlandic hoards.

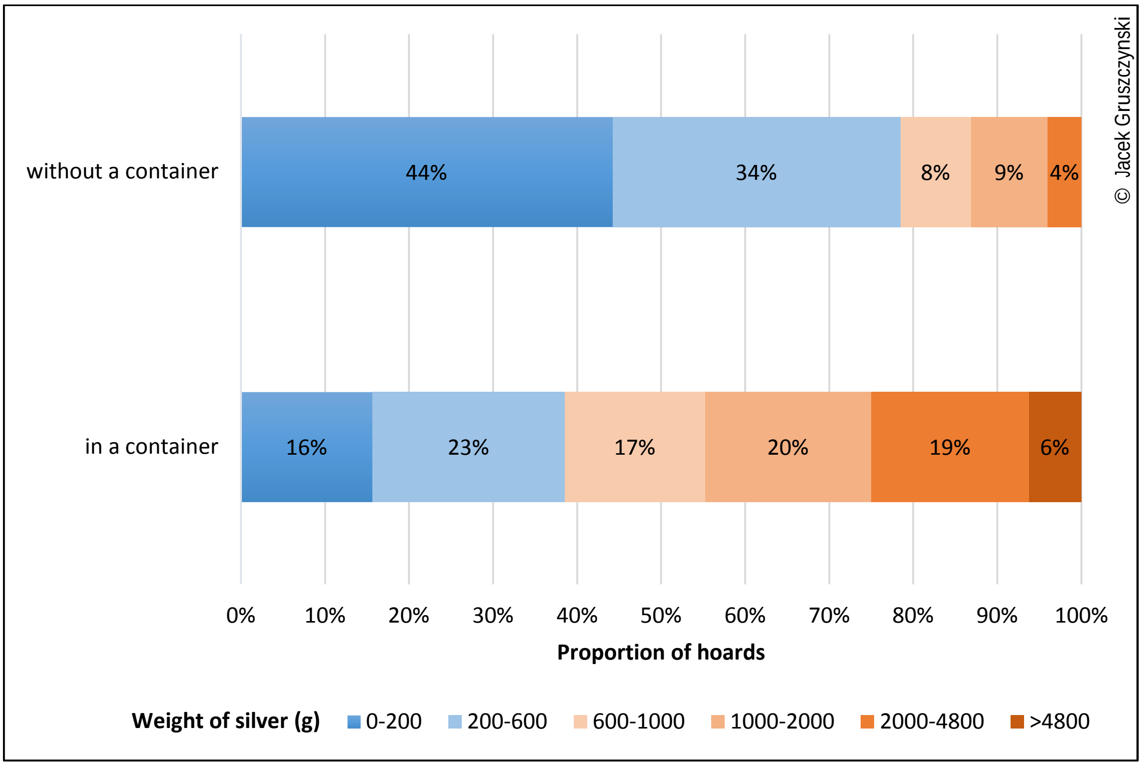
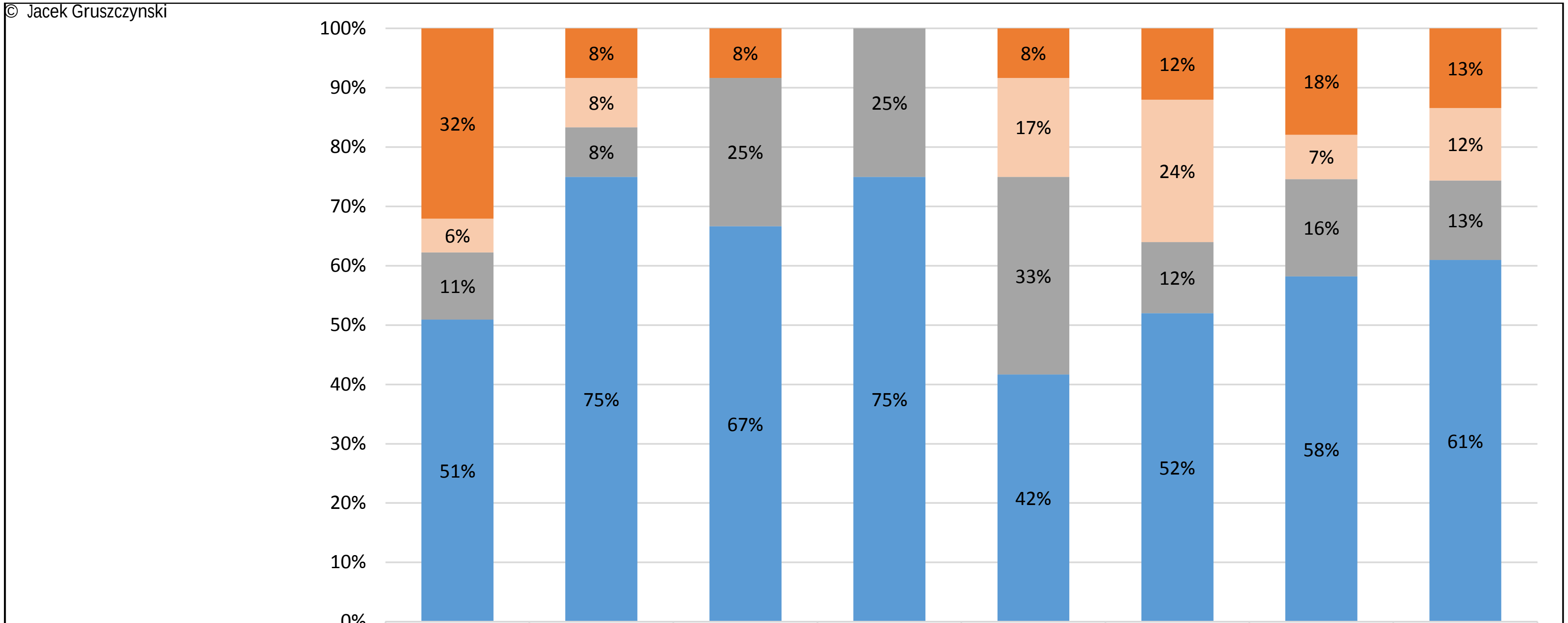


Figure 2.24 Comparison of Gotlandic deposits discovered with and without containers classified by weight of silver.



	VA settlements	Burials and cemeteries	Earlier settlements	Watery environment	Stenvasts	Stone and landscape markers	Traditional soils (no other context)	Marginal soils (no other context)
large contained (savings)	17	1	1	0	1	3	24	11
small contained (emergency)	3	1	0	0	2	6	10	10
large containerless (grey area)	6	1	3	1	4	3	22	11
small containerless (placed deposits)	27	9	8	3	5	13	78	50

Figure 2.25 Comparison of Gotlandic deposits discovered with and without containers classified by weight of silver. The silver weight was categorised to describe deposits weighing above 600g as large, and those below 600g as small.

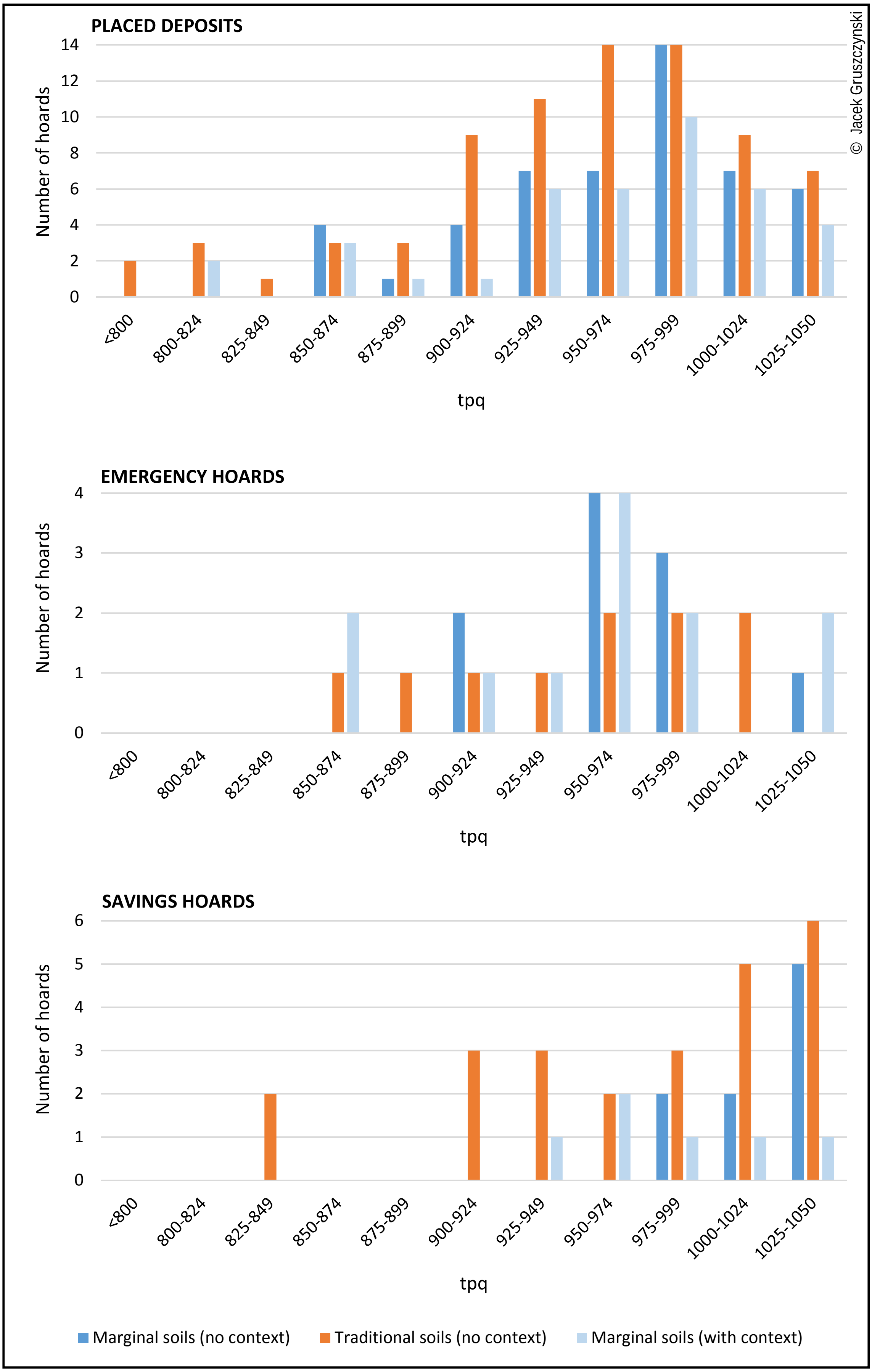


Figure 2.26 Chronological structure of hoards without known archaeological context.

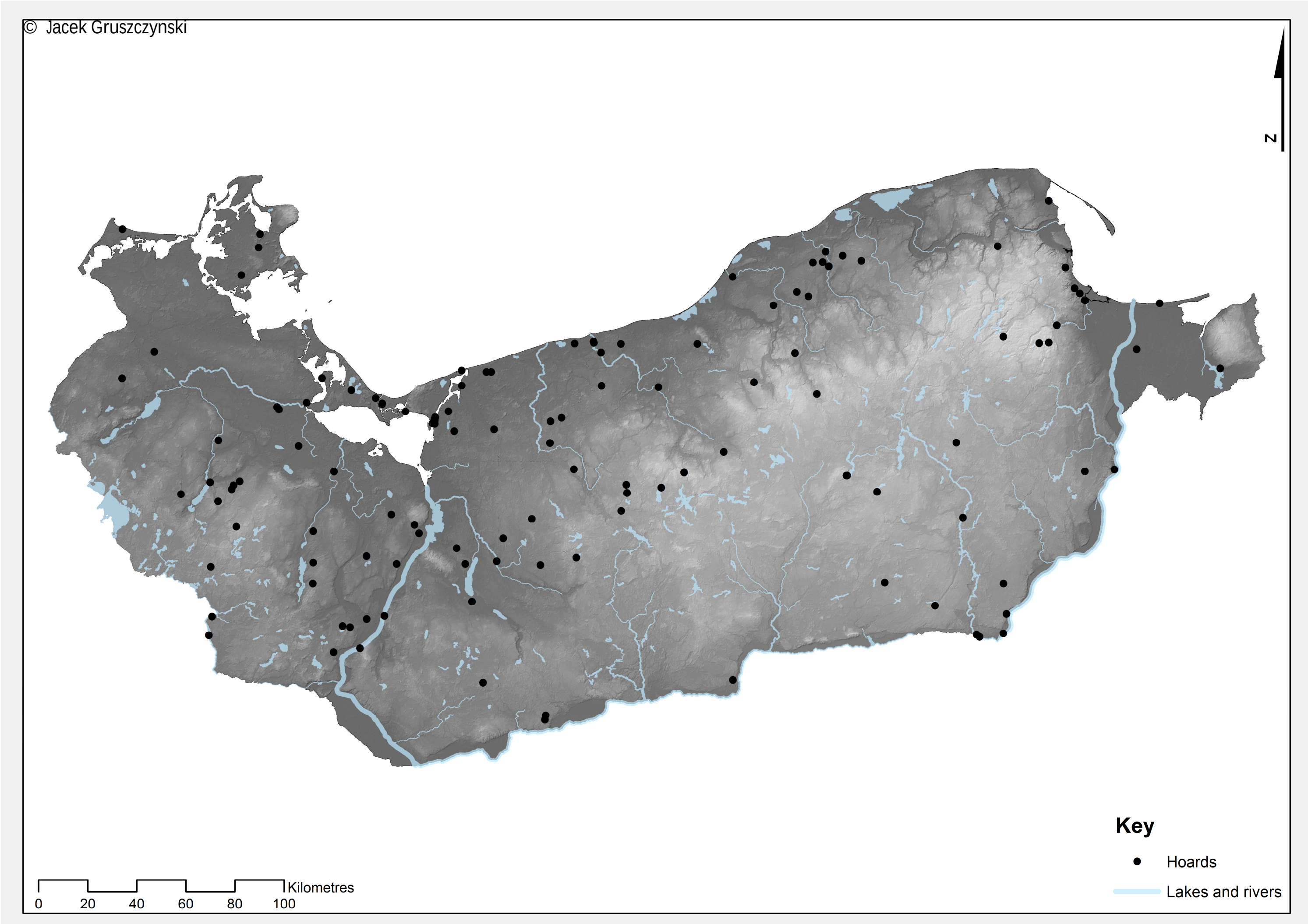
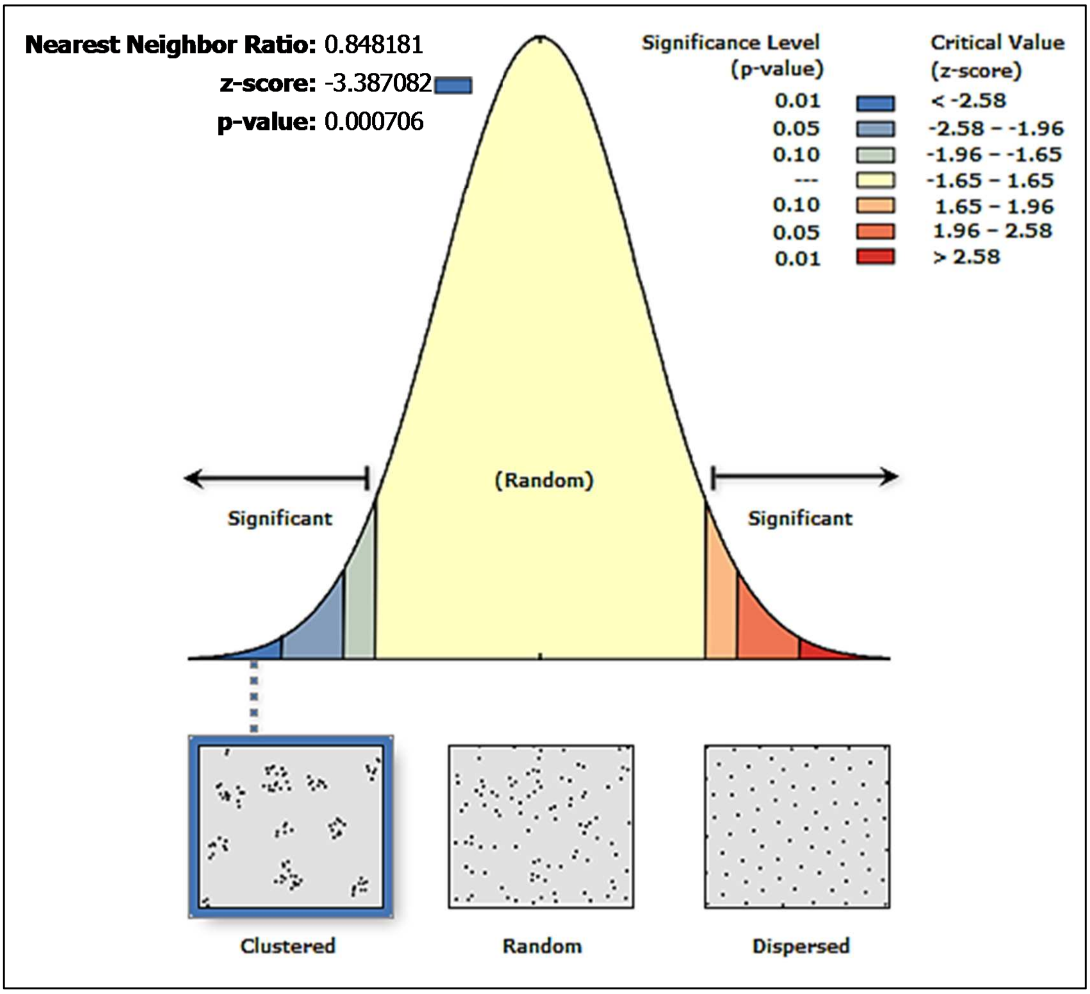


Figure 3.1 Distribution of silver hoards c. 800-1050 in Pomerania.



Observed Mean Distance:	9442.2199 metres
Expected Mean Distance:	11132.3137 metres
Nearest Neighbor Ratio:	0.848181
z-score:	-3.387082
p-value:	0.000706
Study Area:	67,417km2

Figure 3.2 Results of Average Nearest Neighbour analysis in ArcGIS of clustering of the Pomeranian hoard findspots.

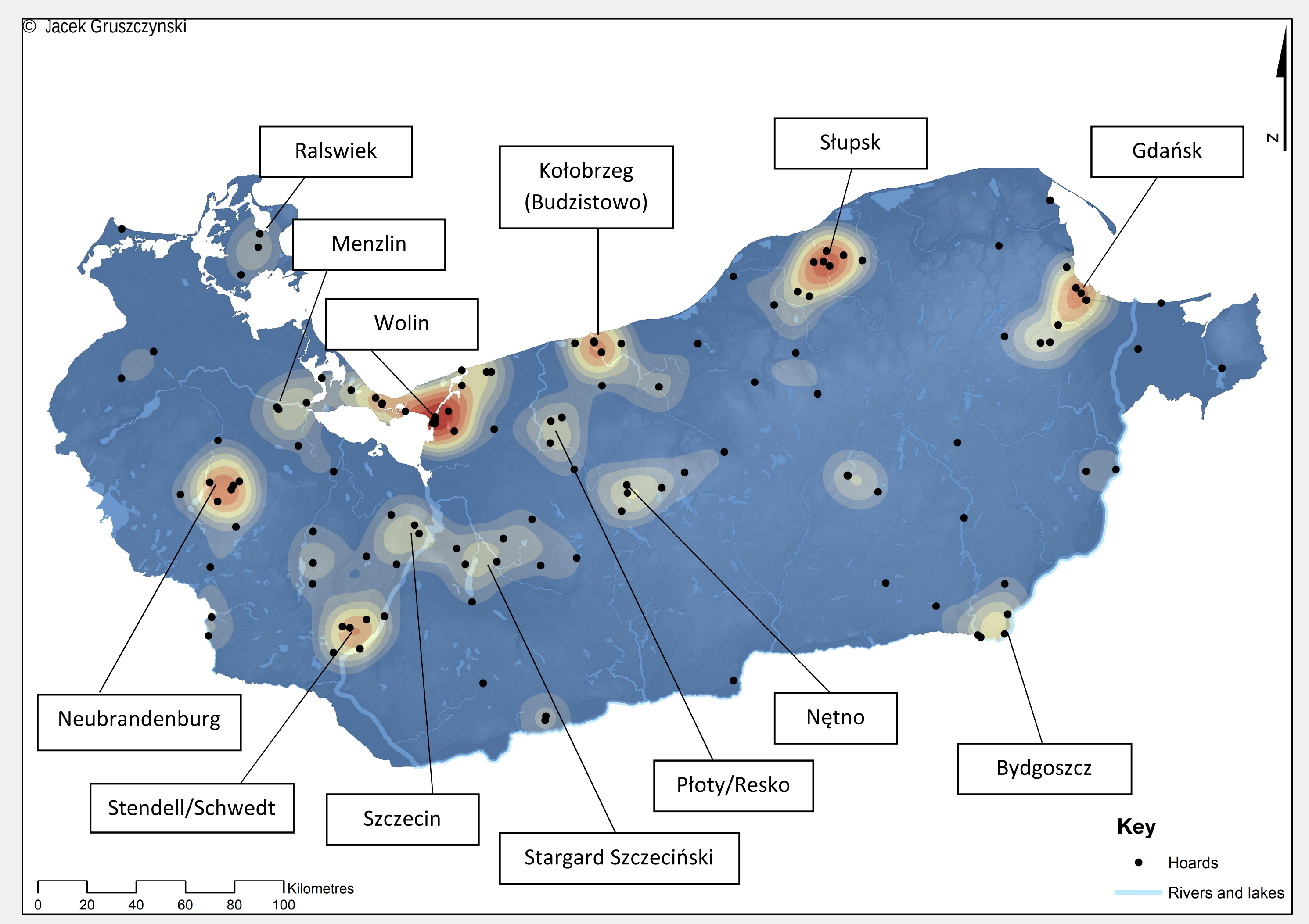
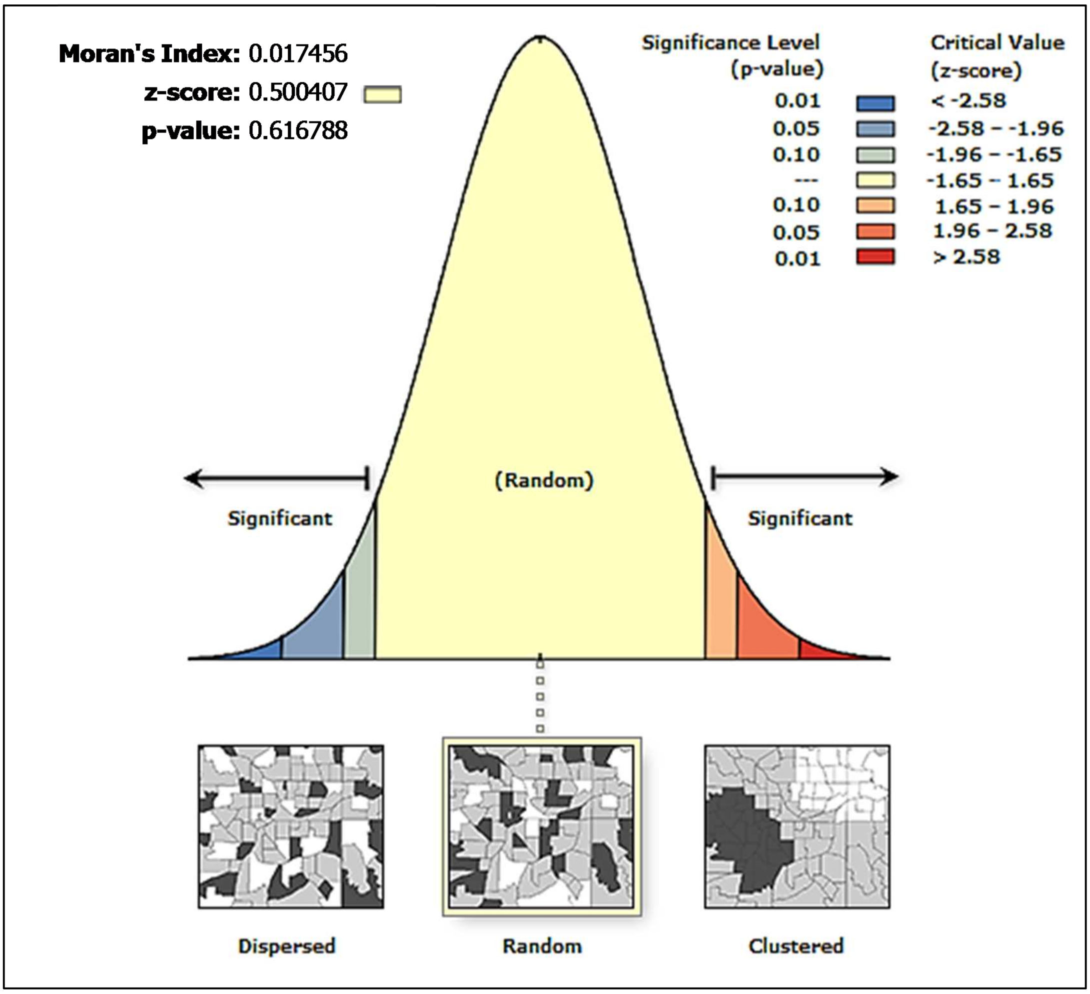


Figure 3.3 Kernel density heat map of Pomeranian hoards. Density classification by 9 equal intervals adjusted for Wolin. The adjustment was made in order to prevent Wolin's 14 hoards outbalancing all remaining concentrations.



Moran's Index:	0.017456
Expected Index:	-0.008264
Variance:	0.002642
z-score:	0.500407
p-value:	0.616788

Figure 3.4 Results of Spatial Autocorrelation (Moran's I) analysis in ArcGIS of the weight of silver clustering in the Pomeranian hoards.

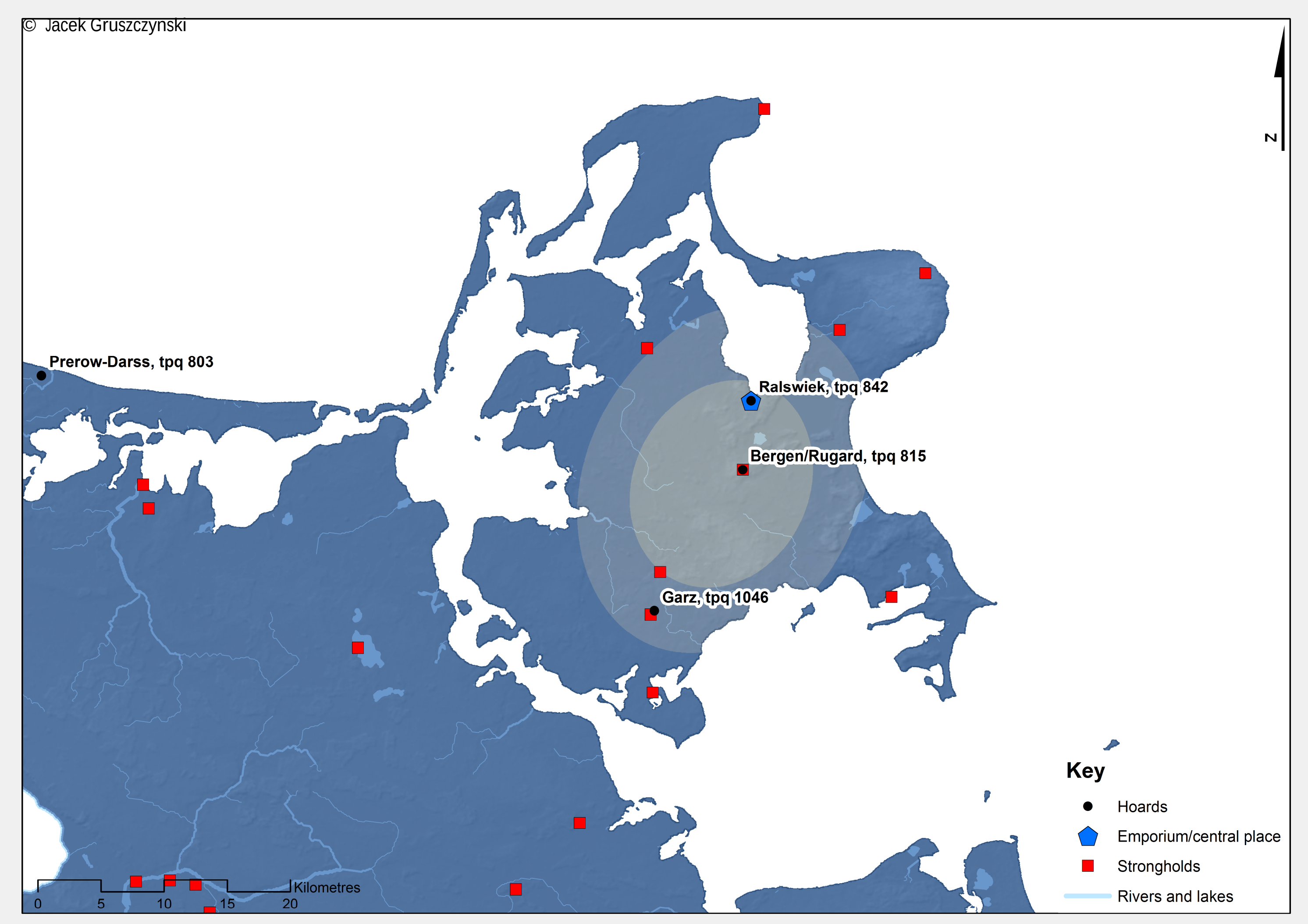


Figure 3.5 Ralswiek concentration.

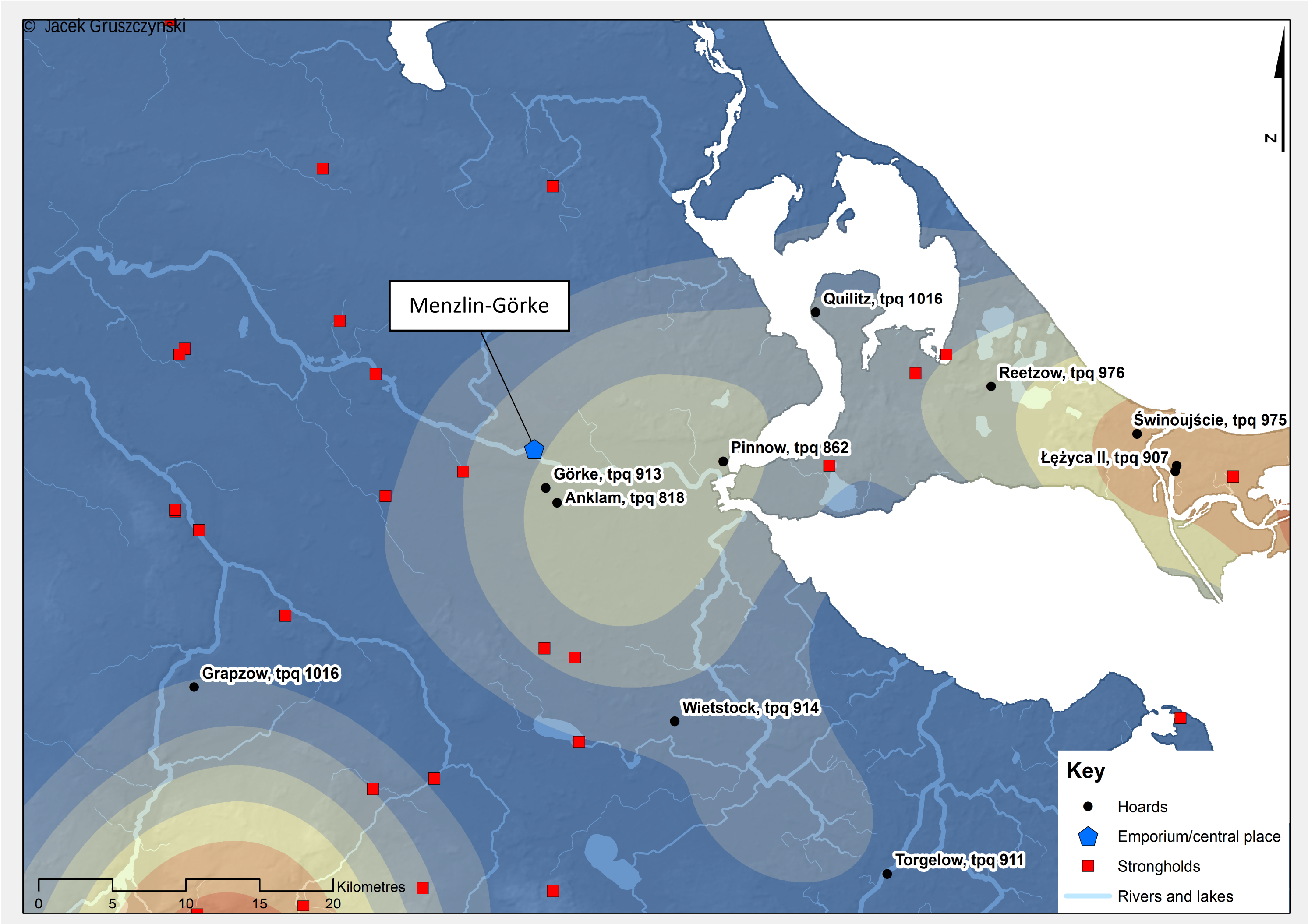


Figure 3.6 Menzlin-Görke concentration.

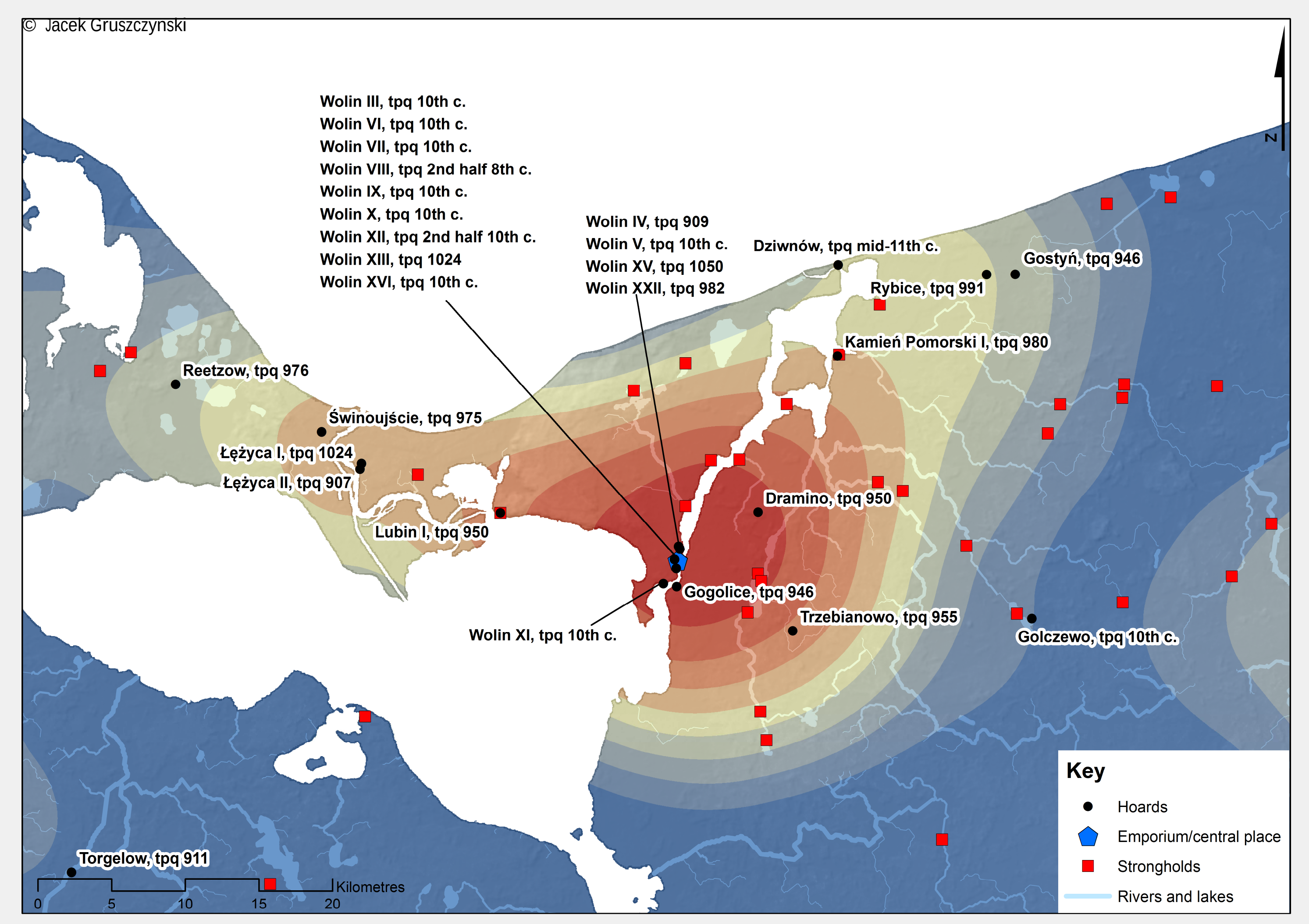


Figure 3.7 Wolin concentration.

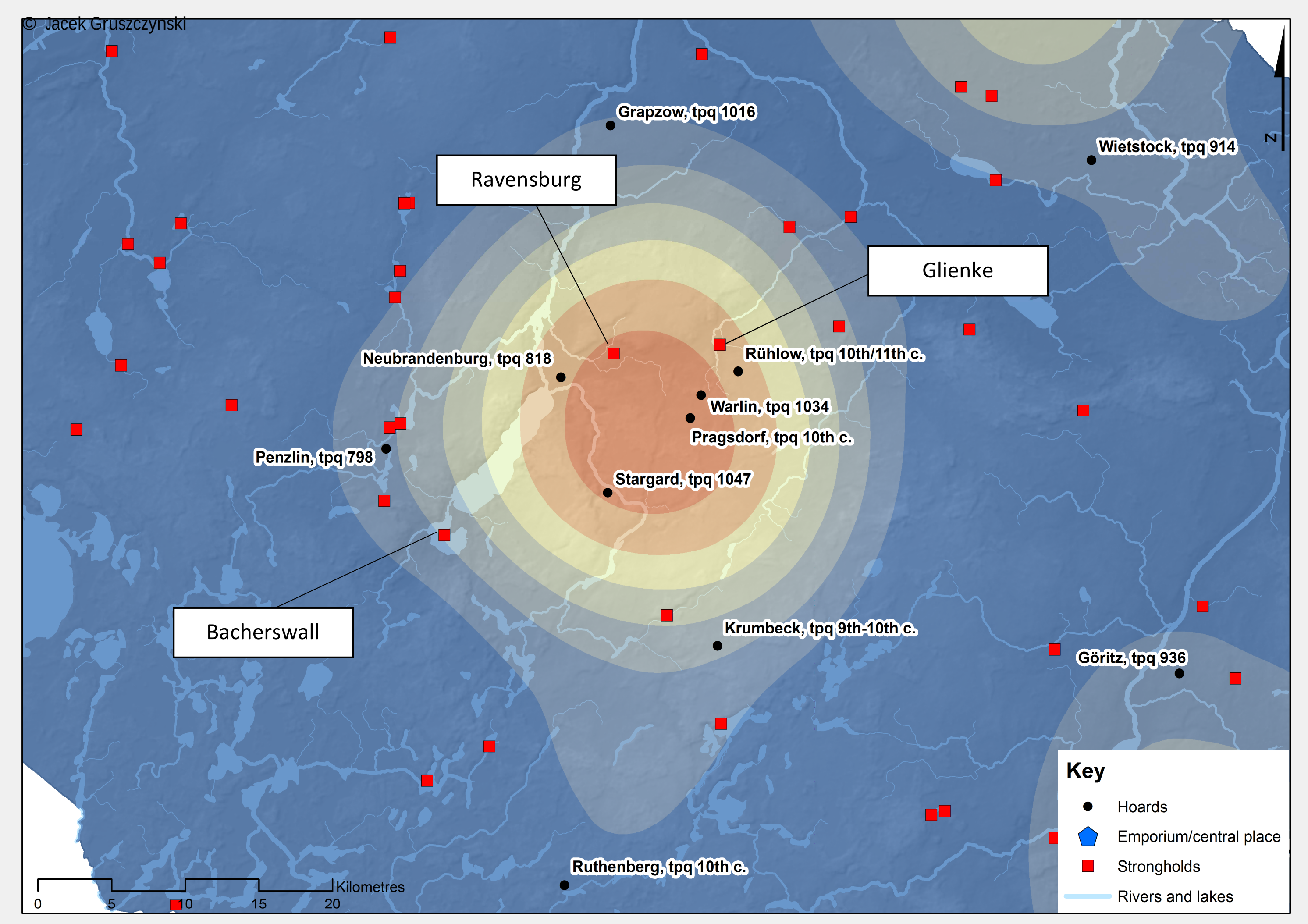


Figure 3.8 Neubrandenburg concentration.

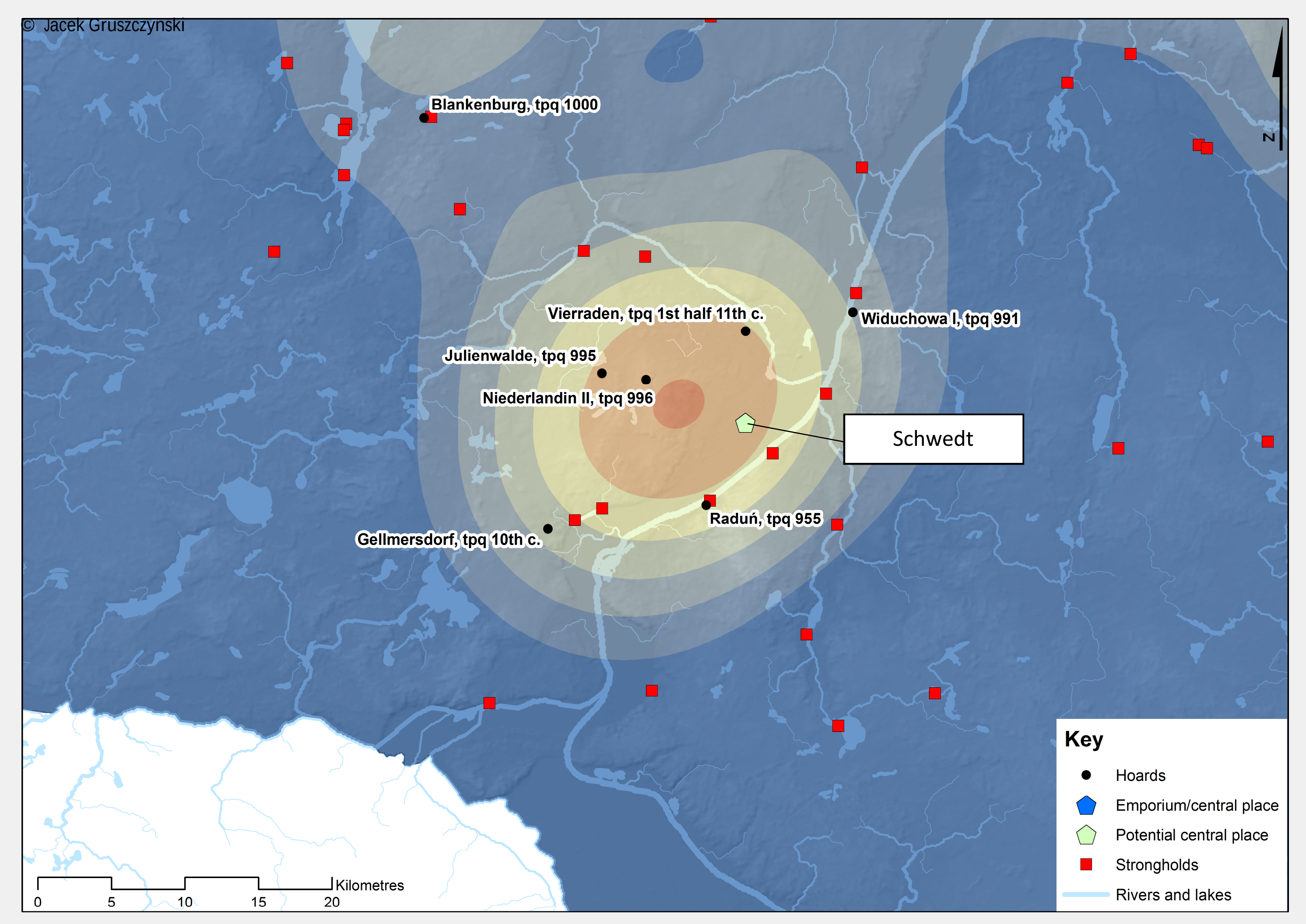


Figure 3.9 Schwedt concentration.

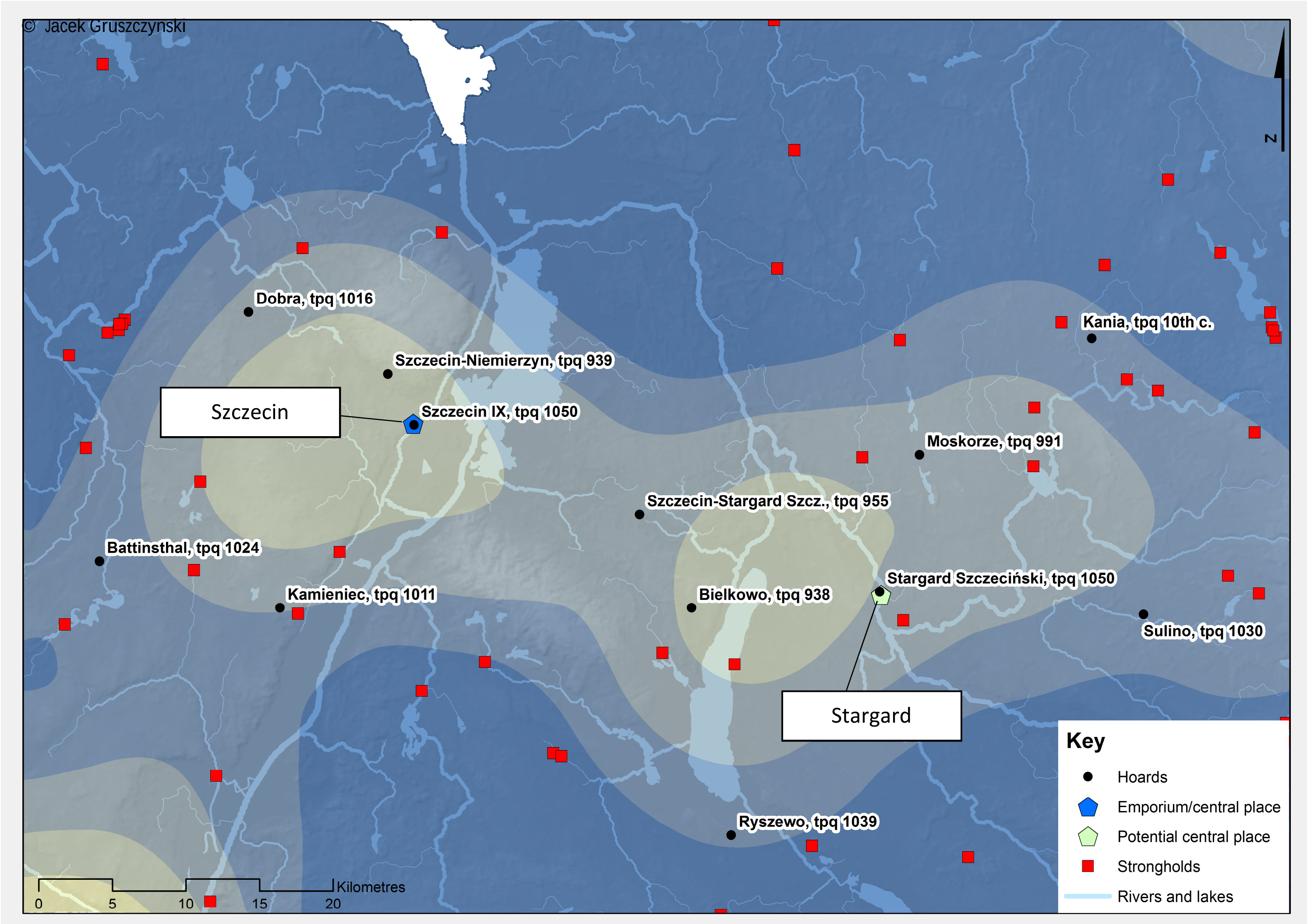


Figure 3.10 Szczecin-Stargard Szczeciński concentration.

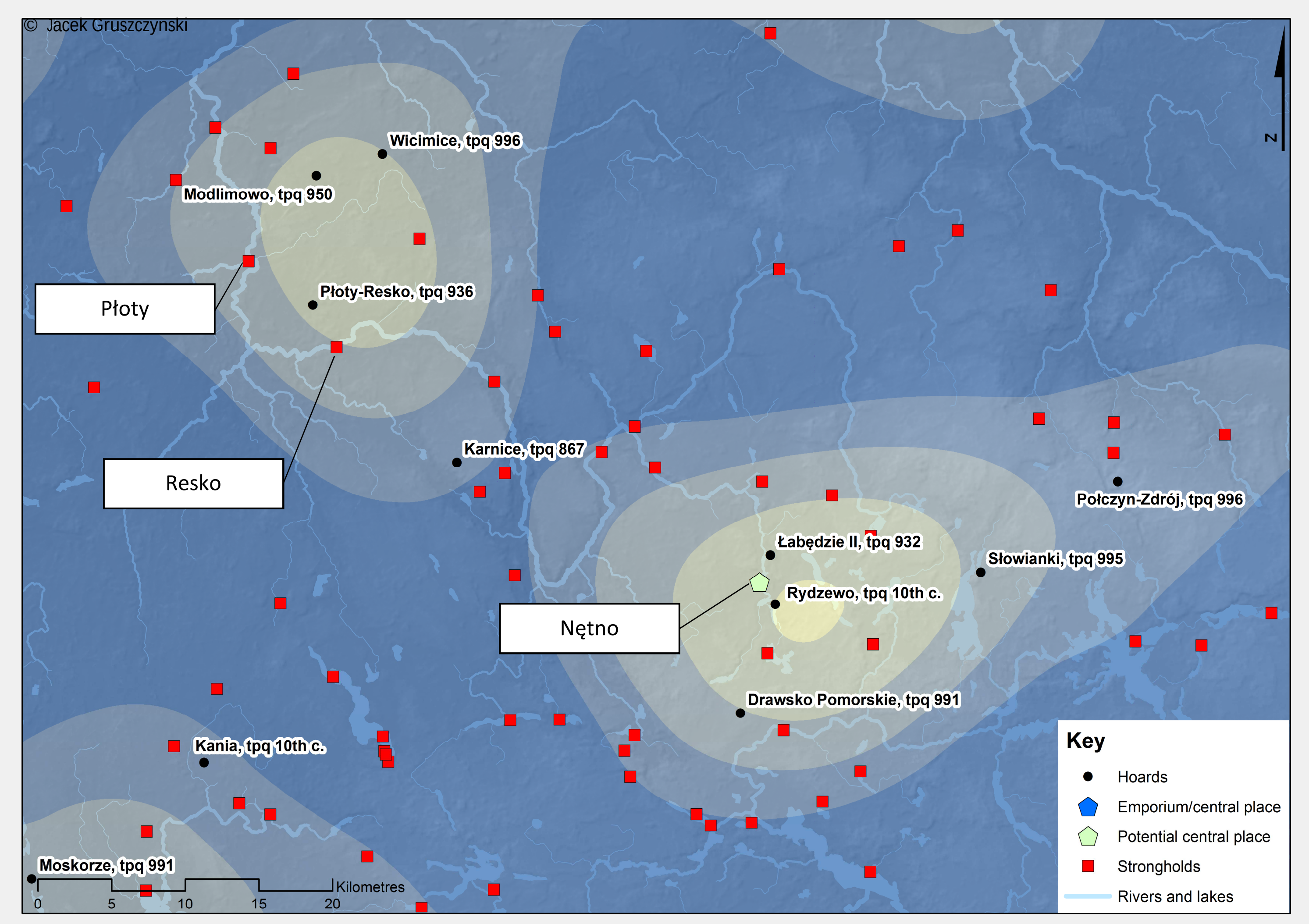


Figure 3.11 Nętno-Płoty/Resko concentration.

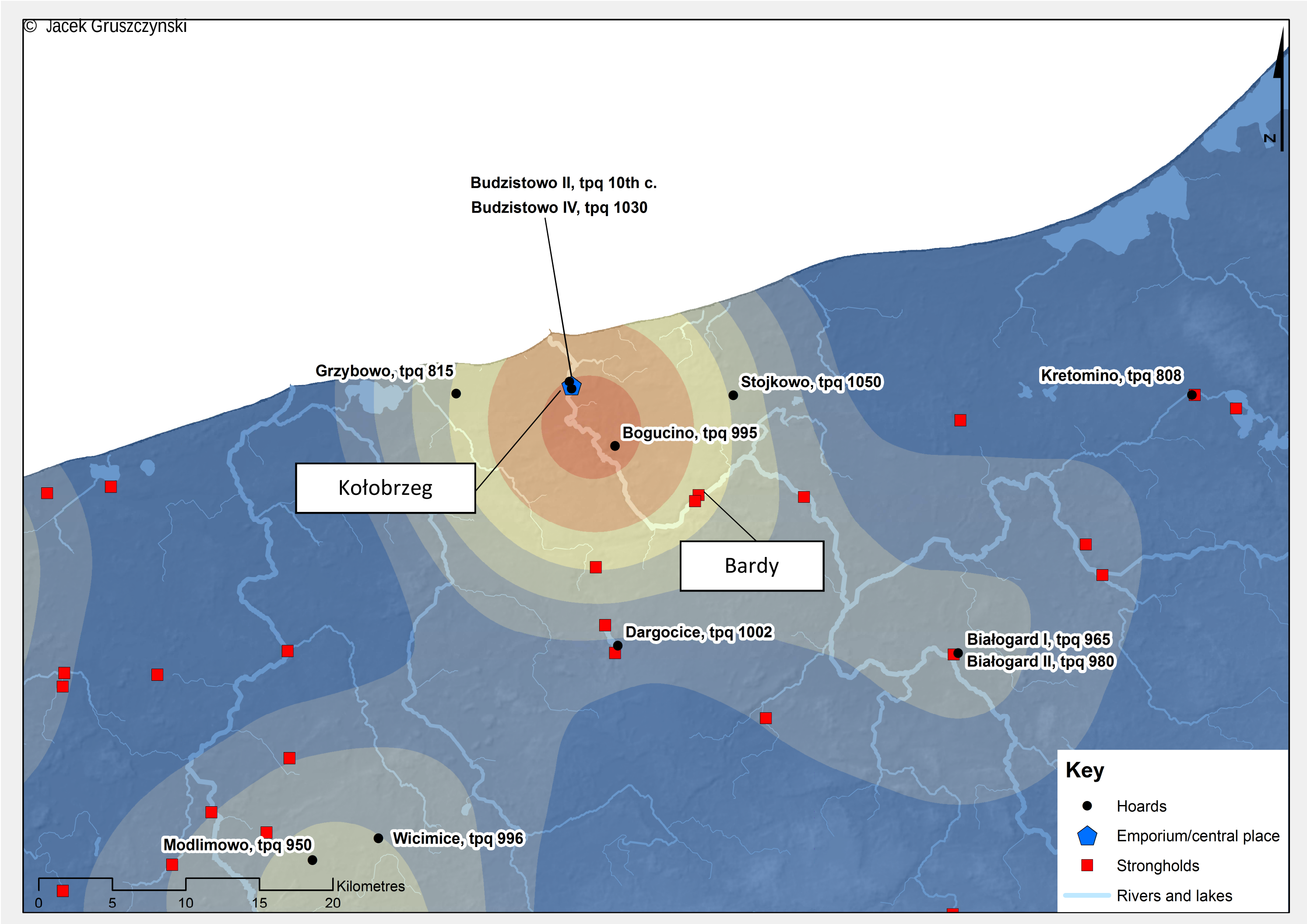


Figure 3.12 Kołobrzeg concentration.

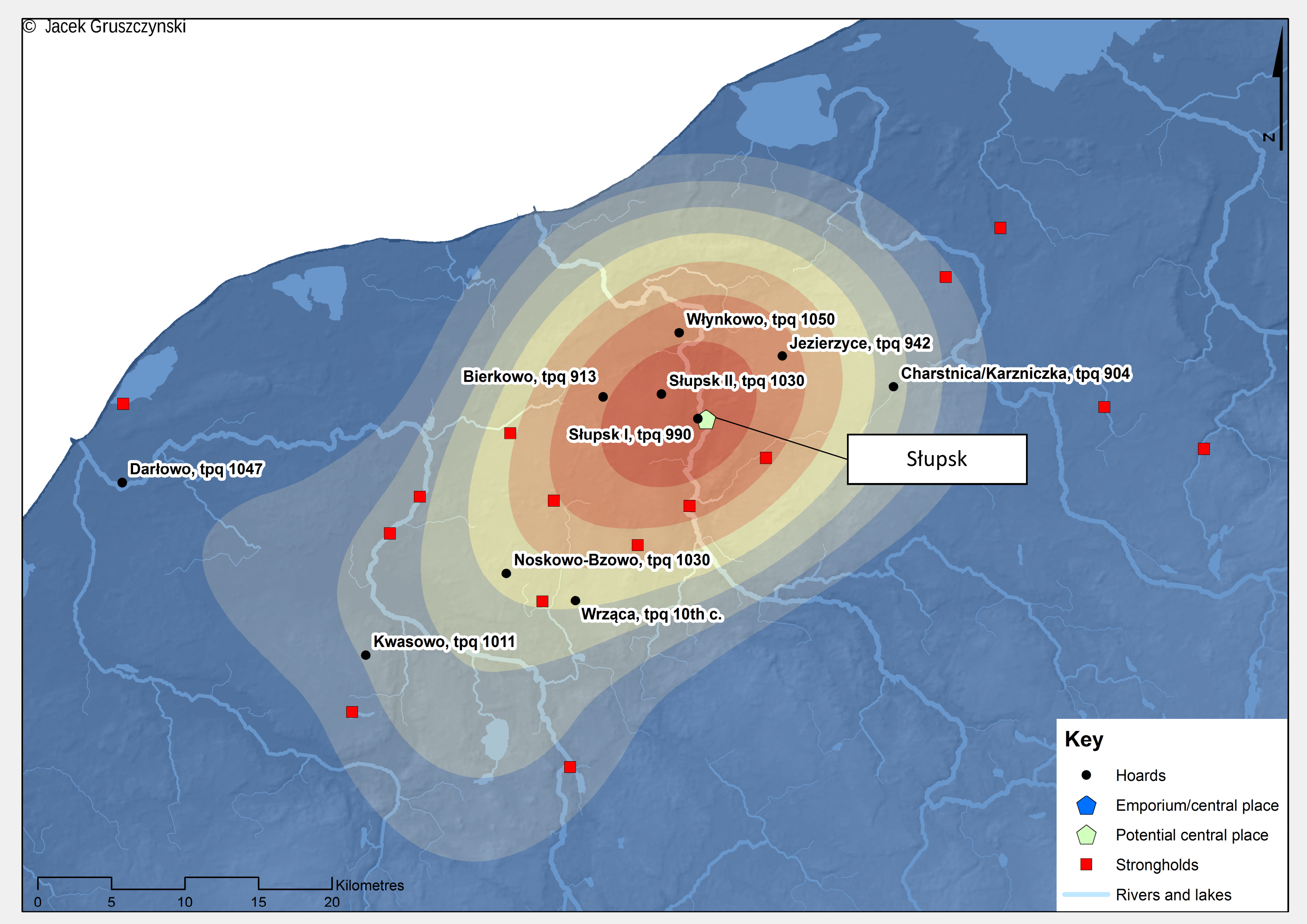


Figure 3.13 Słupsk concentration.

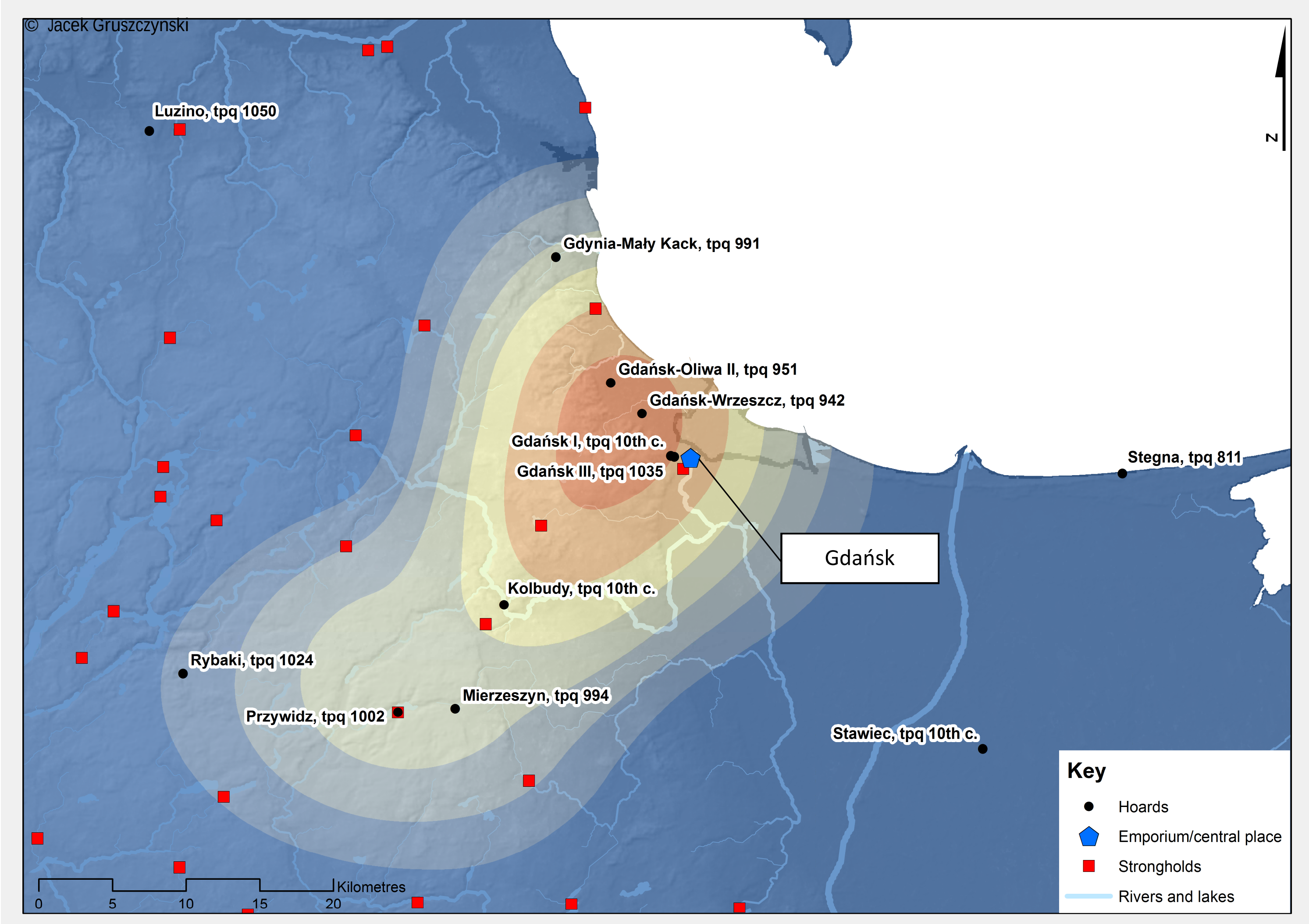


Figure 3.14 Gdańsk concentration.

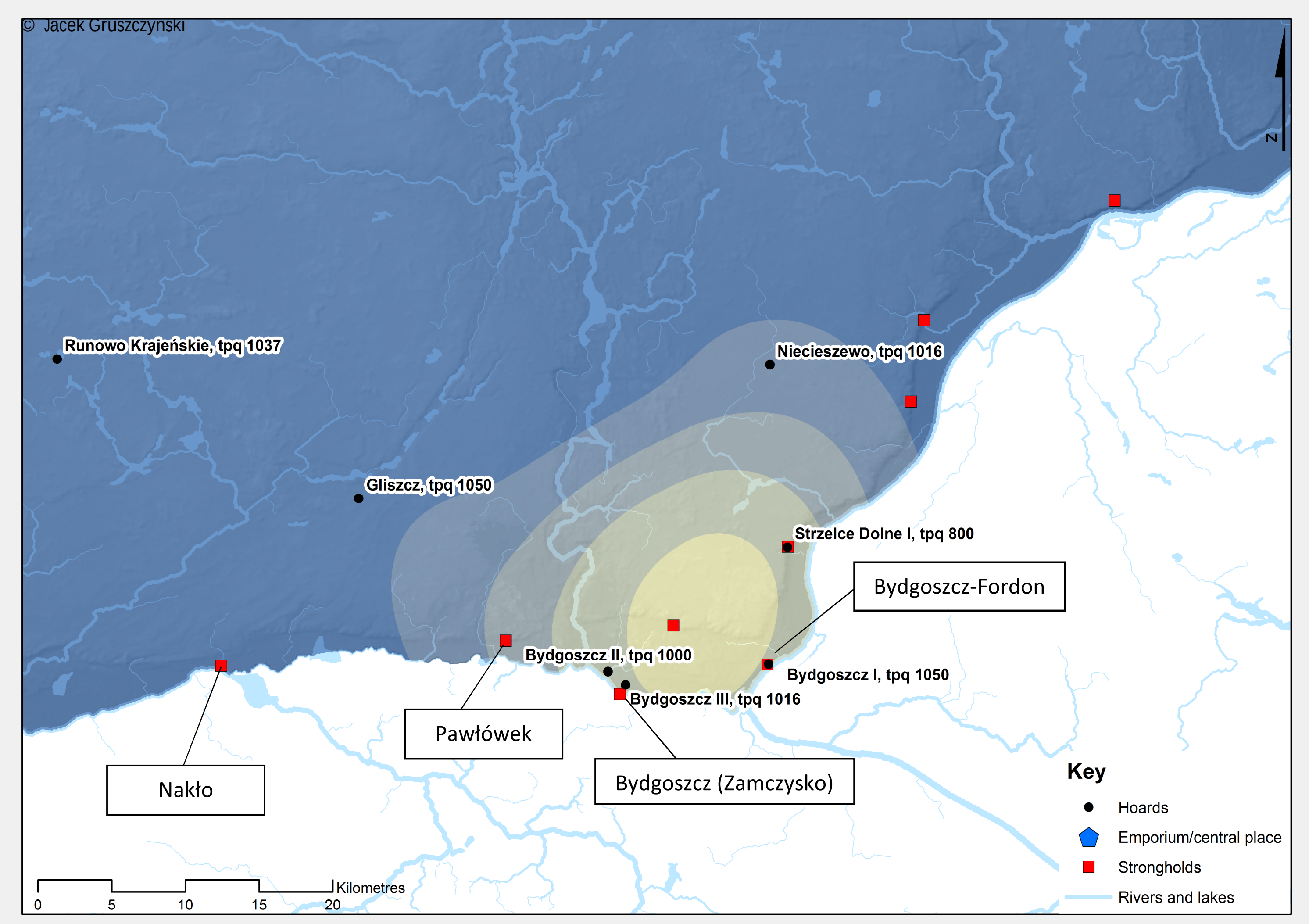


Figure 3.15 Bydgoszcz concentration.

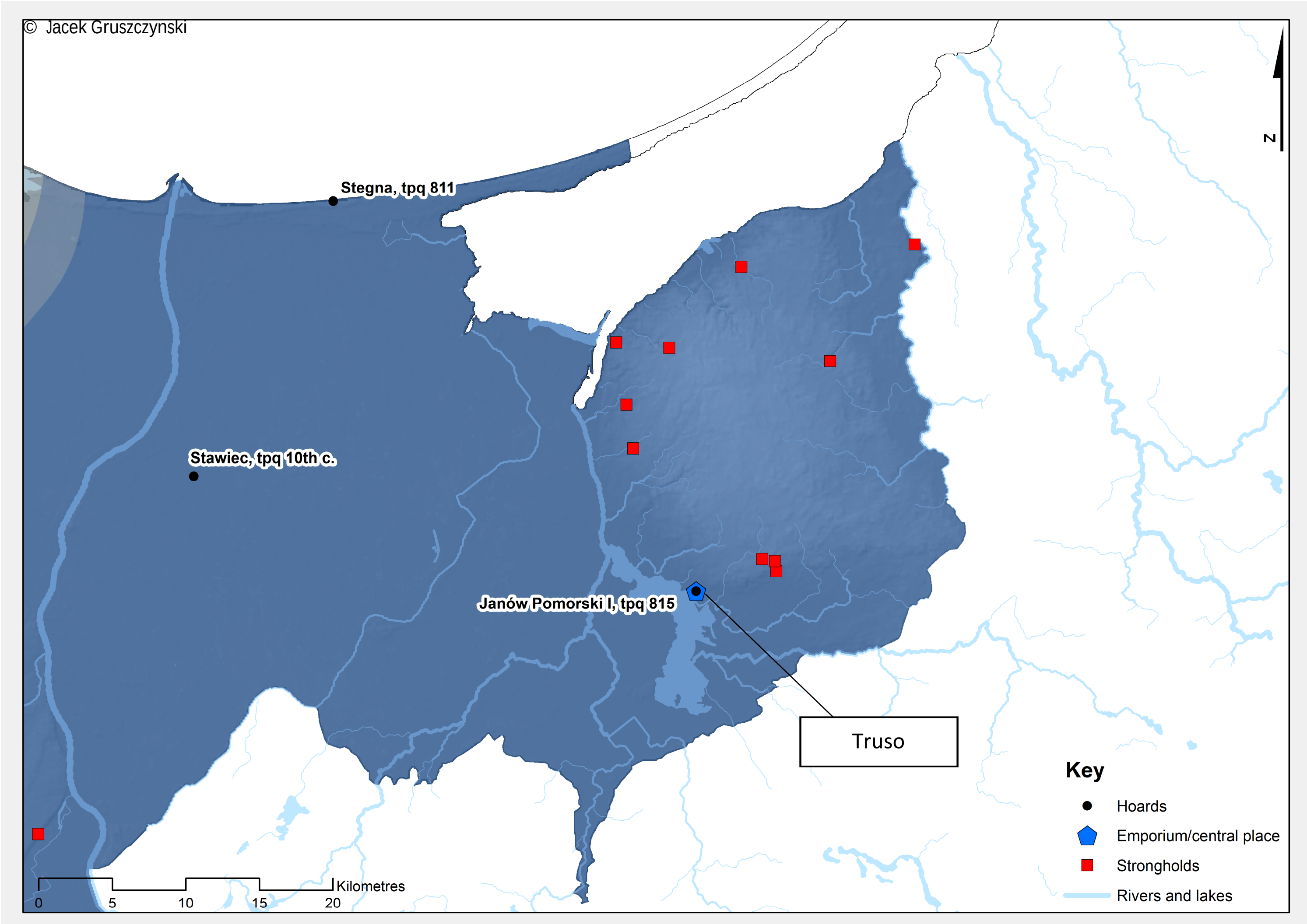


Figure 3.16 The area of Truso.

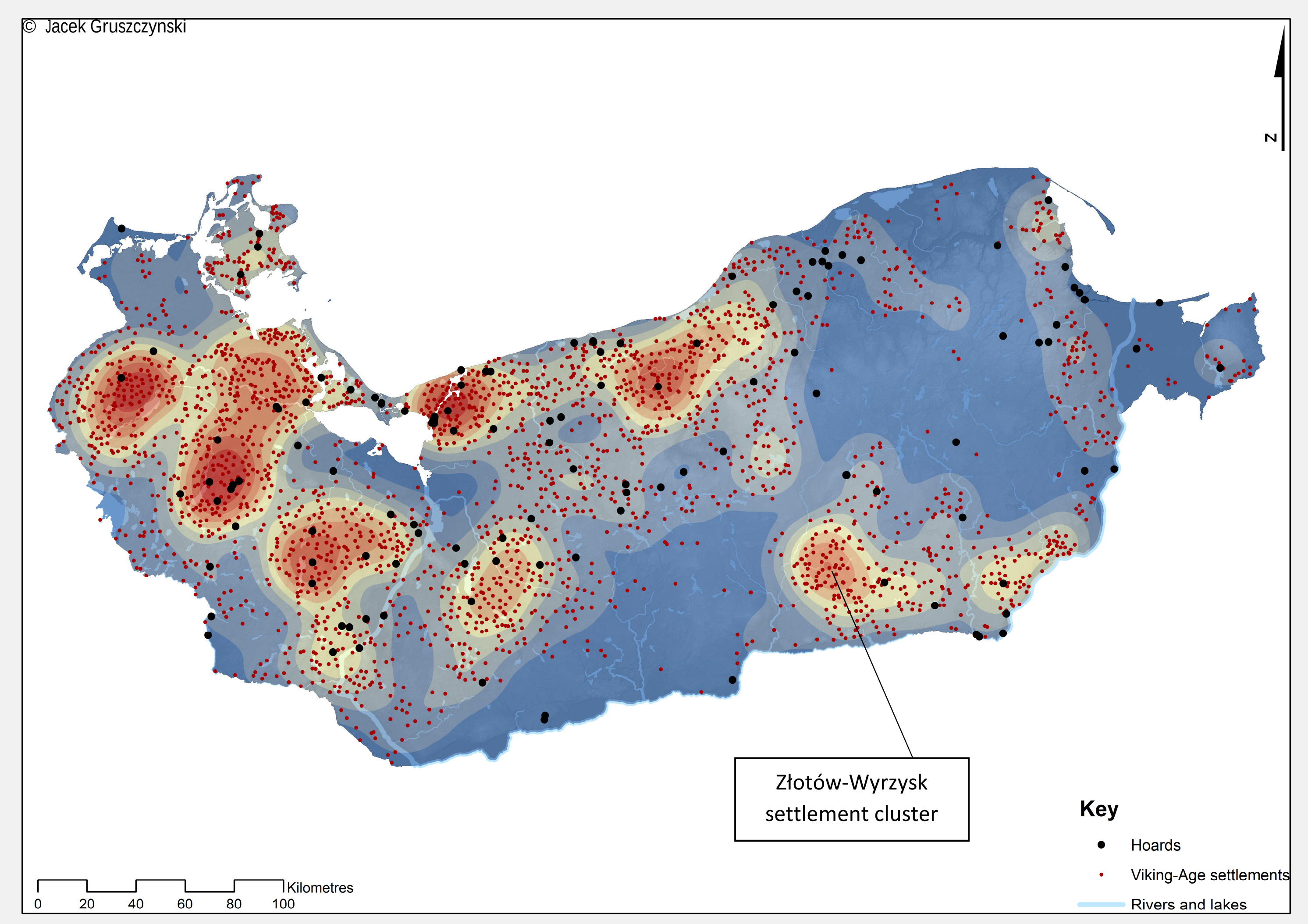


Figure 3.17 Density heat map of Pomeranian settlements classified by 9 natural breaks (Jenks) to facilitate visual comparison with Figure 3.3 and to account for comparatively much higher number of sites.

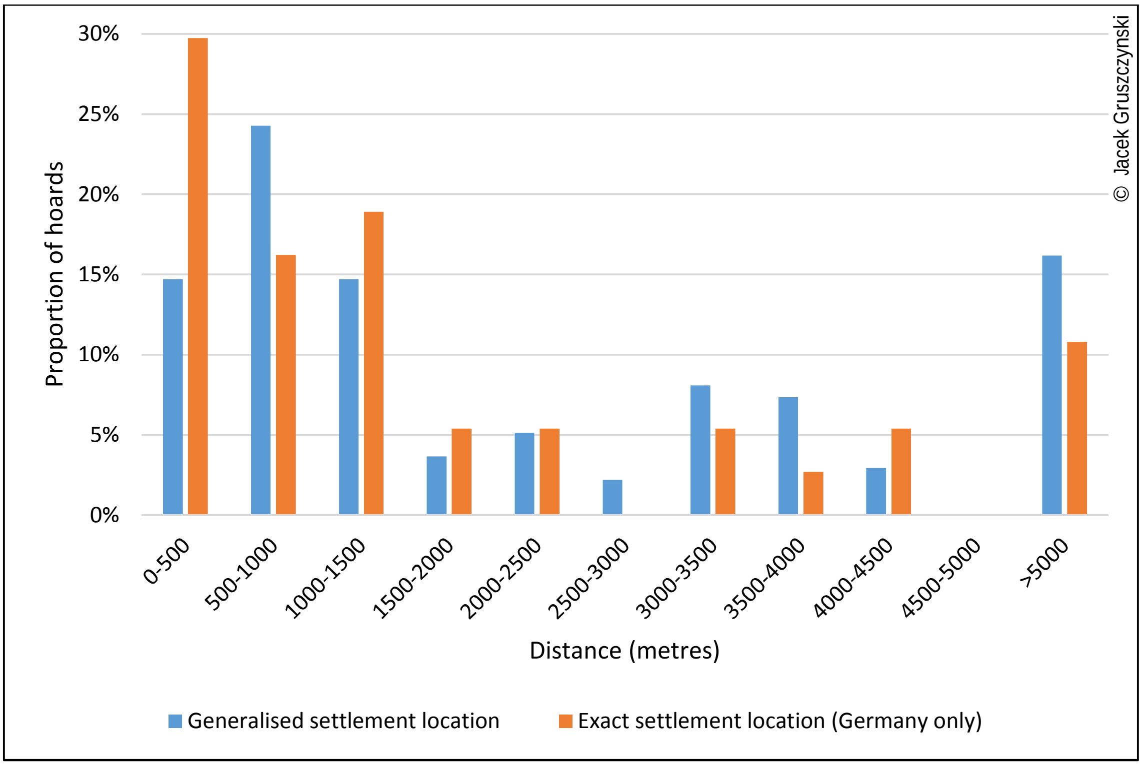


Figure 3.18 Distance from Pomeranian hoards to the nearest rural settlement. The generalised location distances are calculated for 136 hoards and 8291 settlements and the exact location distances in German part of Pomerania are based on 37 hoards and 3643 settlements.

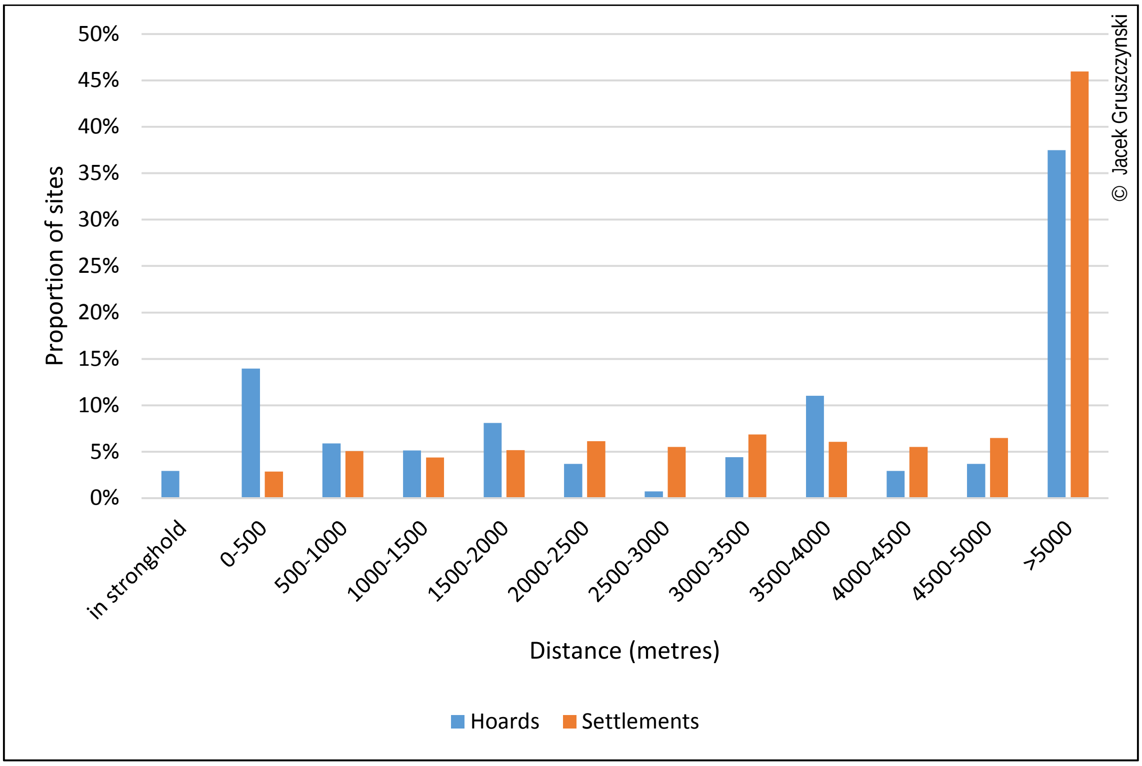


Figure 3.20 Distance from Pomeranian hoards and rural settlements to the nearest stronghold using generalised settlement locations.

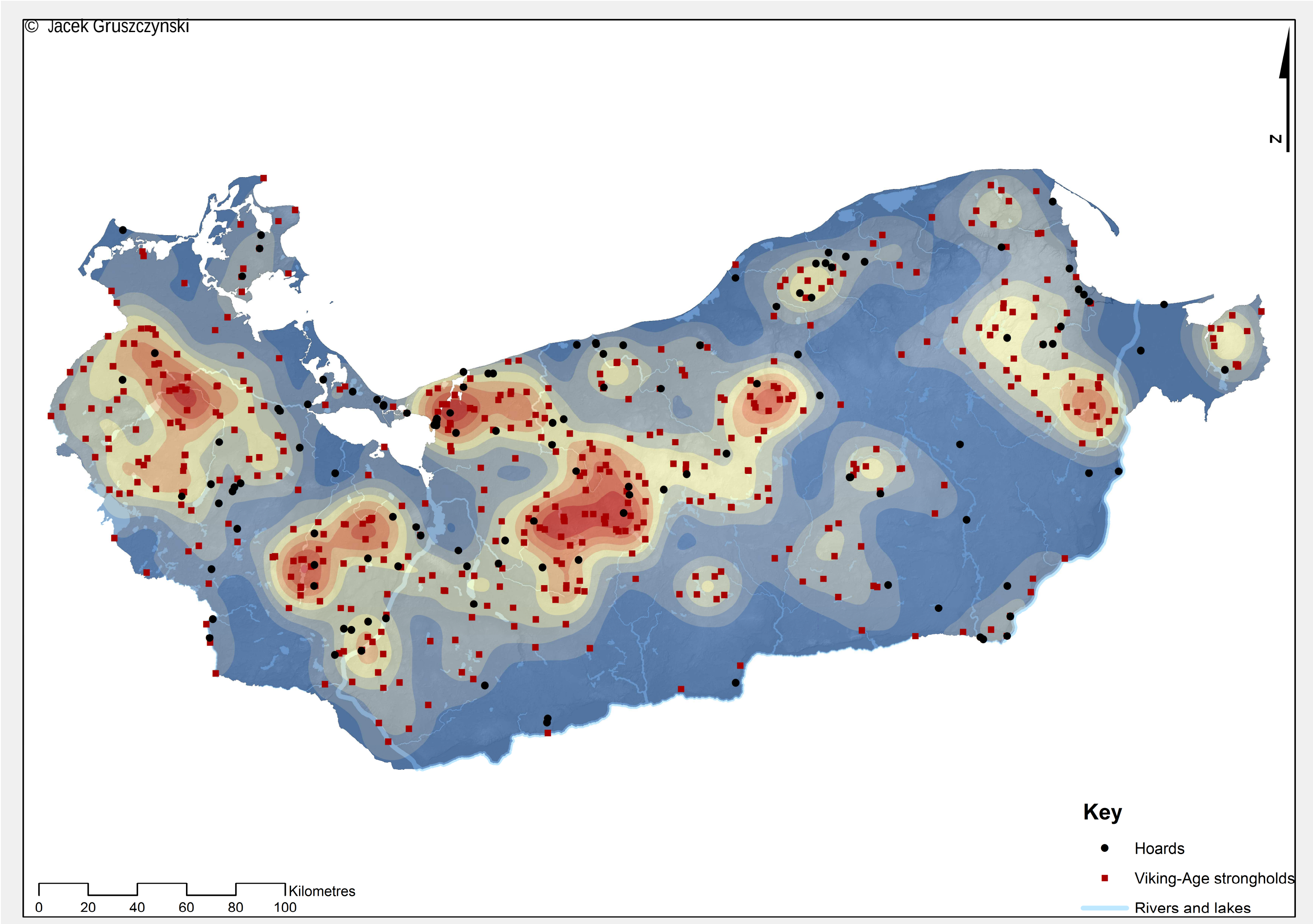


Figure 3.19 Density heat map of Pomeranian strongholds. Classification by 9 equal intervals.

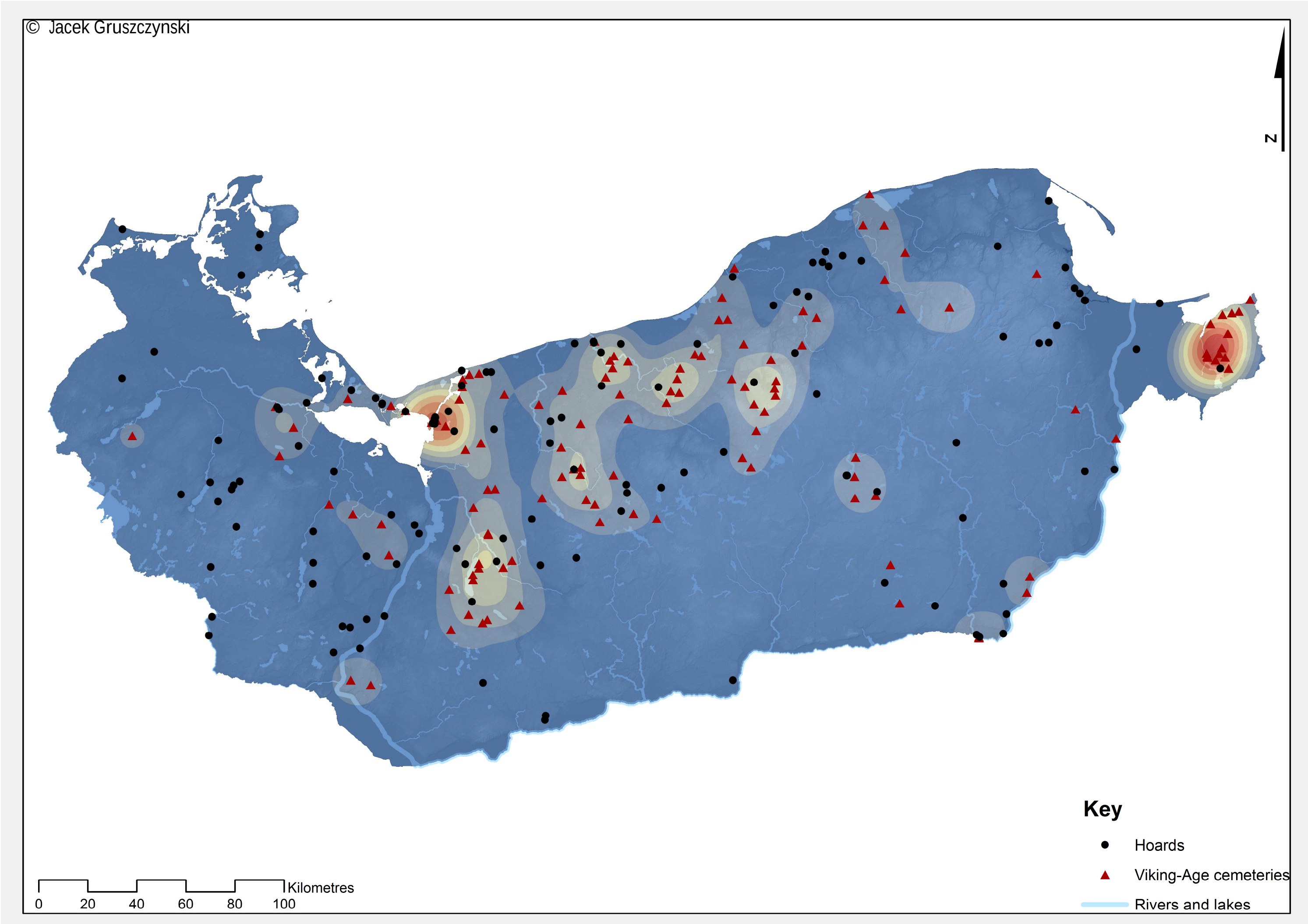


Figure 3.21 Density heat map of Pomeranian cemeteries. Classification by 9 equal intervals.

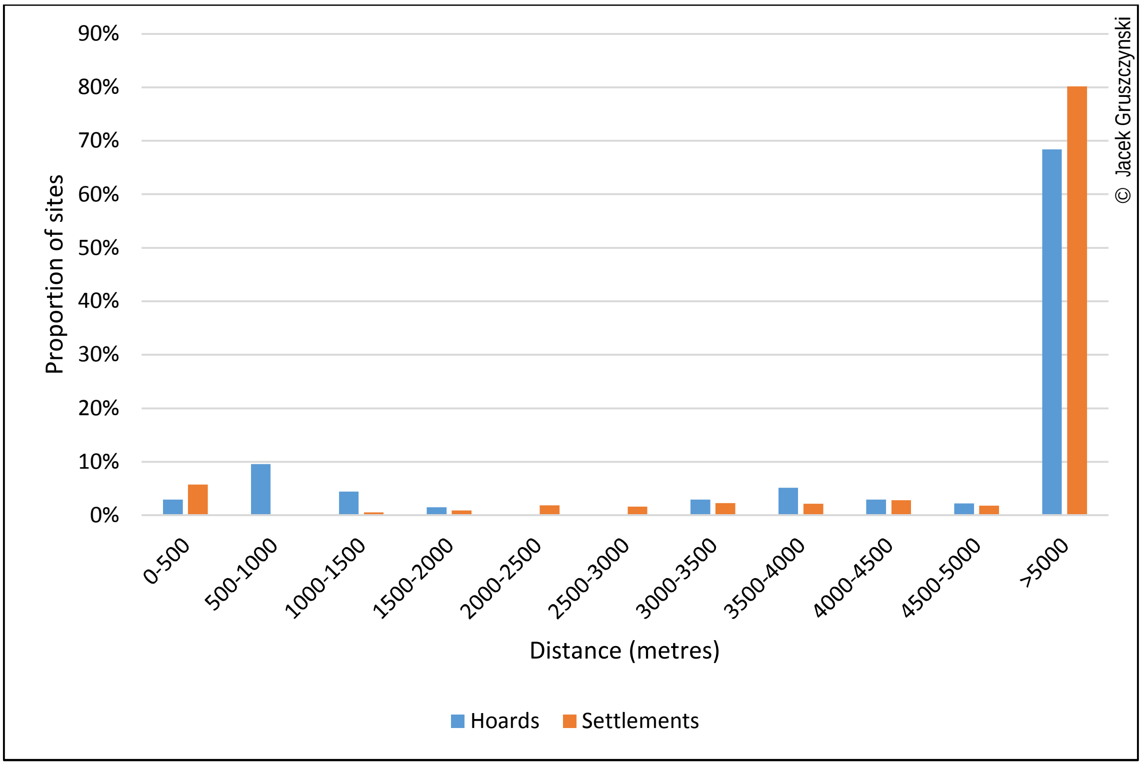


Figure 3.22 Distance from Pomeranian hoards and rural settlements to the nearest cemetery using generalised settlement and cemetery locations.

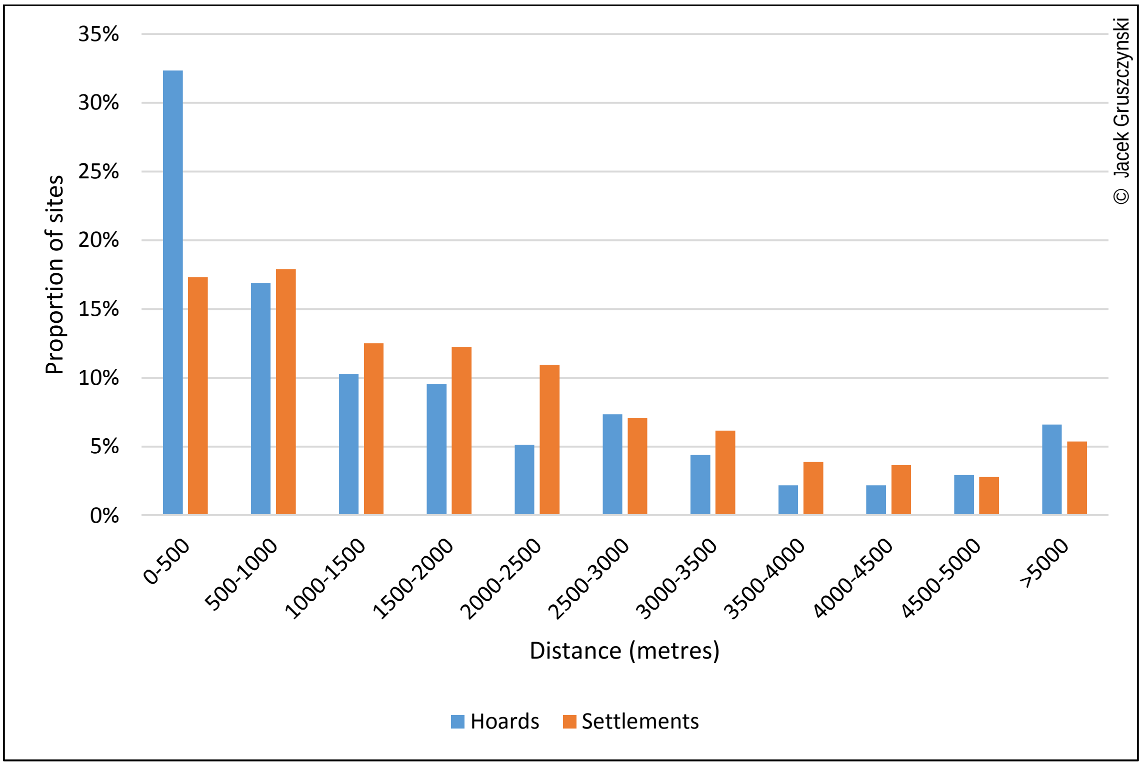


Figure 3.25 Distance from Pomeranian hoards and rural settlements to stronghold boundaries.

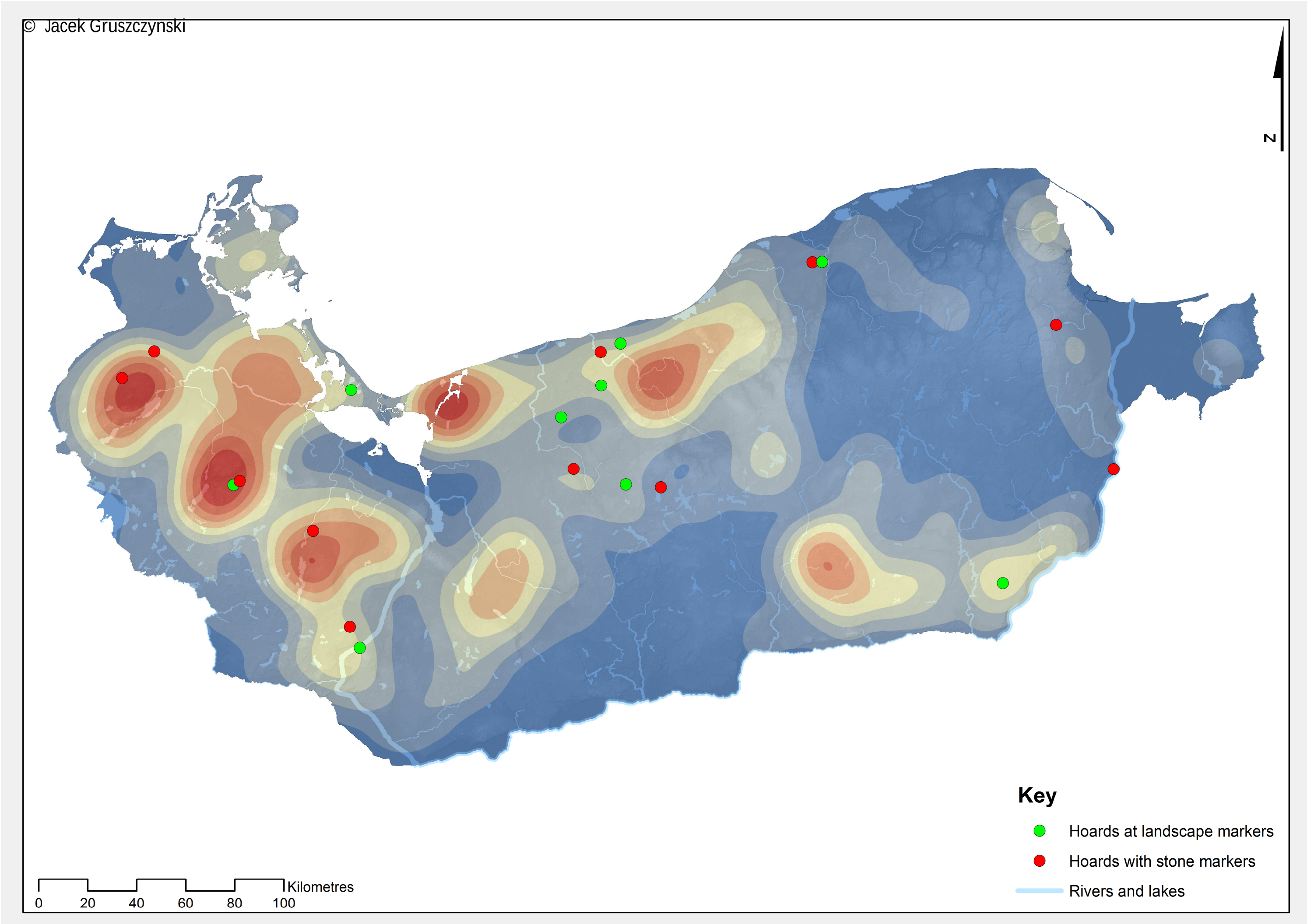


Figure 3.23 Pomeranian hoards associated with stone and landscape markers overlain on density heat map of Viking-Age settlements classified by 9 natural breaks (Jenks).

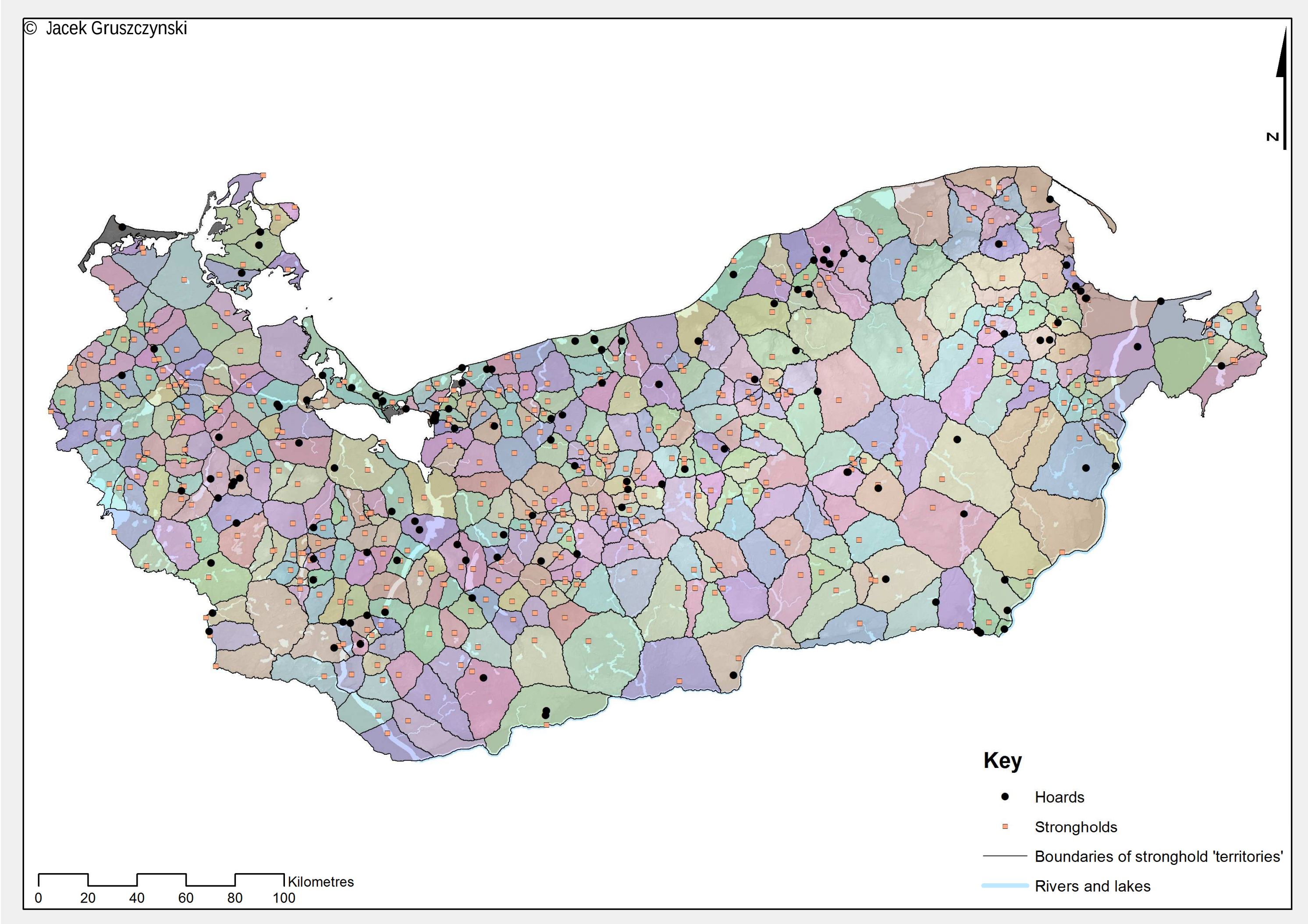


Figure 3.24 Calculated Pomeranian stronghold territories and boundaries.

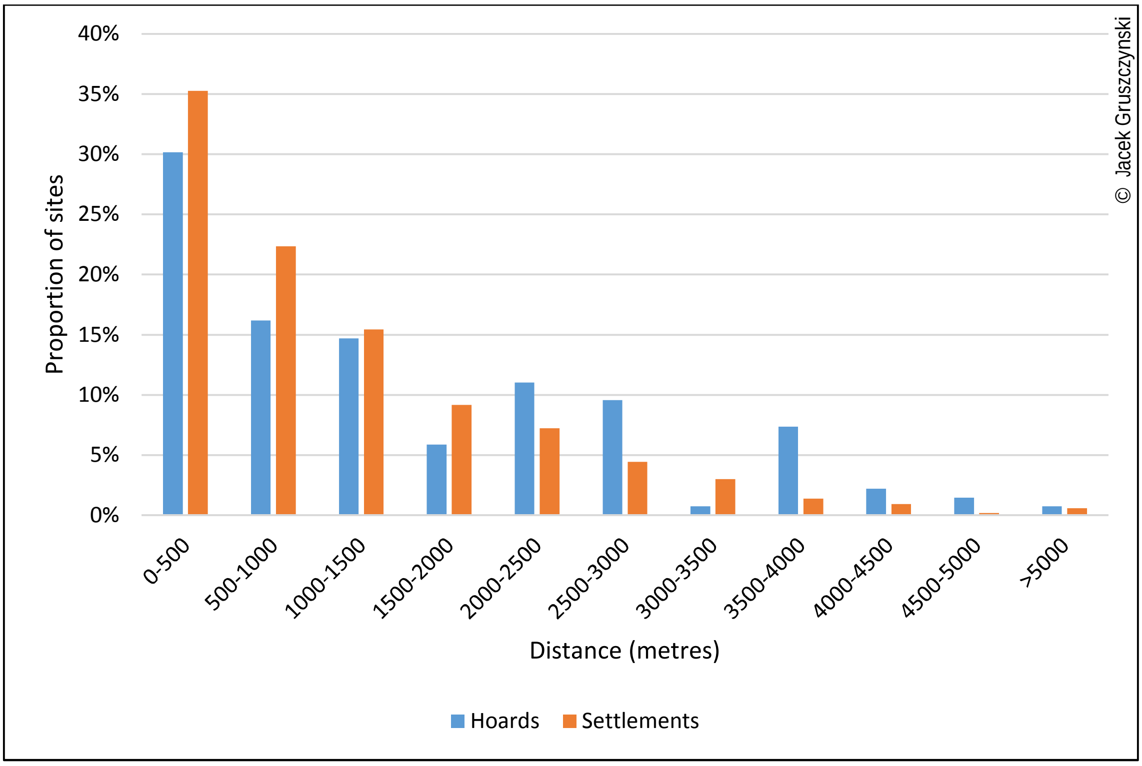


Figure 3.26 Distance from Pomeranian hoards and rural settlements to the nearest body of water.

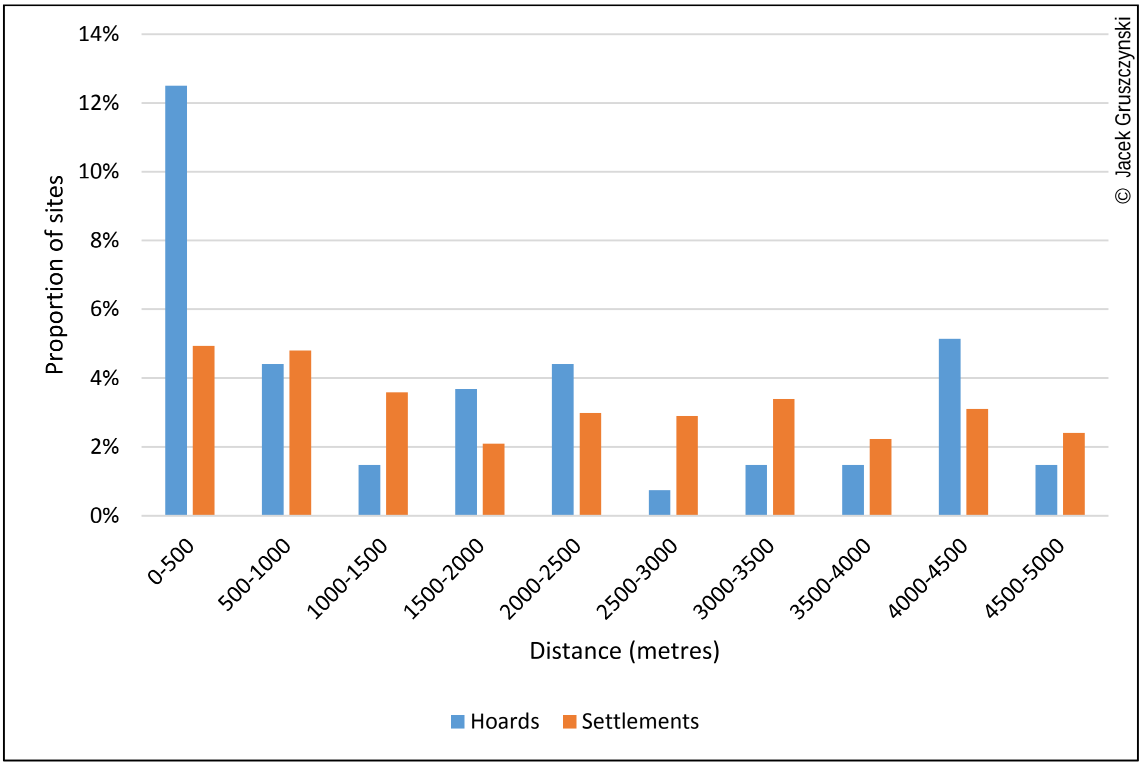


Figure 3.27 Distance from Pomeranian hoards and rural settlements to major rivers.

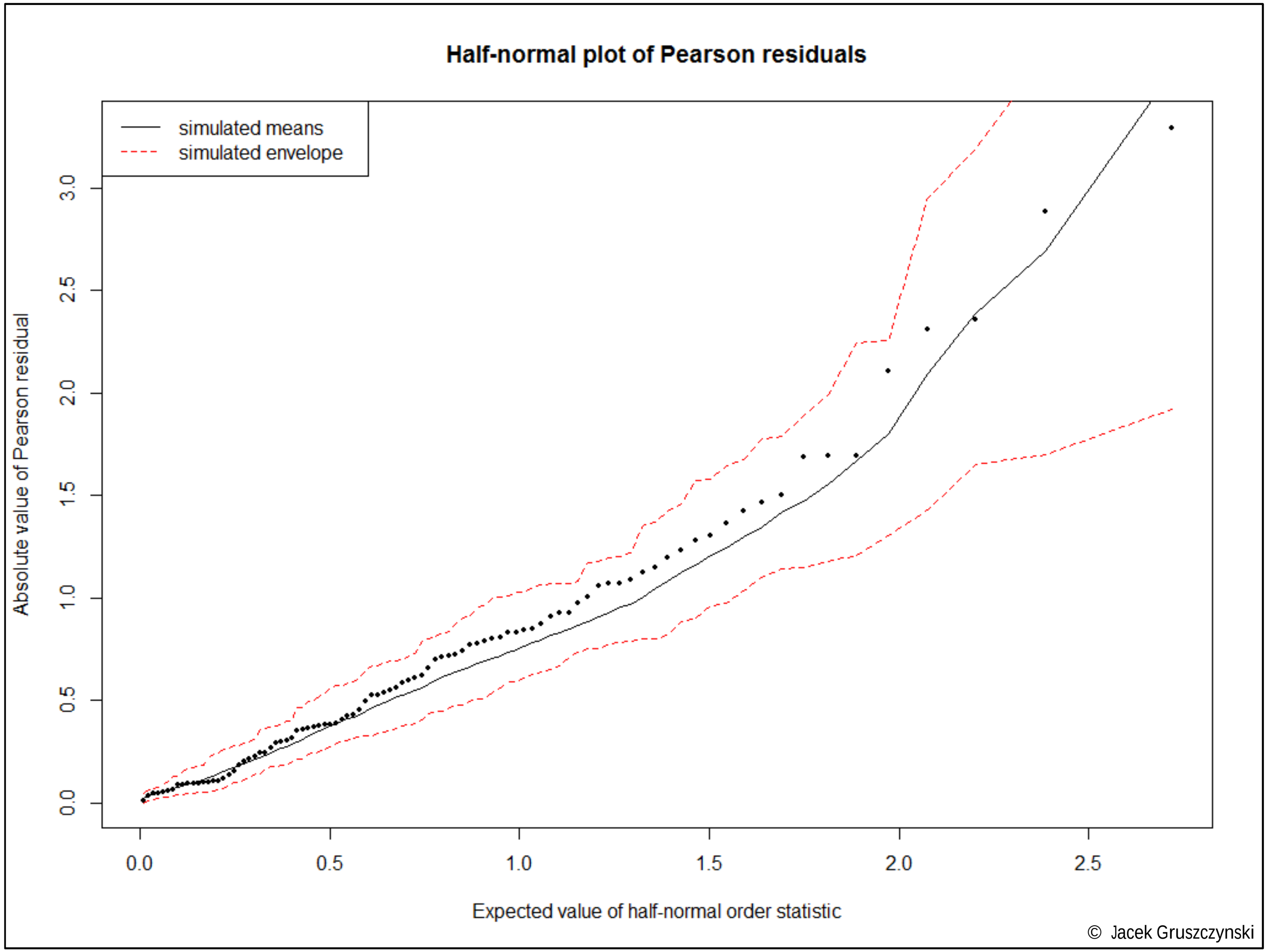
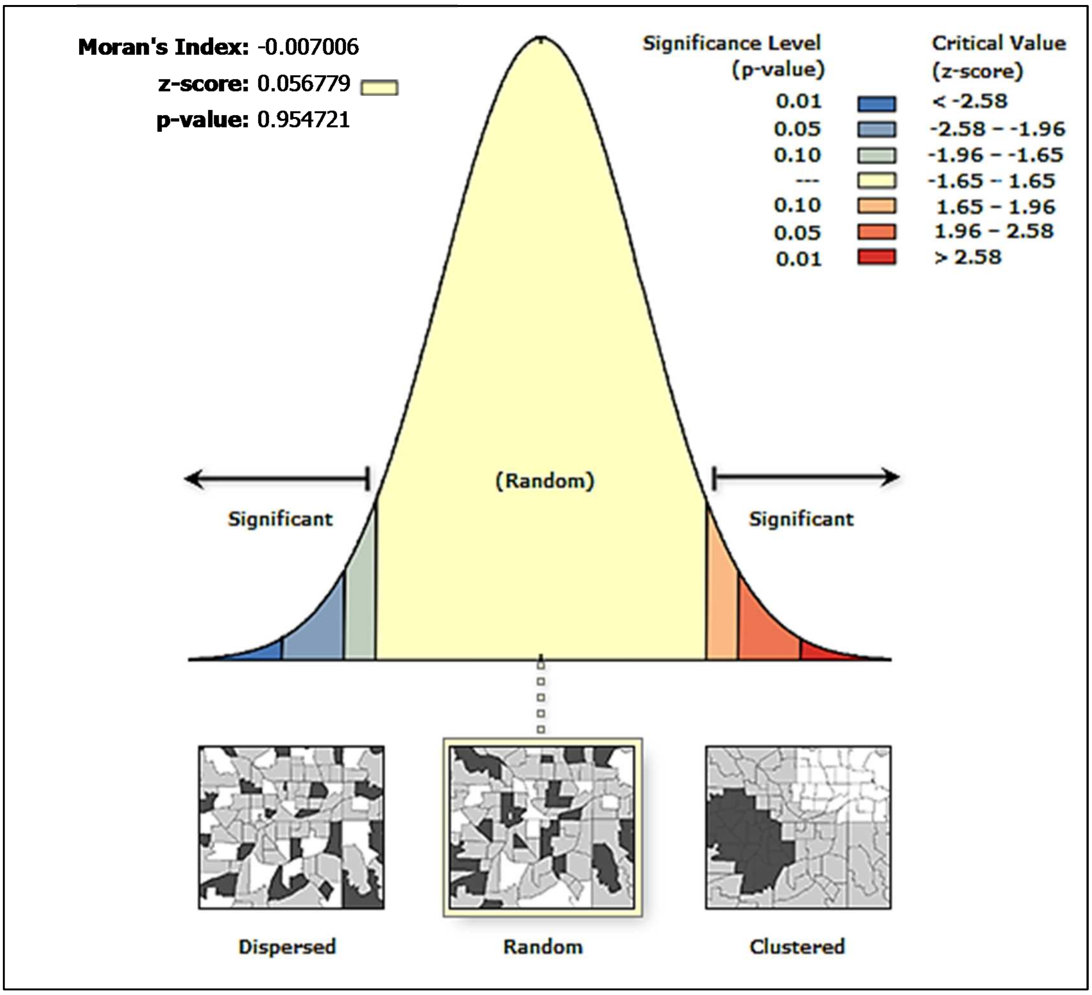


Figure 3.28 Half-normal plot of Pearson residuals versus simulated residuals in the GLM model for Pomeranian case study (mod40.2).



Moran's Index:	-0.007006
Expected Index:	-0.010638
Variance:	0.004093
z-score:	0.056779
p-value:	0.954721

Figure 2.29 Results of Spatial Autocorrelation (Moran's I) analysis in ArcGIS of Pearson residuals in Pomeranian regression model (mod40.2).

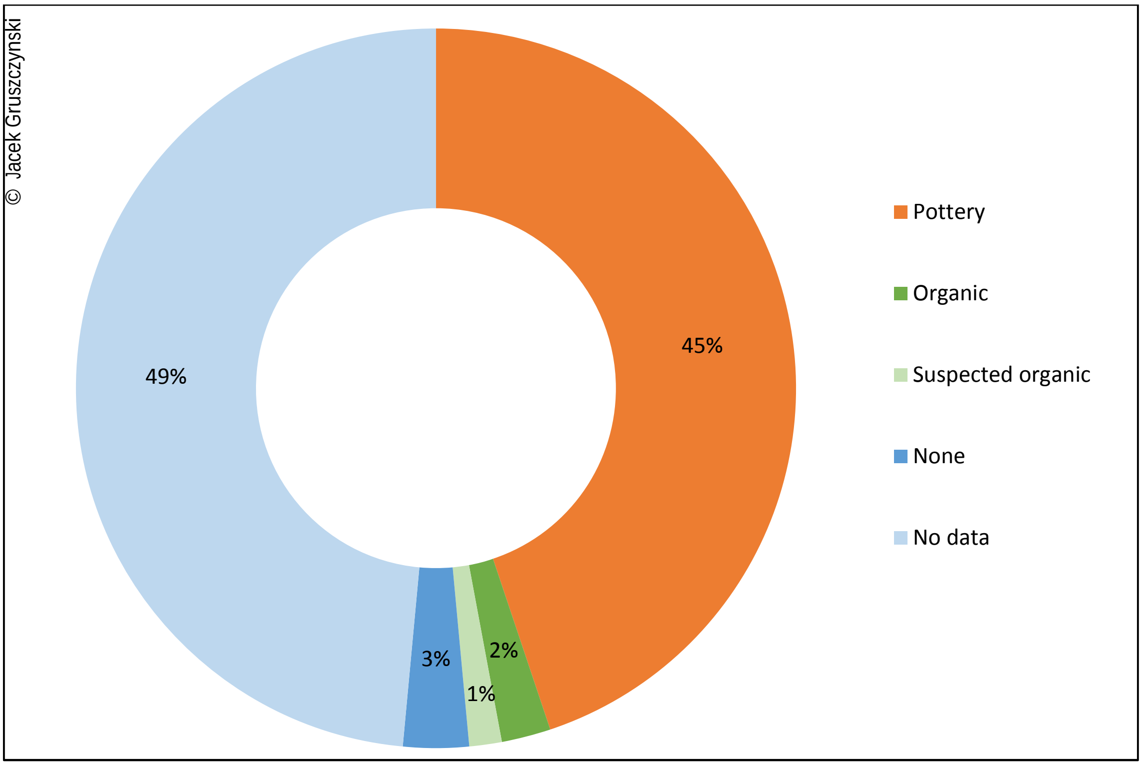


Figure 3.30 Deposition of Pomeranian hoards in various types of containers.

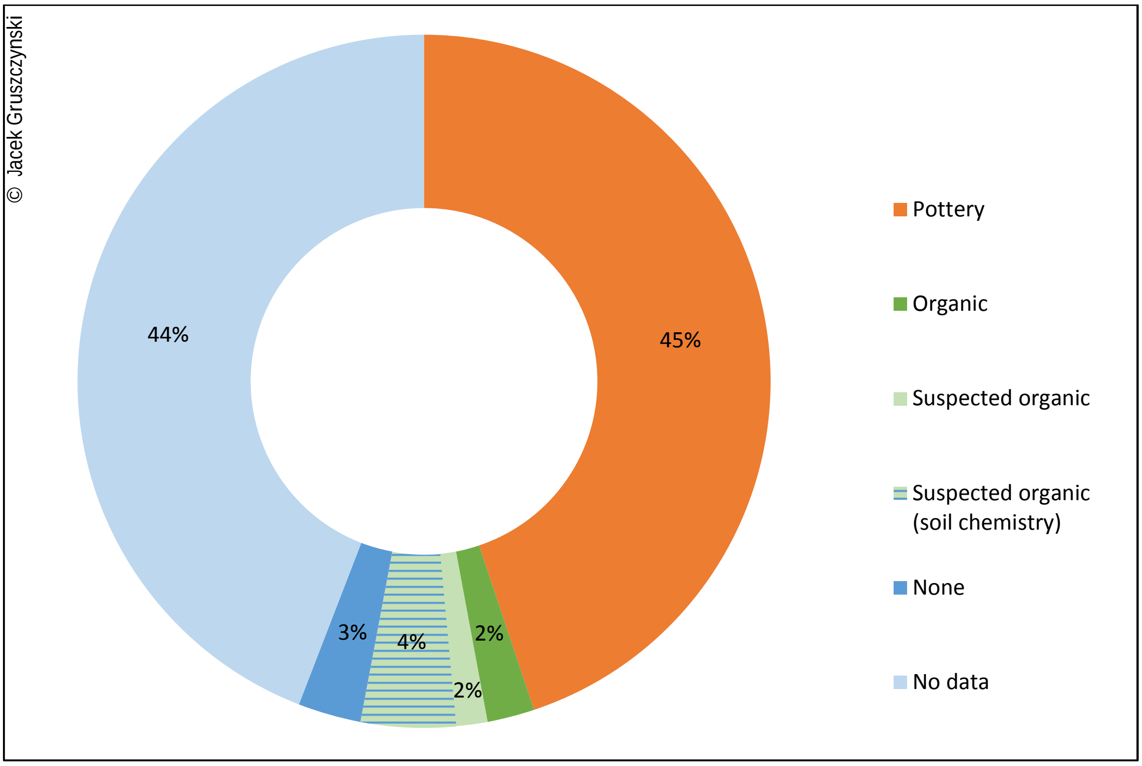


Figure 3.31 Deposition of Pomeranian hoards in various types of containers including 'No data' deposits reclassified on the basis of soil chemistry analysis.

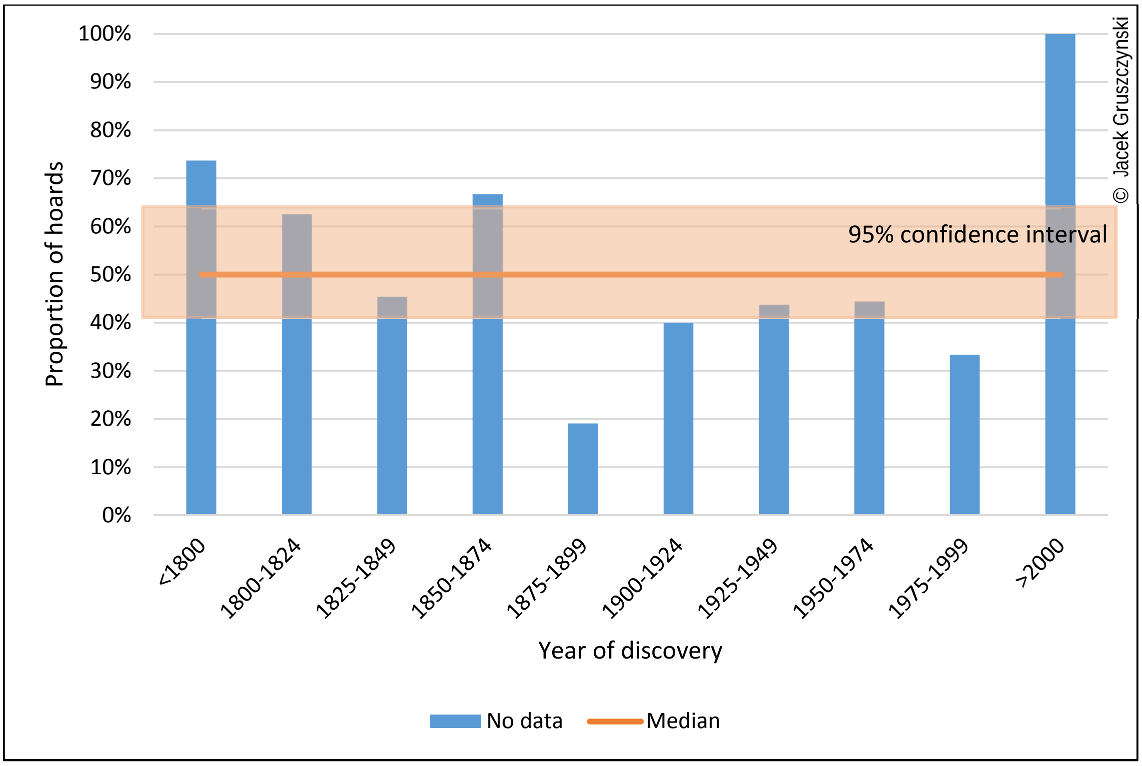


Figure 3.32 Proportion of hoards without the explicit information on the presence/absence of a container. The median average proportion of all 'No data' hoards is 50% and the statistical 95% confidence interval for the median lies between 41% and 64% (calculated using bootstrap method described in A2.3).

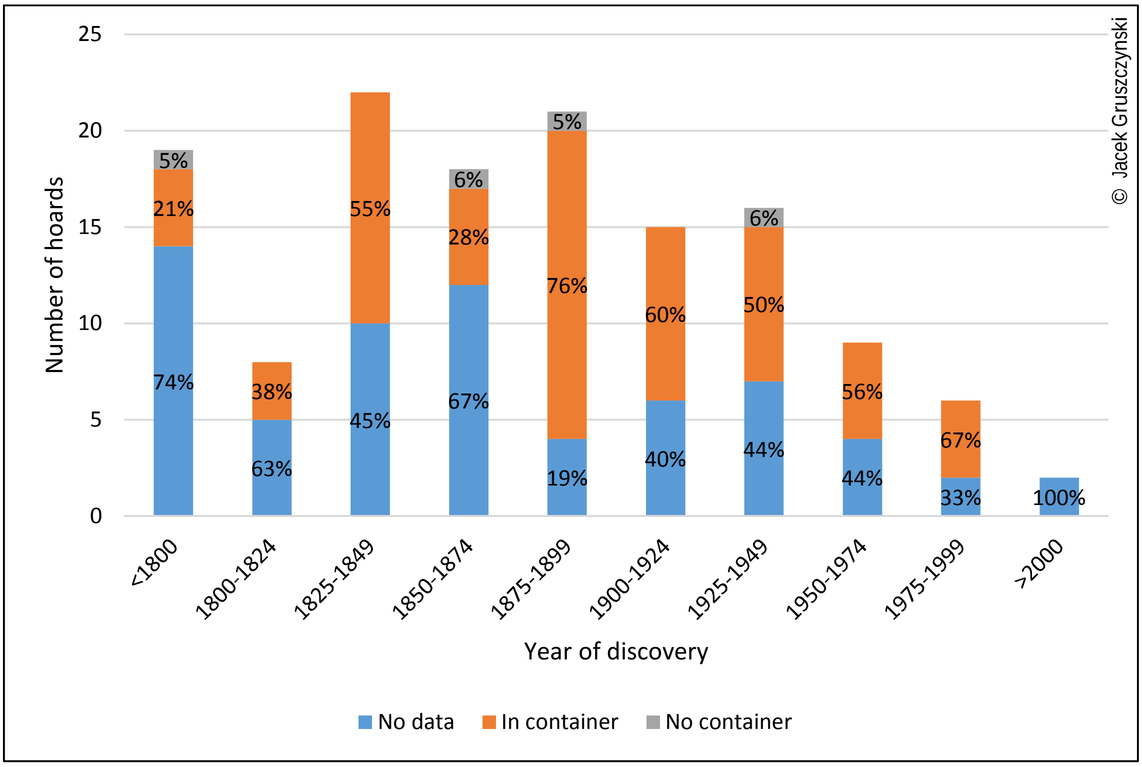


Figure 3.33 Chronological structure of all hoard discoveries in Pomerania.

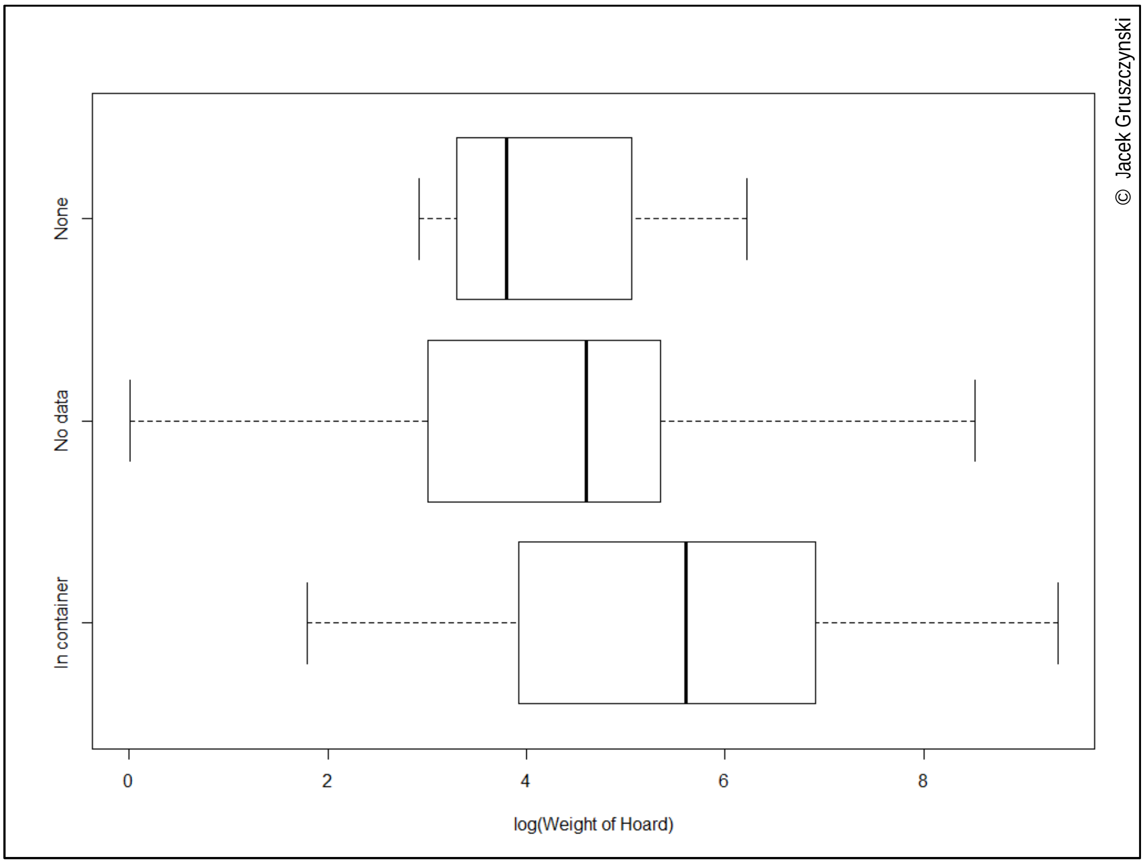


Figure 3.34 Comparison of silver weight distribution between different categories of Pomeranian hoards.

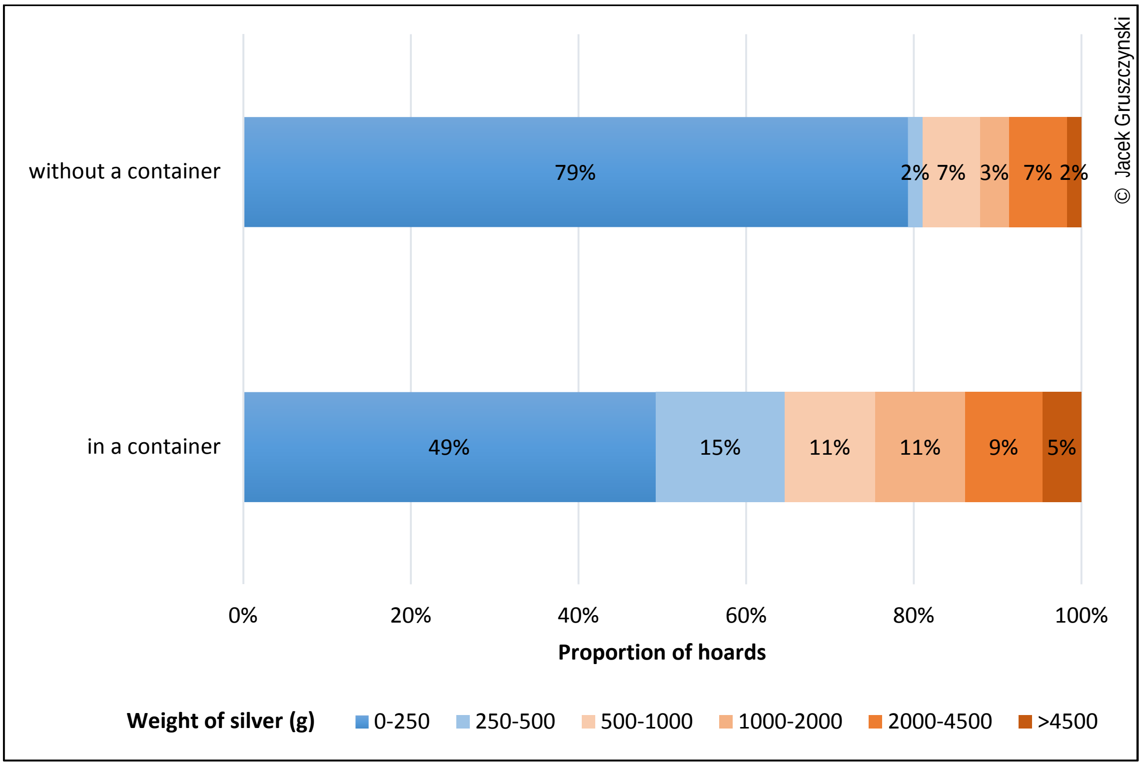
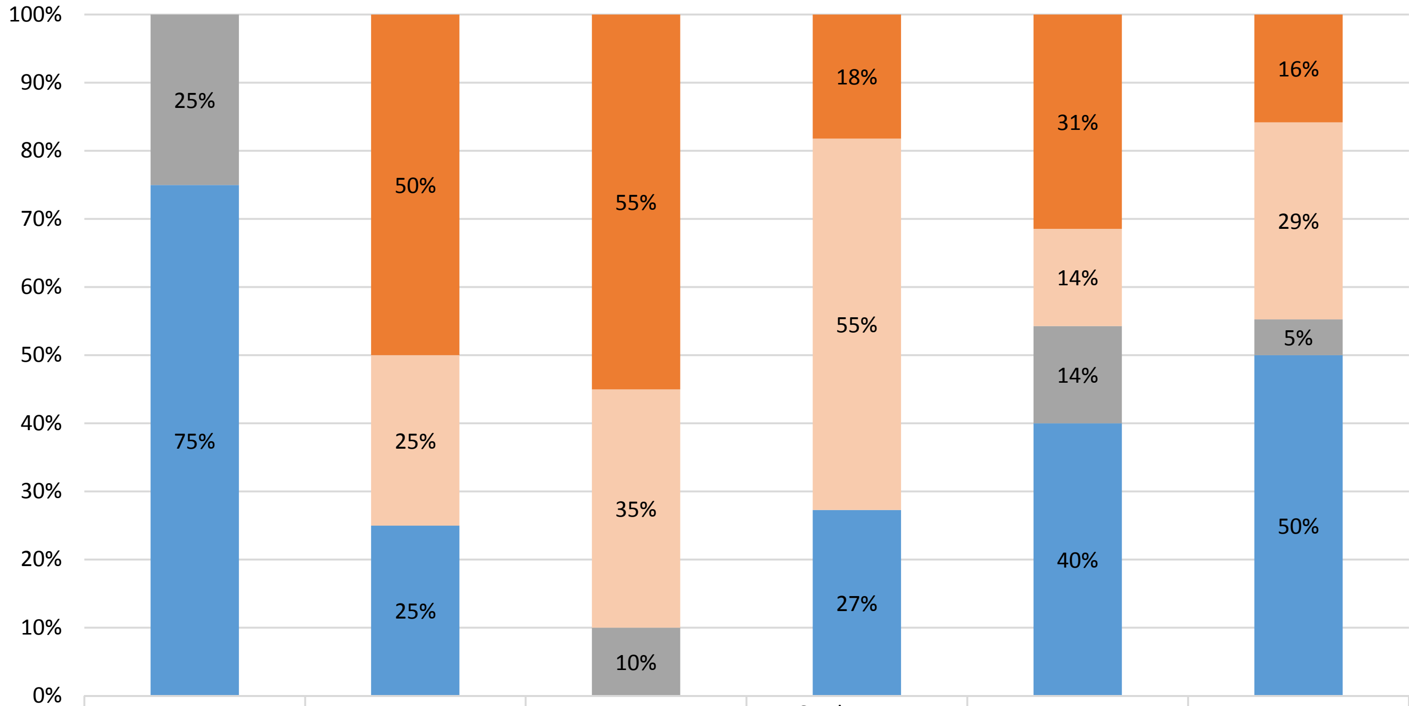


Figure 3.35 Comparison of Pomeranian deposits discovered with and without containers classified by weight of silver.

© Jacek Gruszczynski



	Watery environment	Burials and cemeteries	Stone and landscape markers	Settlements (emporia and strongholds)	Moraine soils (no other context)	Sandy soils (no other context)
savings (large contained)	0	2	11	2	11	6
emergency (small contained)	0	1	7	6	5	11
grey area (large containerless)	1	0	2	0	5	2
placed deposits (small containerless)	3	1	0	3	14	19

Figure 3.36 Comparison of Pomeranian deposits discovered with and without containers classified by weight of silver. The silver weight was categorised to describe deposits weighing above 250g as large, and those below 250g as small.

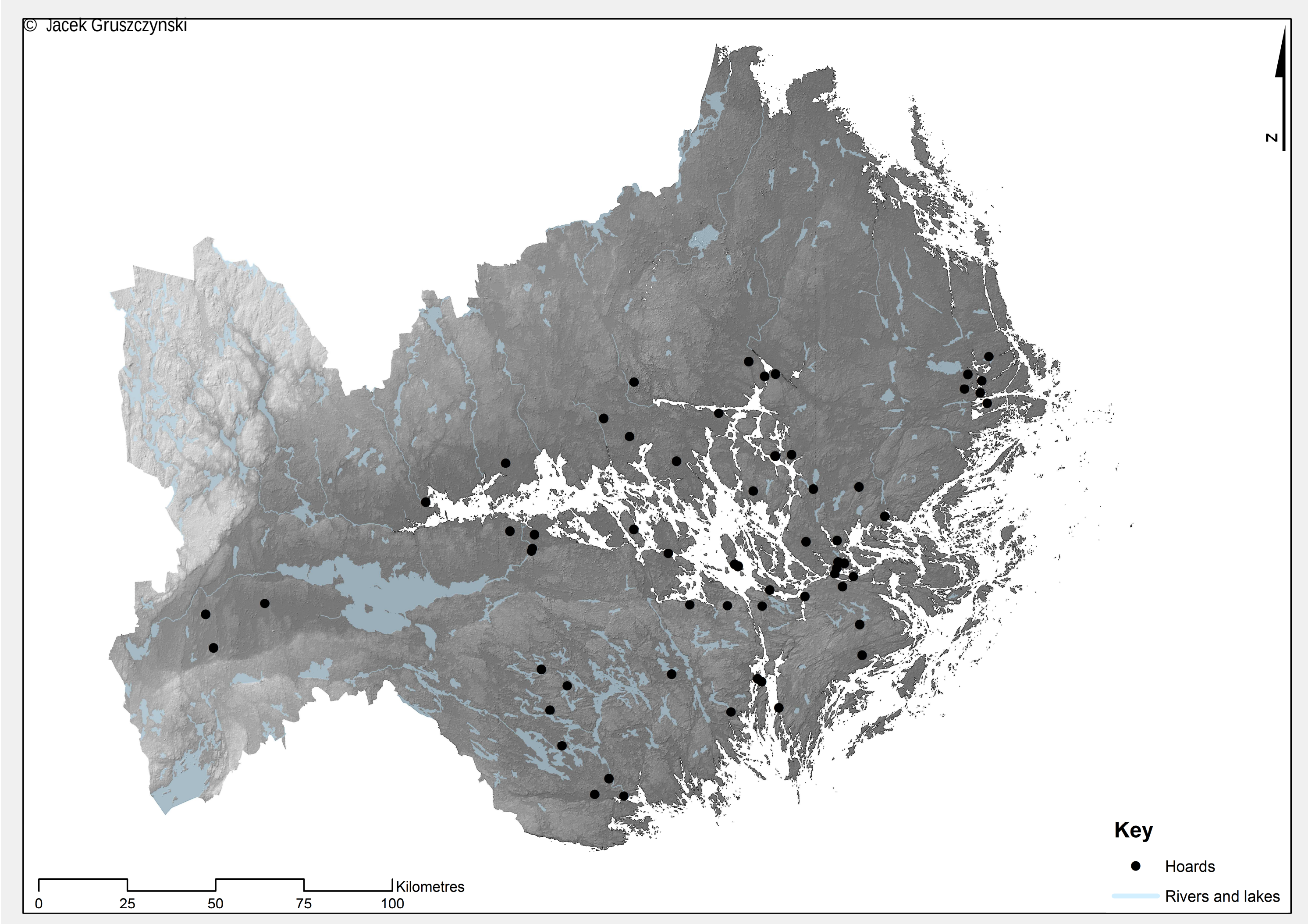
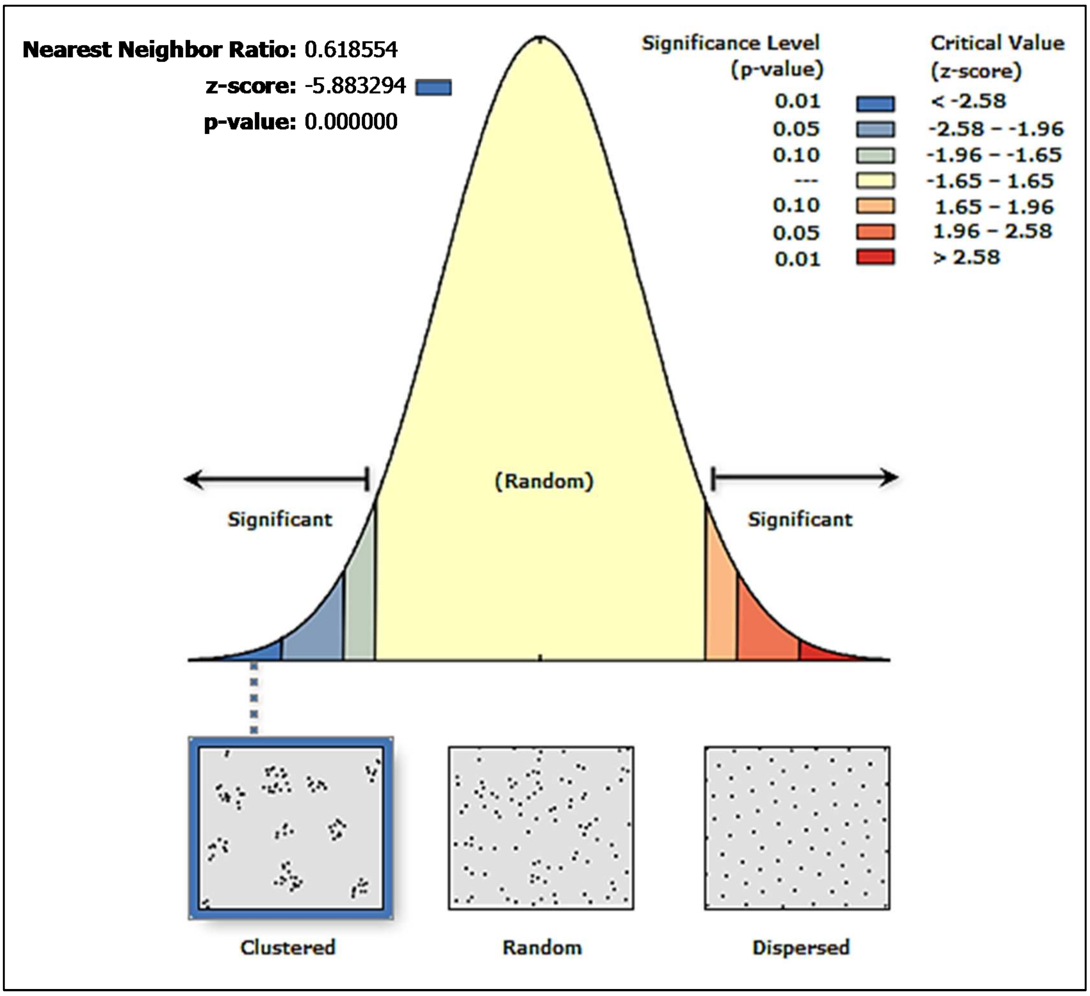


Figure 4.1 Distribution of silver hoards c. 800-1050 in Svealand. The coastline in this and following maps represents the sea level at c. 900.



Observed Mean Distance:	6997.2855 metres
Expected Mean Distance:	11312.3262 metres
Nearest Neighbor Ratio:	0.618554
z-score:	-5.883294
p-value:	0.000000
Study Area:	33272km^2

Figure 4.2 Results of Average Nearest Neighbour analysis in ArcGIS of clustering of the Svealandic hoard findspots.

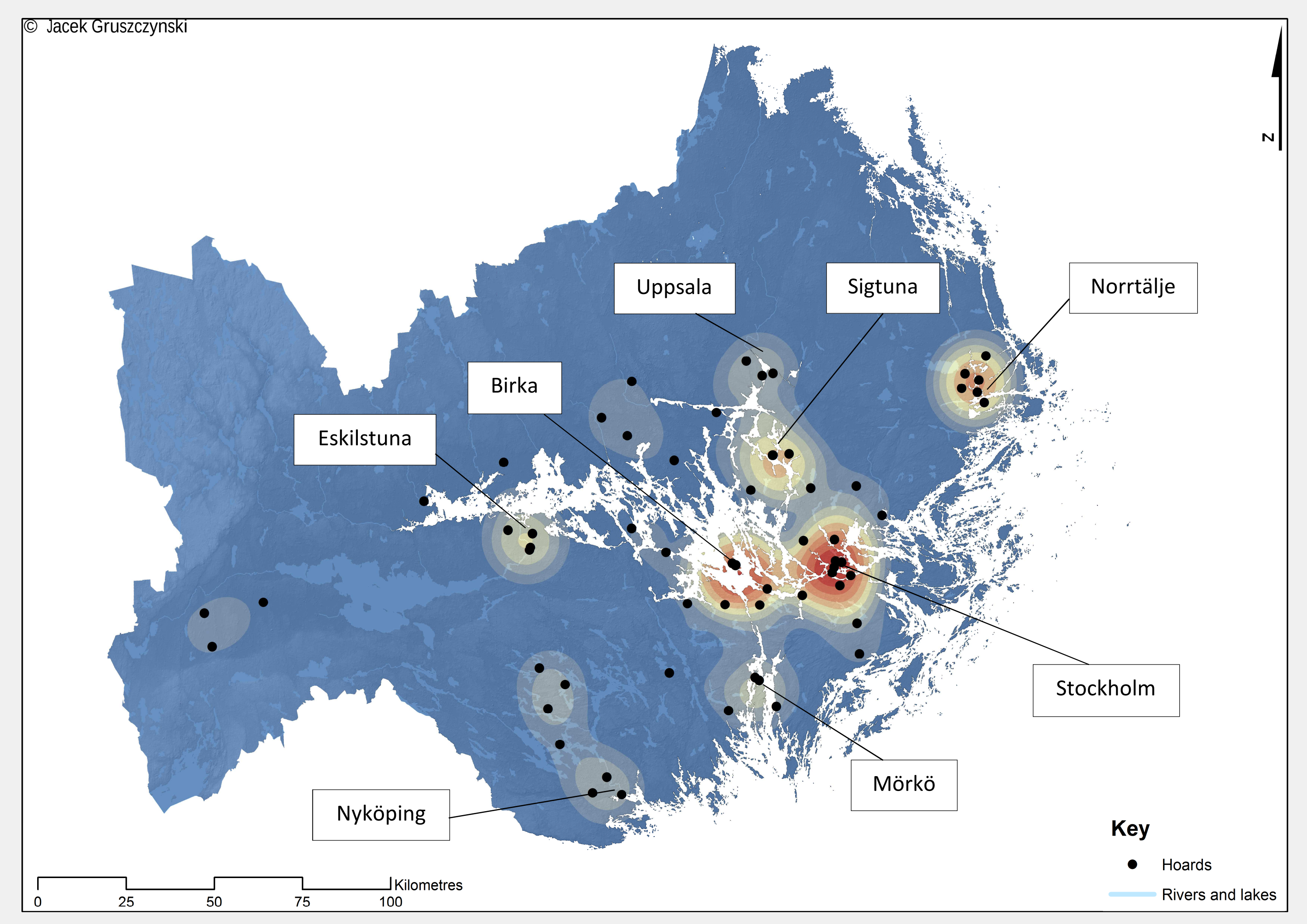
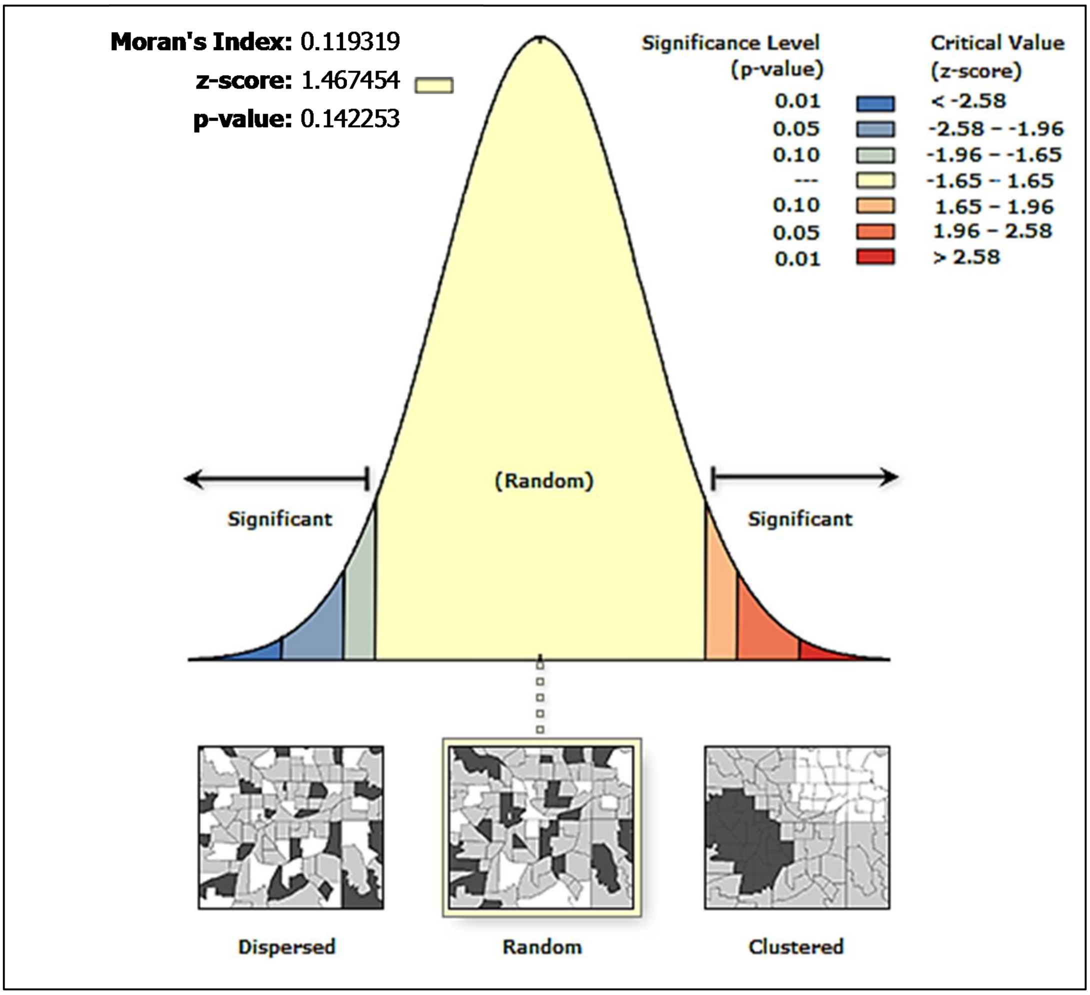


Figure 4.3 Kernel density heat map of Svealandic hoards. Density classification by 9 equal intervals.



Moran's Index:	0.119319
Expected Index:	-0.015873
Variance:	0.008487
z-score:	1.467454
p-value:	0.142253

Figure 4.4 Results of Spatial Autocorrelation (Moran's I) analysis in ArcGIS of the weight of silver clustering in the Svealandic hoards.

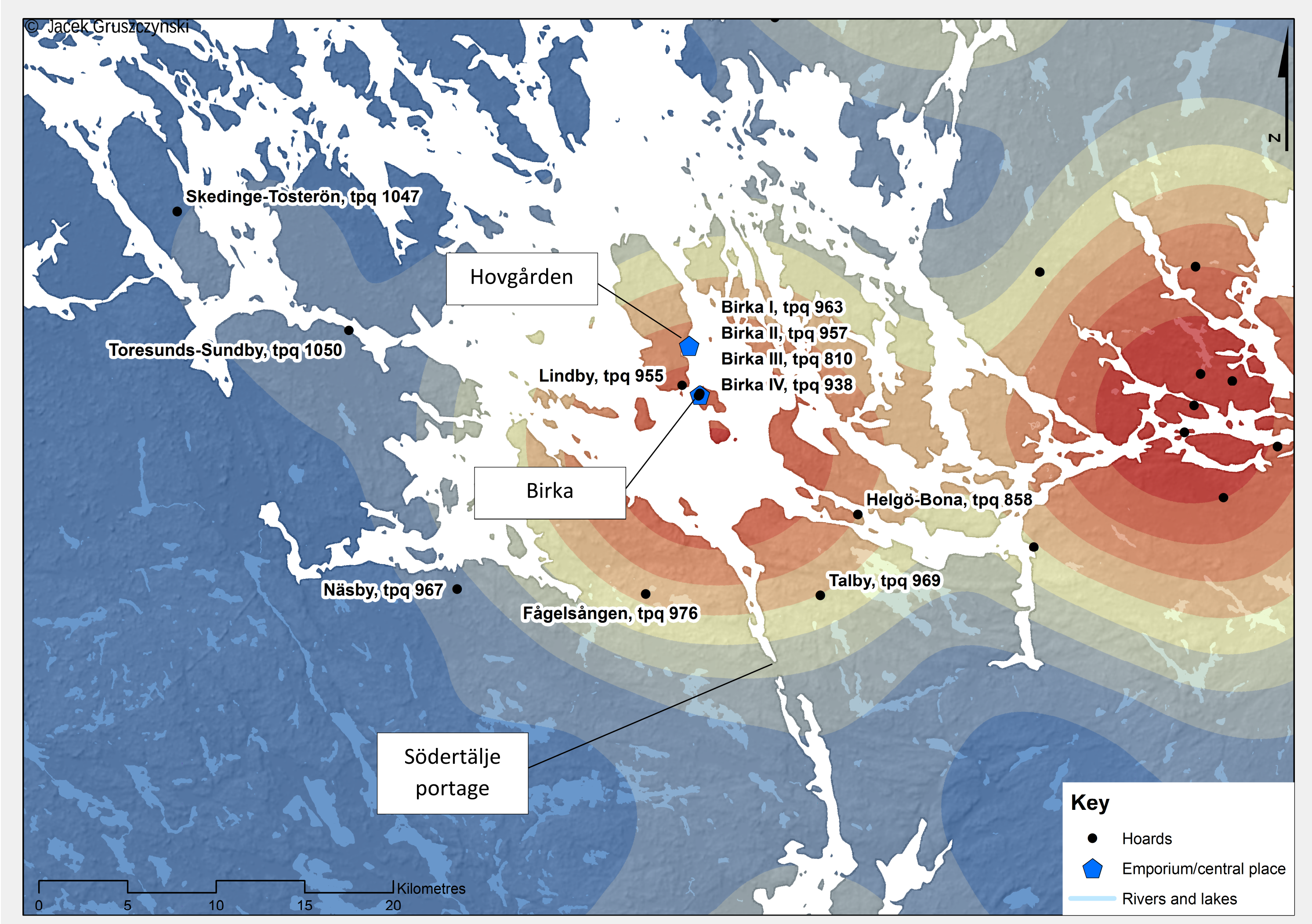


Figure 4.5 Birka concentration.

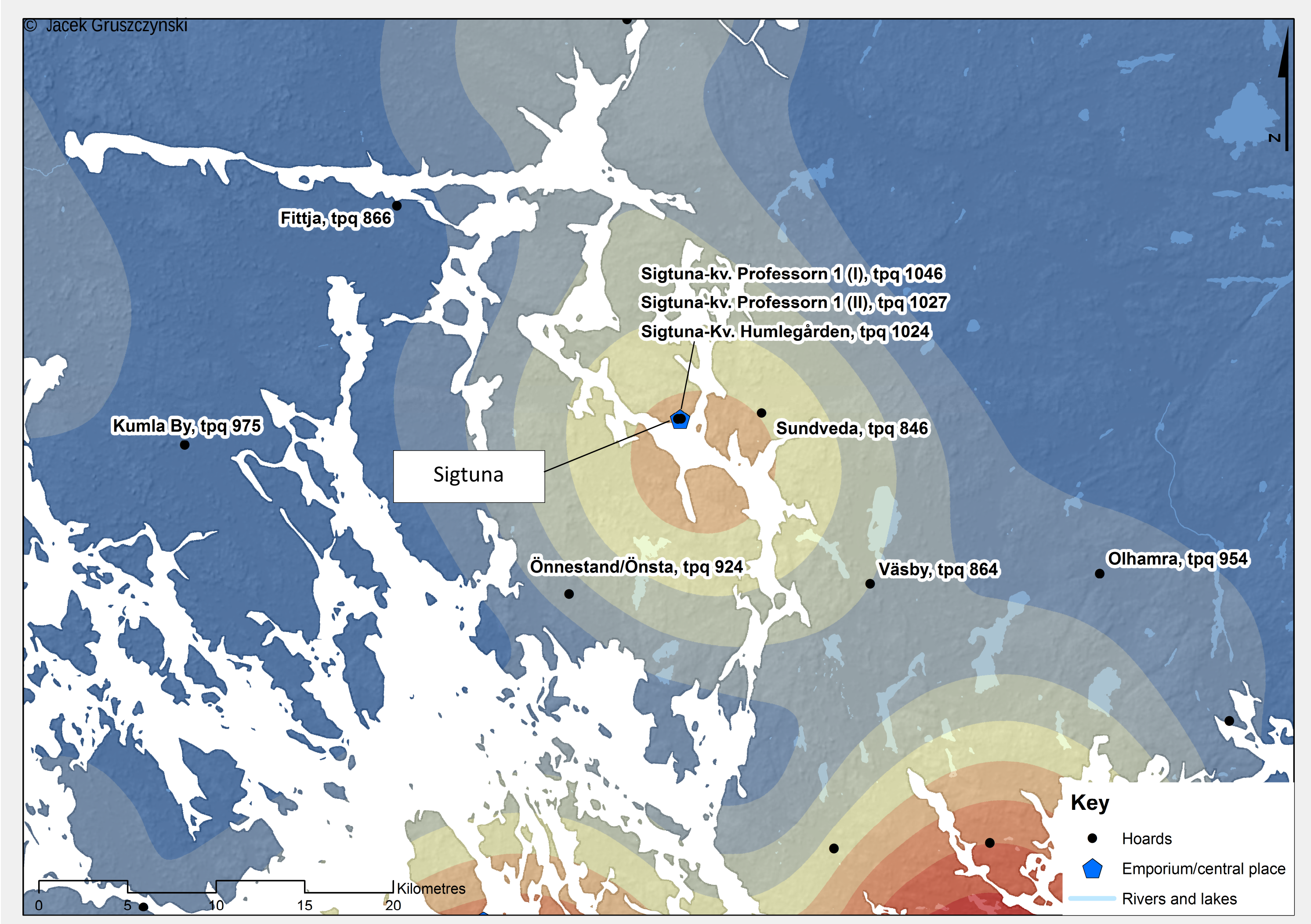


Figure 4.6 Sigtuna concentration.

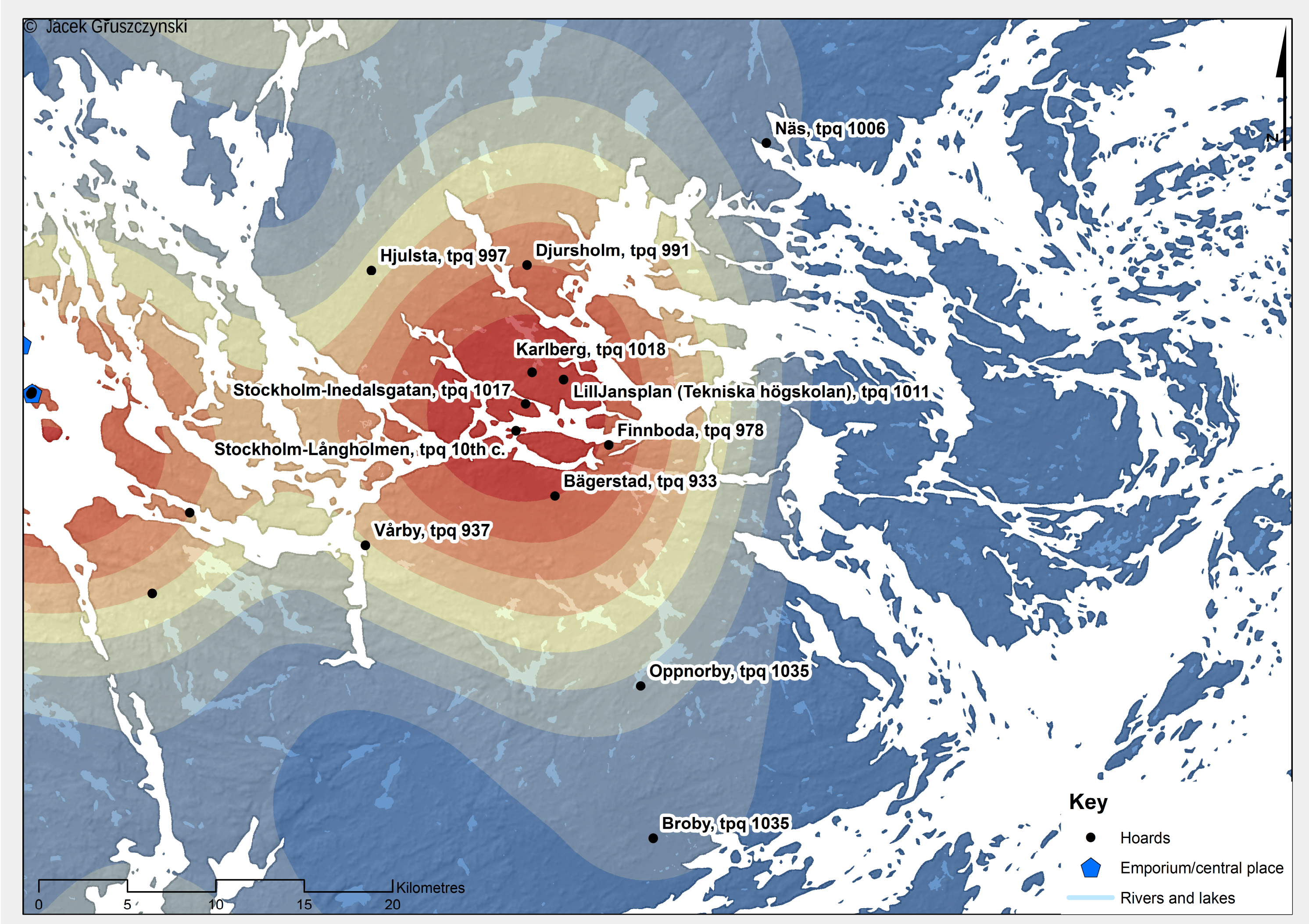


Figure 4.7 Stockholm concentration.

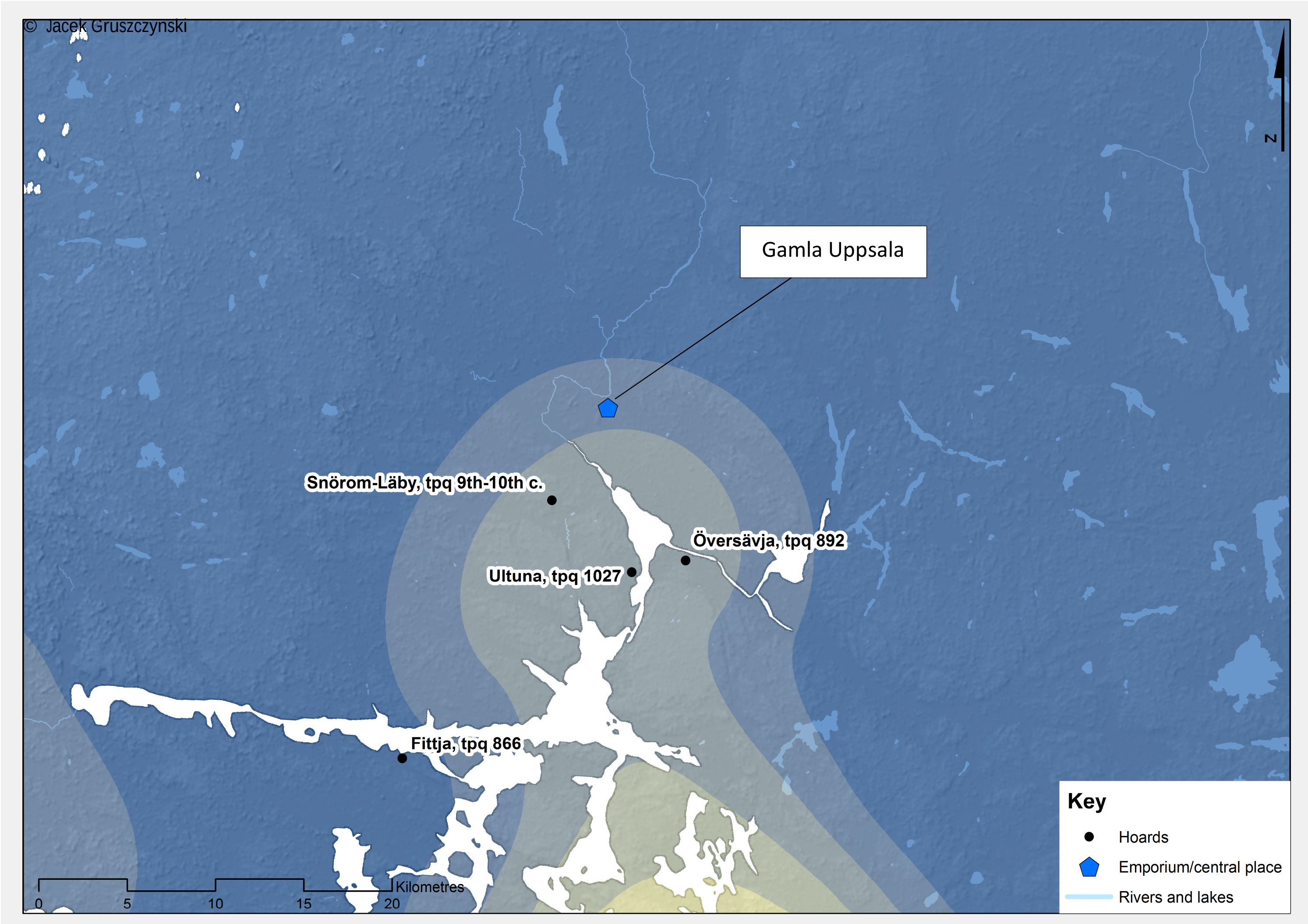


Figure 4.8 Uppsala concentration.

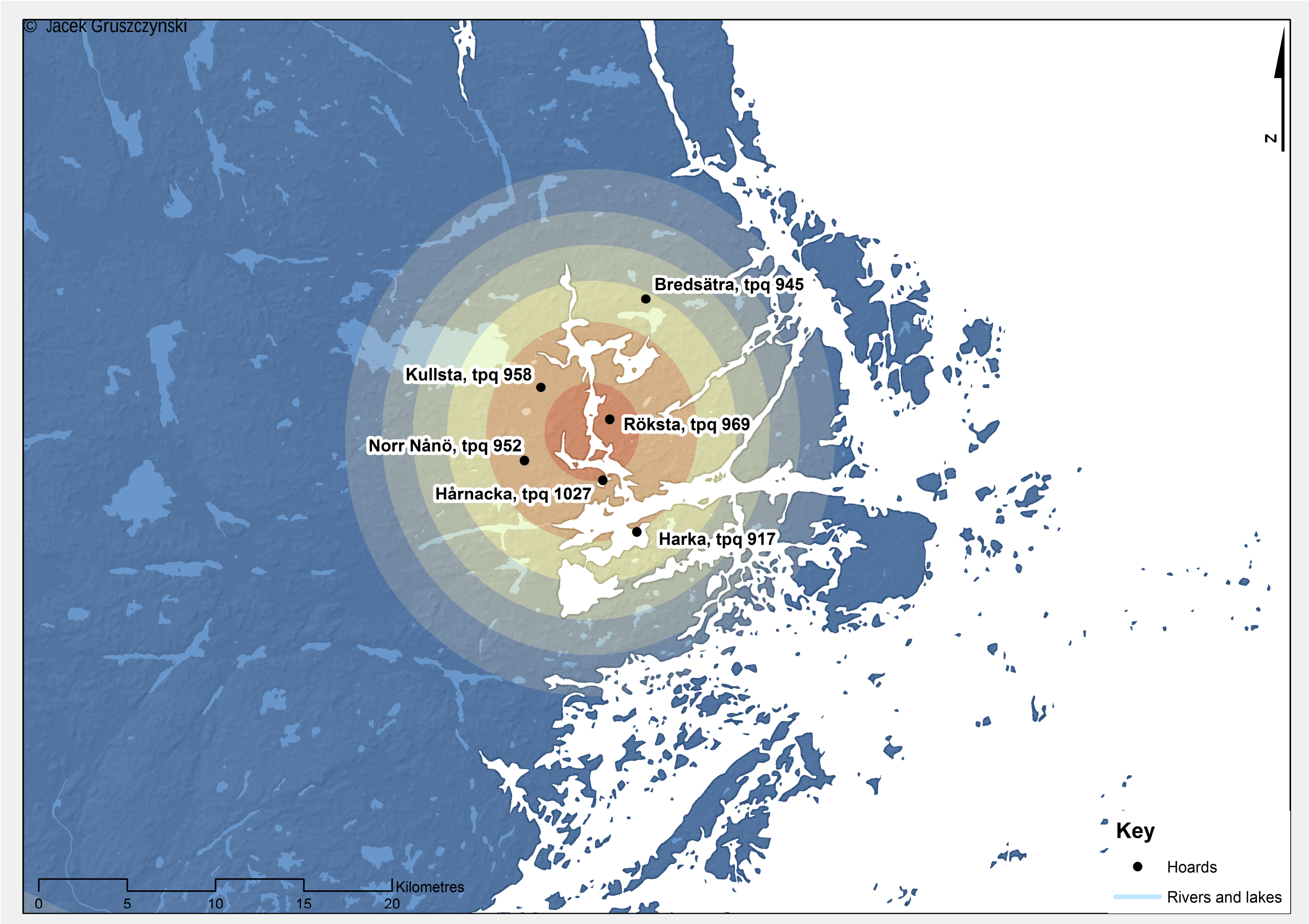


Figure 4.9 Norrtälje concentration.

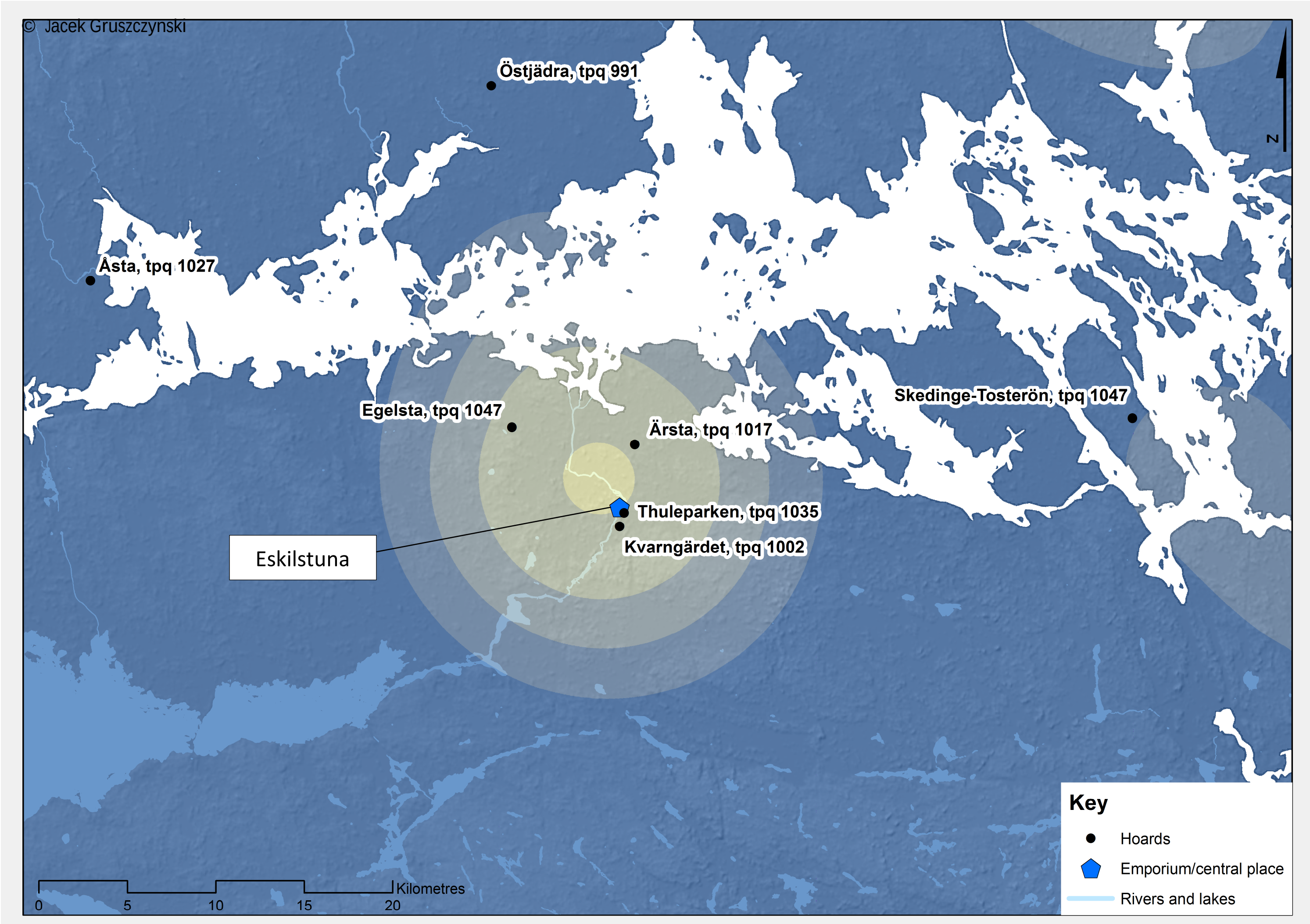


Figure 4.10 Eskilstuna concentration.

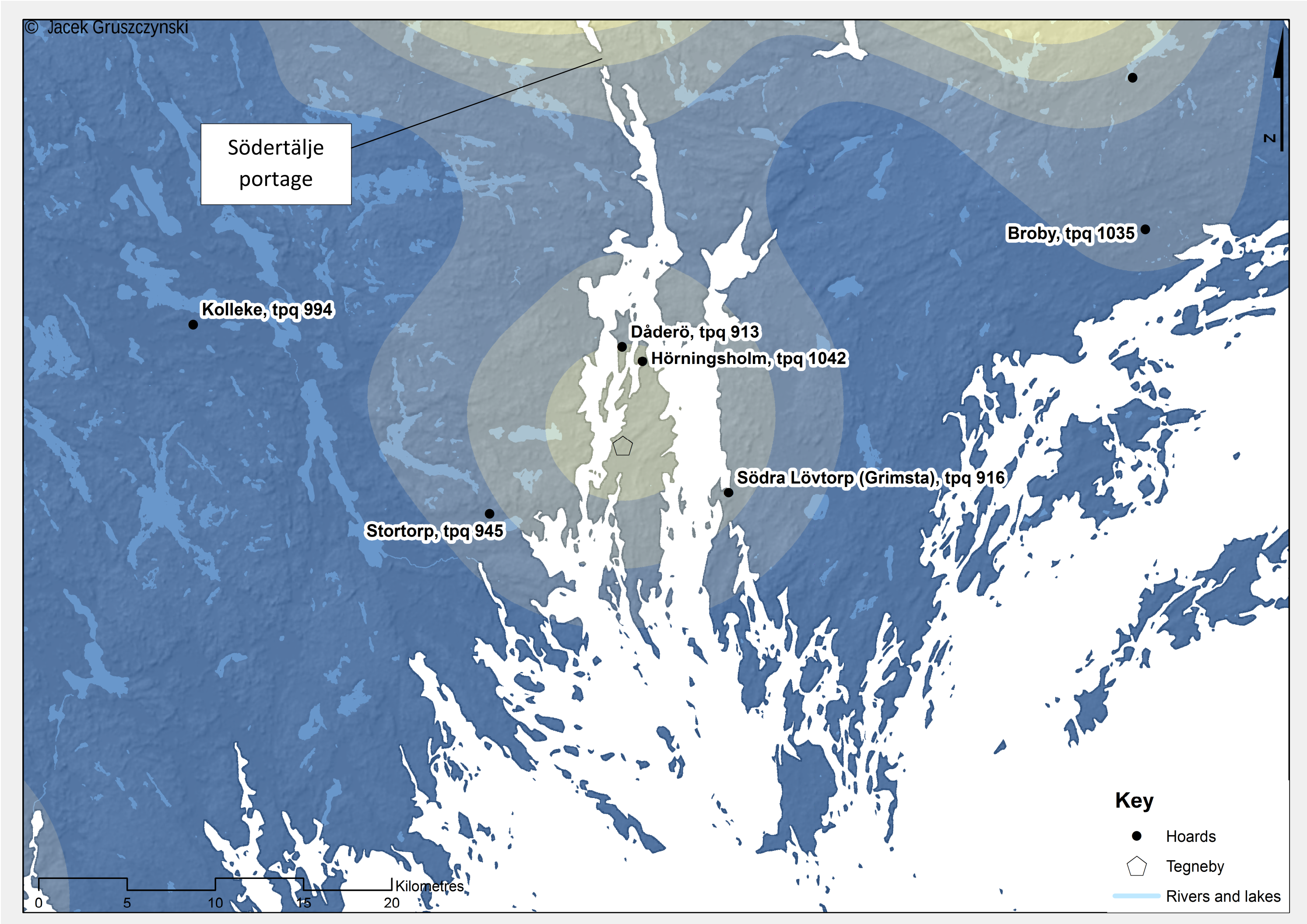


Figure 4.11 Mörkö concentration.

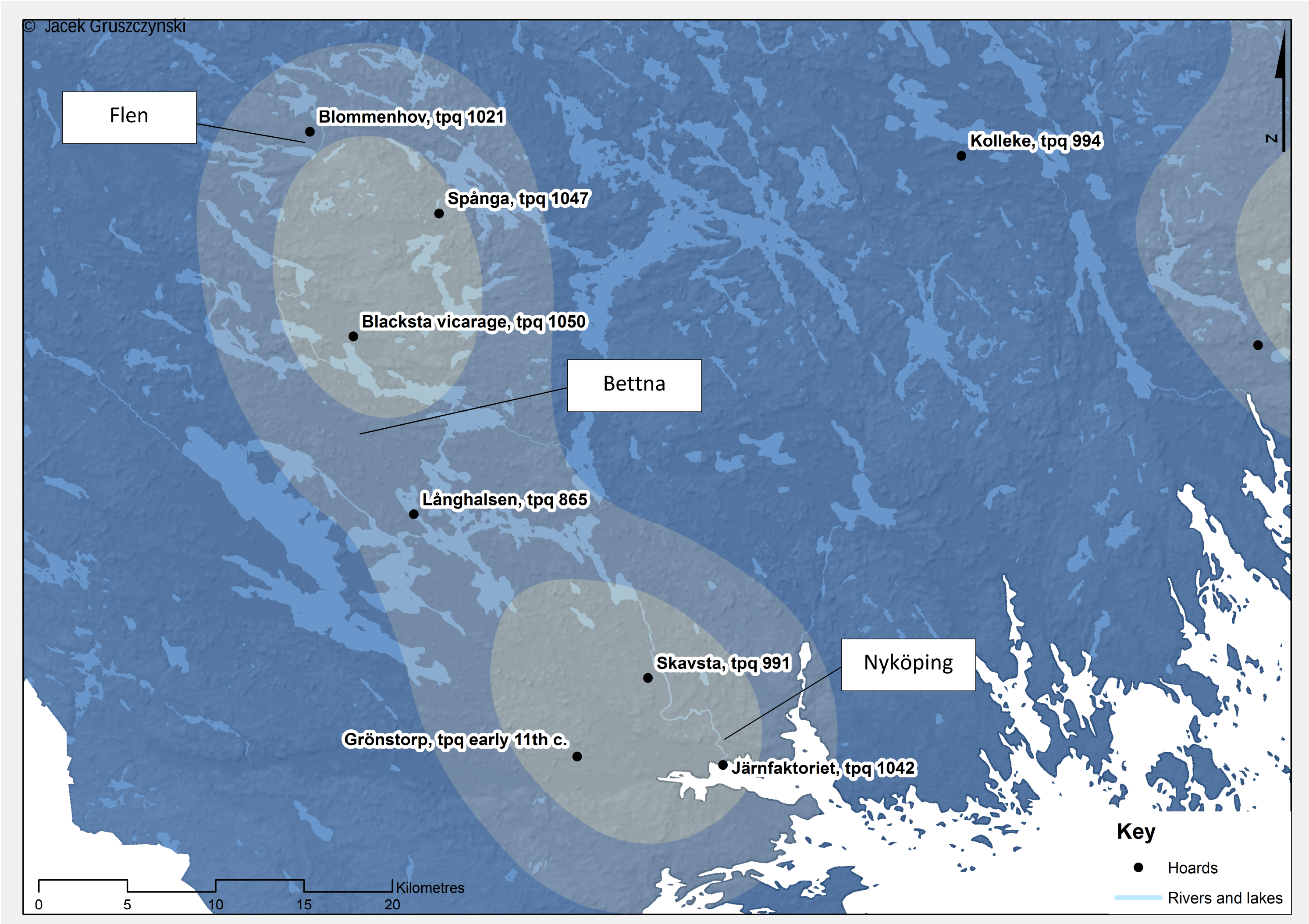


Figure 4.12 Nyköping concentration.

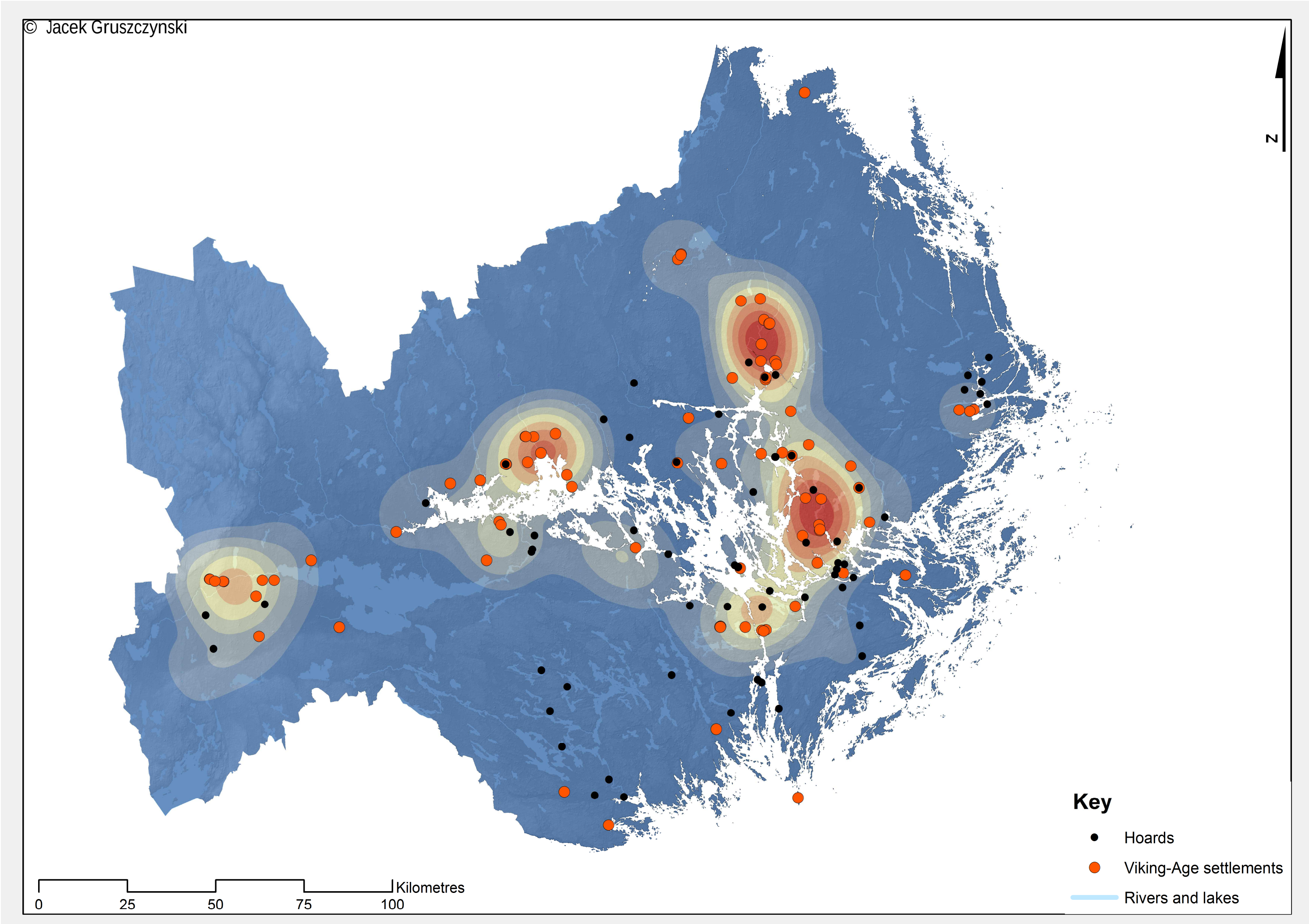


Figure 4.13 Kernel density heat map of Viking-Age settlements in Svealand. The density is classified by 9 equal intervals.

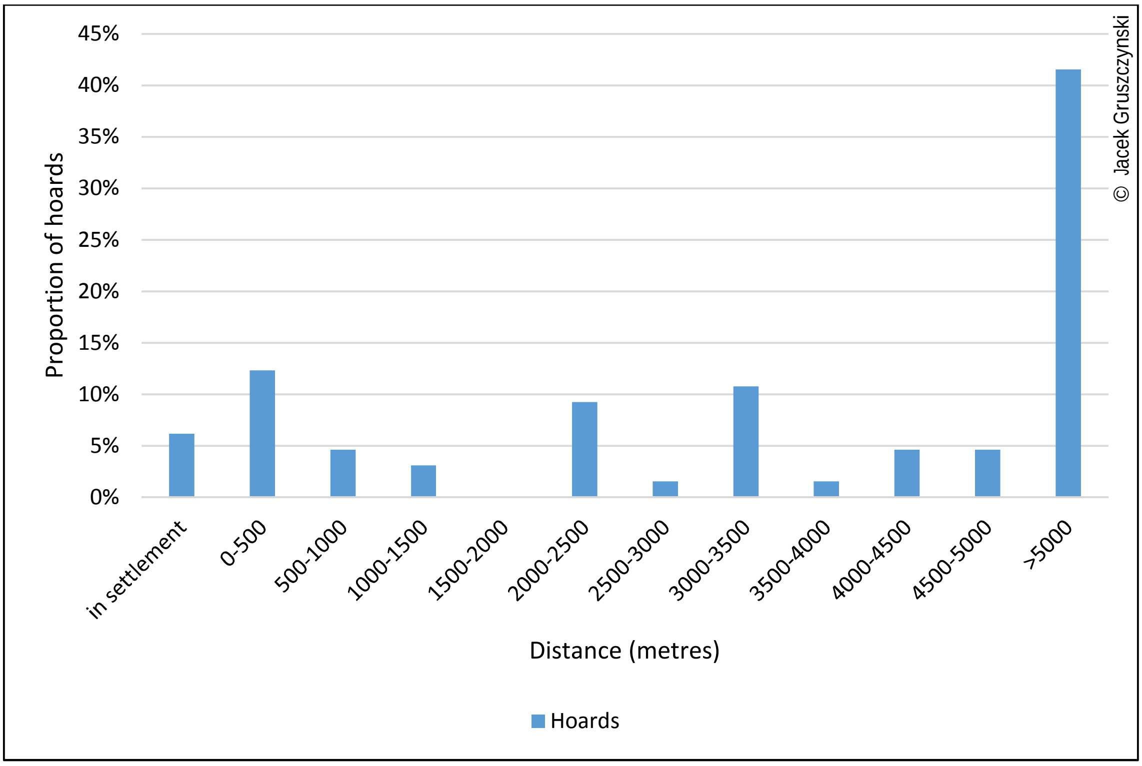


Figure 4.14 Distance from Svealandic hoards to the nearest Viking-Age rural settlement.

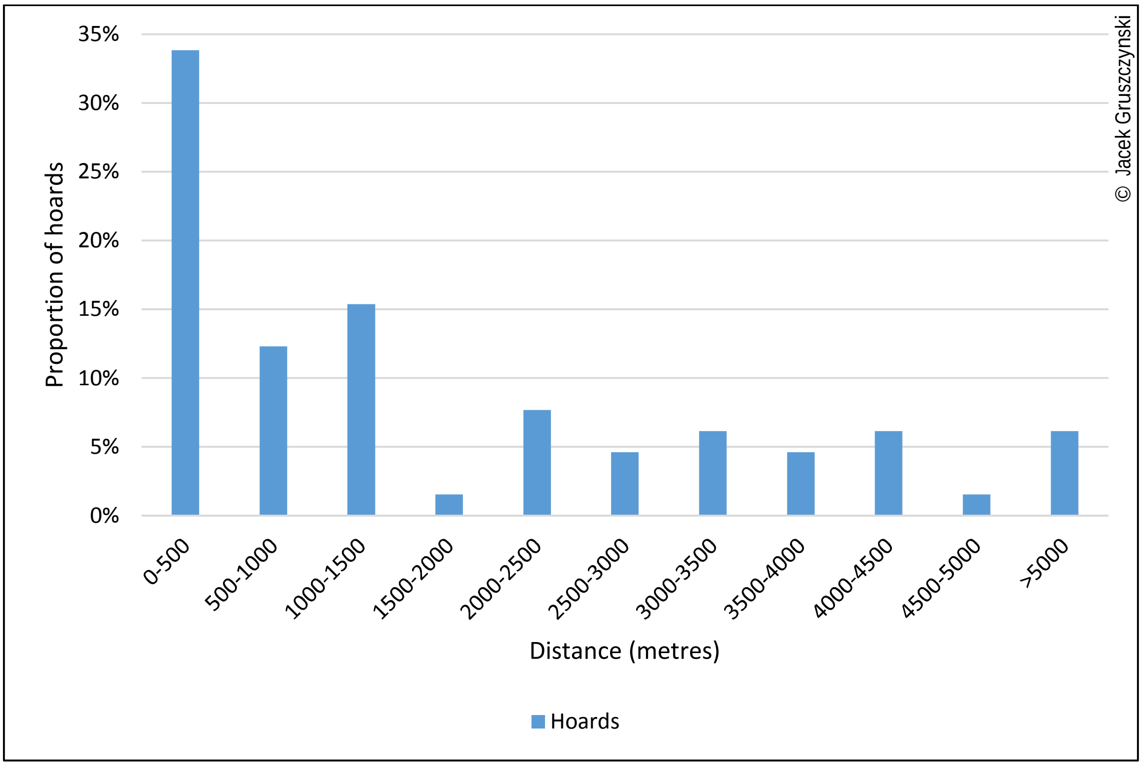


Figure 4.15 Distance from Svealandic hoards to the nearest Viking-Age settlement indicators (settlements and runestones).

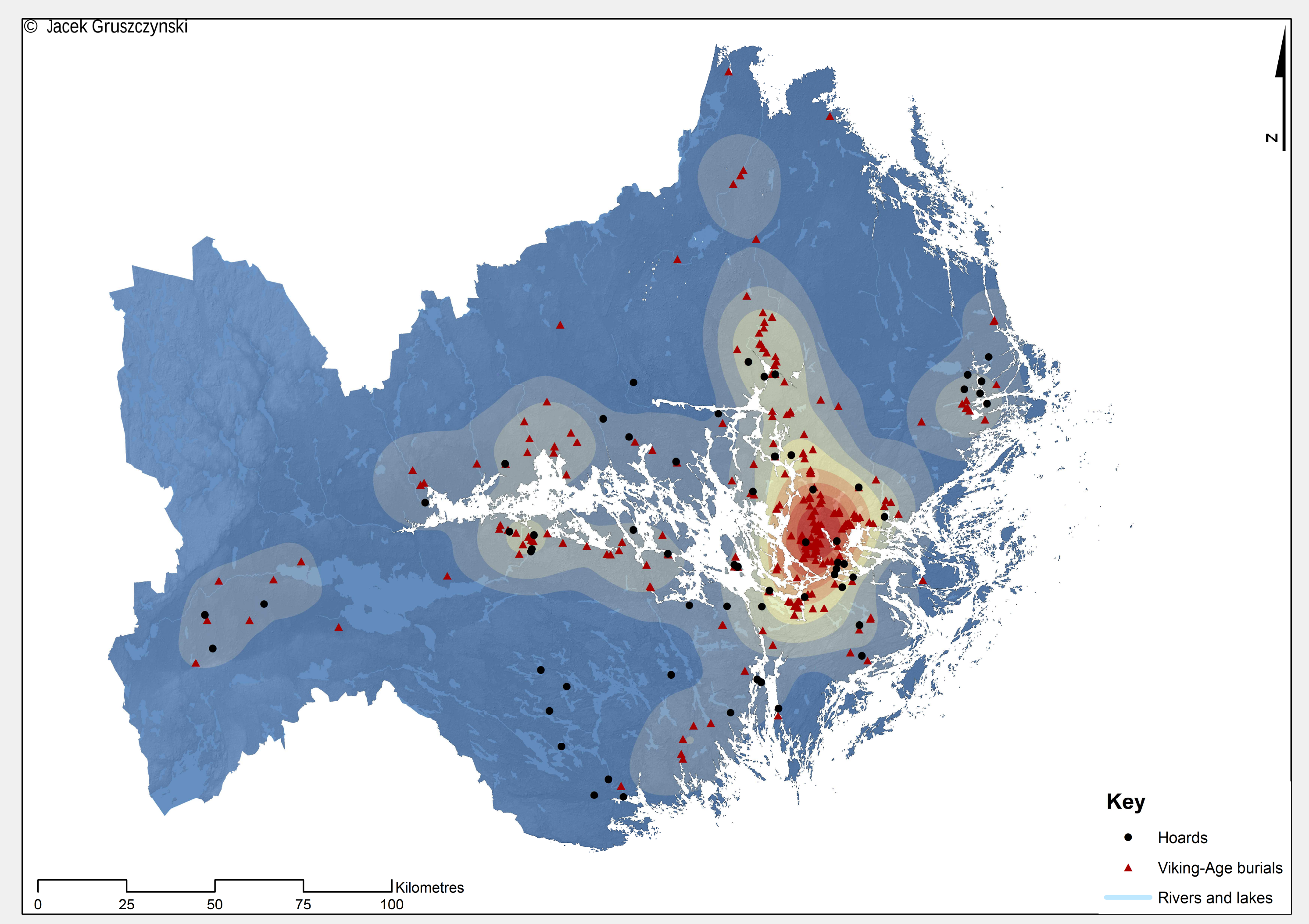


Figure 4.16 Kernel density heat map of Viking-Age burials and cemeteries in Svealand. The density is classified by 9 natural breaks (Jenks) to facilitate visual comparison with Figure 4.3.

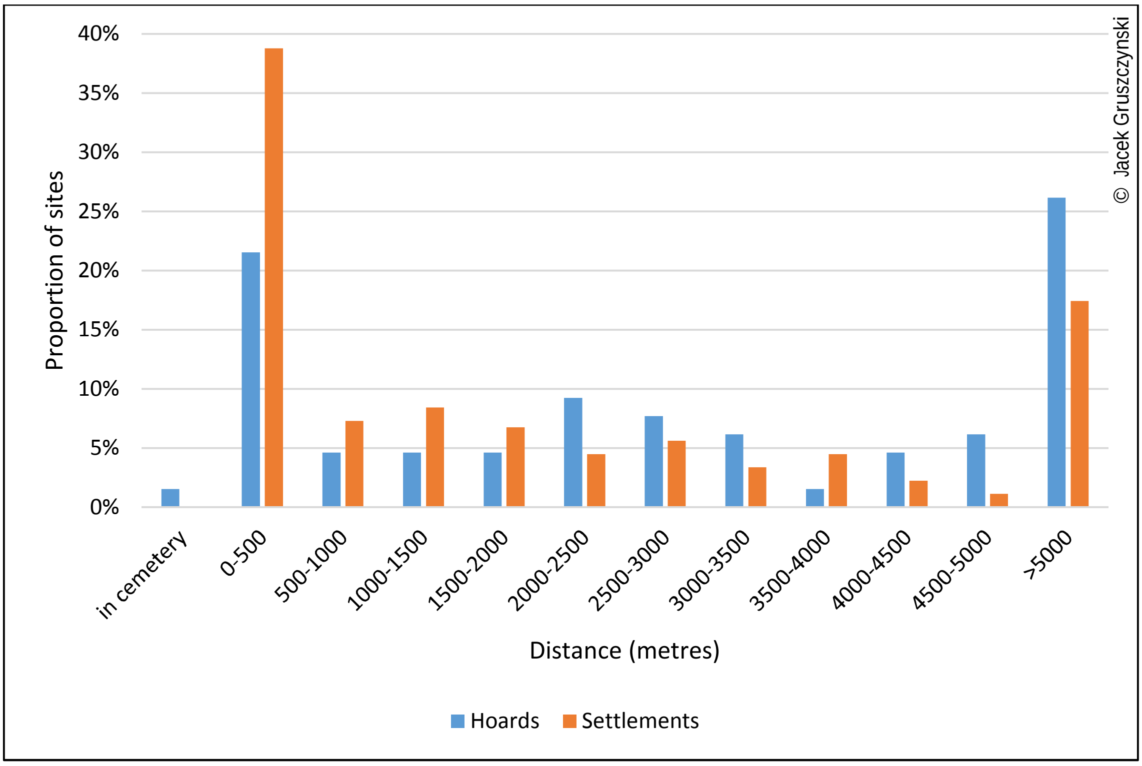


Figure 4.17 Distance from Svealandic hoards and Viking-Age settlements to the nearest contemporary cemetery.

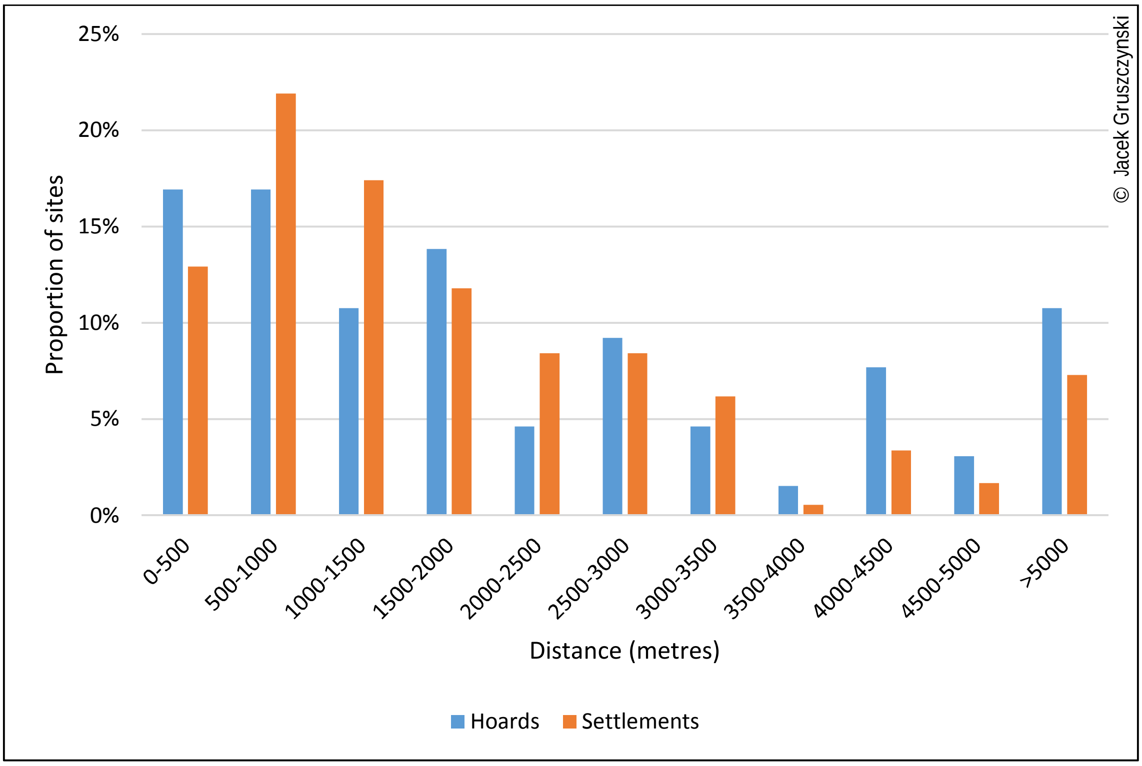


Figure 4.18 Distance from Svealandic hoards and Viking-Age settlements to the nearest body of water.

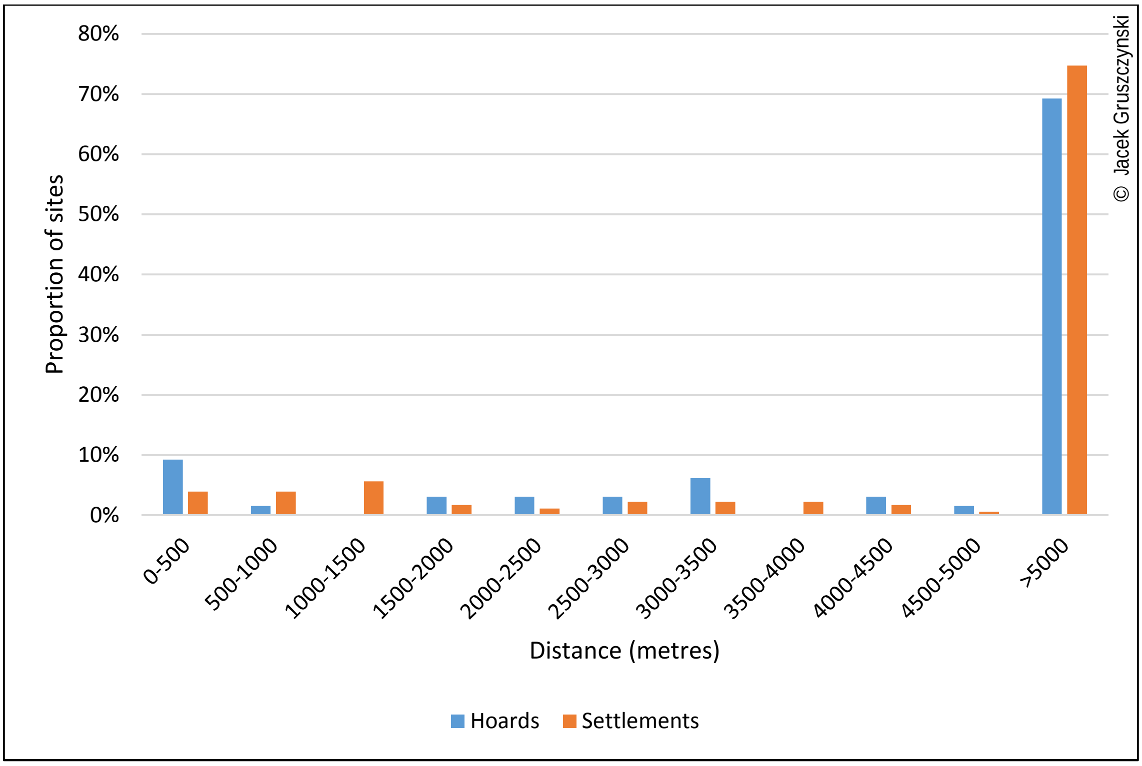


Figure 4.19 Distance from Svealandic hoards and Viking-Age settlements to the nearest major waterway.

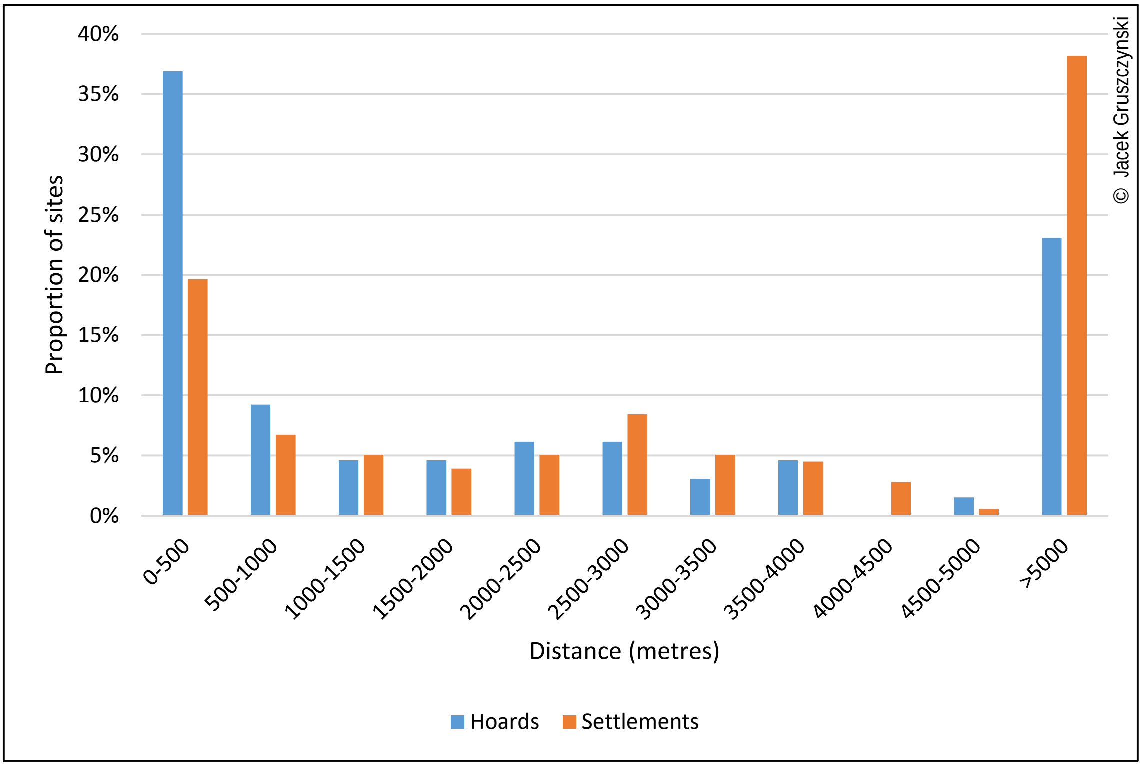


Figure 4.20 Distance from Svealandic hoards and Viking-Age settlements to the coast at c. 900 and including Lake Mälaren, which in the Viking Age was a brackish inlet of the Baltic.

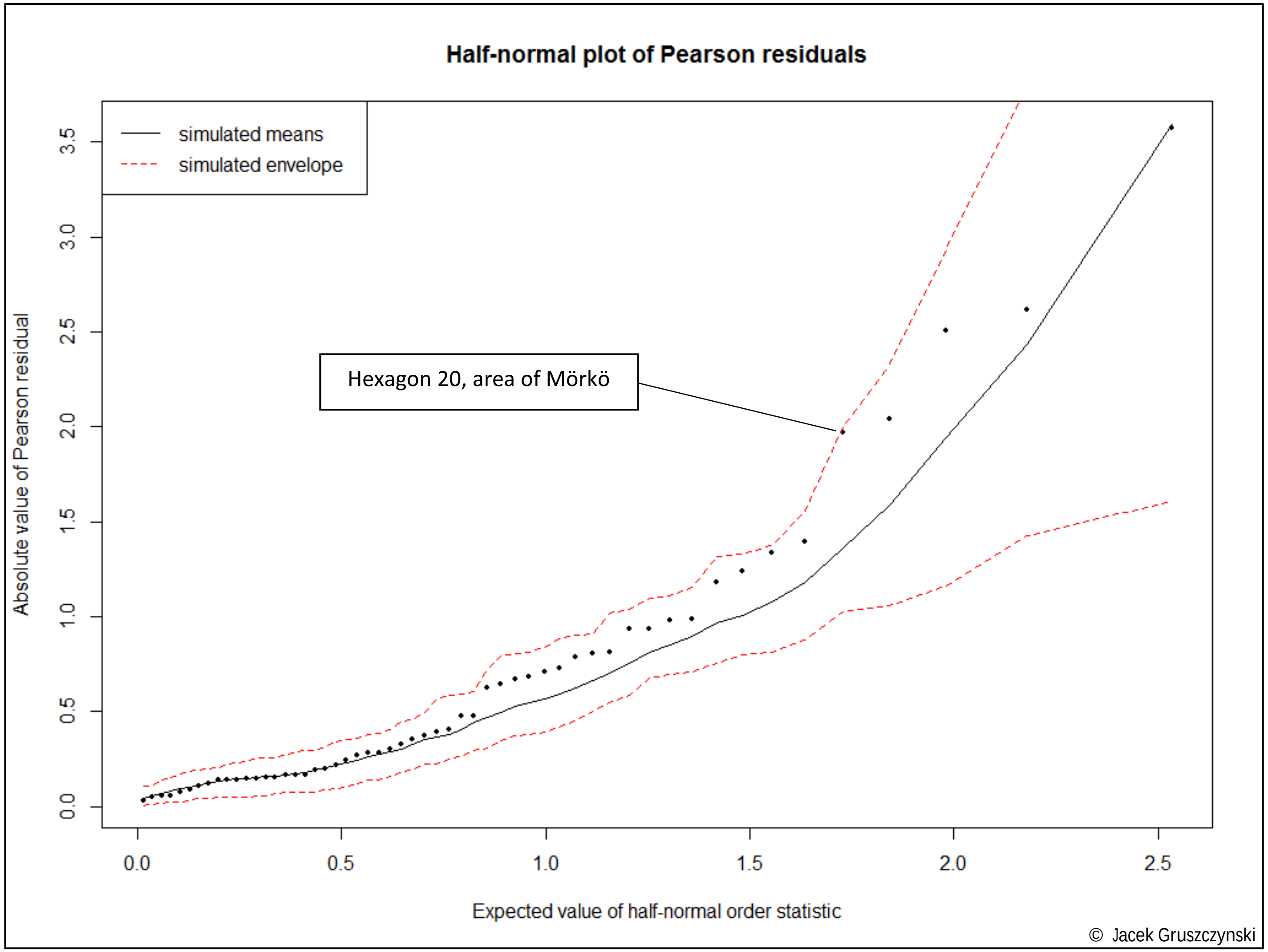
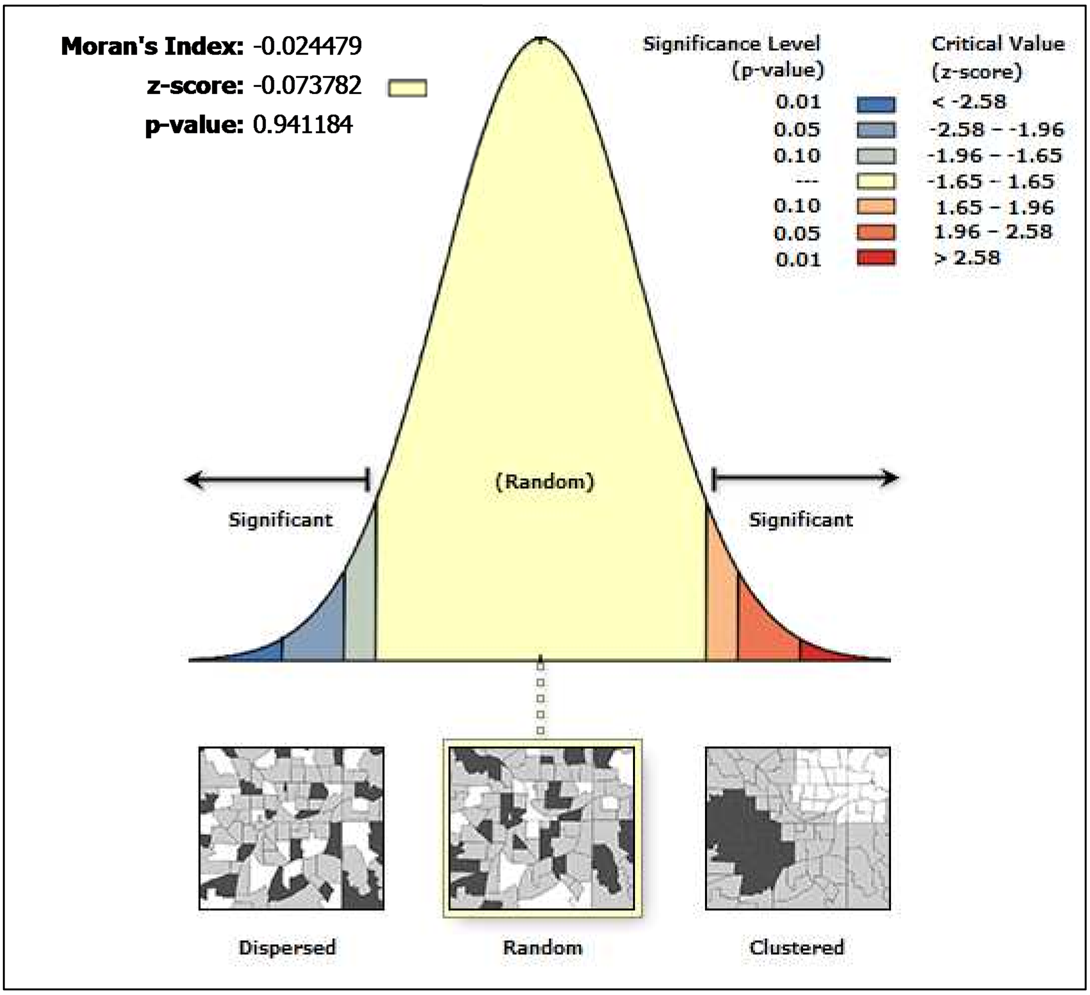


Figure 4.21 Half-normal plot of Pearson residuals versus simulated residuals in the GLM model for Svealandic case study (mod40.3).



Moran's Index:	-0.024479
Expected Index:	-0.018519
Variance:	0.006526
z-score:	-0.073782
p-value:	0.941184

Figure 4.22 Results of Spatial Autocorrelation (Moran's I) analysis in ArcGIS of Pearson residuals in Svealandic regression model (mod40.3).

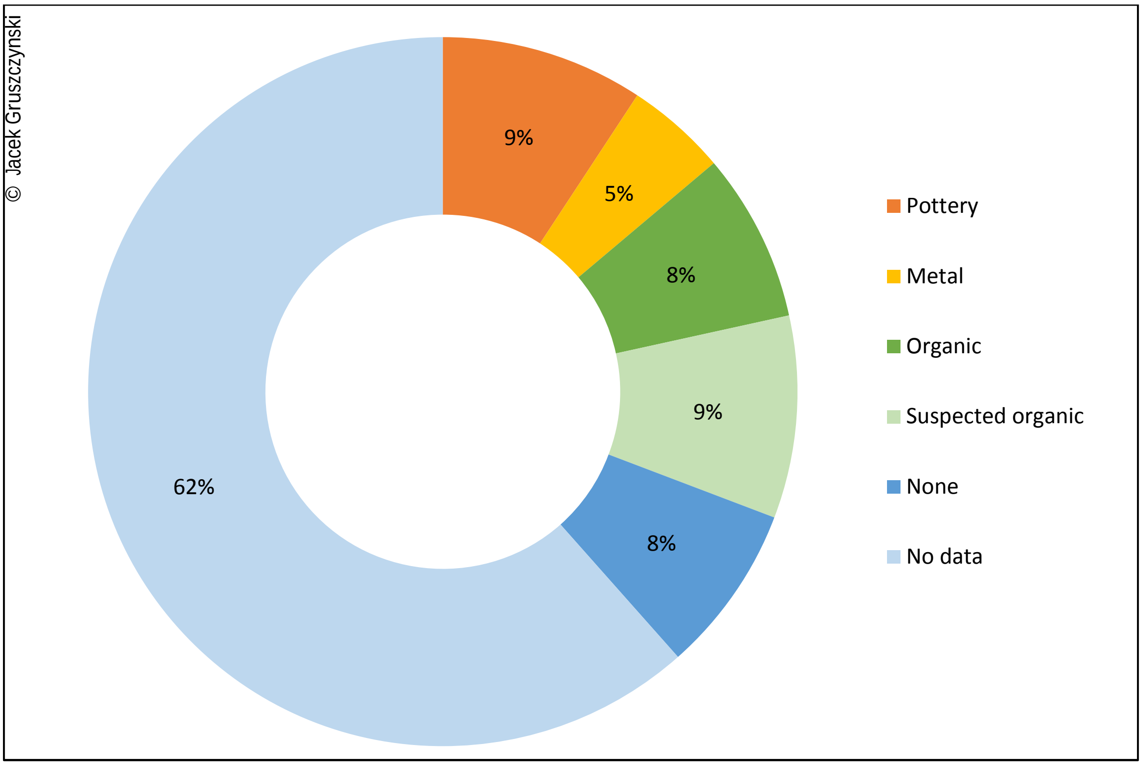


Figure 4.23 Deposition of Svealandic hoards in various types of containers.

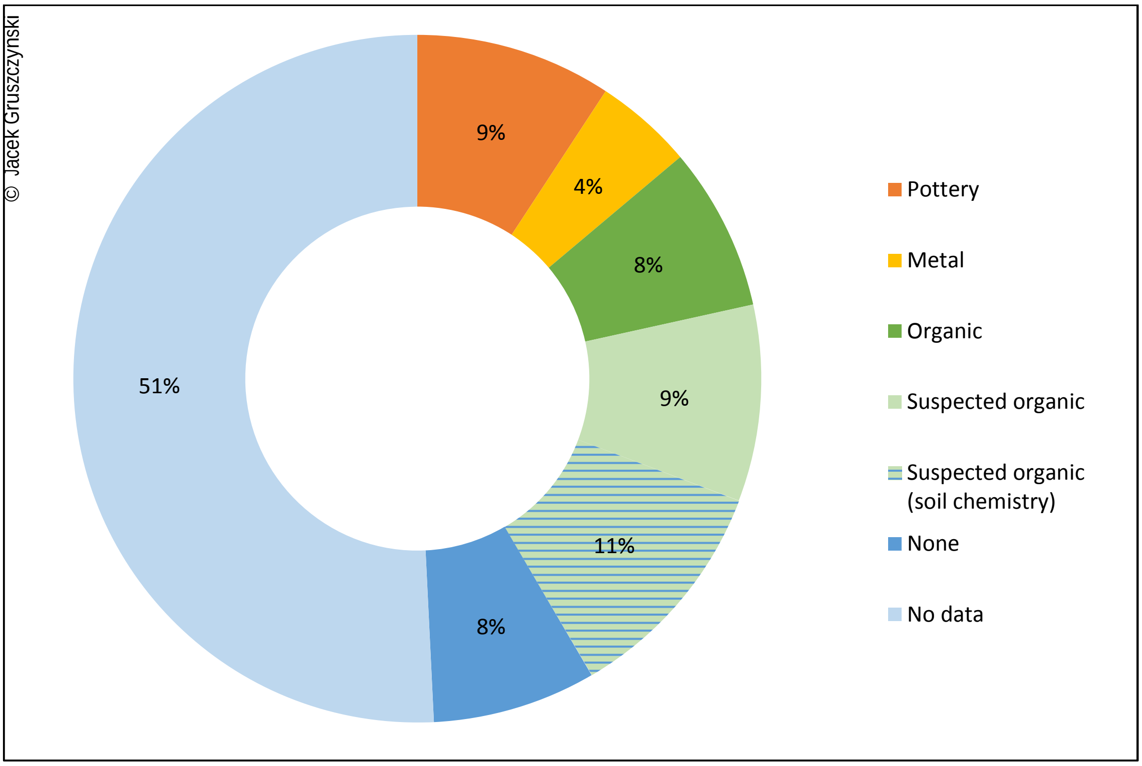


Figure 4.24 Deposition of Svealandic hoards in various types of containers including 'No data' deposits reclassified on the basis of soil chemistry analysis.

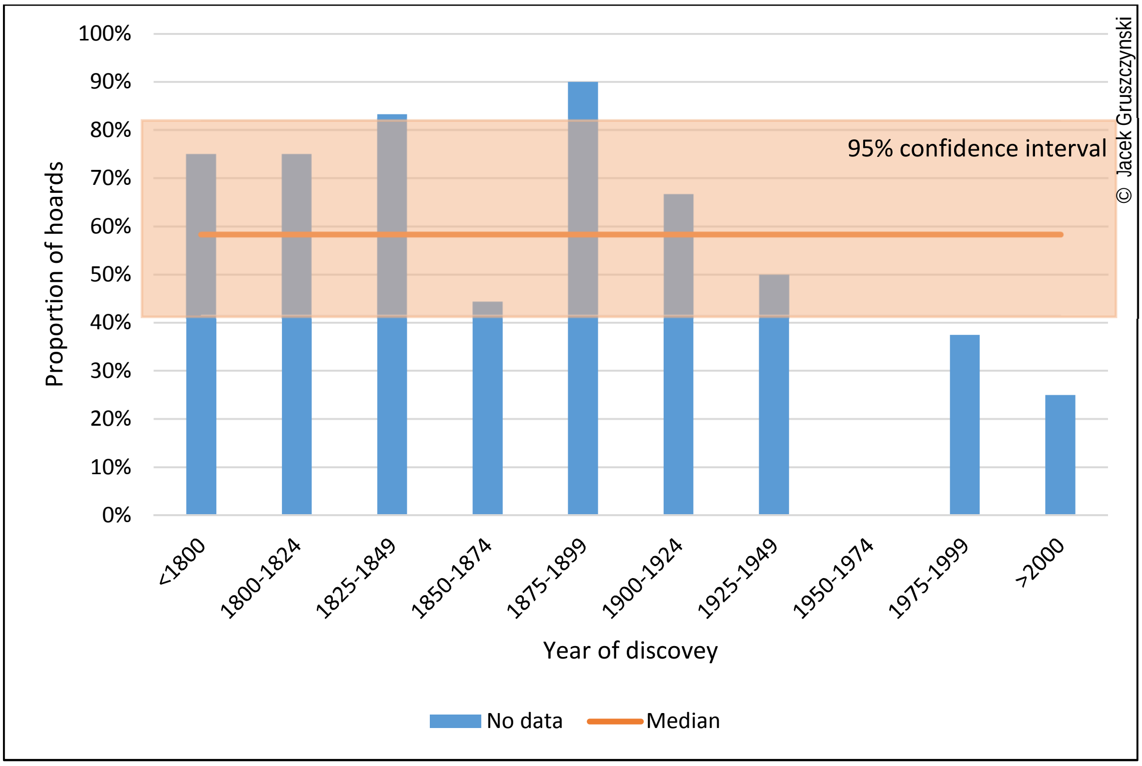


Figure 4.25 Proportion of hoards without the explicit information on the presence/absence of a container. The median average proportion of all 'No data' hoards is 58% and the statistical 95% confidence interval for the median lies between 42% and 82% (calculated using bootstrap method described in A2.3).

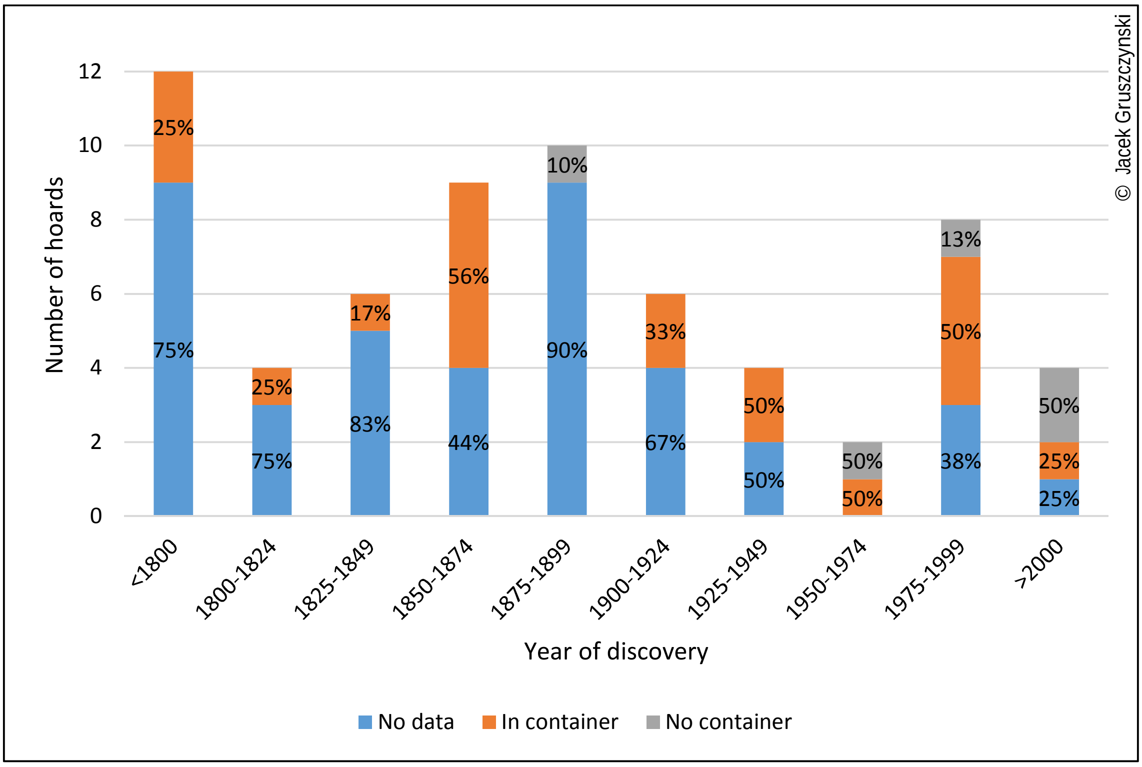


Figure 4.26 Chronological structure of all hoard discoveries in Svealand.

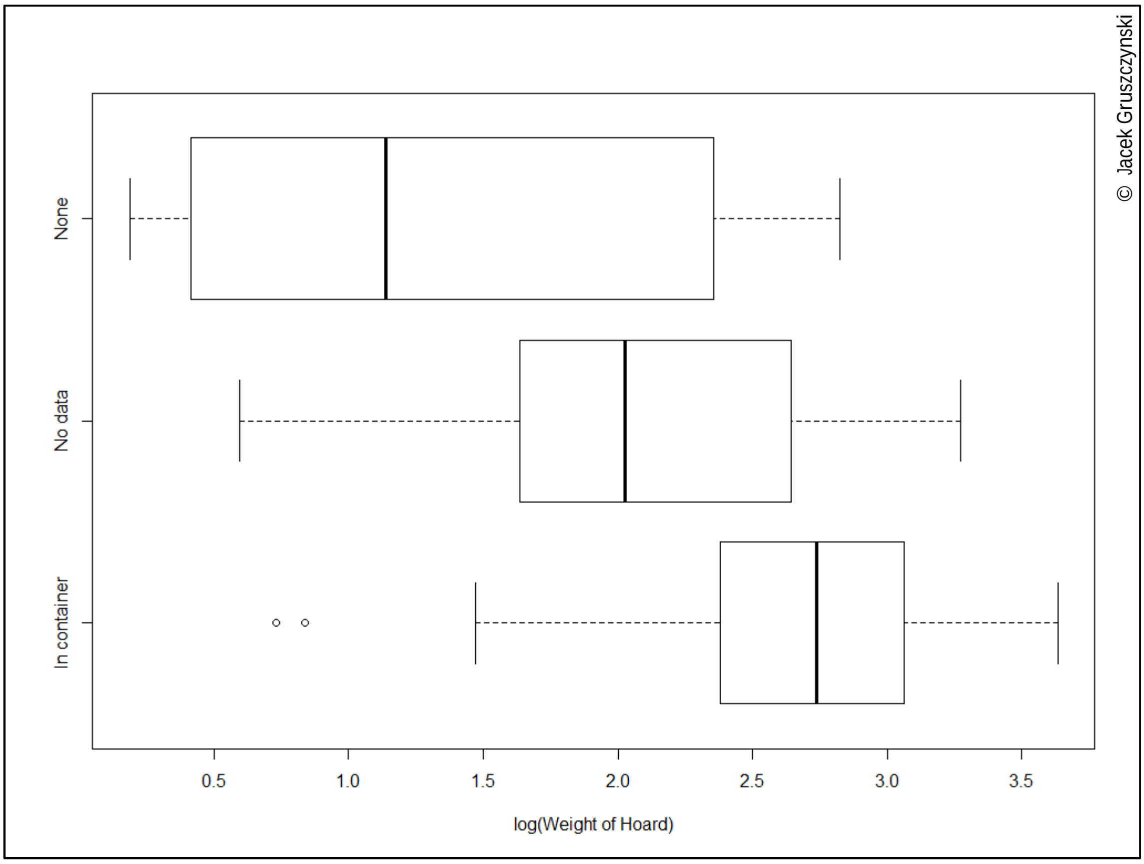


Figure 4.27 Comparison of silver weight distribution between different categories of Svealandic hoards.

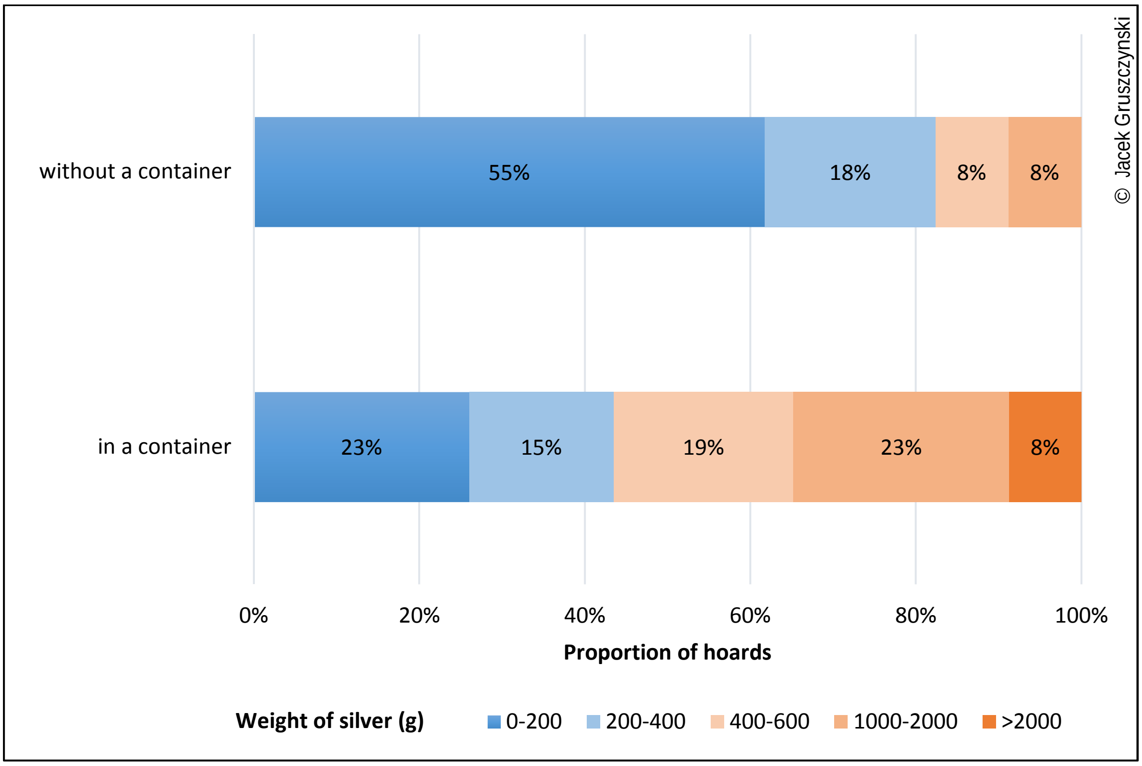
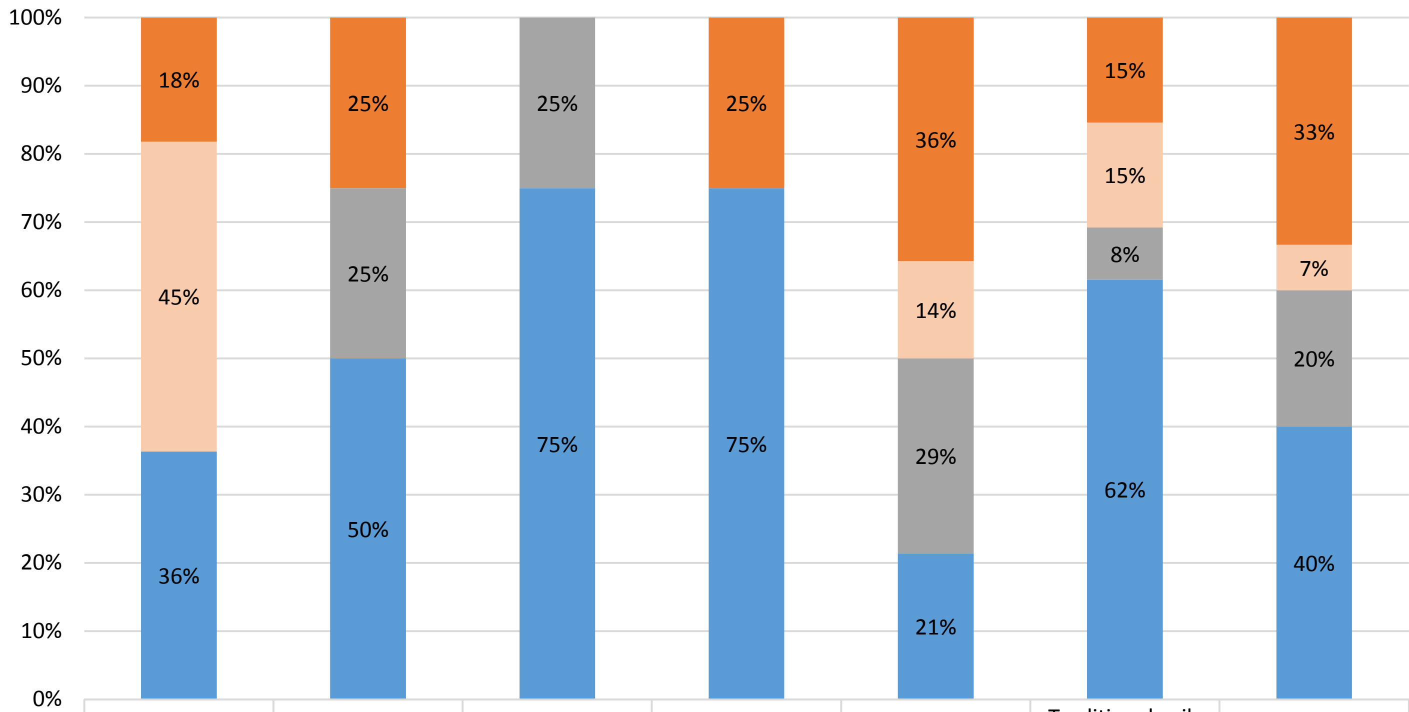


Figure 4.28 Comparison of Svealandic deposits discovered with and without containers classified by weight of silver.



	Settlements (all types)	Watery environment	Crevices	Burials and cemeteries	Markers	Traditional soils (no other context)	Marginal soils (no other context)
savings (lagre contained)	2	1	0	1	5	2	5
emergency (small contained)	5	0	0	0	2	2	1
grey area (large containerless)	0	1	1	0	4	1	3
placed deposits (small containerless)	4	2	3	3	3	8	6

Figure 4.29 Comparison of Svealandic deposits discovered with and without containers classified by weight of silver. The silver weight was categorised to describe deposits weighing above 400g as large, and those below 400g as small.

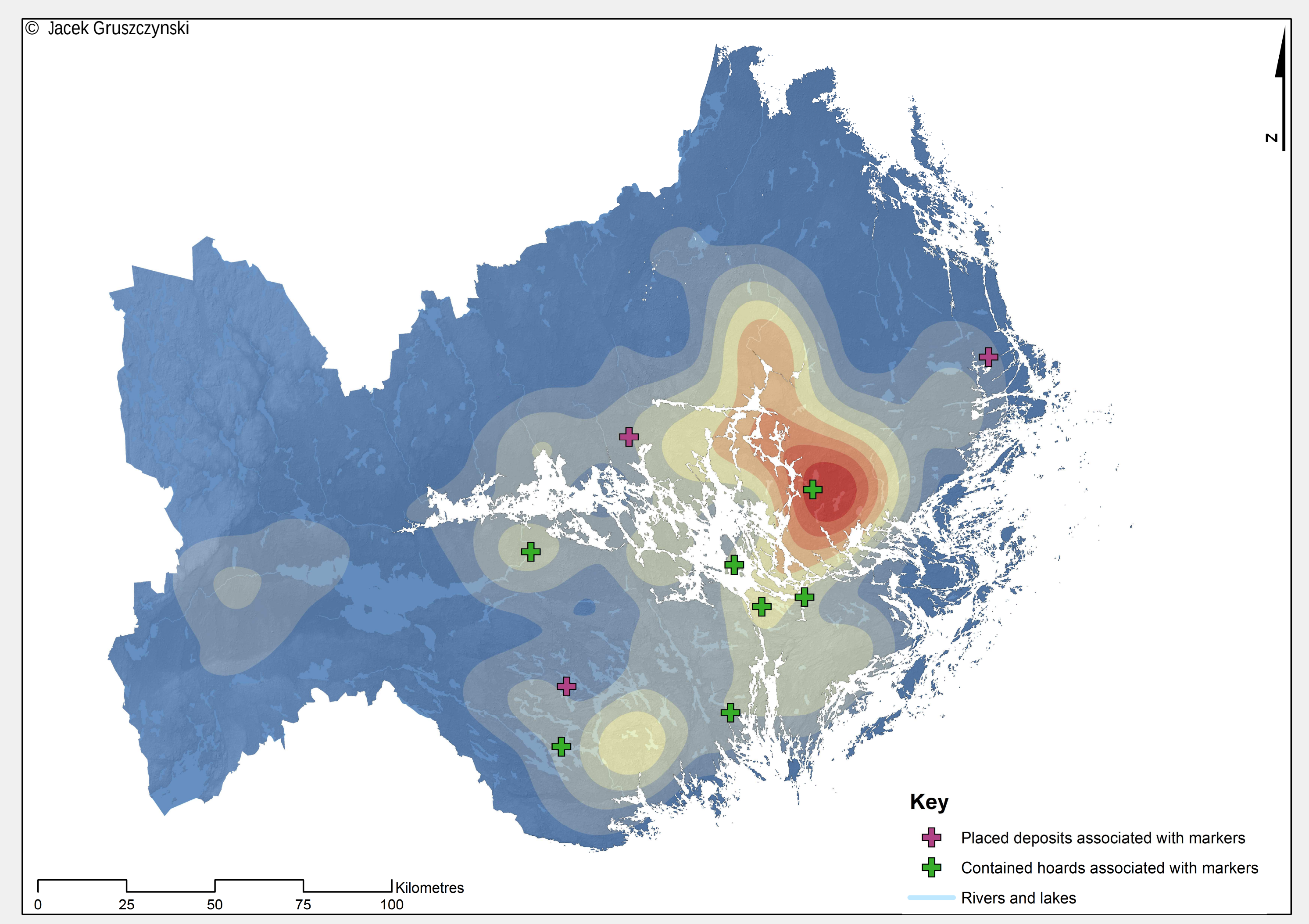


Figure 4.30 Hoards associated with markers overlain on density heat map of indicators of Viking-Age settlement (settlements and runestones) classified by 9 natural breaks (Jenks).

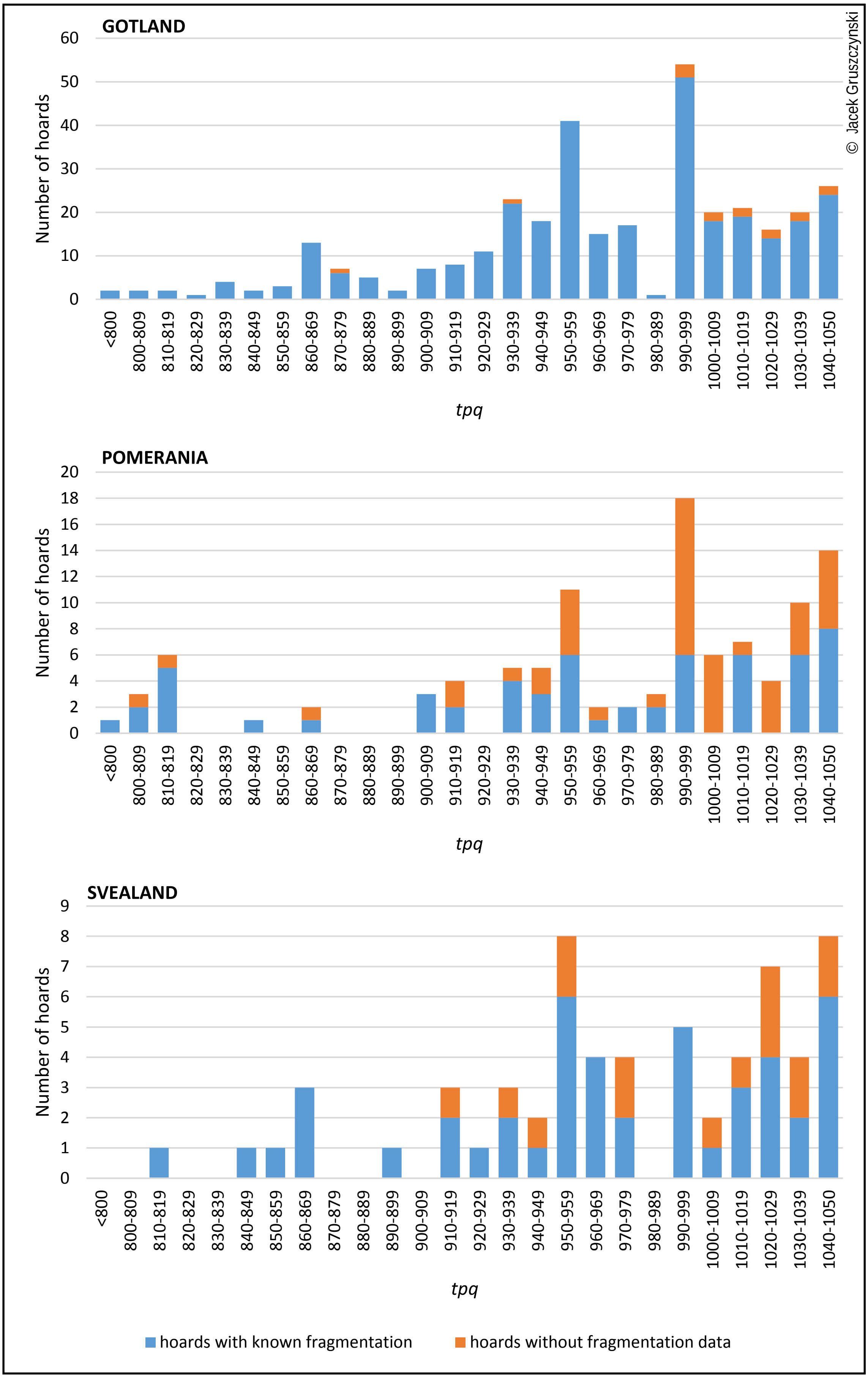


Figure 5.1 Chronological distribution of hoards c. 800-1050.

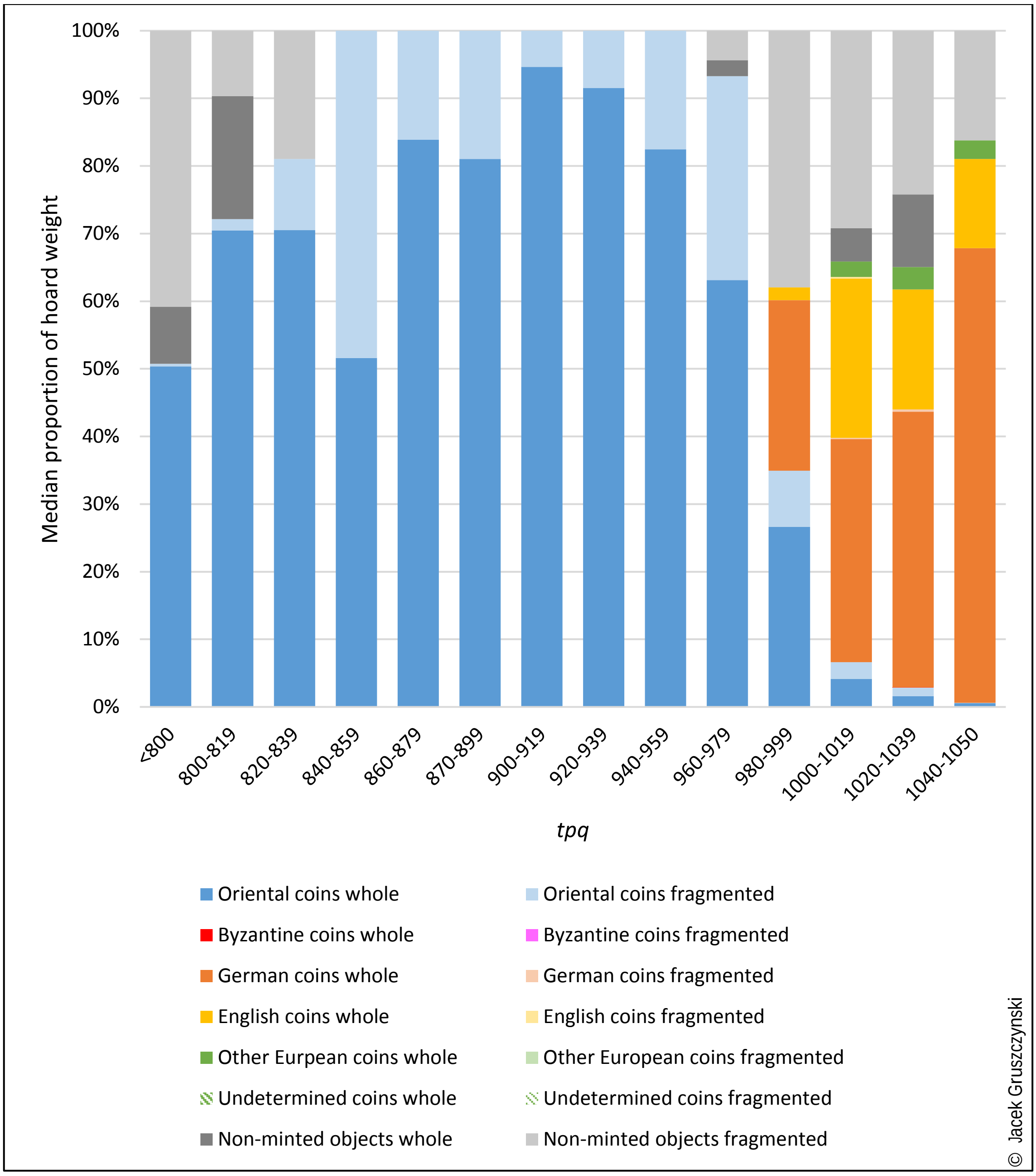


Figure 5.2 Chronological changes in median proportions of different hoard components in Gotland.

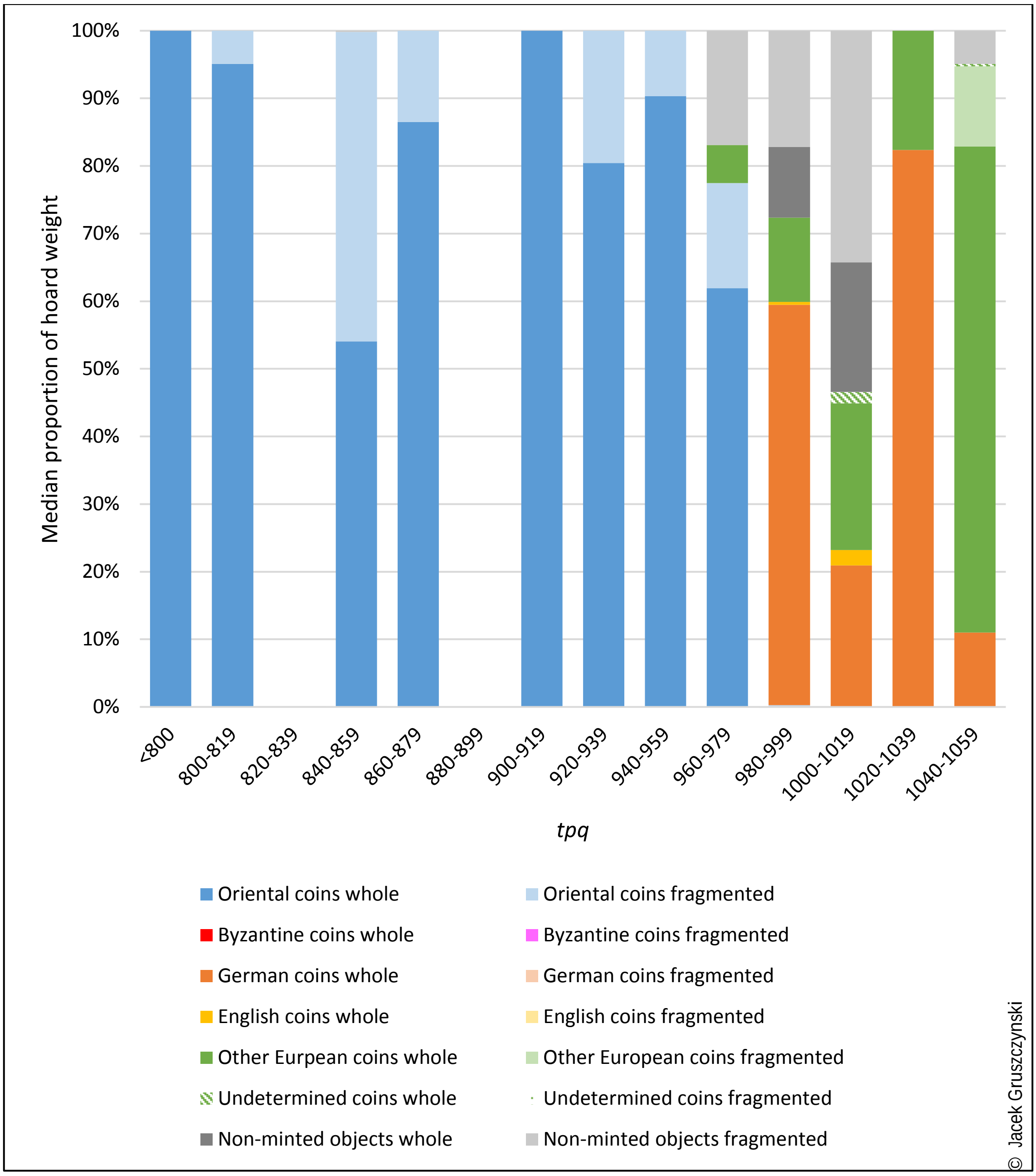


Figure 5.3 Chronological changes in median proportions of different hoard components in Pomerania.

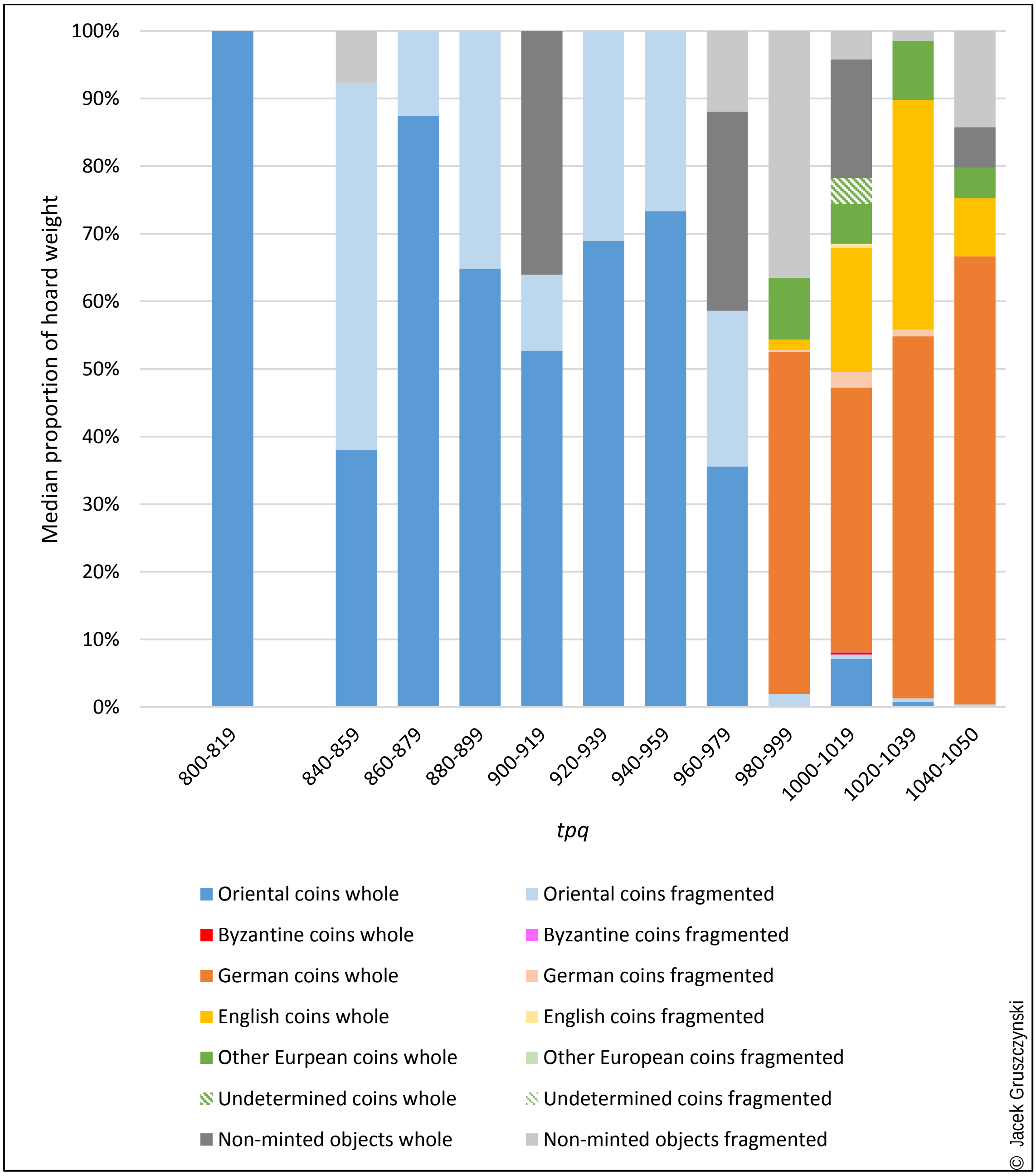


Figure 5.4 Chronological changes in median proportions of different hoard components in Svealand.

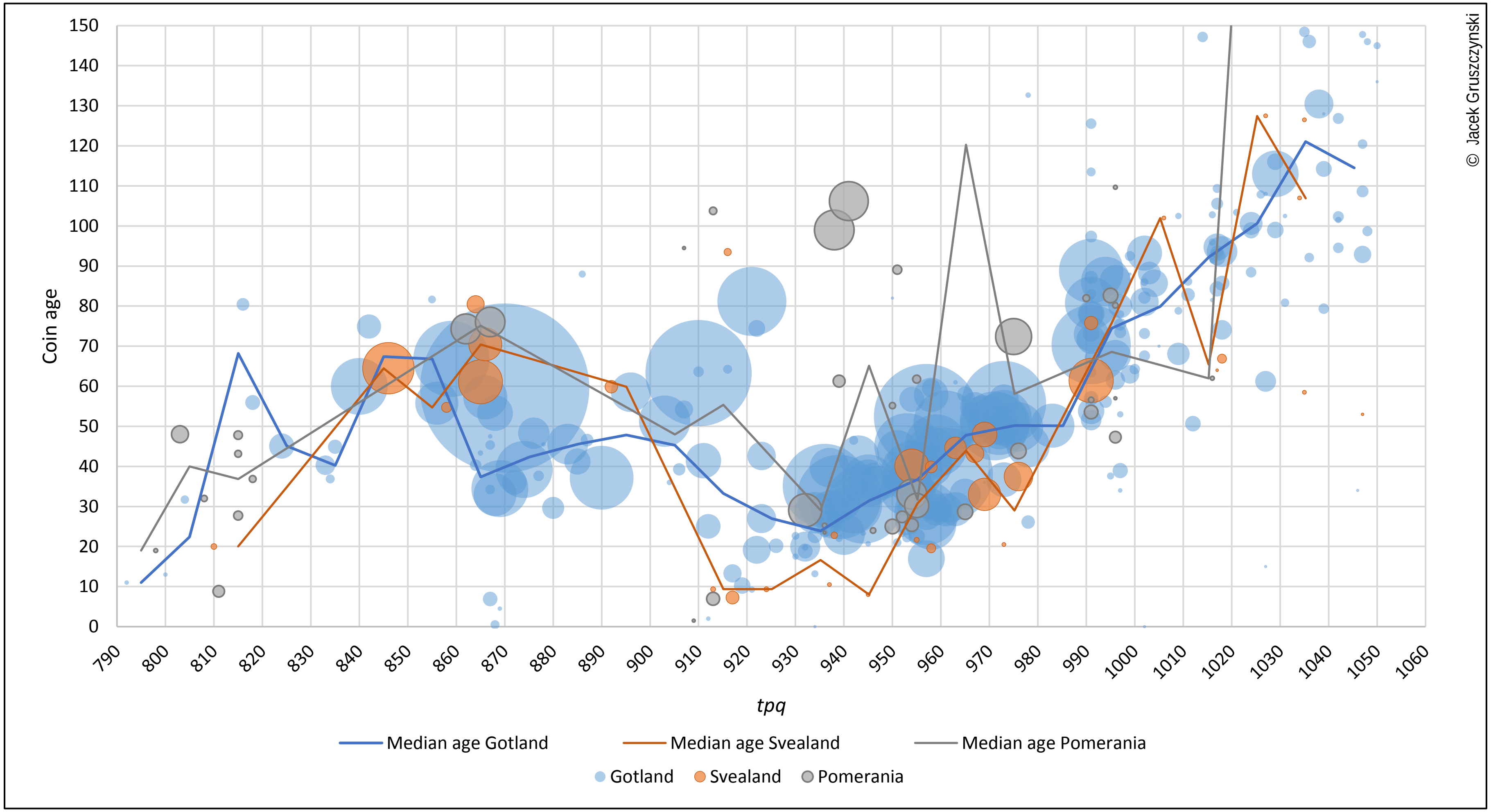


Figure 5.5 Chronological changes in age structure of Oriental coins in analysed hoards. Each circle represents a single hoard and its size represents the number of analysed coins (between 3 and 2829, c.f. A1.3.4). The age of a coin was calculated by subtracting its date from the *tpq* of a hoard. For each hoard the mean age of Oriental coins was calculated, with the exception of imitative and other coinage whose dating was problematic. To represent the patterns more clearly and to limit the influence of large and unusually composed hoards the individual mean ages were summarised by calculated a 10-year median represented in the graph by a solid line.

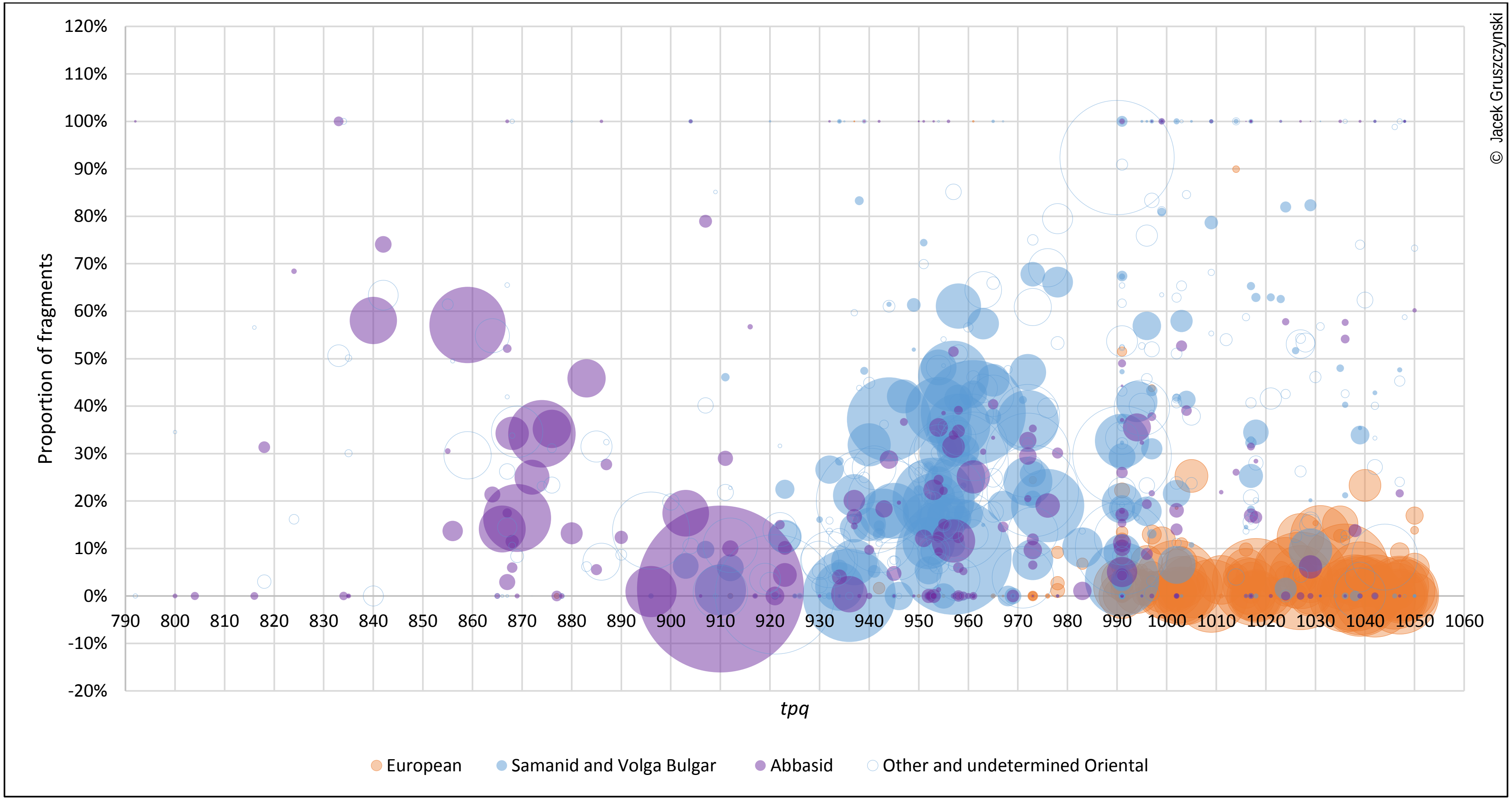


Figure 5.6 Chronological changes in the fragmentation of coins in Gotland calculated as a proportion of the total weight of coins in each category. Each circle represents a coin category in a single hoard and its size represents the total weight of analysed coins in each group. Only hoards for which reliable data on fragmentation was present are included in the statistic.

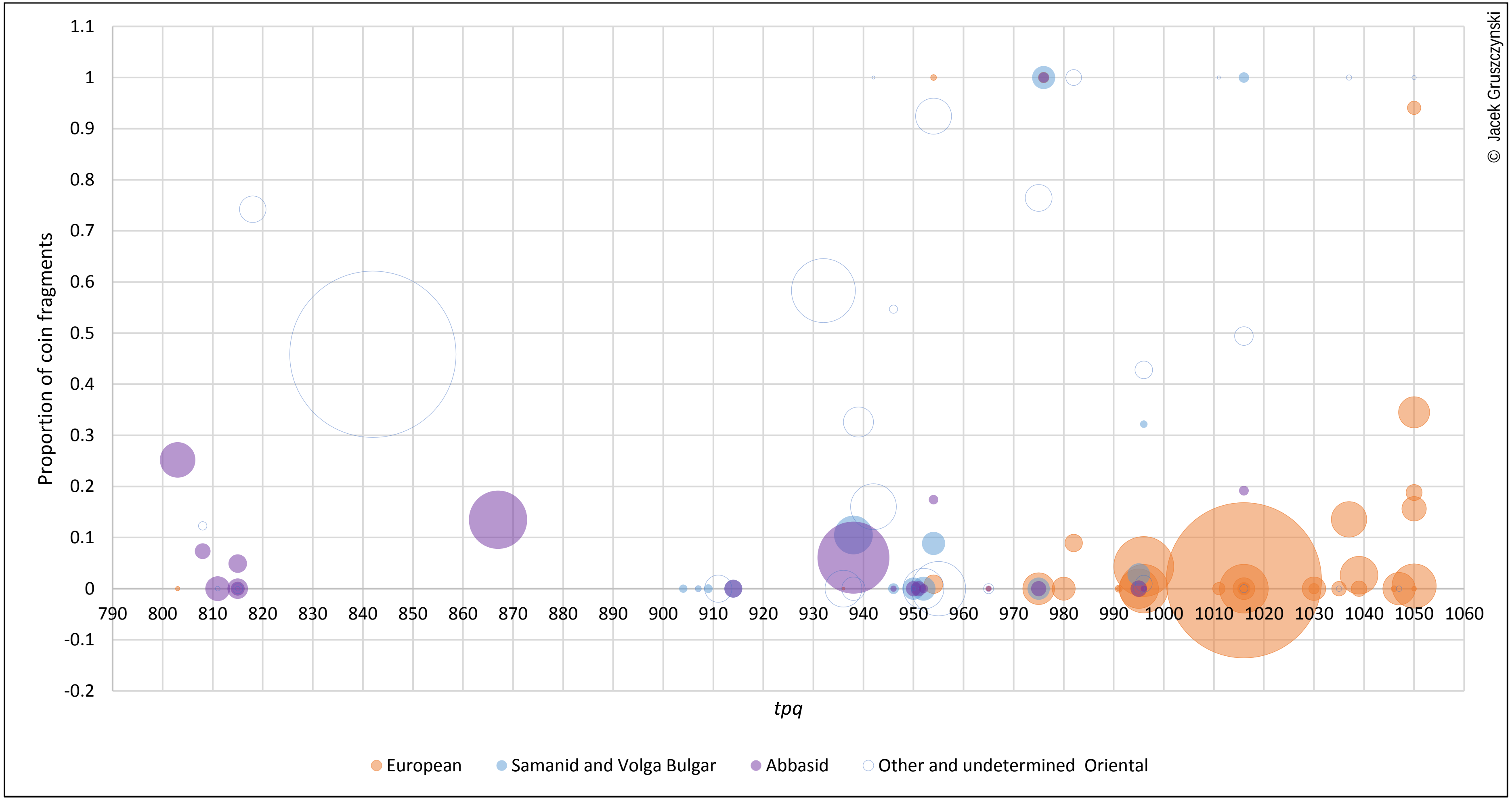


Figure 5.7 Chronological changes in the fragmentation of coins in Pomerania calculated as a proportion of the total weight of coins in each category. Each circle represents a coin category in a single hoard and its size represents the total weight of analysed coins in each group. Only hoards for which reliable data on fragmentation was present are included in the statistic.

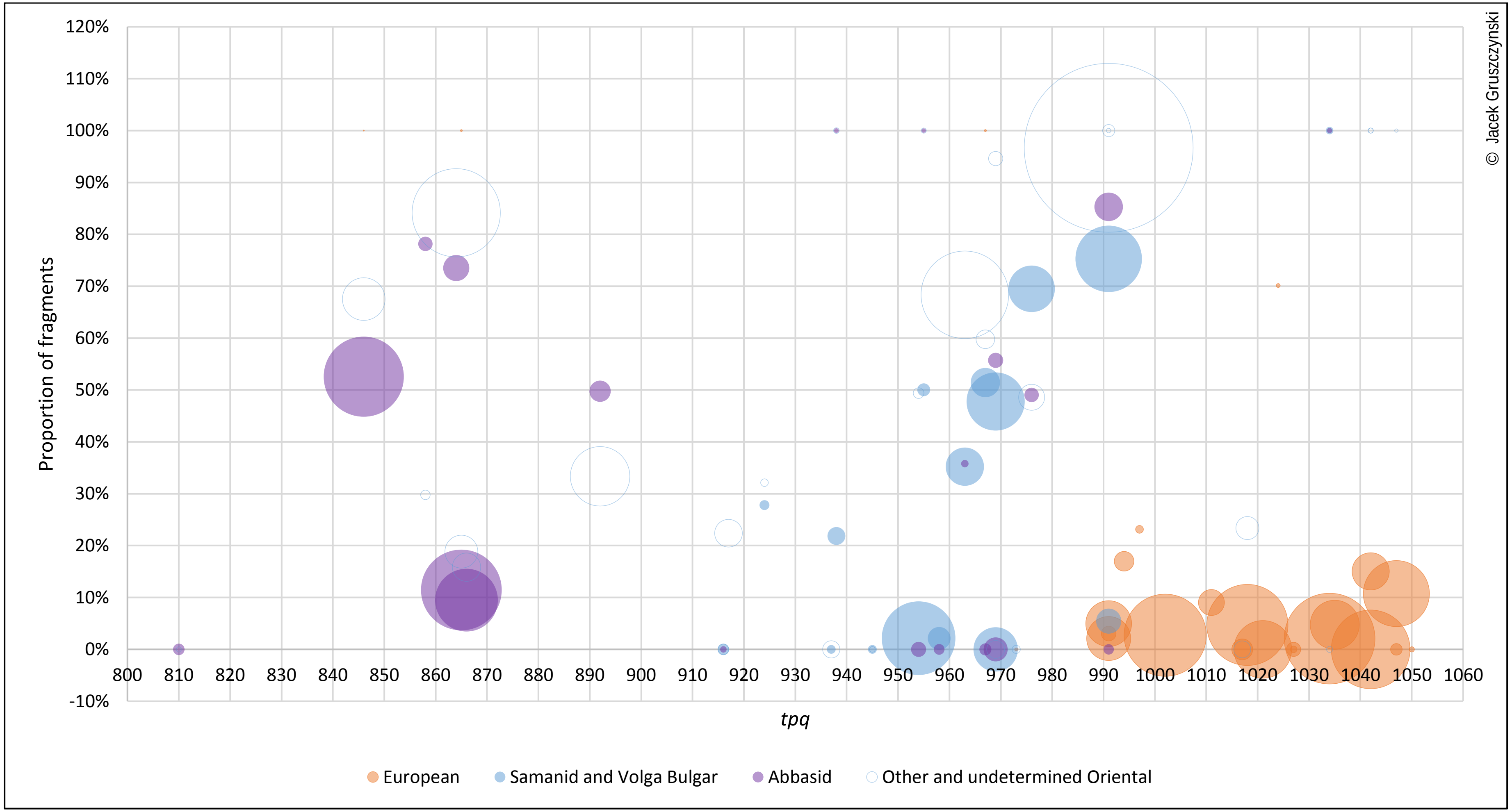


Figure 5.8 Chronological changes in the fragmentation of coins in Svealand calculated as a proportion of the total weight of coins in each category. Each circle represents a coin category in a single hoard and its size represents the total weight of analysed coins in each group. Only hoards for which reliable data on fragmentation was present are included in the statistic.

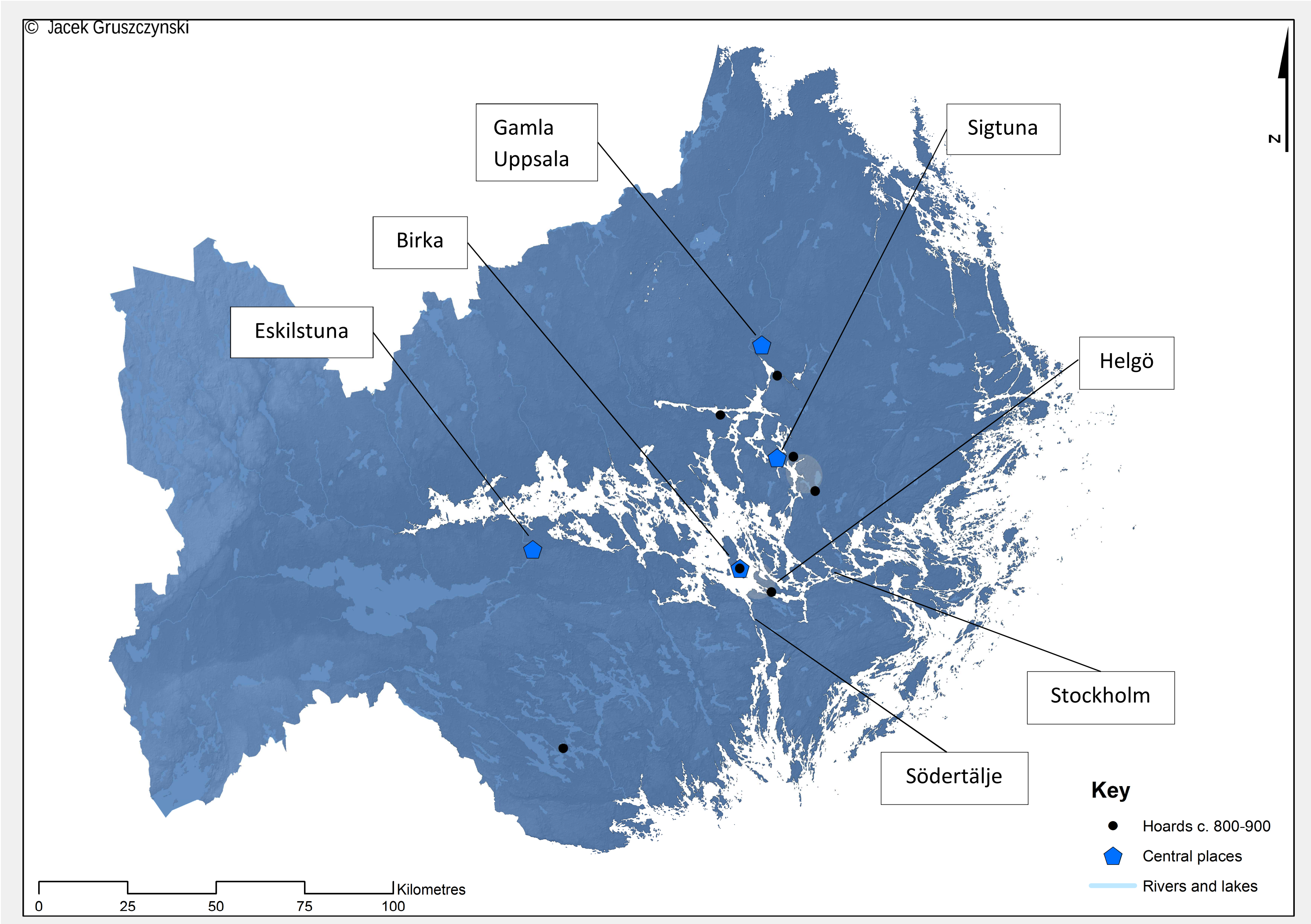


Figure 5.9 Distribution and concentrations of hoards in Svealand in the period c. 800-900. The kernel density in this and the following two figures is classified with the scale used for presentation of the density of all Svealandic hoards in Figure 4.3.

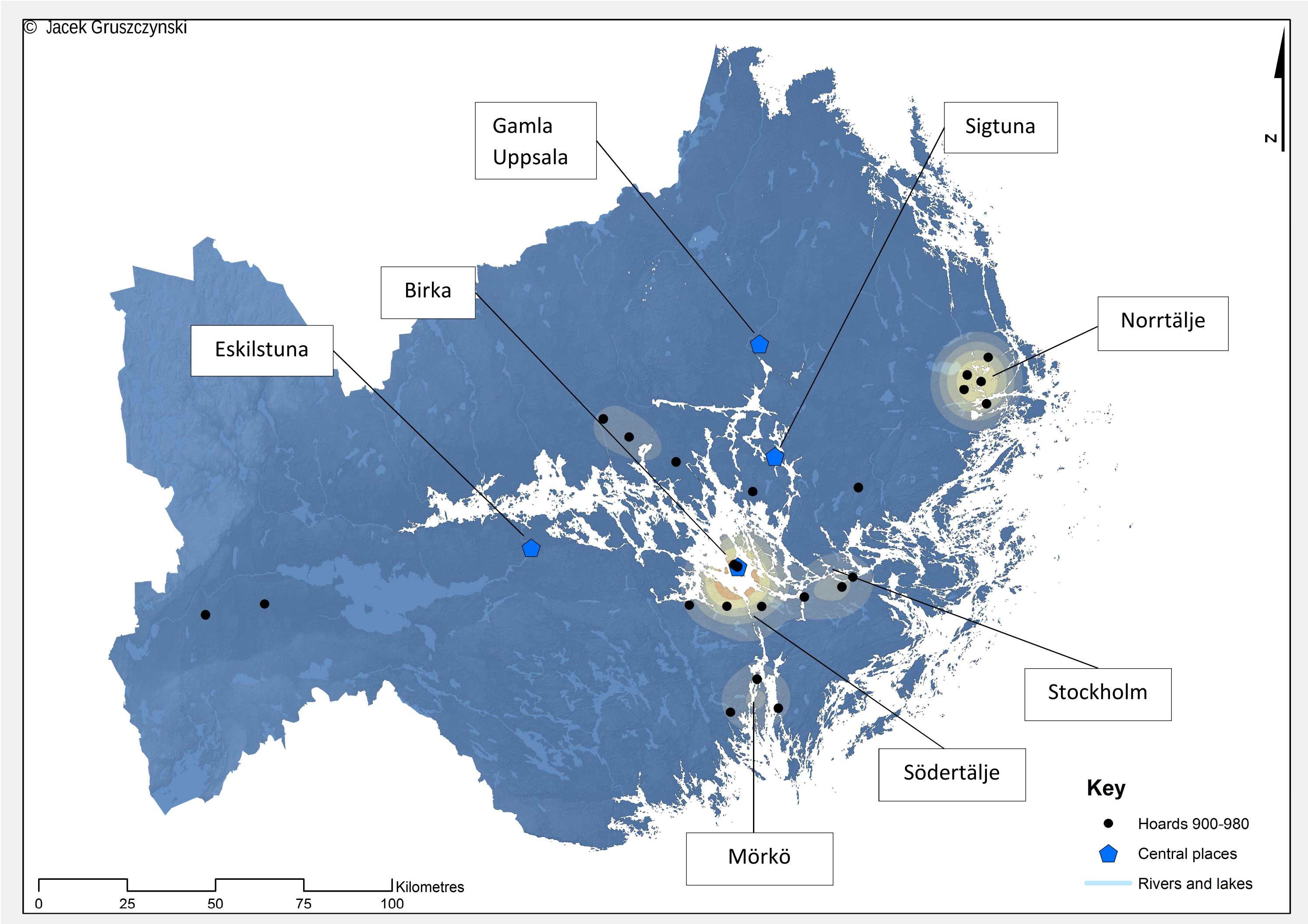


Figure 5.10 Distribution and concentrations of hoards in Svealand in the period 900-980.

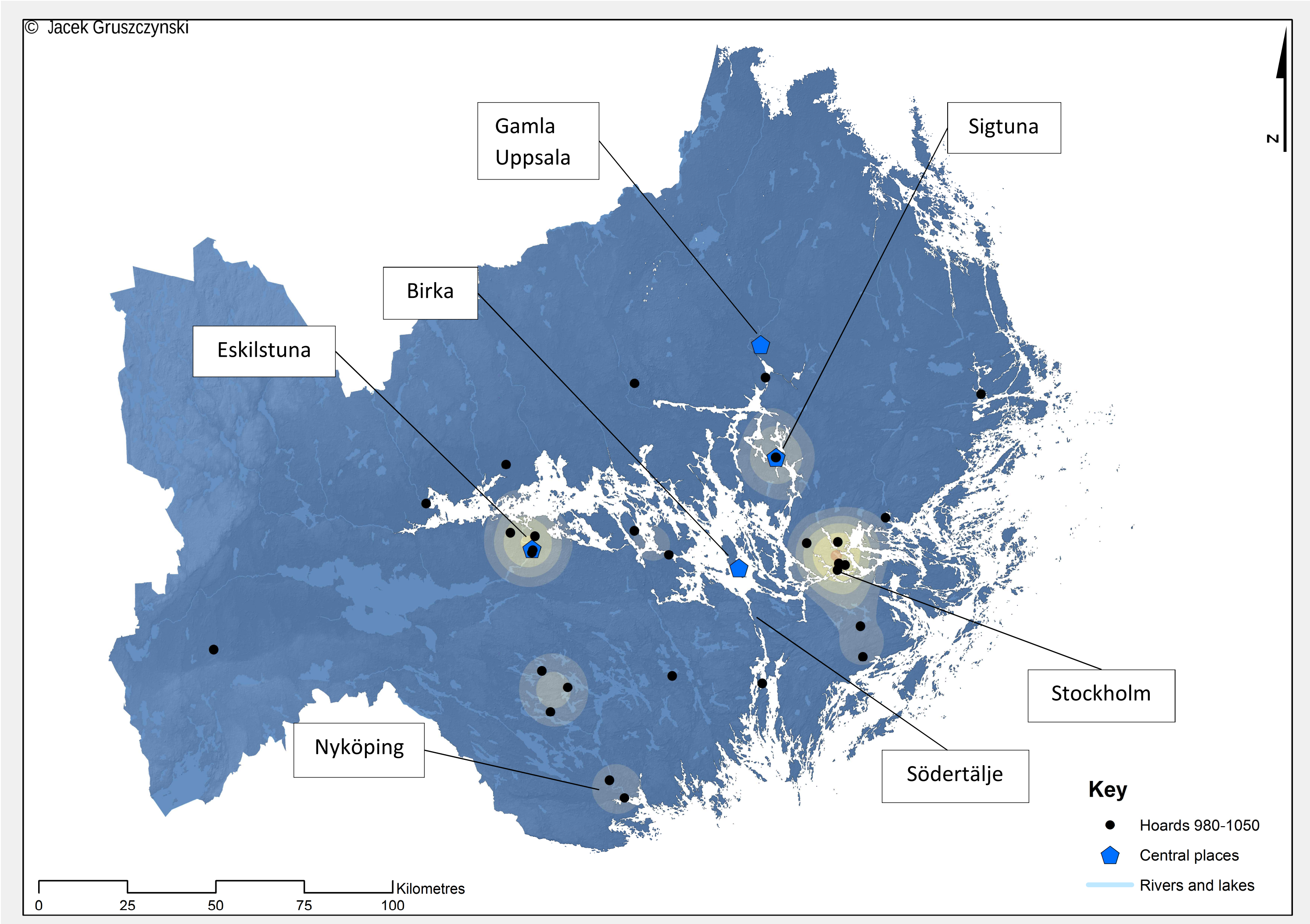


Figure 5.11 Distribution and concentrations of hoards in Svealand in the period 980-1050.

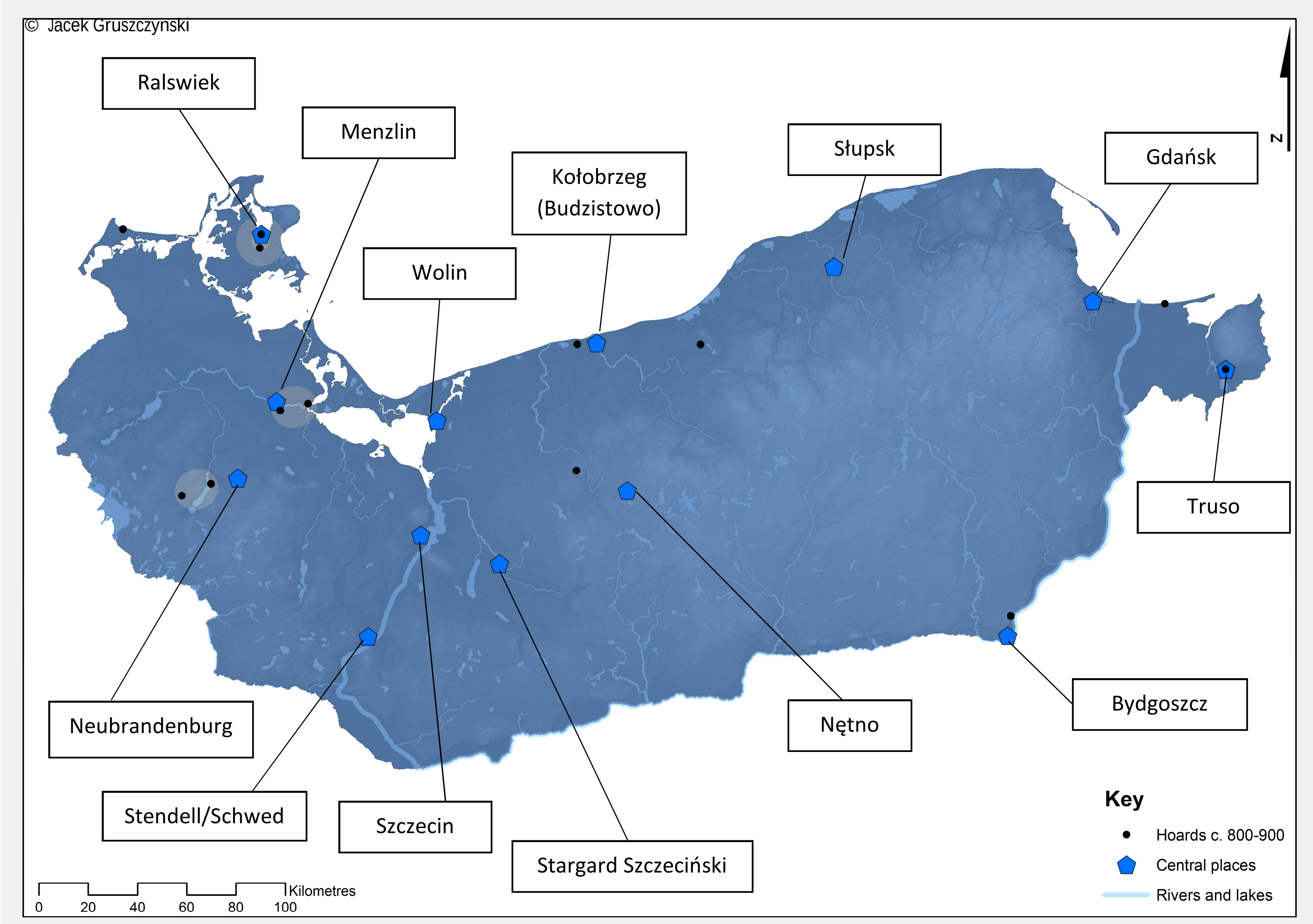


Figure 5.12 Distribution and concentrations of hoards in Pomerania in the period c. 800-900. The kernel density in this and the following two figures is classified with the scale used for presentation of the density of all Pomeranian hoards in Figure 3.3.

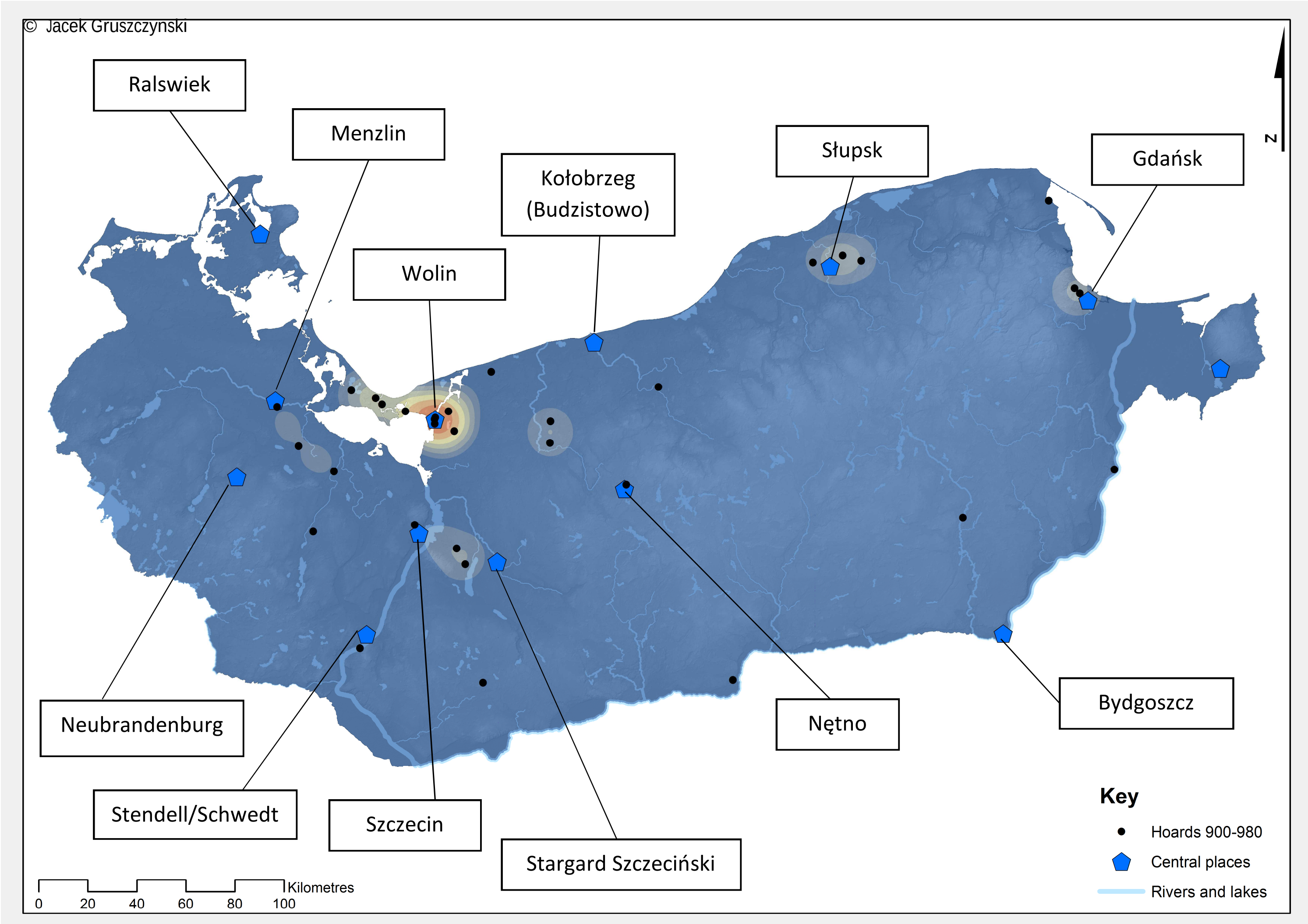


Figure 5.13 Distribution and concentrations of hoards in Pomerania in the period 900-980.

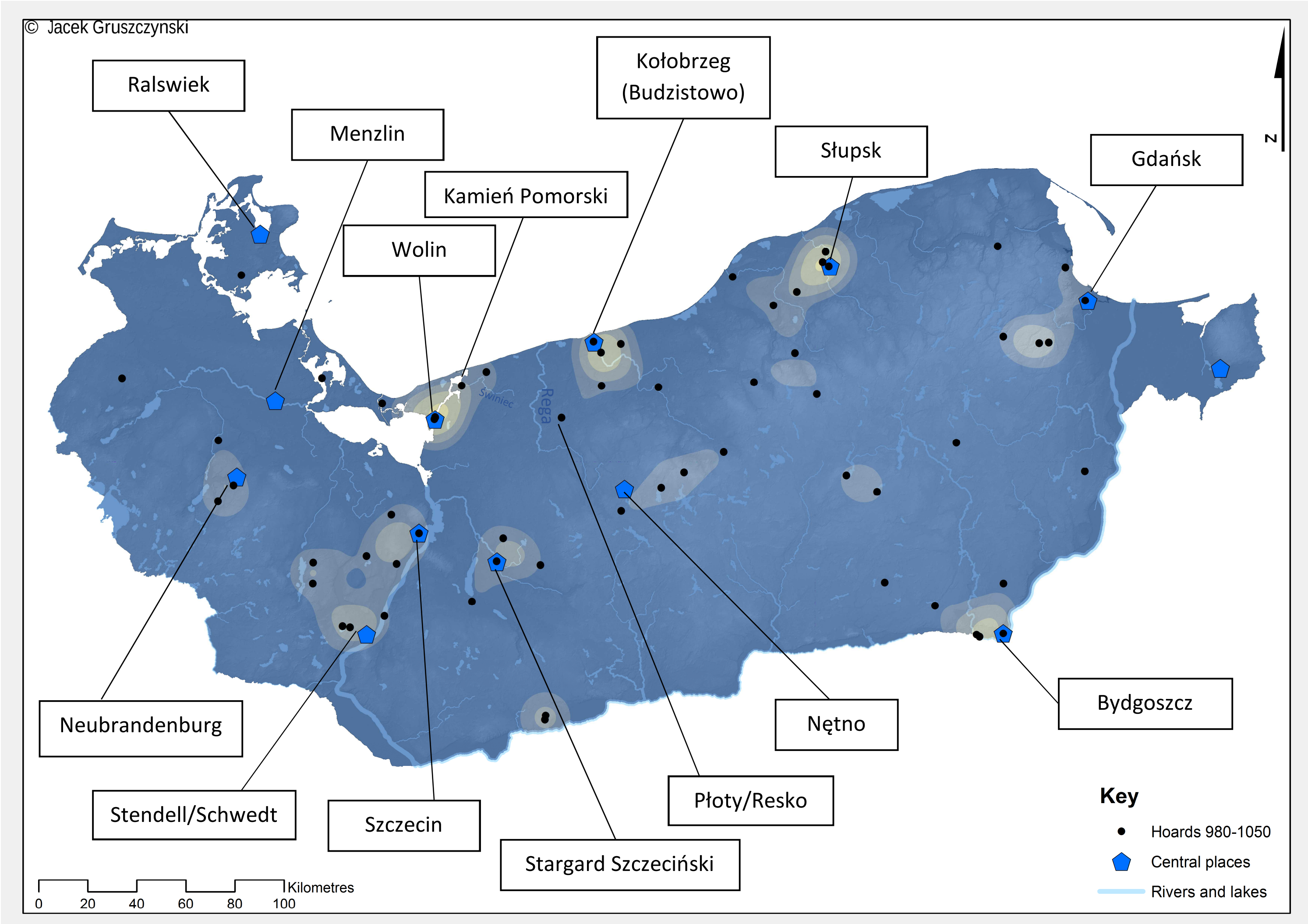


Figure 5.14 Distribution and concentrations of hoards in Pomerania in the period 980-1050.

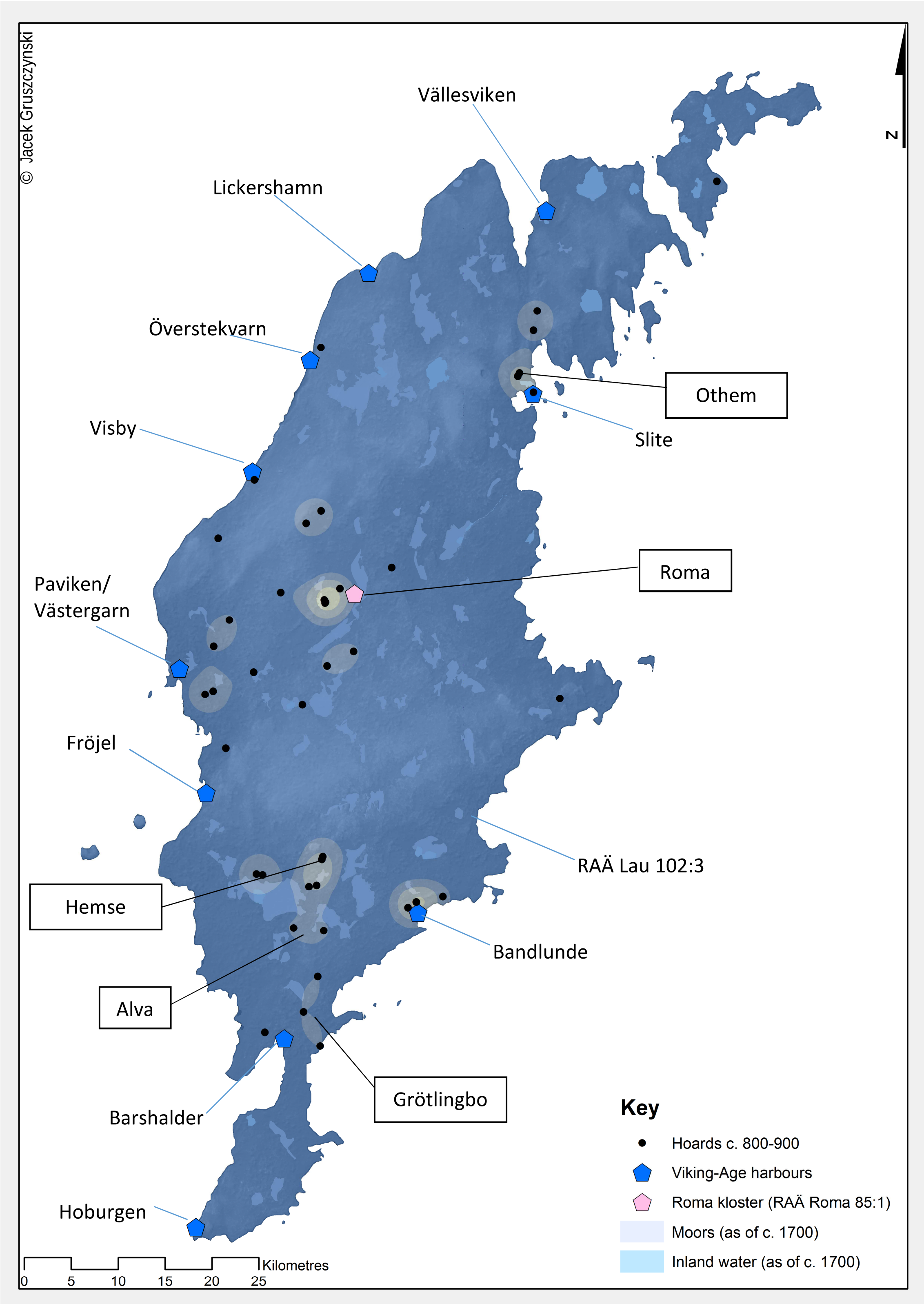


Figure 5.15 Distribution and concentrations of hoards in Gotland in the period c. 800-900. The kernel density in this and the following two figures is classified with the scale used for presentation of the density of all Gotlandic hoards in Figure 2.3.

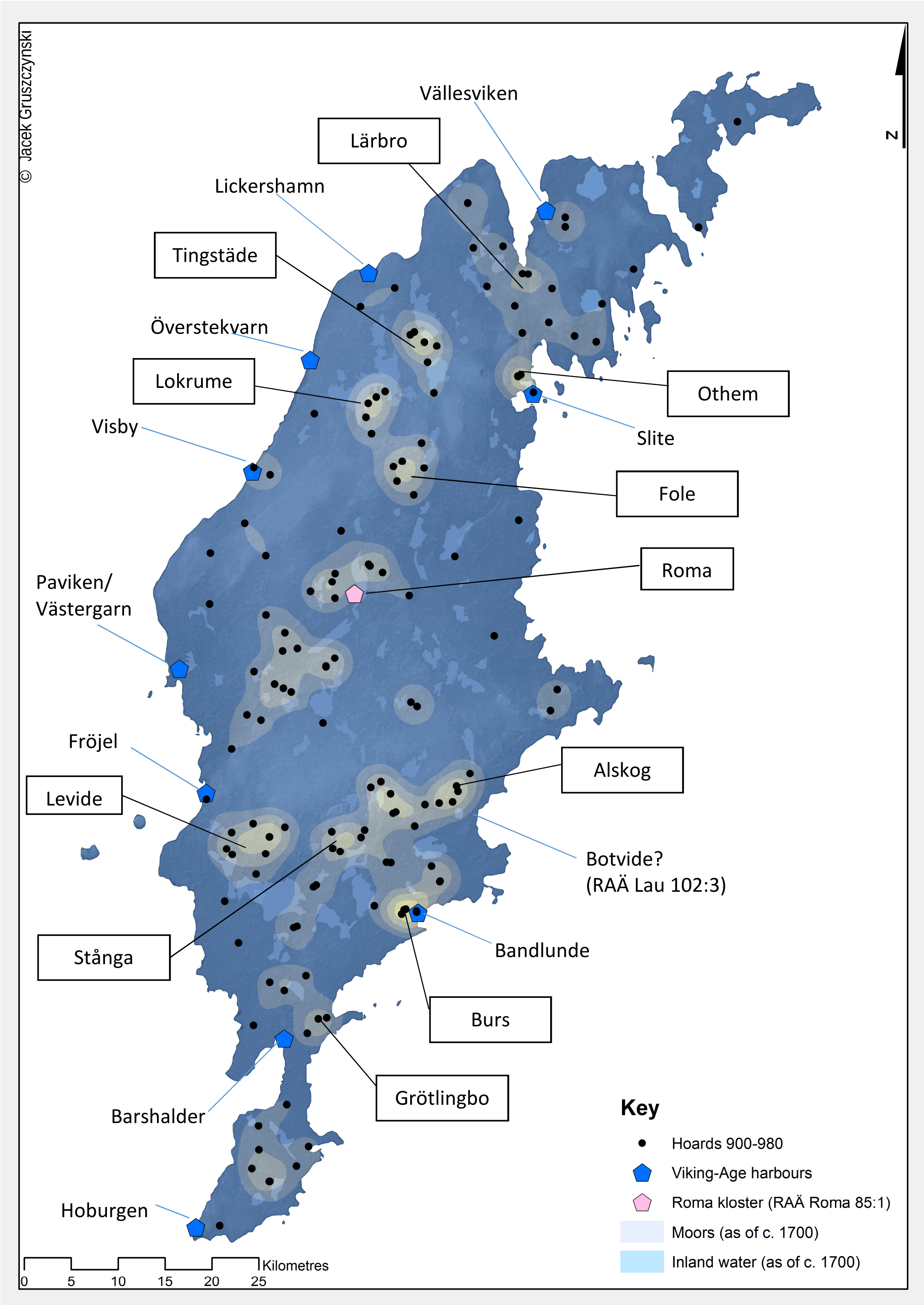


Figure 5.16 Distribution and concentrations of hoards in Gotland in the period 900-980.

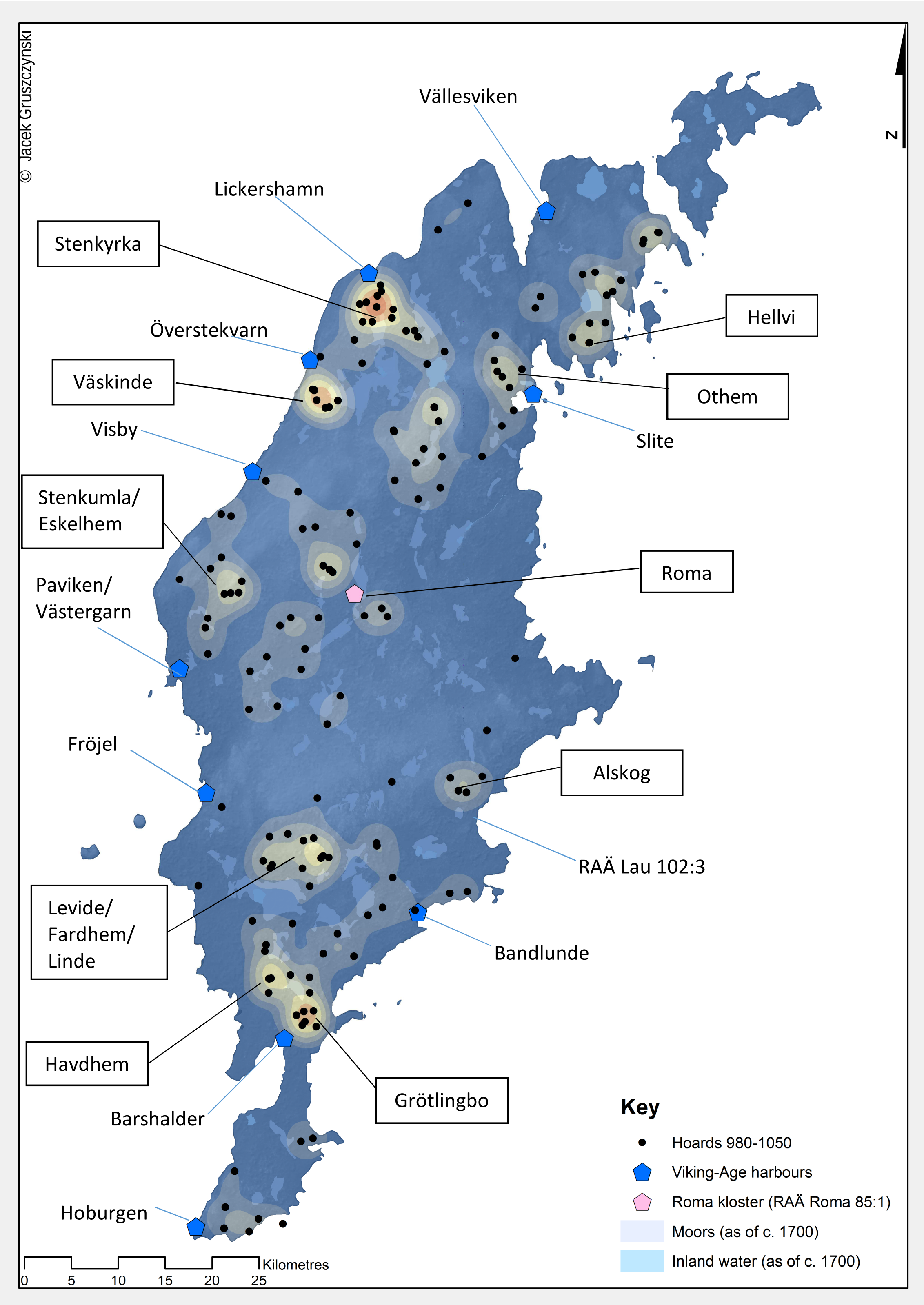


Figure 5.17 Distribution and concentrations of hoards in Gotland in the period 980-1050.

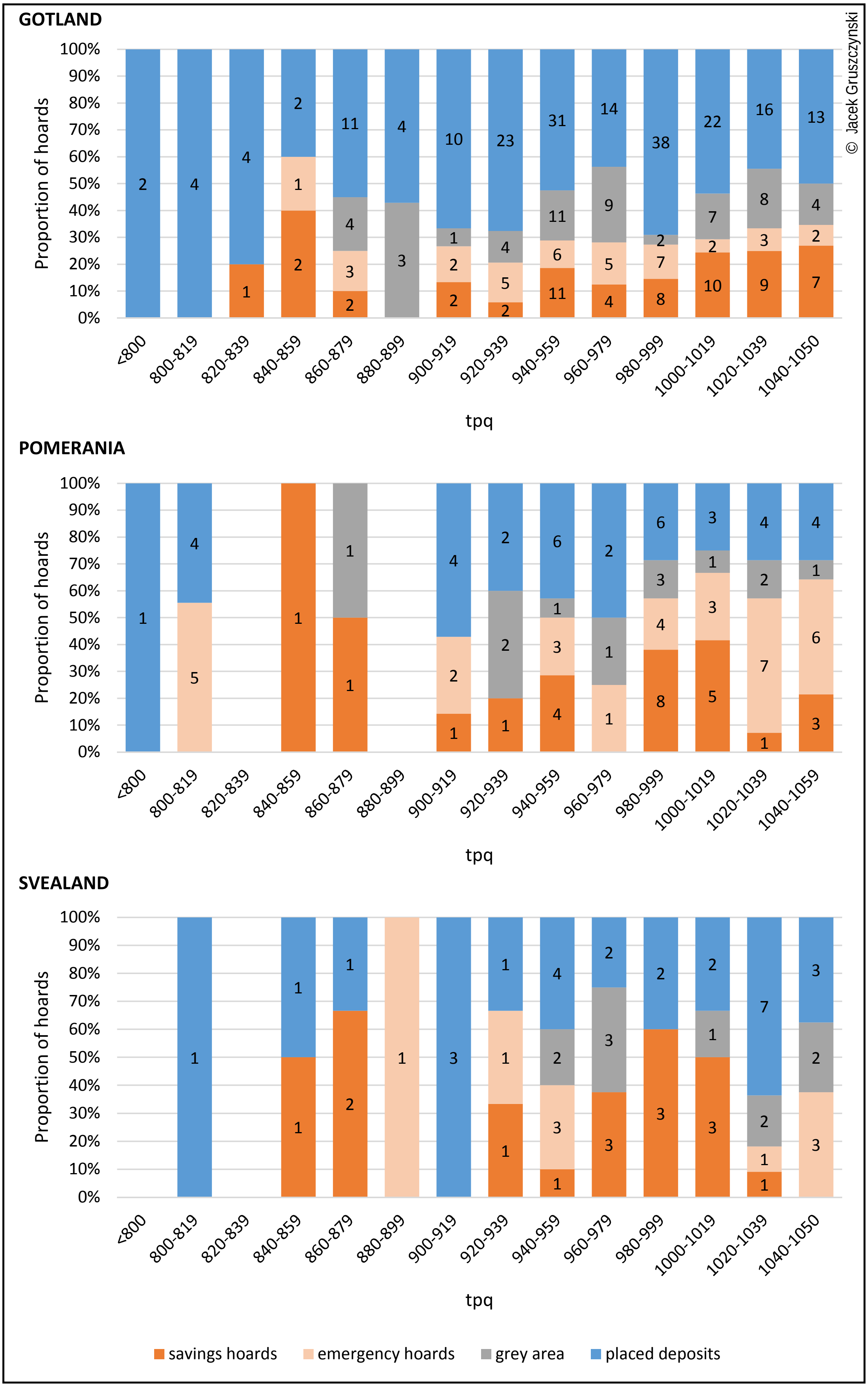


Figure 5.18 Chronological changes in the proportion of hoards classified by the container/weight categorisation. The number of hoards in each category per 20-year period is shown in relevant columns.

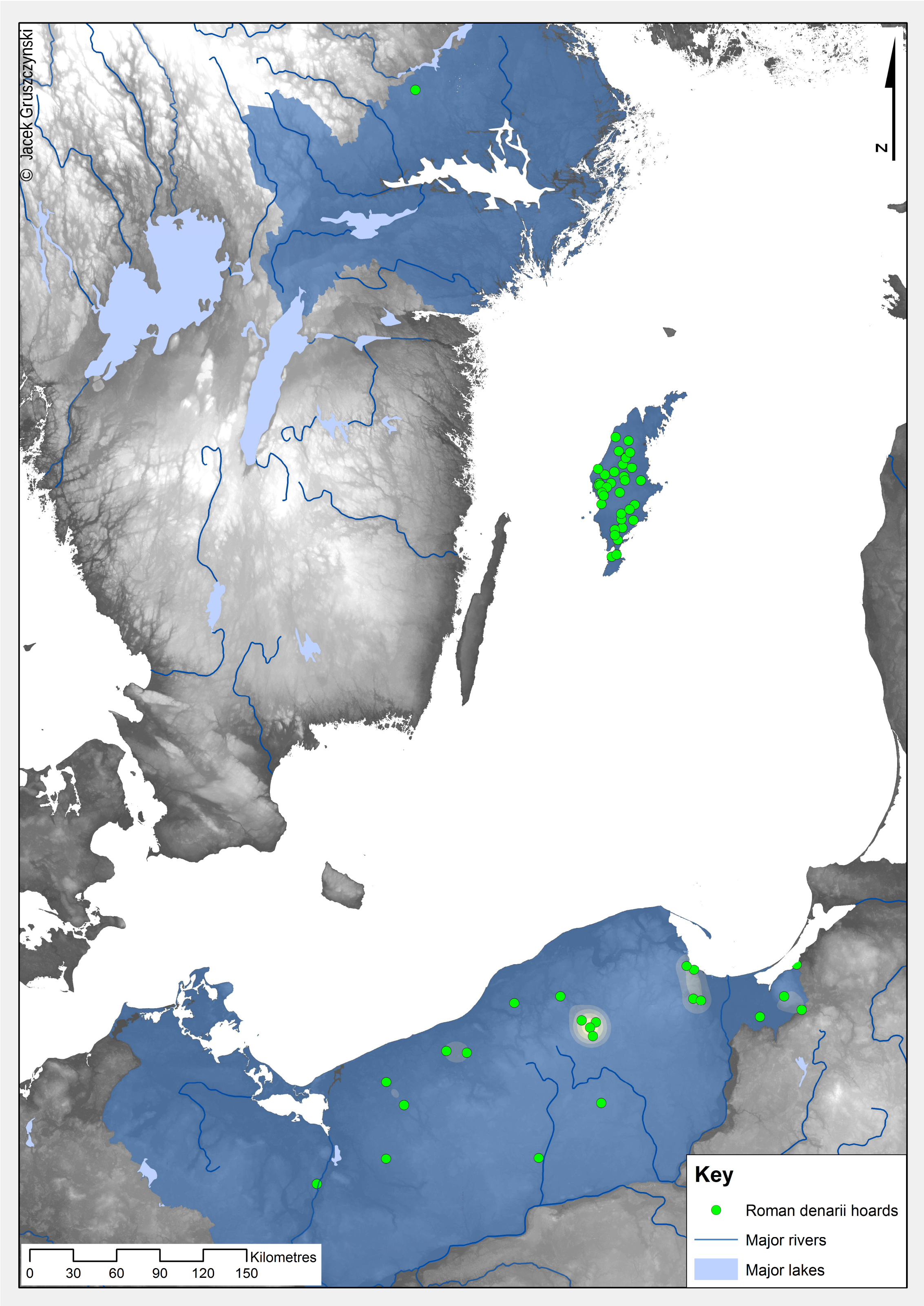


Figure 5.19 Distribution and concentrations of Roman denarii hoards. Kernel density underlays are classified with scales used for presentation of the density of Viking-Age hoards in respective case studies.

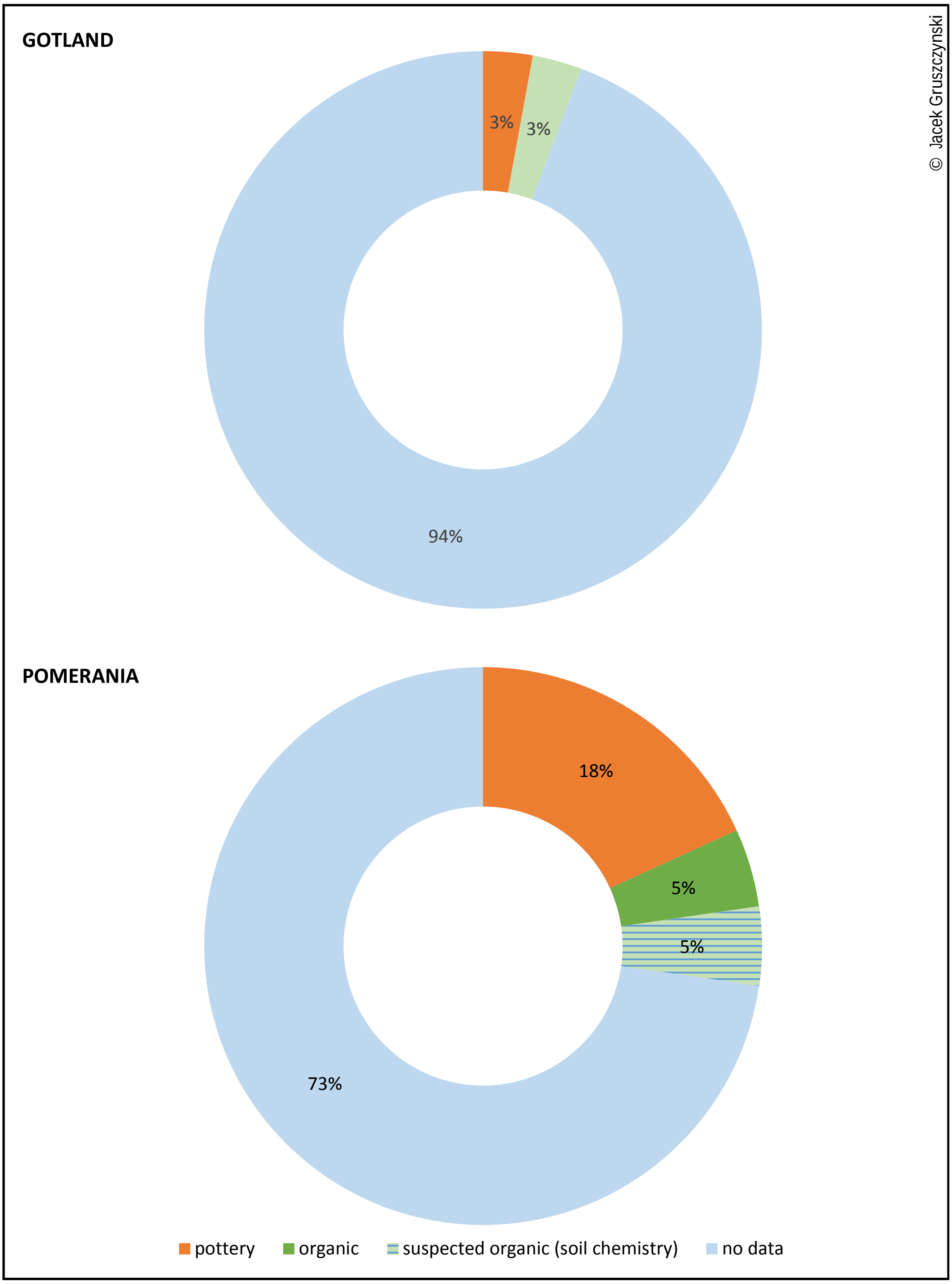


Figure 5.20 Deposition of Roman denarii hoards in various types of containers including 'No data' deposits reclassified on the basis of soil chemistry analysis. In Svealand the only denarii hoard from Hede was a containerless deposit found in a rock crevice.

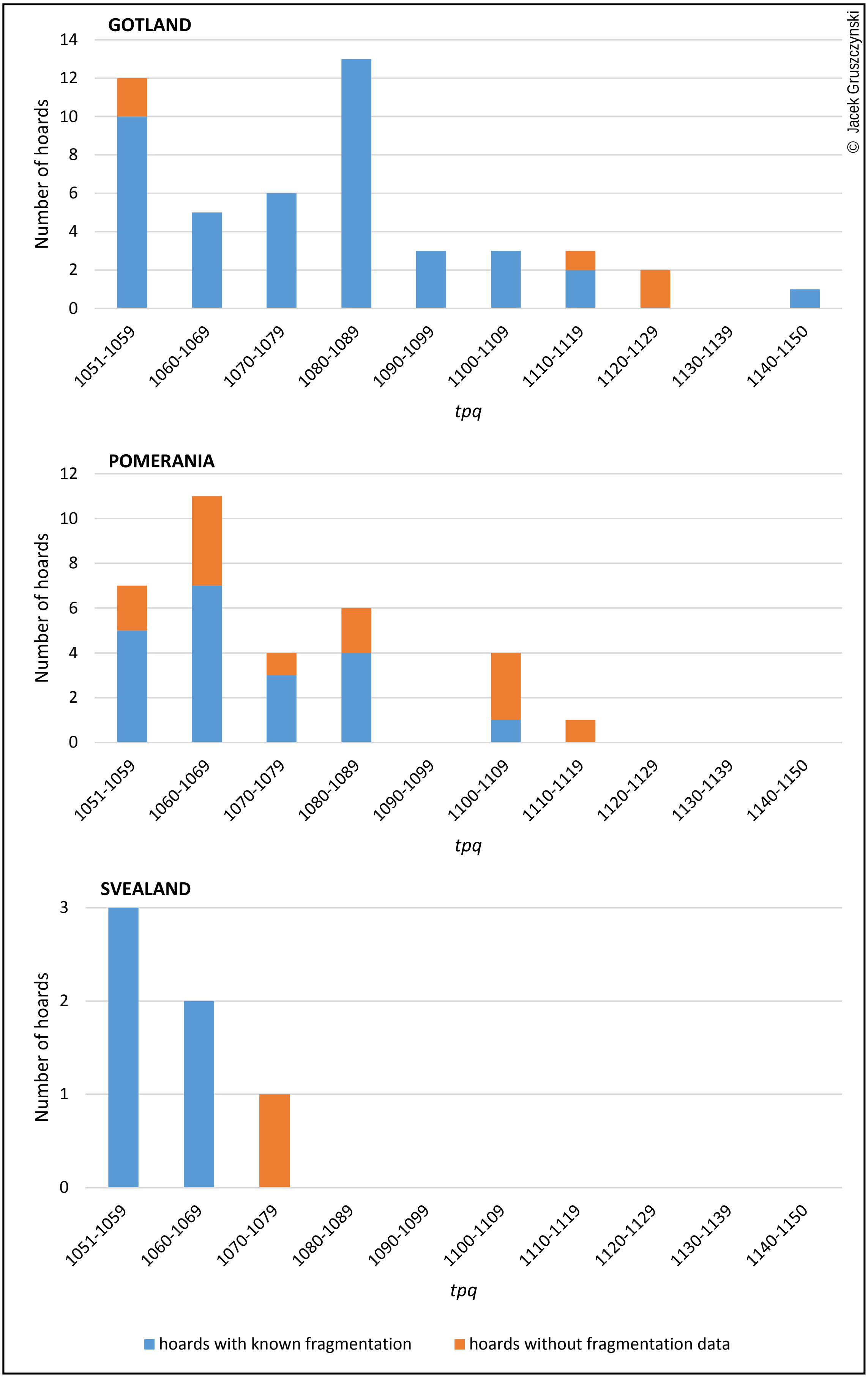


Figure 5.21 Chronological distribution of hoards deposited after 1050.

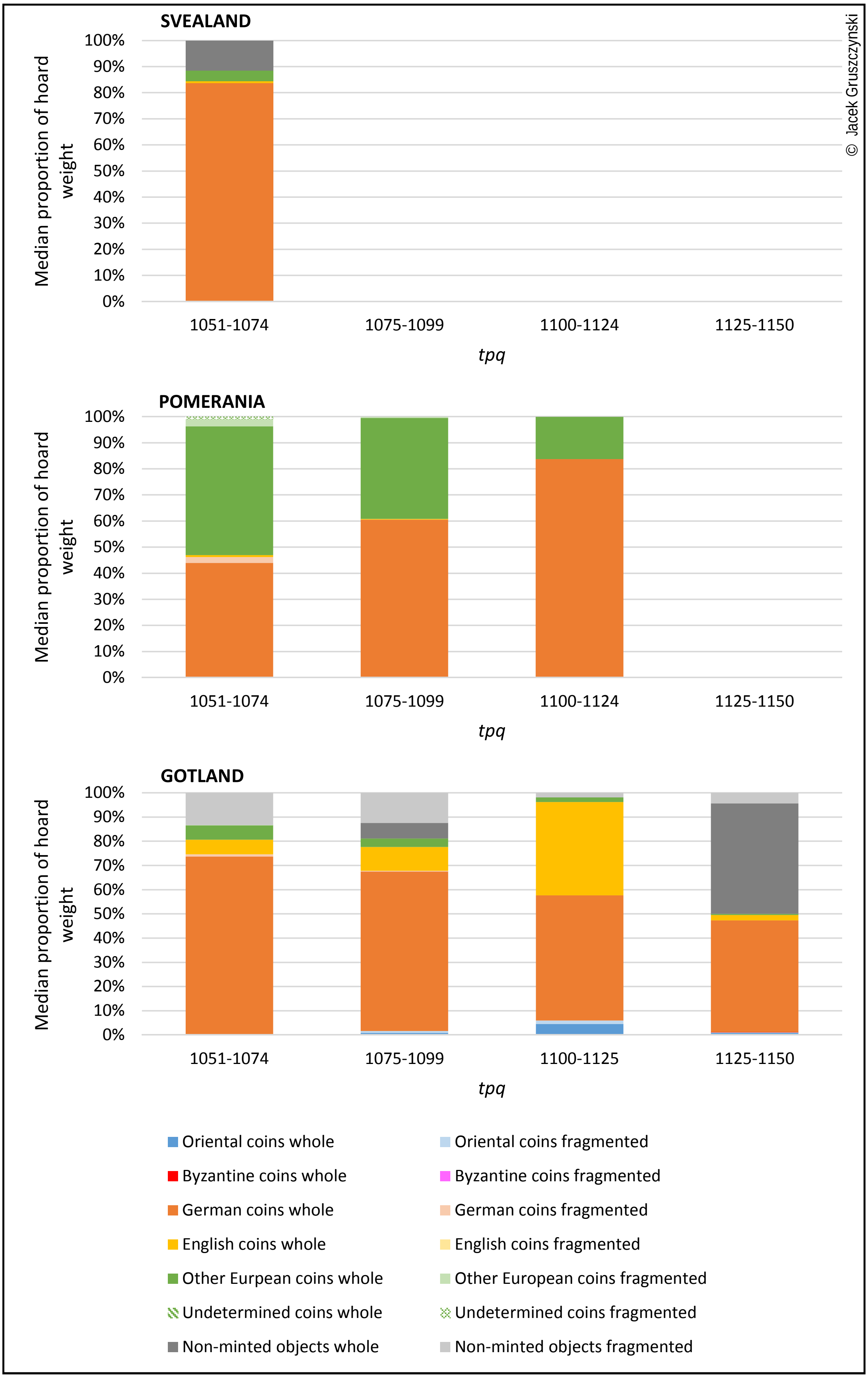


Figure 5.22 Chronological changes in median proportions of hoard components in deposits made after 1050.

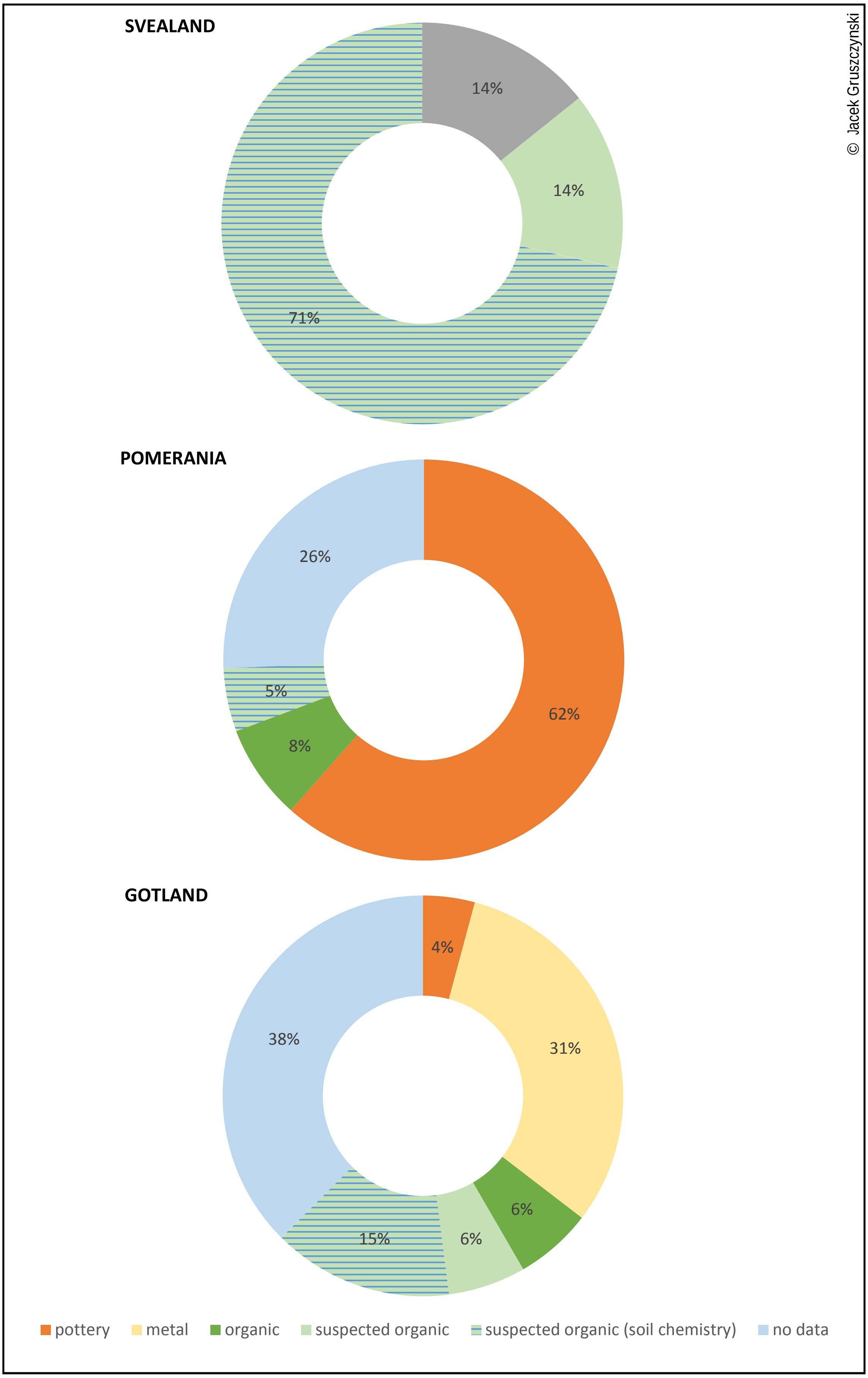


Figure 5.23 Deposition of hoards after 1050 in various types of containers including 'No data' deposits reclassified on the basis of soil chemistry analysis.

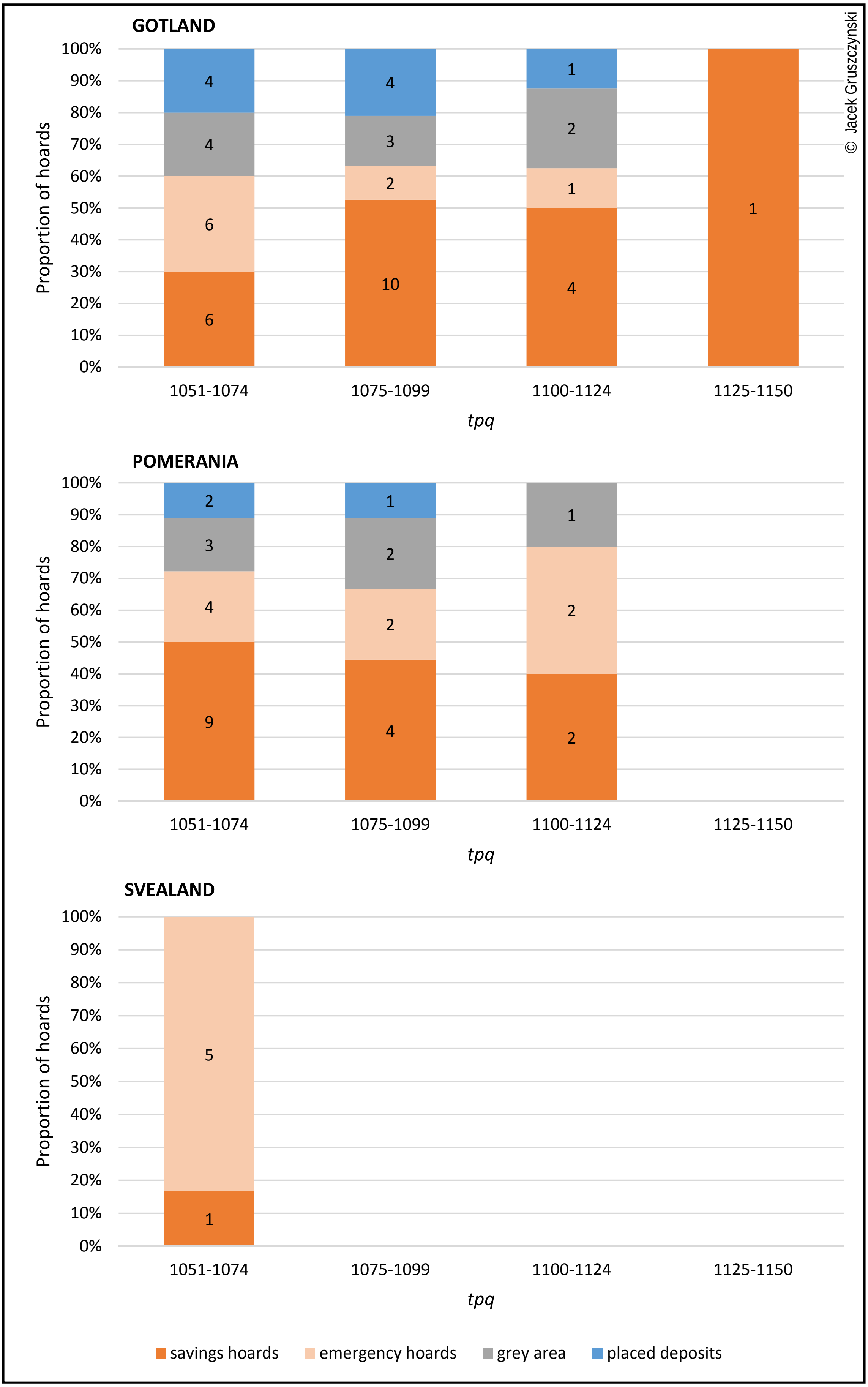


Figure 5.24 Chronological changes in the proportion of hoards deposited after 1050 classified by the container/weight categorisation. The number of hoards in each category per quarter-century is shown in relevant columns.

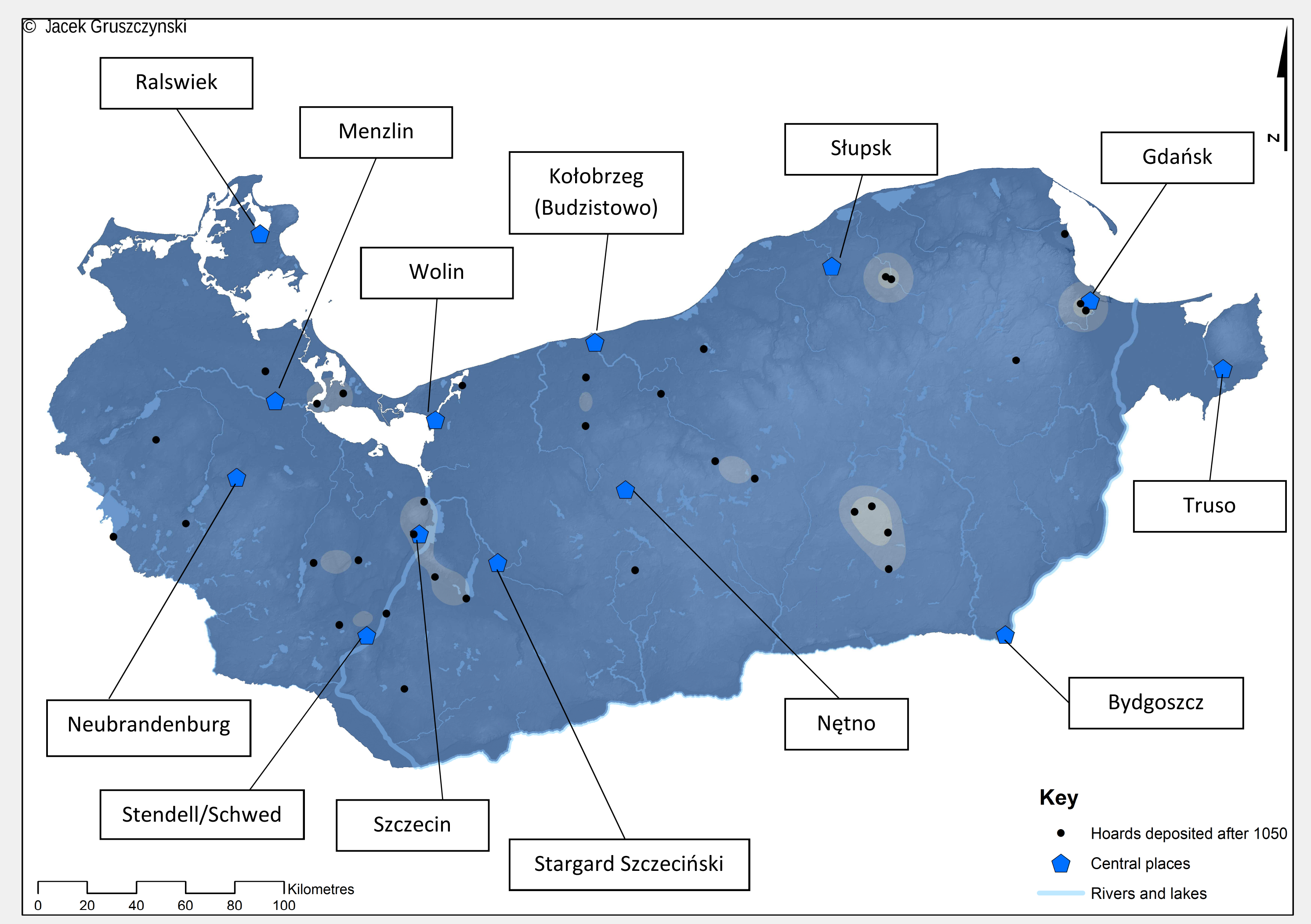


Figure 5.25 Distribution and concentrations of hoards deposited after 1050 in Pomerania. The kernel density underlay is classified with scales used for presentation of the density of Viking-Age hoards in Figure 3.3.

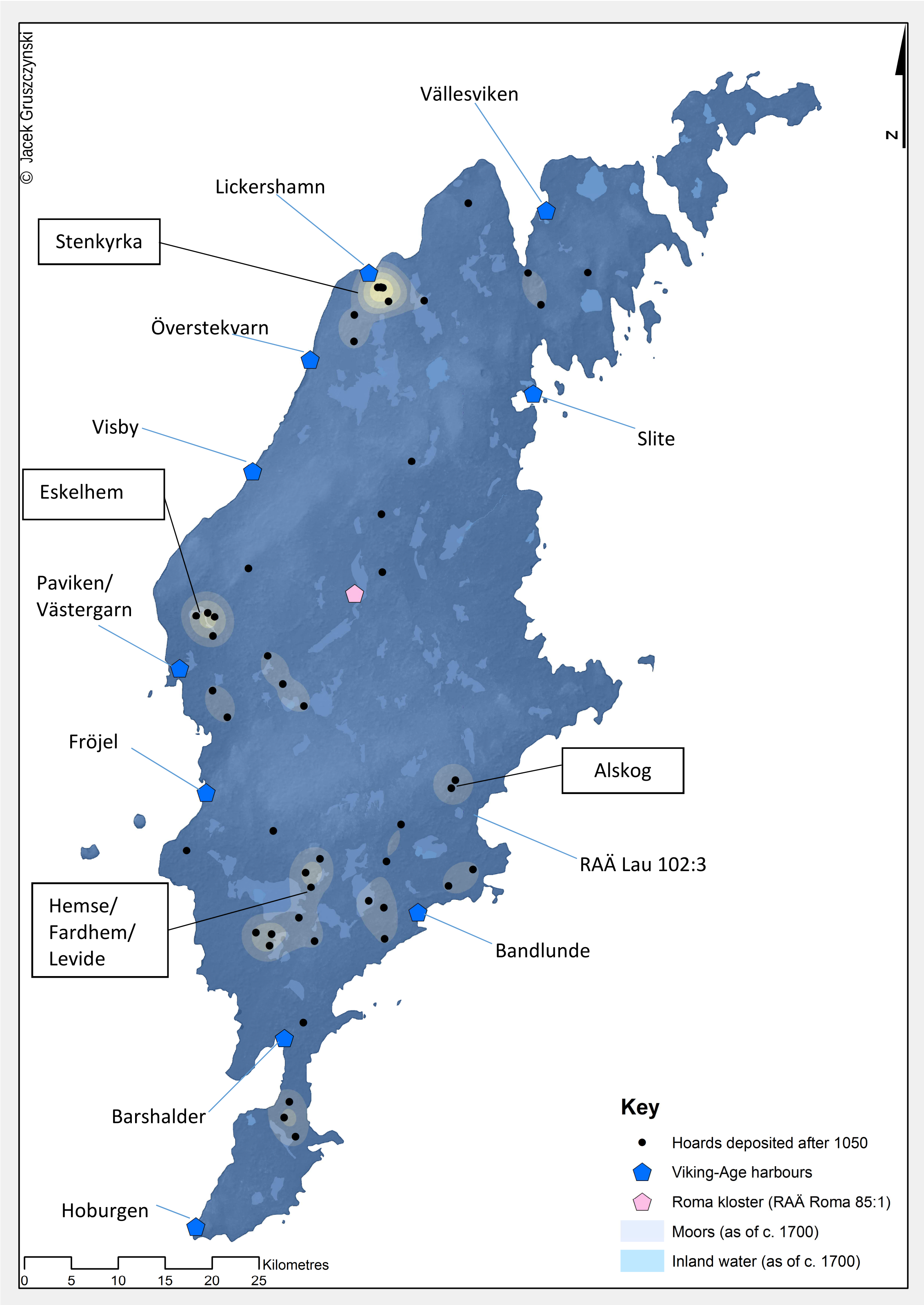


Figure 5.26 Distribution and concentrations of hoards deposited after 1050 in Gotland. The kernel density underlay is classified with scales used for presentation of the density of Viking-Age hoards in Figure 2.3.

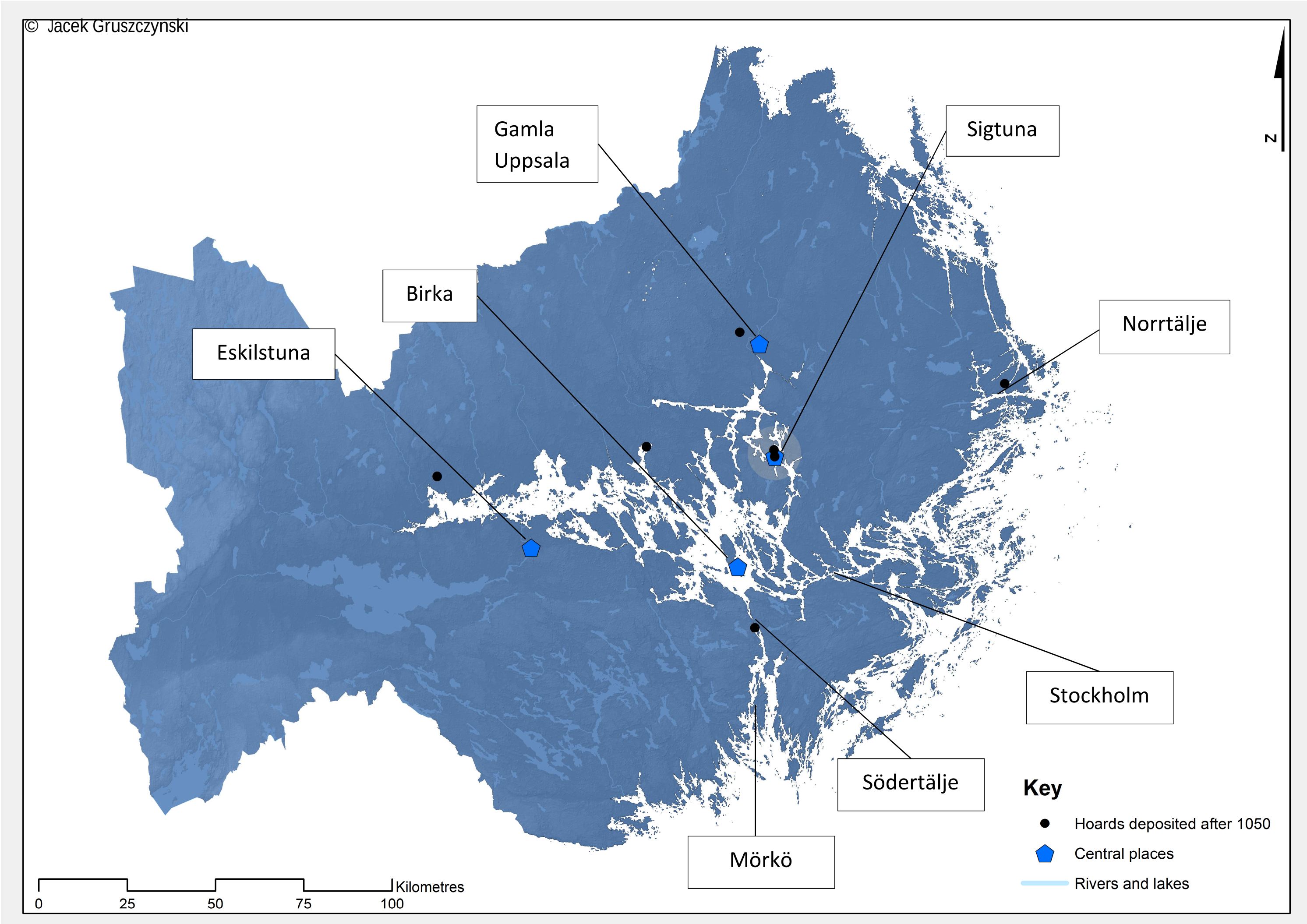


Figure 5.27 Distribution and concentrations of hoards deposited after 1050 in Svealand. The kernel density underlay is classified with scales used for presentation of the density of Viking-Age hoards in Figure 4.3.

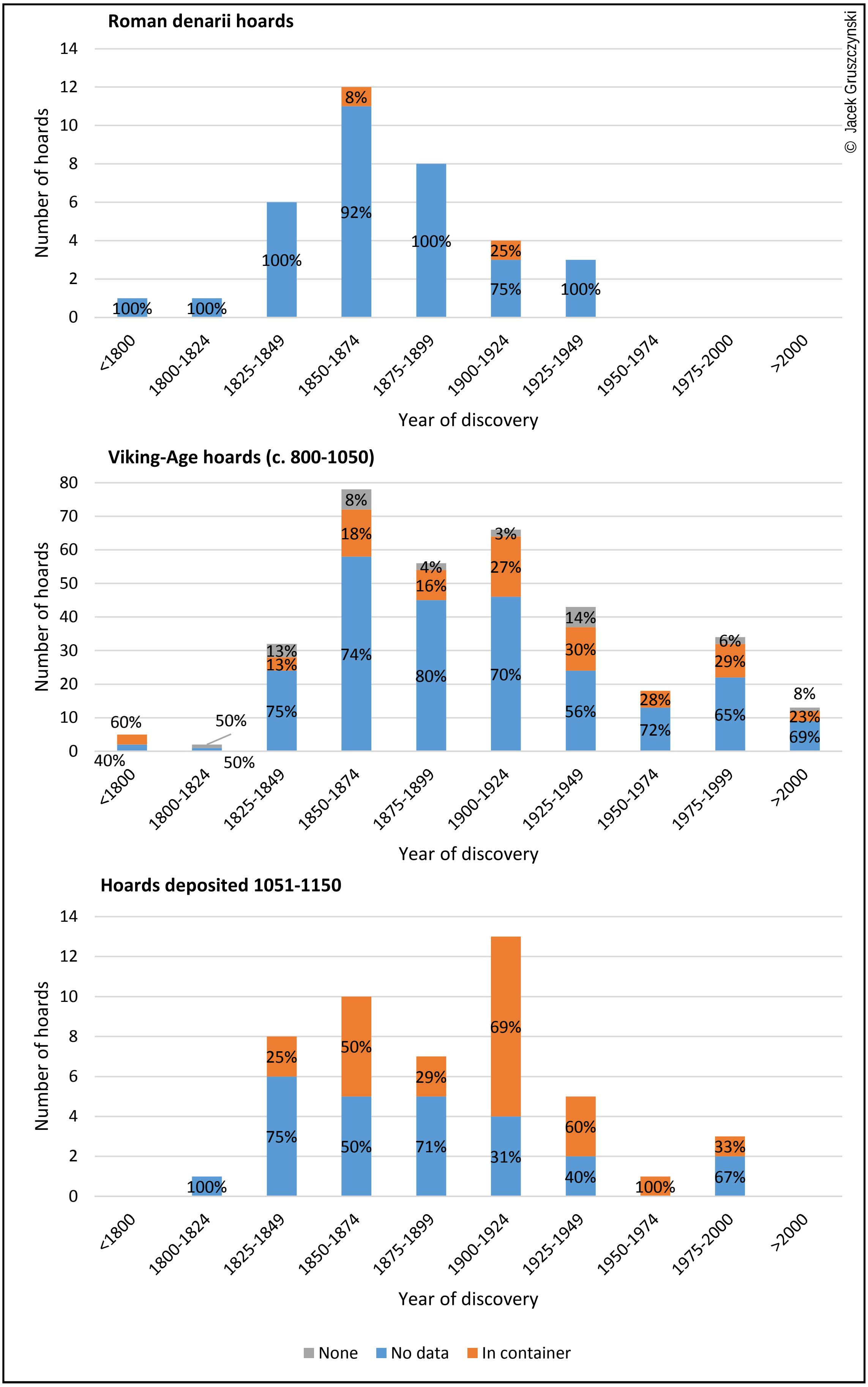


Figure 5.28 Chronological structure of hoard discoveries in Gotland, grouped by date of deposition.

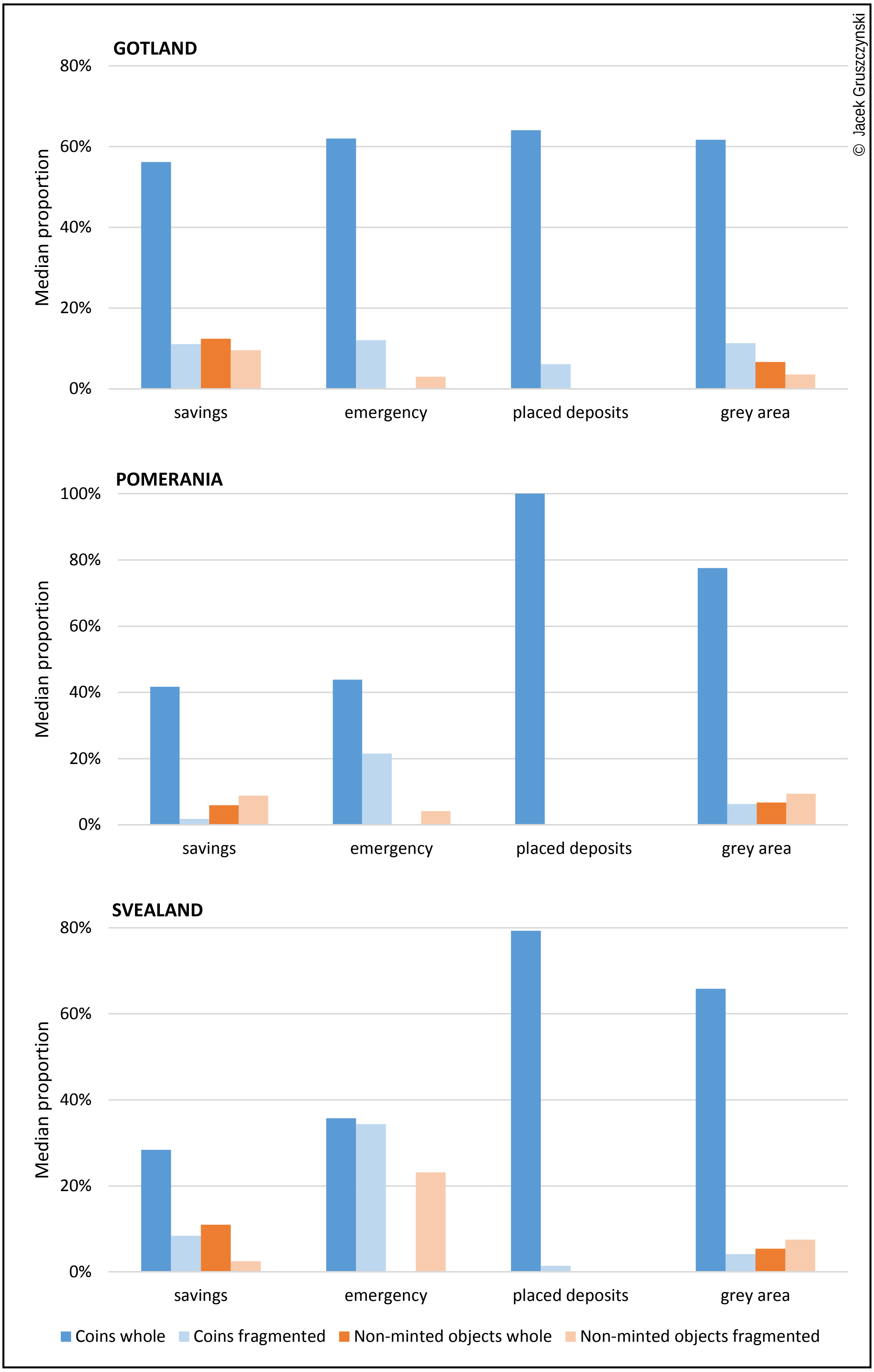
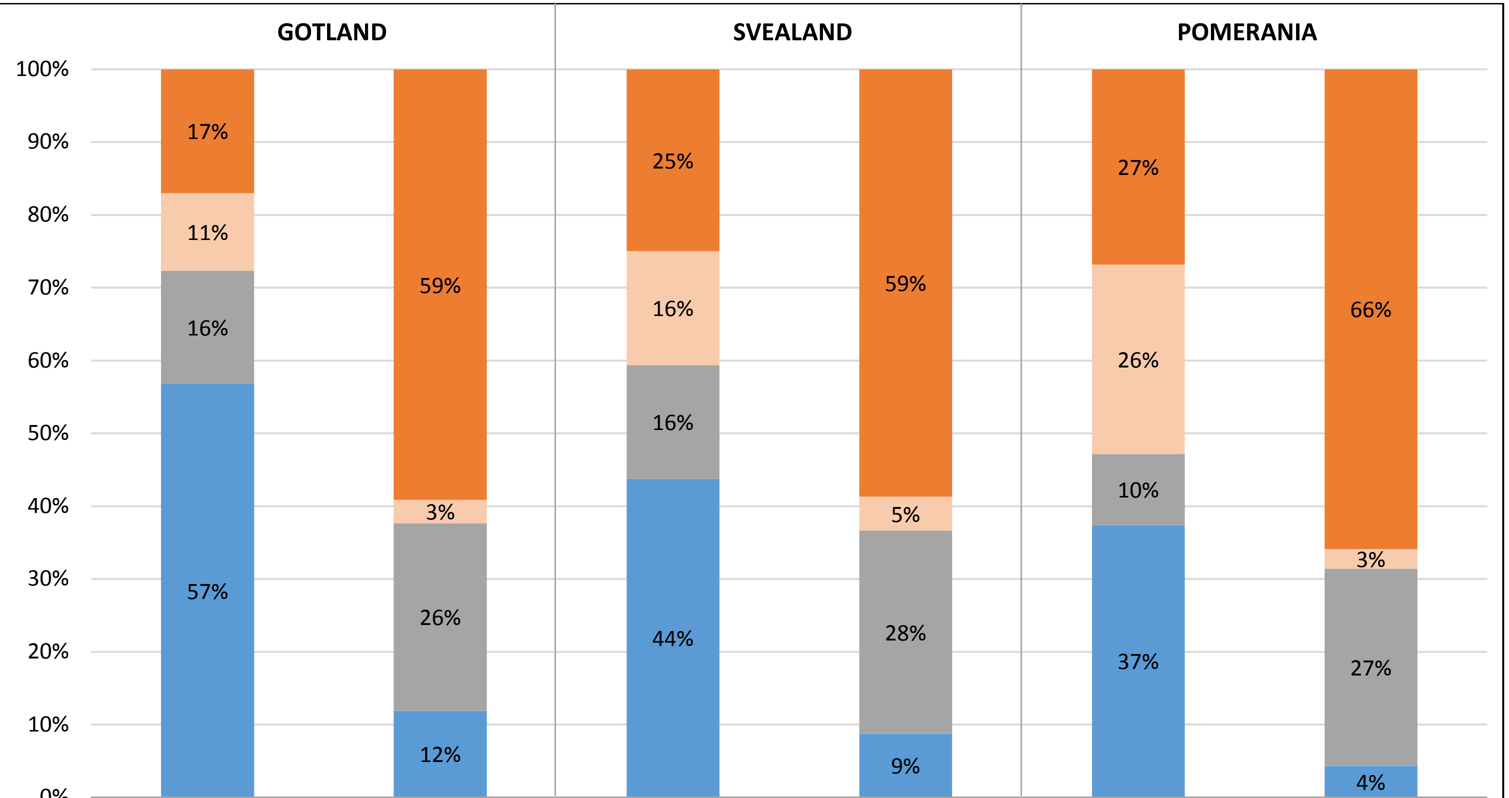


Figure 6.1 Median proportions of main components of hoards (by weight) in container/weight categories.



	Gotland number of hoards	Gotland weight of silver (kg)	Svealand number of hoards	Svealand weight of silver (kg)	Pomerania number of hoards	Pomerania weight of silver (kg)
savings (large contained)	59	188.43	16	18.83	33	57.53
emergency (small contained)	37	10.20	10	1.50	32	2.36
grey area (large containerless)	54	81.99	10	8.94	12	23.65
placed deposits (small containerless)	197	37.96	28	2.80	46	3.77

Figure 6.2 Summary comparison of number of hoards and weight of silver in weight/container groups.

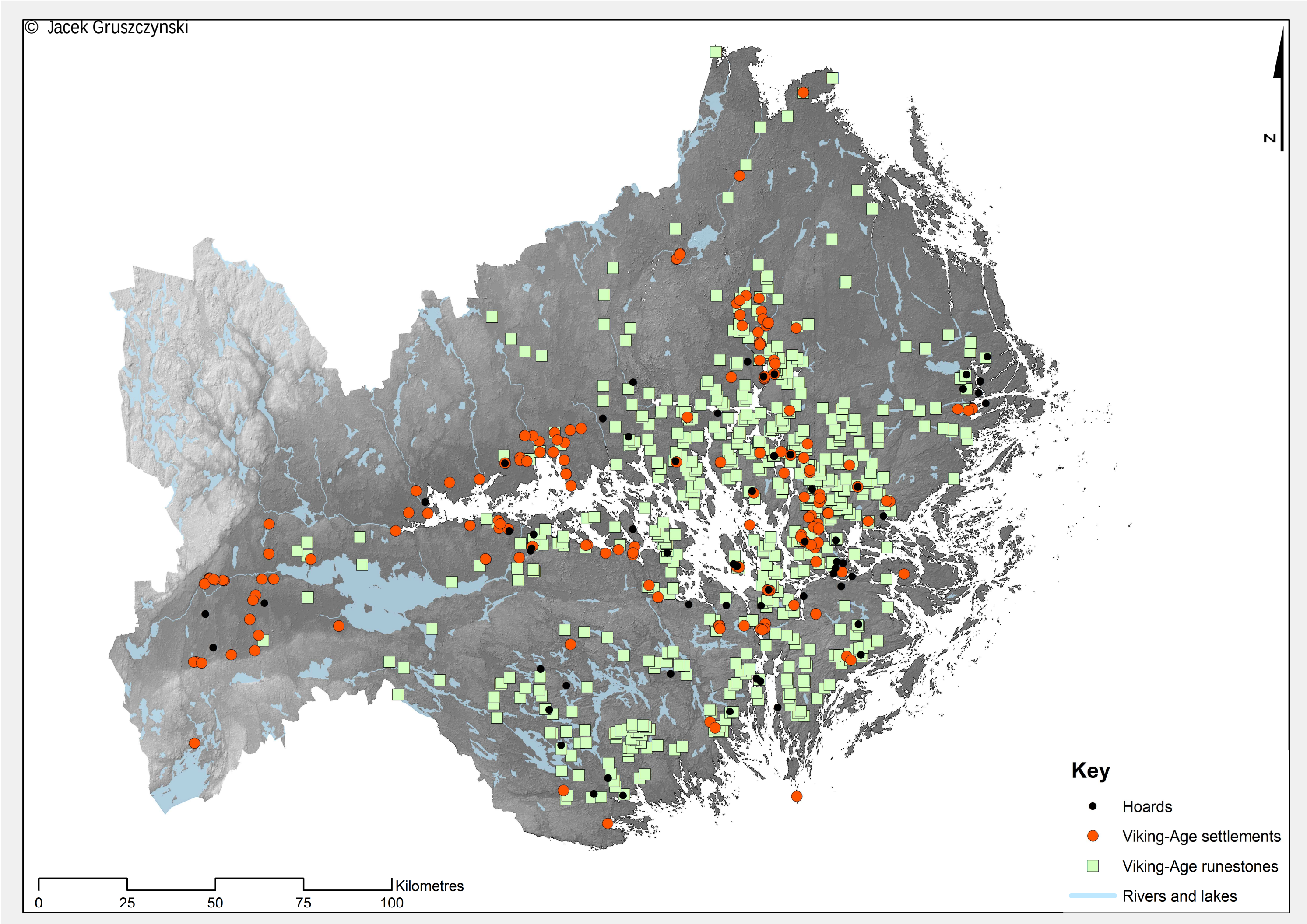


Figure 6.3 Comparison between distributions of settlements datable to the Viking Age listed in FMIS and contemporary runestones.

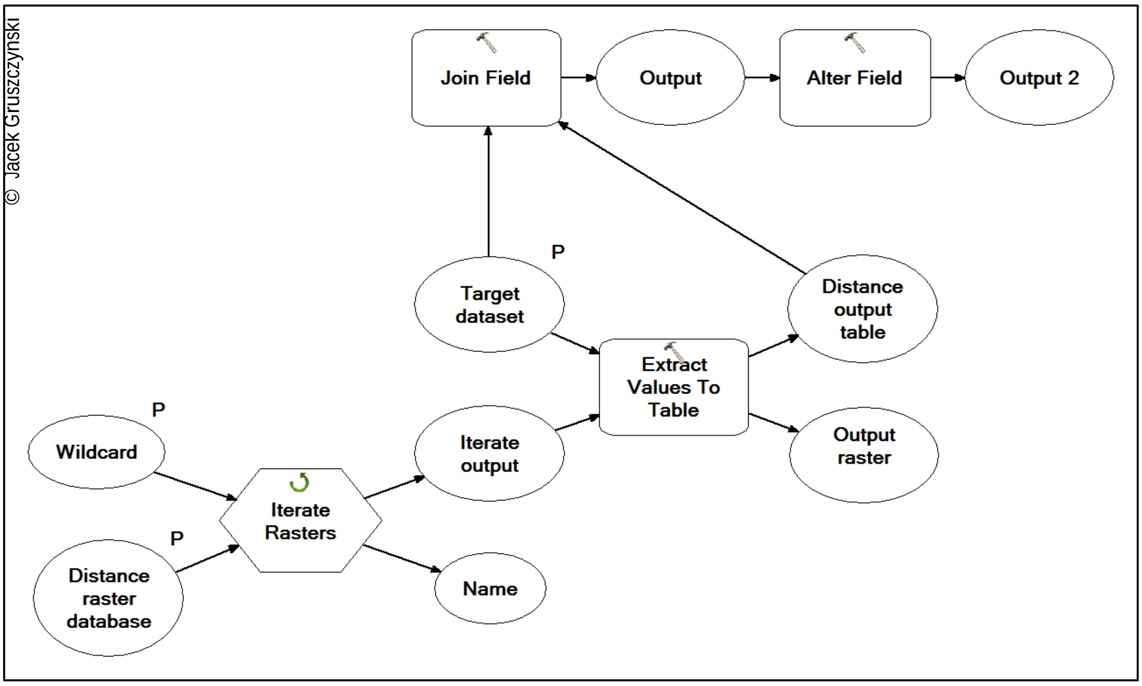


Figure A1 Model used for extracting data from distance rasters database to relevant target dataset (e.g. hoards).

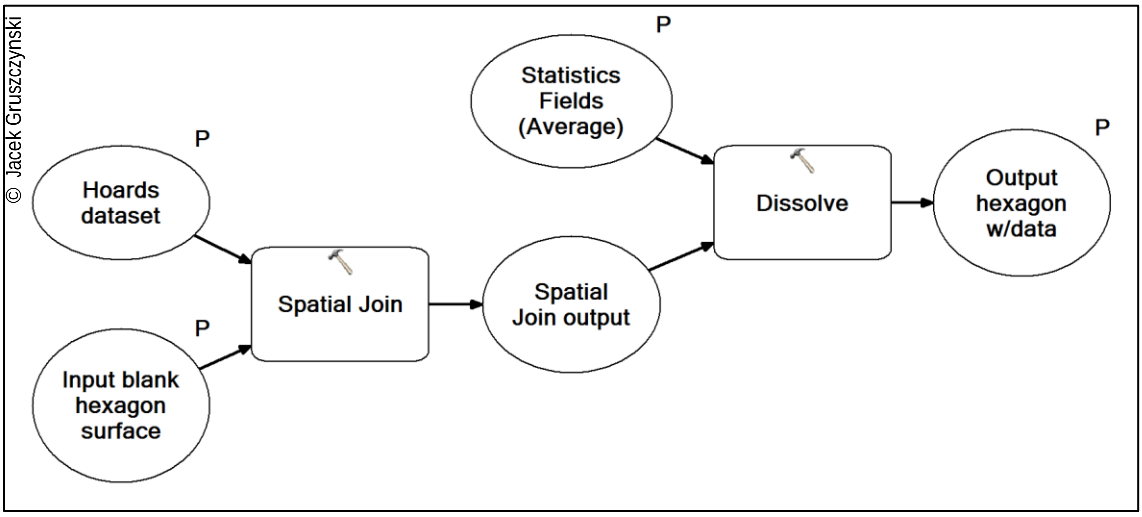


Figure A2 Model used for extracting data from hoards datasets into hexagon surface.

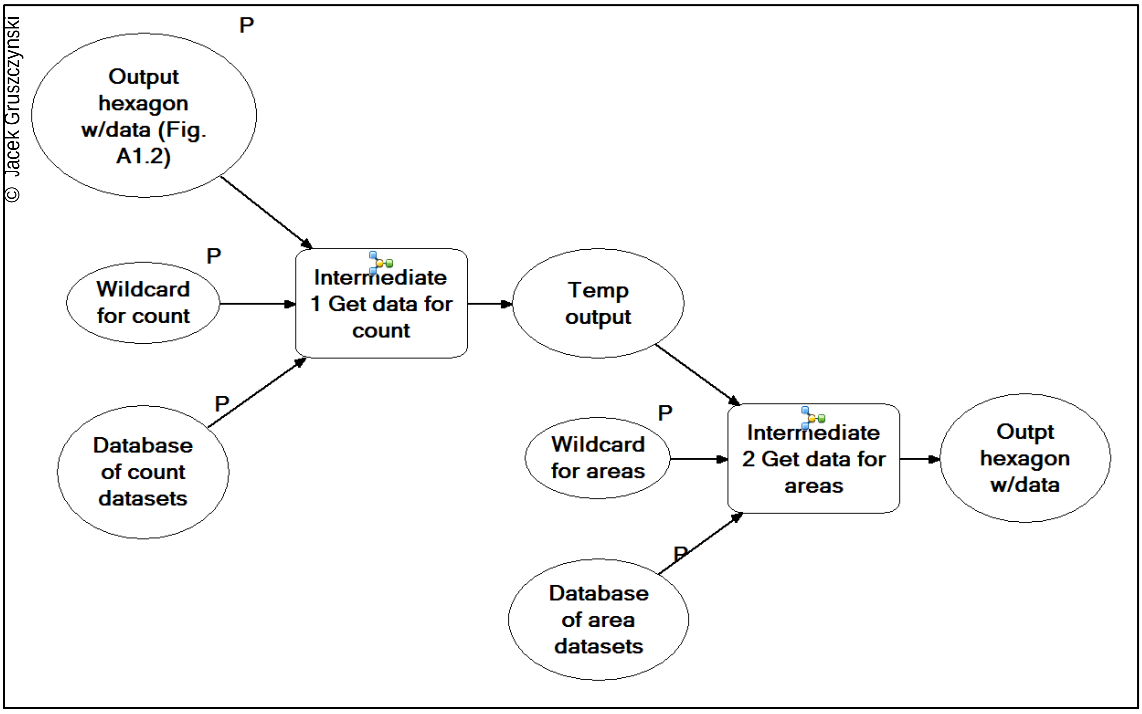


Figure A3 Model used for extracting data from count datasets (e.g. number of settlements within a hexagon) and area datasets (e.g. area of forest cover within a hexagon) into hexagon surface.

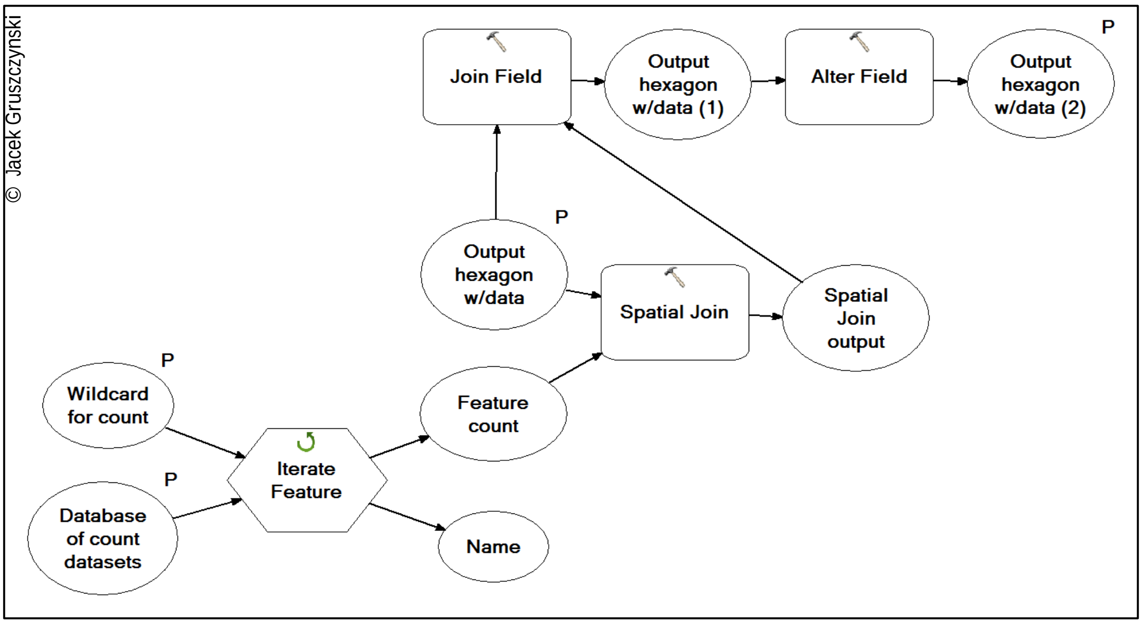


Figure A4 Submodel 'Intermediate 1 Get data for count'.

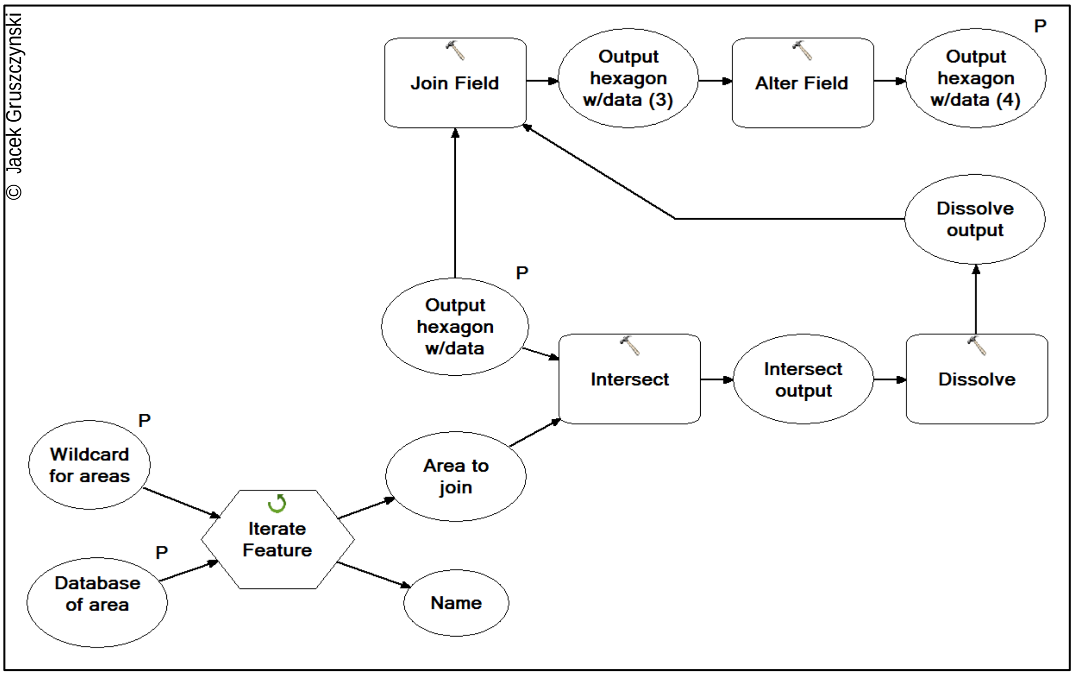


Figure A5 Submodel 'Intermediate 2 Get data for areas'.

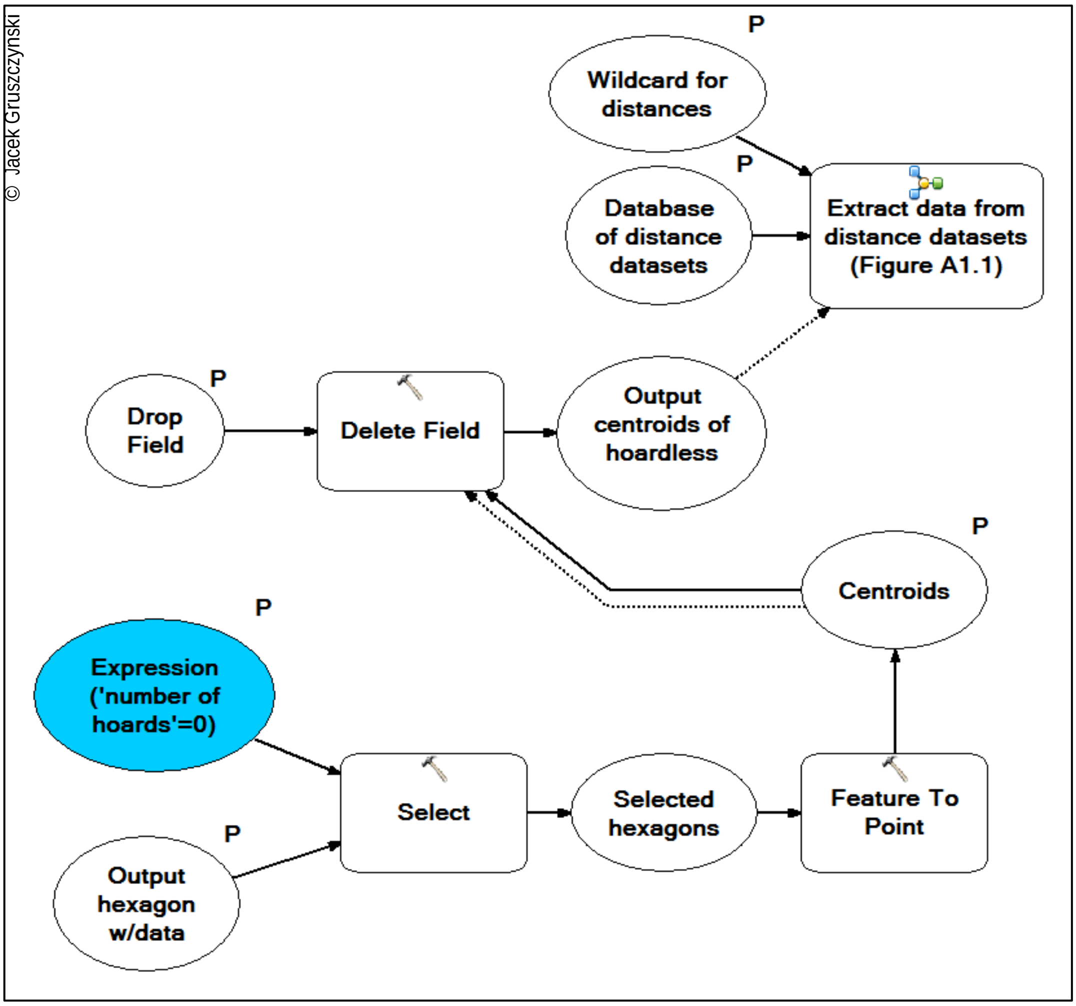


Figure A6 Model used for extracting distance data for hexagons where hoards were not present.

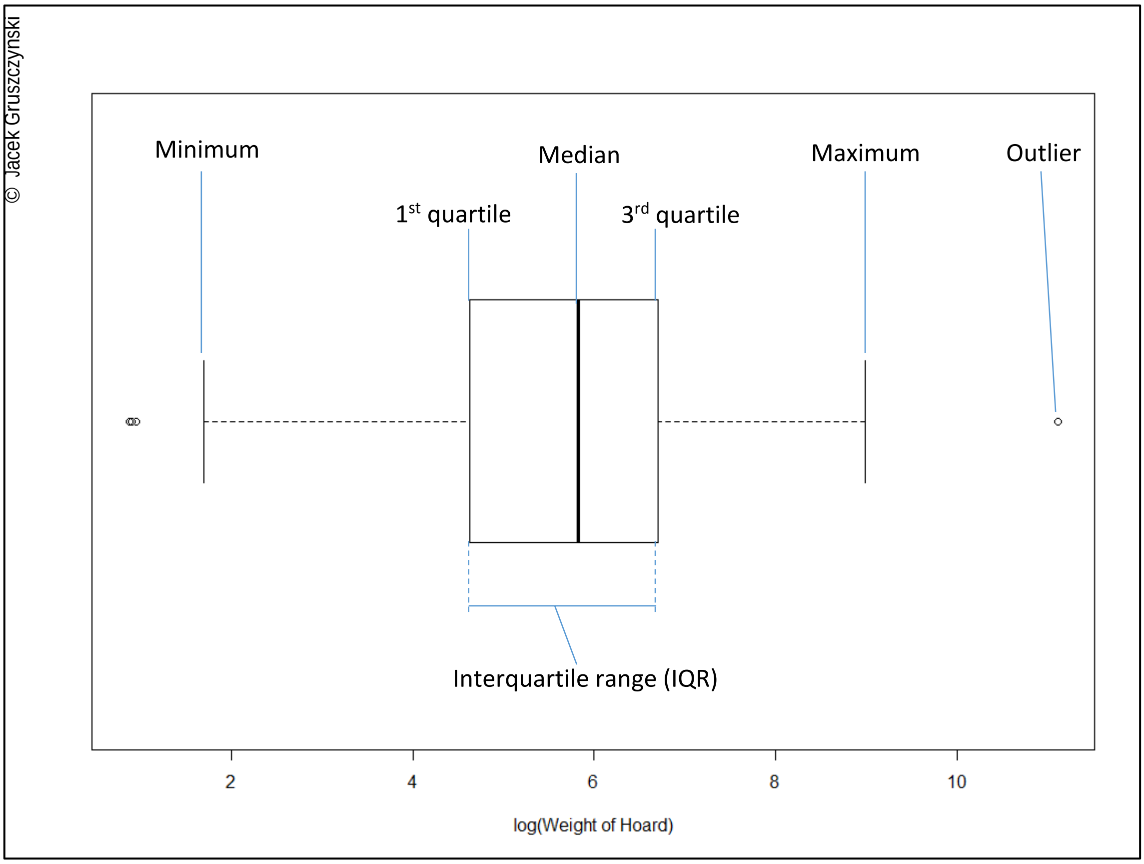


Figure A7 Explanation of a boxplot.

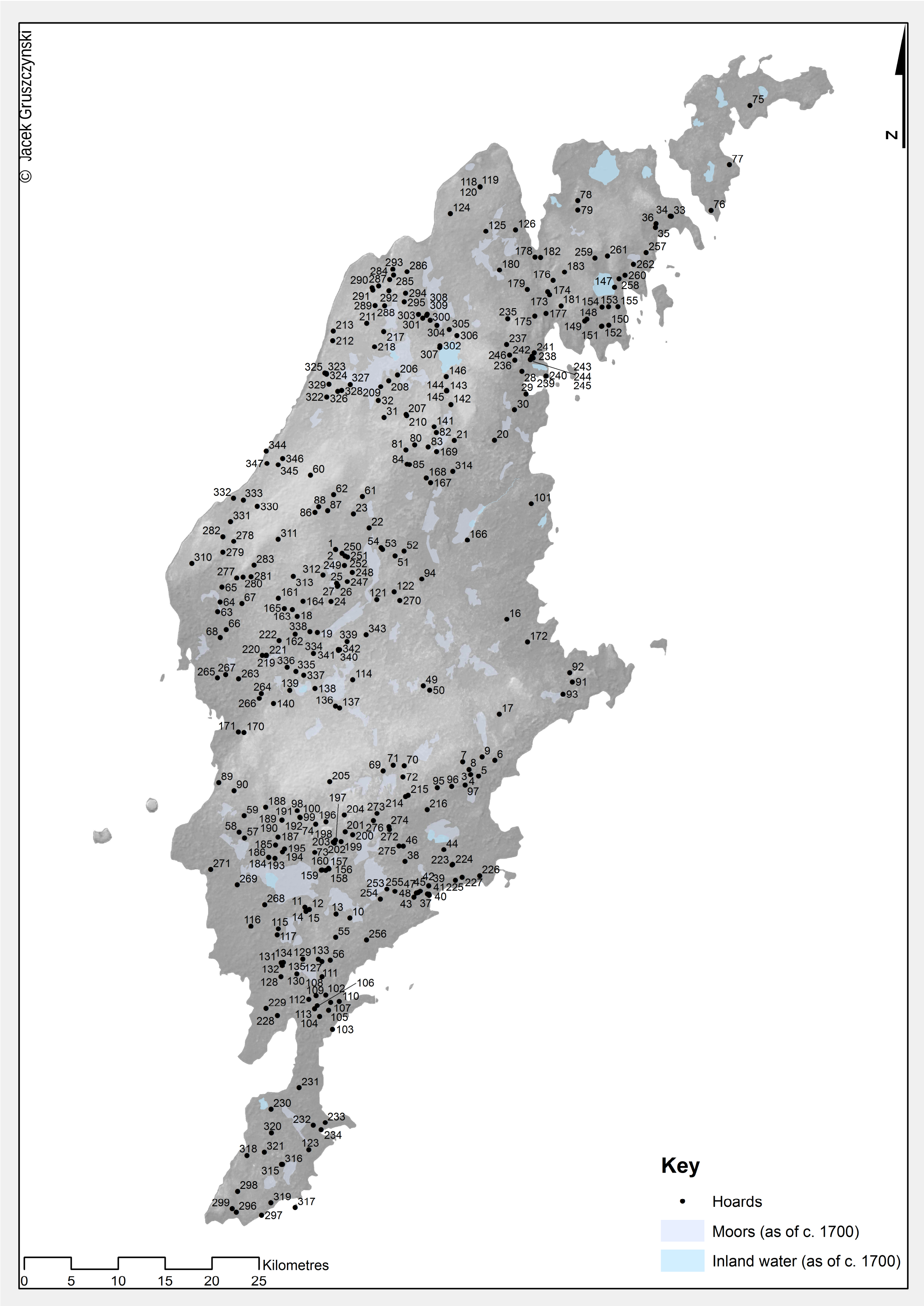


Figure B1 Map of silver hoards in Gotland, CatNos 1-347.

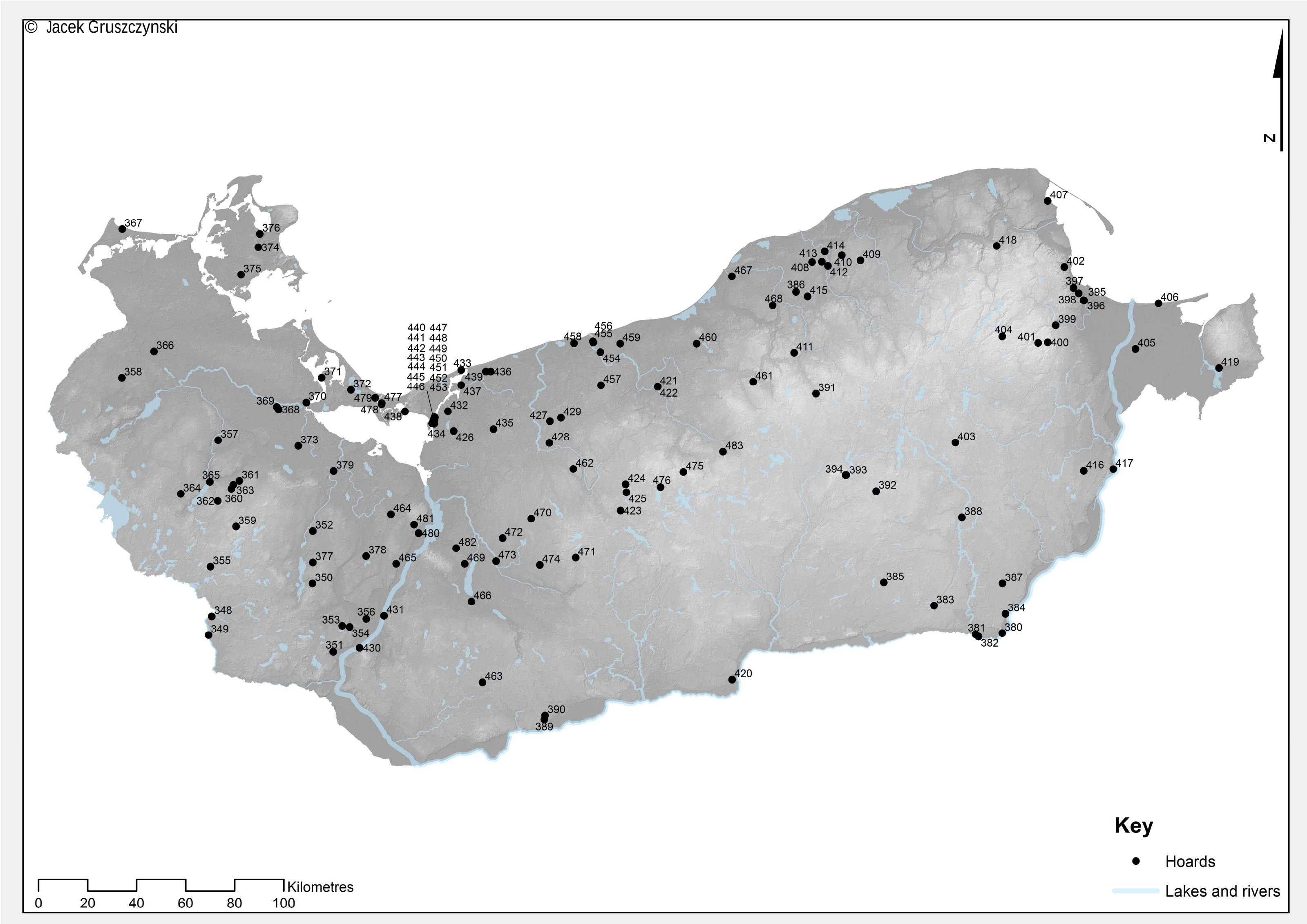


Figure B2 Map of silver hoards in Pomerania, CatNos 348-483.

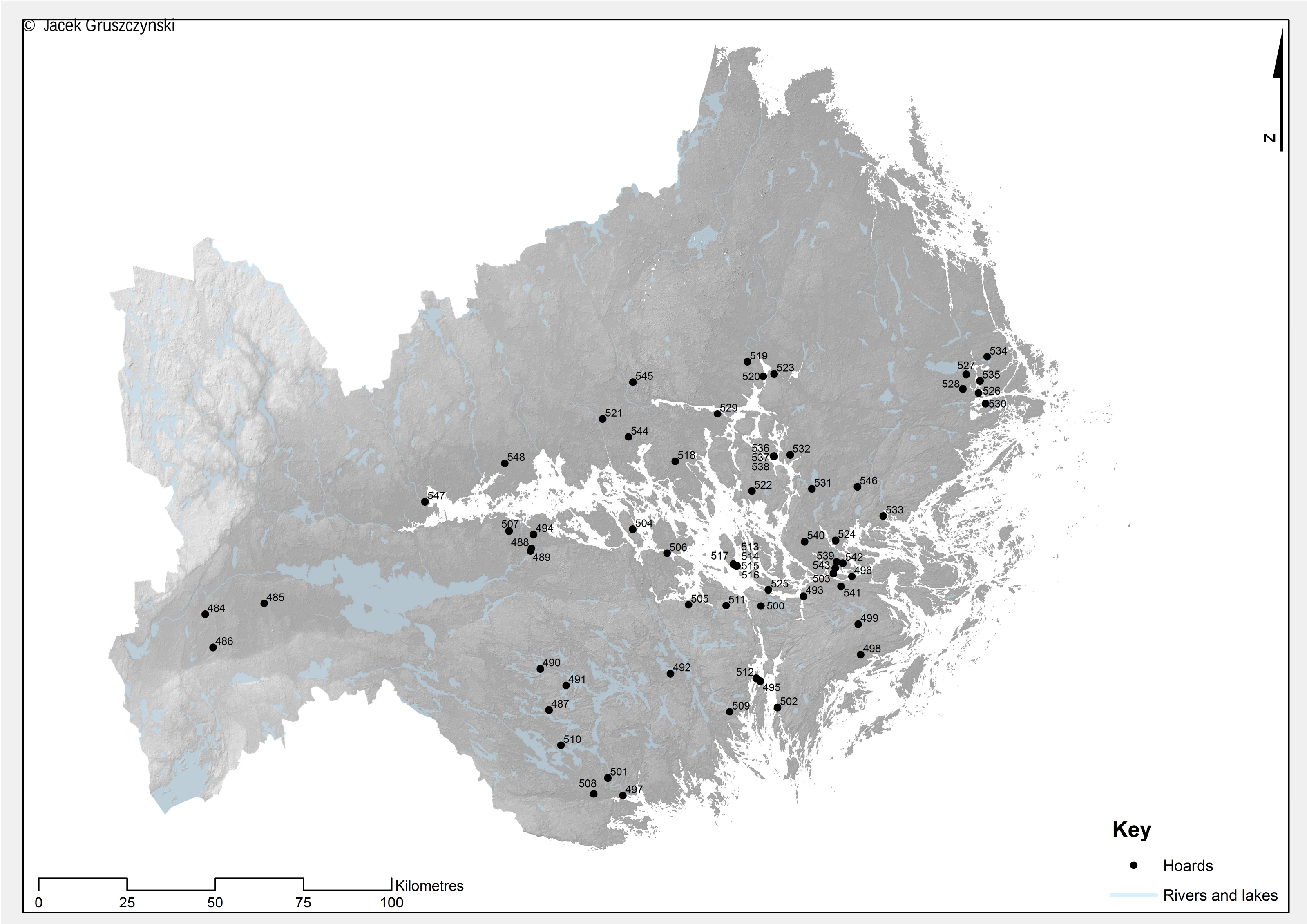


Figure B3 Map of silver hoards in Svealand, CatNos 484-548.