COIN CIRCULATION IN ROMAN NORTH AFRICA:

AN EXAMINATION OF COIN HOARDS

A thesis submitted in partial fulfilment of the requirements of the degree of

Master of Philosophy in Classical Archaeology

University of Oxford, June 2015

Amy Leigh Nizolek, Worcester College

Contents

Coin Hoards in the Context of post-Diocletianic Provinces

Conclusions

Acknowledgements

I would like to express my thanks to Professor Chris Howgego both for his assistance in selecting this thesis topic and for his patience and guidance throughout the research and writing process. I would also like to thank Jerome Mairat and Philippa Walton for their help in familiarizing me with the Coin Hoards of the Roman Empire Project and its database. I hope that this thesis may be of use to them.

My gratitude also goes to my parents and grandmother for their support, their proofreading, and their willingness to learn the difference between an *antoninianus* and an *aurelianus*.

List of Illustrations

Figures

Tables

CHAPTER ONE

Introduction

1.1 Introduction to the thesis

North Africa was one of the major economic powerhouses of the Roman Empire. Its varied landscape was well-suited to a broad range of agricultural pursuits, from cereals and vines on the coastal plains and along the Bagradas River, to olives and barley in the south and on the high Numidian plateau.[1] Some areas are dominated by mountains, and others are covered by desert. A broad spectrum of weather patterns also exists, from near-desert conditions in Tripolitania to approximately 600 mm of rainfall per annum in Cyrenaica.[2] Thanks to dry-farming and elaborate irrigation systems, however, even these most arid lands were agriculturally productive in ancient times.[3] Following its annexation by Rome, North Africa quickly became Rome's principal supplier of corn, by some estimates shipping about half a million tons of corn to Rome per annum.[4] As a major supplier of grains and olive oil to Italy

[1] MATTINGLY 1988, 44-9.
[2] APPLEBAUM 1979, 5.
[3] The UNESCO Libyan Valleys Survey provided excellent evidence for the systematic construction of irrigation walls in the Tripolitanian pre-desert region. The subject is discussed thoroughly by G.W.W. Barker and G.D.B. Jones in *Libyan Studies* volumes 13, 14, and 15, as well as in their 1996 two-part publication, *Farming the Desert: The UNESCO Libyan Valleys Archaeological Survey*.
[4] RAVEN 1993, 88.

and the rest of the Roman Empire, it is no wonder that Roman North Africa had a booming economy.

It is remarkable, then, that so little numismatic work has been done on the region. North Africa has tended to be marginalized in the literature and mentioned in passing as though there was little evidence for coin hoards at all. In his discussion of 222 Roman Imperial precious-metal coin hoards valued at more than 400 *sestertii*, Richard Duncan-Jones notes only one from Africa: a hoard of 105 *denarii* with a closing date between AD 119 and 122 located in Volubilis, the ancient administrative center of Mauretania Tingitana.[5] As this thesis will make clear, this is a gross misrepresentation of the number of precious-metal hoards in the region. Admittedly, the evidence for Roman coin hoards in North Africa is scattered through journals with publication dates spanning back to the mid-nineteenth century, which has complicated the collection and analysis of data. Within the last decade, various efforts have been made to put together a comprehensive corpus of coin hoards in North Africa, and it is hoped that this thesis will contribute to scholarly understanding of coin hoards in the latter years of the Empire.

1.2 The parameters of this study

Although in a geographical sense North Africa stretches from the Atlantic Ocean in the west to the Red Sea in the east without any major topographical boundaries, there was a clear political and economic divide between what is called Roman North Africa and its neighboring region Roman Egypt. Roman North Africa is understood to be the region stretching from the west coast of ancient Mauretania Tingitana through the eastern border

[5] DUNCAN-JONES 1994, 264.

of Cyrenaica/Libya Superior. This region, although divided into distinct administrative provinces, had the same type of political oversight in all areas. Similarly, all of these provinces used the same type of Roman Imperial currency system as the rest of the Empire. Roman Egypt, however, had a closed-currency system through the end of the third century AD, and consequently it features a numismatic fingerprint that is unlike the rest of the Empire.[6] Egypt has therefore been intentionally excluded from this study.

Aside from the geographical parameters of this investigation, it is also necessary to define the numismatic ones. A coin hoard is here defined as a collection of at least two coins that have the appearance of being intentionally or unintentionally deposited together. In a few cases, the hoards in this study contain non-coin objects of value in addition to coins, but in every case multiple coins are present in the hoard.[7] A case can be made for the inclusion of a single gold coin in the definition of a hoard given the incredibly high value of such an item.[8] A lone gold coin represents a far greater monetary value than multiple base-metal or even silver coins. Because there is only one report of single gold coins being found in North Africa, and this of questionable reliability, the issue is not pressing here.[9] The term 'coin' itself is taken to mean a small piece of struck metal created to facilitate economic transactions and to circulate as currency. This definition excludes such objects as medallions, which, while pieces of struck metal, were not intended for wider circulation as currency.

[6] CHRISTIANSEN 2004, 133.
[7] This is an infrequent occurrence and will be noted where pertinent to the discussion.
[8] CHRISTIANSEN 2004, 14. See also HIERNARD 1992, 106.
[9] GAVAULT 1895, 141. Although *solidi* of multiple late emperors are named in the text, they are listed as site finds rather than a hoard. The exact circumstances of their discovery are not revealed.

1.3 Literature review

Hoards and site finds in North Africa have been recorded and published in various journals since the late nineteenth century, the vast majority by French archaeologists and numismatists. Although there are references to coin hoards in many journals, four publications stand out as containing the greatest quantity of data pertinent to this thesis: *L'Africa Romana* volume 14.3 (2002), *Trésors Monétaires* volume 20 (2002), *Cahiers Numismatiques* volume 41.161 (2004), and *Antiquités Africaines* volume 43 (2007). These texts contain substantive information about numerous hoards and tend to be the best sources for otherwise elusive information about the location and composition of each hoard. Other publications were utilized with less regularity, but nonetheless proved essential for supplying information about certain hoards. *Mitteilungen der Österreichischen Numismatischen Gesellschaft* volume 25 is one such journal. While sometimes these journals contain relatively complete information about particular hoards, frequently their coverage amounts to little more than a passing reference. In some cases, however, this is the full extent of the information published about a hoard, and in such situations even a casual mention is of value.

Although a comprehensive catalogue of hoards in Roman North Africa has not yet been published, within the past decade various scholars have made efforts to compile data. In October 2011, Georges Depeyrot released an unpublished document online entitled "Catalogue de quelques trouvailles monétaires (et autres documents) en Algérie, Libye, Maroc, Tunisie" which contains a list of most Roman hoards and site finds in North Africa, excluding Egypt.[10] Depeyrot also provides some succinct bibliographical information about each hoard and occasionally, in the case of site finds, a complete list of coins. This document

[10] This document is to be found online at http://cnrs.academia.edu/GeorgesDepeyrot. Depeyrot has requested that this text not be quoted due to its unpublished state, however it is worth mentioning the document's existence.

proved to be an excellent starting place for research and assisted greatly in the compilation of data for this thesis. More recently in September 2014, Daniel Hoyer submitted a doctoral dissertation to the Classics Department at New York University which has greatly expanded knowledge of pre-AD 250 coin hoards in Roman North Africa.[11] His dissertation entitled "Buying a Province, Building an Empire: Money, Markets and Growth in Roman Africa from Augustus to Aurelian" is a discussion of production and the economy in North Africa with an accompanying analysis of how the investments of local elites and state agents aided the urbanization and market development within the region prior to the mid-third century. Although the subject matter covered by his thesis is quite broad, Hoyer devotes two chapters to numismatic evidence with statistical analysis. These chapters represent a great improvement in the corpus of literature concerning coin circulation in North Africa during the early to mid-Empire, and it is the most comprehensive survey of data yet completed.

1.4 Methodology

Using Georges Depeyrot's unpublished document as a starting point, each hoard was systematically researched and recorded in as much detail as possible. In a few cases, hoards were discovered that were not acknowledged in Depeyrot's text. Additionally, redundancies in the data set resulting from the poor quality of archaeological information and the ambiguity of some find-spots were discovered and removed. The data was then entered into Microsoft Excel and Access, where the hoards could be filtered, rearranged, and categorized as necessary.

When the topic of my thesis was originally developed, Daniel Hoyer's doctoral dissertation was yet unknown. I had originally intended my own research to cover roughly

[11] Hoyer's thesis will be published with its full database of coins in a forthcoming issue of ISAWPapers.

the same chronological period as Hoyer's did. Once I acquired a copy of his dissertation, however, it was apparent that the pressing need for a catalogue and analysis of pre-AD 250 coin hoards in Roman North Africa had been satisfied, at least in a preliminary way. I therefore changed the timeframe covered by my research to that of the Roman Empire post-AD 250. This thesis, then, is intended to be a complement and continuation of Hoyer's numismatic work.

As a result, I removed all hoards terminating prior to AD 250 from my data set, with the exception of *sestertius* hoards with closing dates as early as AD 240, which have been included because of the particular chronology of these hoards. As such, all dates mentioned in this work should be understood to be in AD unless otherwise stated. There was no need to impose a chronological limit on the upper end of my research, as the number of recorded Roman coin hoards in North Africa dropped significantly in the late fourth century, remained stable but very low throughout the fifth century, and totaled only four hoards in the entirety of the sixth century.

As previously mentioned, North Africa's complicated provincial boundaries provided an element of difficulty in the geographical categorization of each hoard. With very few exceptions, modern publications list hoards with reference to their location within modern countries, rather than ancient provinces. Each hoard was initially recorded in my dataset alongside its modern country, namely Morocco, Algeria, Tunisia, or Libya. Each hoard was subsequently allocated to its proper ancient province. Hoards of *sestertii*, *asses and dupondii*, *denarii*, and radiates were assigned to their pre-Diocletianic provinces, whilst those containing *nummi* and *solidi* were assigned to post-Diocletianic provinces. Whether a hoard type was assigned to pre- or post-Diocletianic provinces was decided based upon the chronology of the hoards. The Barrington Atlas, the Pleiades online database, and Harvard University's Digital Atlas of Roman and Medieval Civilizations were the principal sources

in determining the boundaries of the ancient provinces and identifying the locations of coin hoards within them.[12]

The data were collected or organized, then analyzed for patterns in geography, chronology, and composition. Each hoard was also assigned a number within the Coin Hoards of the Roman Empire Project database (CHREP #) if it did not already have one, and these numbers will be used to identify the hoards throughout this work. Hoards containing more than one denomination of coin were considered in the analysis of each denomination rather than just the one comprising the majority of the hoard's coins. Hoards that have been reported with no useable information such as denomination or metal-type are not included in the studies here. They are, however, listed in the catalogue at the end of this thesis. Mintmarks on coins within any given hoard are especially helpful in this regard as they provide direct evidence of a coin's provenance and suggest some overarching patterns in the importation and use of coinage in North Africa.

Two main texts were utilized as models for this thesis, both of which were completed rather recently. Kevin Butcher's *Small Change in Ancient Beirut*, published in 2003, examines the base-metal coins dating from the fourth century BC to seventh century AD found at the Beirut Souks and Bath House sites.[13] Butcher's work provides an excellent example of systematic analysis of coinage based on archaeological evidence. The second text of particular note is Philippa Walton's 2012 volume entitled *Rethinking Roman Britain: Coinage and Archaeology*. Walton's work does address the late Empire, which is a refreshing deviation from the majority of studies concerning Roman Imperial coinage which conclude in the mid-third century. While the sheer volume of data from Britain which

[12] Pleiades, a creation of the Ancient World Mapping Center and the Institute for the Study of the Ancient World, can be accessed online at http://pleiades.stoa.org/home. Harvard's DARMC functions as an online, updated, and interactive version of the Barrington Atlas. The DARMC can be accessed online at http://darmc.harvard.edu/icb/icb.do.

[13] BUTCHER 2003, 7.

Walton analyzes is vastly larger than that of North Africa, the methods that Walton uses to analyze her data are equally applicable to the data set discussed in the remainder of this thesis. Her work has been invaluable in guiding my research and analysis.

1.5 Complications

North Africa has been subject to a great deal of political upheaval in the past two centuries as a result of colonialism, civil war, and other forms of armed conflict. This has, predictably, had an effect on the archaeology conducted in each modern country. In the case of Algeria, colonization led to a surge of interest among French scholars in the history and material culture of the region under Roman rule. North African archaeology as a French national interest has significantly outlasted colonialism, as is clear by the impressive number of French articles on the subject that continue to be published. In other countries, however, the state of archaeological knowledge is far inferior. Morocco especially has a very underdeveloped corpus of numismatic evidence. While it is logical that some modern countries put greater emphasis on archaeology than others, it complicates the analysis of the existing dataset considerably. The fact that fewer hoards have been reported in Morocco does not mean that fewer existed in the first place. There is a danger, especially when assigning hoards to ancient provinces rather than modern countries, that this disparity in archaeological inquiry be overlooked.

The reporting of coin hoards itself is also frequently problematic. In a handful of cases, the only known information about a hoard is the century in which its coins supposedly were struck. In a significant number of cases, either the denomination of the coins or the number of coins in the hoard is omitted from the report. Additionally, the information that is provided in the text cannot be proven to be complete or entirely correct. The paucity of

detail in almost all of the nineteenth-century reports and many of the recent ones leaves much in question. As Duncan-Jones points out, "conclusions about hoard-size cannot always be pressed very far, because recovery may be incomplete, and some reported totals may be inexact."[14] Similarly, coins that are described by only their metal-type or only the authority under which they were minted are not necessarily easy to identify. These issues lead to an unavoidable margin of error within the dataset.

1.6 A brief history of Roman North Africa

Given the relatively complex history of North Africa, it is helpful to supply a brief history of the region's relationship with Rome. As coins are intimately tied to the political, economic, and social environment of both the local area in which they were struck or used and the Empire as a whole, the context of their minting and circulation is essential.

Alexander Graham cites 201 BC as the first year in Roman North Africa's history. This assertion is based on Graham's idea that "till the fall of Hannibal and the recognition of Carthage and Numidia as powerful States subject to the will of Rome, Africa held no place in the Roman mind as a country adapted either for the establishment of military strongholds or for the future settlement of a civil population."[15] Even then, however, North Africa cannot be said to have been "Roman" in any substantive way as there was no direct political takeover on the part of the Romans. It was not until 146 BC at the end of the Third Punic War and after Carthage had been annihilated that Africa Proconsularis was founded.[16]

[14] DUNCAN-JONES 1994, 68.
[15] GRAHAM 1902, 13.
[16] RAVEN 1993, 49.

Imperial-style Roman involvement in Africa began with the rise of Julius Caesar. The Numidian Kingdom fell to Caesar at the battle of Thapsus in 46 BC and was refashioned as a Roman province called Africa Nova, albeit partially under the control of the client king Bocchus until his death in 33 BC.[17] In that same year Mauretania, the region later to become the provinces of Mauretania Tingitana and Maretania Caesariensis, was conquered, although it was not officially annexed until AD 40 under the reign of Caligula.[18] Caesar also brought about the first successful colonization effort in Africa by settling his veterans in places such as Carthage and Thysdrus, a process reinforced by Octavian's refounding of Carthage in 29 BC.[19]

With the rise of the Empire came Rome's ability to control and utilize the resources of its provinces. North Africa was no exception to this rule. Interestingly, the system of provincial government was remarkably stable throughout the Empire even in the face of bad or incompetent emperors.[20] In the time of Augustus, Africa Proconsularis was a senatorial province, controlled by a proconsul with authority over both the government and the military in the region. This lasted until Caligula, who Tacitus describes as "*turbidus animi ac Marcum Silanum obtinentem Africam metuens*," stripped the proconsul of his military authority and installed a legate to run the military affairs of the province.[21] This division of power in North Africa is an early example of how the insecurity of the emperor had a direct effect on the organization of the provincial administrative hierarchy.

Because of the important role North Africa had in the economy of the Empire, those with civil or military control in the region had the opportunity to gain considerable wealth

[17] RAVEN 1993, 53.
[18] RAVEN 1993, xxi.
[19] RAVEN 1993, 53.
[20] ROGAN 2011, 16.
[21] TACITUS *Histories* iv. 48; ARNOLD 1914, 122. This passage translated reads "troubled of mind and fearful of Marcus Silanus holding Africa." All translations in this thesis are by A. Nizolek unless otherwise noted.

and prestige. In an effort to combat this, the provinces in the region were deliberately divided. Initially, Roman North Africa was comprised of four main provinces: "Mauretania as far south as Volubilis (divided for administrative convenience into Mauretania Tingitana and Mauretania Caesariensis); Numidia as far south as the Aurès mountains; and Africa Proconsularis with the narrow coastal strip of Tripolitania."[22] Although Cyrenaica was not technically within the Roman conception of North Africa, it is included in this thesis as well because it lies outside of Egypt and therefore was under the same monetary system as the rest of the Roman Empire. Figure 1 gives a clear picture of the state of provincial borders in Africa and lower Europe as of AD 117 at the end of Trajan's reign.

[22] RAVEN 1993, 63.

FIGURE 1: The provinces of the Roman Empire in AD 117. Source: Digital Atlas of Roman and Medieval Civilizations, Harvard University (2014).

The provinces in North Africa remained largely static until Diocletian saw fit to reorganize them. The division of imperial power in the late third century was radically different from what it had been during Trajan's reign. There was a long, slow process throughout the second and third centuries that moved to limit the amount of power any one person could accumulate. By AD 293, the empire was quartered between Diocletian, Maximian, Galerius, and Constantius Gallus. North Africa itself was divided as well. In AD 286 Maximian had been given control of all of Africa, but seven years later Diocletian took control of Africa Proconsularis and Cyrenaica, while Maximian retained Mauretainia Tingitana, Mauretania Caesariensis and Numidia.[23] In his *De Mortibus Persecutorum*, Lactantius relates, "*. . . provinciae quoque in frusta concisae: multi praesides et plura officia*

[23] ARNOLD 1914, 185-6.

singulis regionibus ac paene iam civitatibus incubare, item rationales multi et magistri et vicarii praefectorum."[24] Given the numerous uprisings just prior to this provincial reorganization scheme, notably those in Gaul and Britain, it seems entirely probable that this reorganization took place as a means of spreading power so thin among provincial leaders that there was no chance of an insurrection.[25] Epigraphic evidence suggests that these geographical divisions did not take place all at once, but rather were part of a gradual process. For example, it appears that Mauretania Caesariensis was partitioned into Caesariensis and Sitifensis by March of AD 293, whilst Africa Proconsularis was divided just before 295.[26] Numidia, on the other hand, was not split into Cirtensis and Militiana until 304-5.[27] A map of the new provinces in North Africa as well as those in lower Western Europe is provided in Figure 2. The map shows the geographic state of the provinces at the completion of their reorganization, circa AD 300.

[24] LACTANTIUS *De Mort. Pers.* VII.4. This passage translated reads ". . . the provinces as well were cut into scraps: many governors and numerous officials brooded over single regions and almost single cities, likewise many procurators and magistrates and deputies of the prefects."
[25] ROGAN 2011, 16.
[26] ANDERSON 1932, 30.
[27] ANDERSON 1932, 30.

FIGURE 2: The provinces of the Roman Empire in AD 300. Source: Digital Atlas of Roman and Medieval Civilizations, Harvard University (2014).

The provinces in North Africa were remarkably secure. Until the Vandal invasion in the early fifth century, north-western Africa was the only area in the Western Roman Empire that had not suffered at the hands of barbarians from northern or eastern Europe.[28] North Africa continued to be a prosperous agricultural center, although the survey of Honorius in AD 422 indicates that there had begun to be a decline in the area of cultivated land.[29] In AD 429, the Vandal invasion began, and by AD 439, Carthage had fallen.[30] By AD 476, the Roman political presence in North Africa was finally eradicated.[31] This is not to say, however, that Roman culture did not persist, for the Vandals fashioned their rule and

[28] RAVEN 1993, 196.
[29] RAVEN 1993, 196.
[30] RAVEN 1993, xxiii.
[31] GRAHAM 1902, 319.

lifestyles after those of Rome.[32] It was not until the Arab takeover in the seventh century that Roman culture was supplanted.

The history of Roman North Africa is reflected within the pattern of its coin hoards. The trends within these hoards' chronology, composition, and circulation highlight the economic and political changes that this region, as well as the Roman Empire as a whole, underwent. The following chapters present the hoard data in the context of this history with the intention of establishing a numismatic narrative for North Africa from the mid-third century onward.

[32] RAVEN 1993, 198.

CHAPTER TWO

Coin Hoards in the Context of pre-Diocletianic Provinces

2.1 Introduction to pre-Diocletianic evidence

As was explained in the introduction, this thesis required the compilation of data which had previously been scattered through various books, journals, and archaeological newsletters. Therefore, although these data are not new in and of themselves, they have never before been brought together into a comprehensive corpus and analyzed systematically. In this chapter and the next, I present this information and identify the trends and patterns within the dataset. This chapter addresses hoards containing *sestertii*, *denarii*, radiates, and earlier small base-metal coins, while Chapter 3 addresses *nummi* and *solidi*. In the final chapter of this thesis, I will compare the hoarding trends and circulation patterns of North Africa with those of other provinces where a comparison is logical.

The *sestertius*, *denarius*, radiate, and small bronze hoards discussed here are grouped together because they tend to have earlier closing dates, primarily in the third and early fourth centuries. This timeframe places them prior to or in the earliest years of Diocletian's provincial reorganization. These hoards are therefore discussed in the context

of the provincial boundaries that existed before this reorganization. *Nummus* and *solidus* hoards close almost exclusively after Diocletian's reorganization, therefore they will be considered in the following chapter and placed in the context of the later provincial system in North Africa.

On the distribution maps featured in this chapter, each dot represents a find-spot of a relevant hoard. Because there are some cases in which two or three hoards are found in the same location, a dot can sometimes give the appearance of a single hoard when in reality there are multiple at that site. For this reason, the maps provided ought to be taken as more of a depiction of find-spot geography rather than a perfectly accurate representation of the number of hoards in each province. A discussion of hoard numbers will follow each map for the purpose of clarity.

This chapter includes figures and tables relevant to the subject being discussed in each section. For some denominations, such as radiates, including tables with information on every hoard of that denomination would be prove cumbersome because of the large number of hoards. Some of the denominations with fewer hoards, such as *denarii*, can be listed fully in tables within this chapter. For a complete listing of the hoards in North Africa, please see the catalogue at the end of this thesis.

2.2 Hoards of *sestertii* – geography

Sestertius hoards in North Africa were relatively prevalent during the period covered by this thesis, albeit only in the first few decades of it. In total, there are 26 hoards containing *sestertii* reported in the literature. Because so many *sestertius* hoards have closing dates just prior to AD 250, I have chosen to include in my study those hoards that close between 240

and 249 as well as those post-250. It is also quite possible that those hoards with final issues dating to the 240s were buried later, as late-dating *sestertii* were rare. This leads to a more complete representation of the chronological trends in *sestertius* use in North Africa than would be possible if these earlier hoards were excluded. The use of pre-Diocletianic provincial boundaries to contextualize these hoards is appropriate, as there is only one hoard that closes after the provincial reorganization took place.

Figure 3 shows a map of the find-spots of hoards containing *sestertii* in North Africa from AD 240 onwards. There are hoards reported in Mauretania Tingitana, Mauretania Caesariensis, Numidia, and Africa Proconsularis. There are no *sestertius* hoards in Cyrenaica.

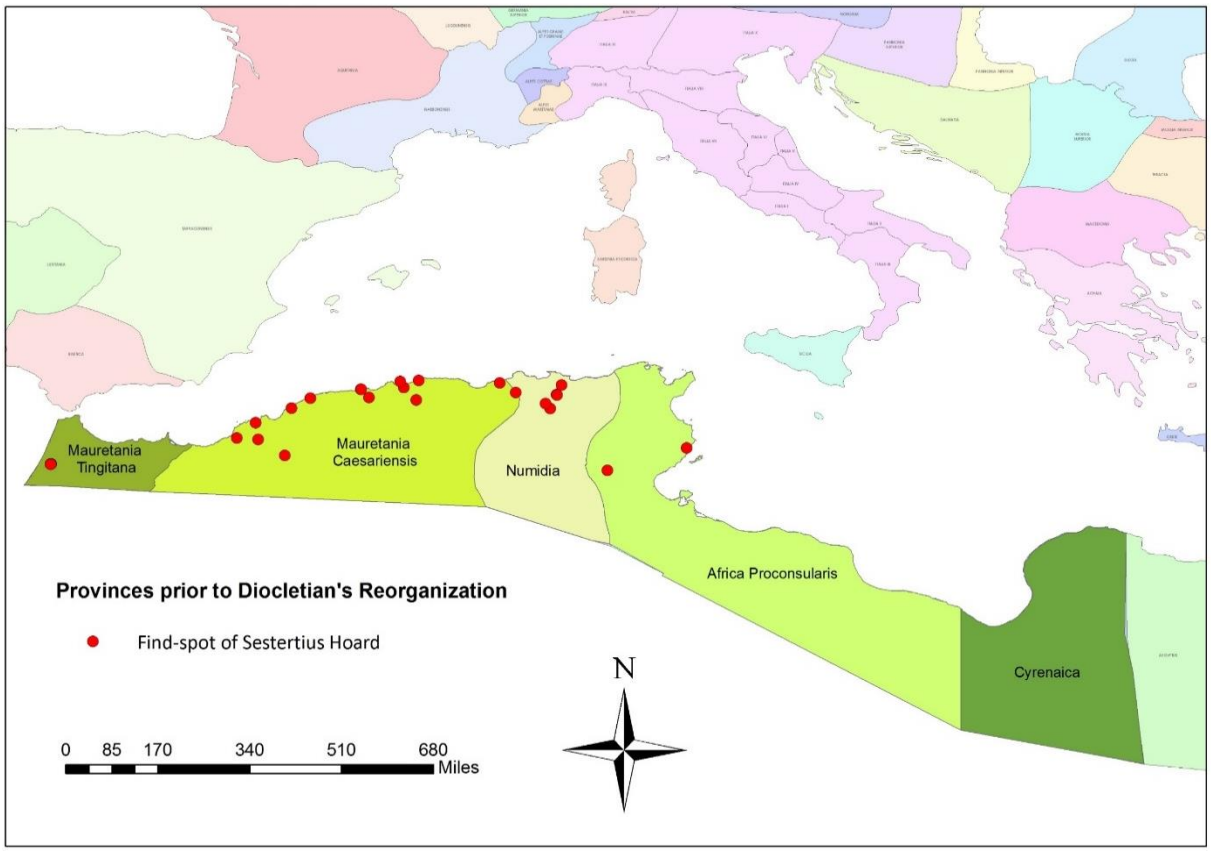

FIGURE 3: Map of the find-spots of *sestertius* hoards in North Africa

As the map above demonstrates, *sestertius* hoards in North Africa are most common in the western provinces. There is a conspicuous absence of hoards in Cyrenaica, and there are very few in the large province of Africa Proconsularis with none in the eastern half. There is also a general trend toward coastal orientation, with all but two of the hoards located within 50 miles of the coastline. The two hoards outside this coastal border are located in Timziouine, Mauretania Caesariensis (CHREP #12353) and in Gafsa-Gabès, Africa Proconsularis (CHREP #12782).

It is already apparent from Figure 3 that Mauretania Caesariensis contains the largest number of *sestertius* hoards out of all the provinces. In fact, this province has more *sestertius* hoards than the other three provinces combined, as is shown in Figure 4 below. The presence of a larger number of hoards does not, however, guarantee that there is a larger number of *sestertii* contained within in the hoards. A graphic representation of the number of hoarded *sestertii* per province in North Africa (Figure 5) is provided for comparison.

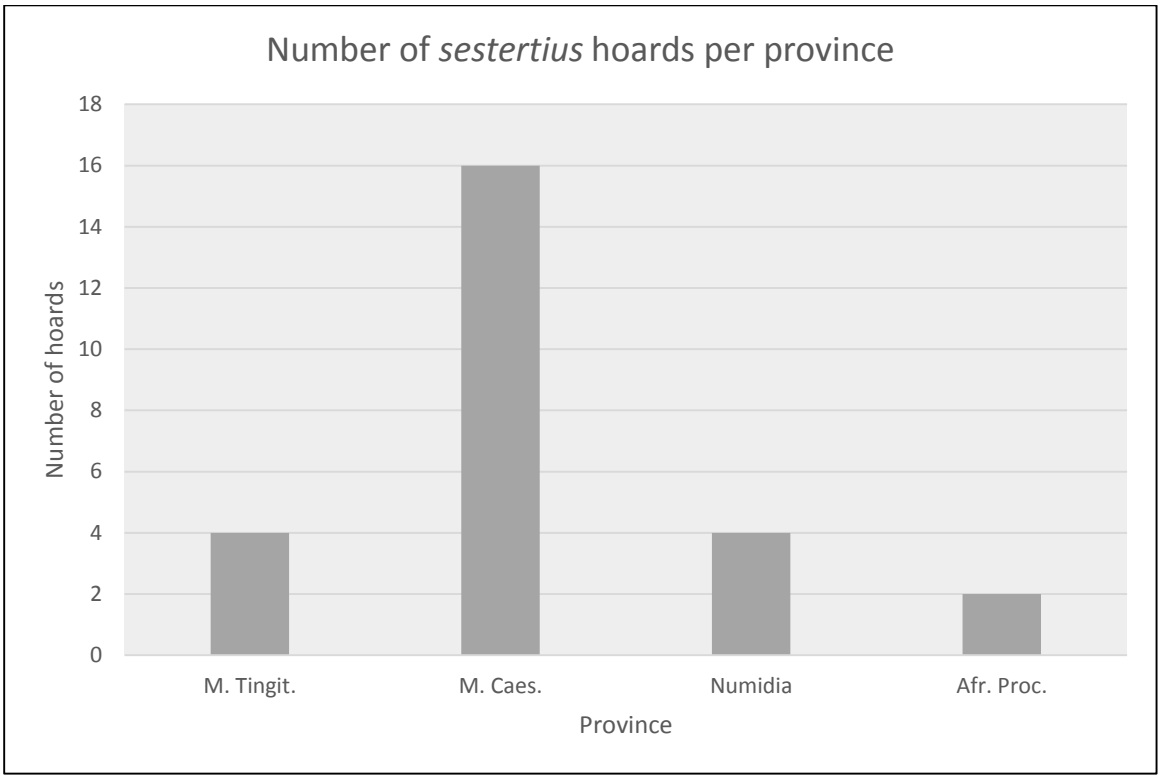

FIGURE 4: Graph representing the number of *sestertius* hoards per province

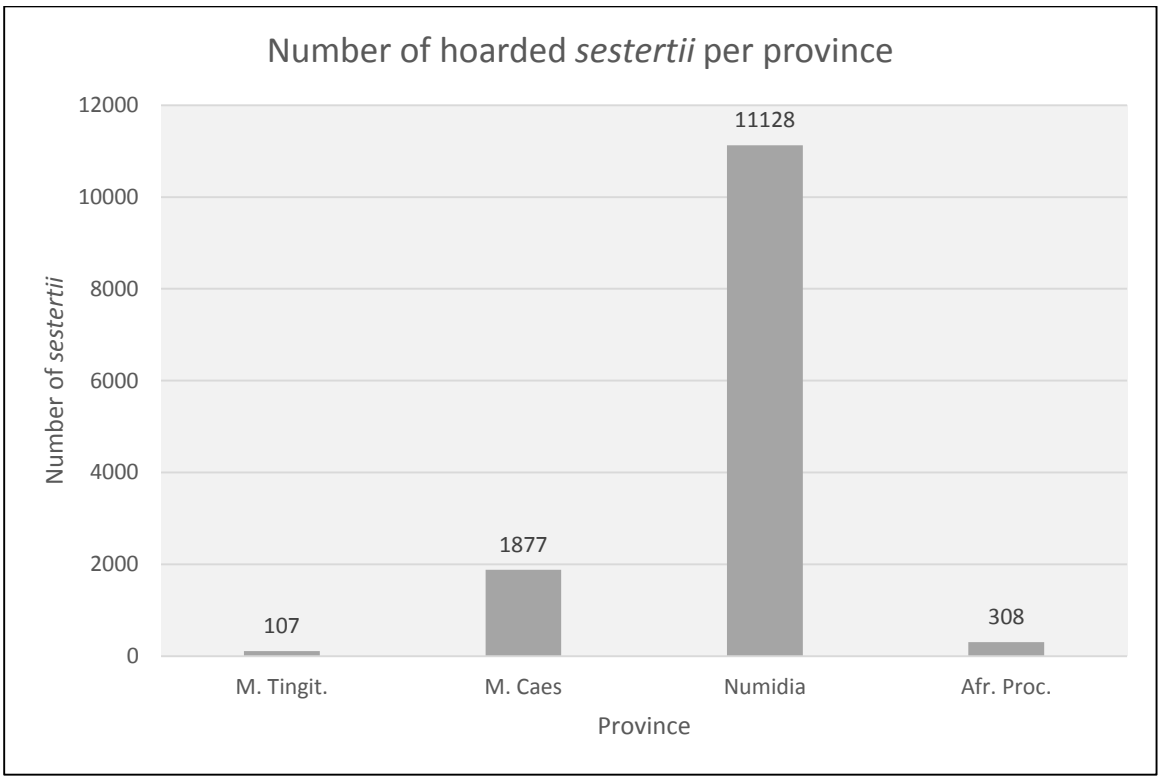

FIGURE 5: Graph representing the number of hoarded *sestertii* per province

Figure 5 shows that although Mauretania Caesariensis had the most *sestertius* hoards, it is Numidia that has the highest number of hoarded *sestertii*. The abundance of *sestertii* in the latter province is due to the existence of two large hoards, both located in Guelma. CHREP #12317, closing in 255-6, has 7,488 *sestertii*,[33] while CHREP #12316, closing in 256, has between 3,000 and 4,000 *sestertii*.[34] In the coin count that was used to create Figure 6, the average number of 3,500 was used for this hoard. Both hoards have *sestertius* issues ranging in date from Augustus to Valerian I. The find-spots of both hoards are not recorded in great depth, but there are at least some vague details known about that of CHREP #12317. When the hoard was discovered, mosaic fragments were found in the vicinity, leading to the supposition that it may have been located in a Roman villa.[35] If this is truly the case, then its location implies that this hoard at least was not part of a systematic withdrawal of *sestertii* from circulation at the hands of the government, but rather the work of a private individual.

For the sake of comparison, if these two hoards were to be considered anomalous and omitted from the count of hoarded *sestertii*, Numidia would have 140 *sestertii*. This would result in a total count that falls well below that of Mauretania Caesariensis and Africa Proconsularis, and only slightly above that of Mauretania Tingitana.

[33] TURCAN 1963, 41.
[34] SALAMA 2004, 29.
[35] TURCAN 1963, 5.

2.3 Hoards of *sestertii* – chronology and composition

Sestertius hoards in North Africa have the greatest uniformity in closing date of any of the hoarded denominations analyzed in this thesis. Ninety-three percent of the *sestertius* hoards close between AD 240 and AD 260, with eight hoards closing in the first decade, and twelve in the second. Of the two hoards that do not close within this period, CHREP #12815, located in Banasa, Mauretania Tingitana, closes in 270, and CHREP #12311, located in El Guelta, Mauretania Caesariensis, closes in 319.

Figure 6 provides a visual representation of the number of *sestertius* hoards in each province that close per five-year period of time. It should be noted that there is a chronologic jump between the penultimate and ultimate closing date period on the graph below.

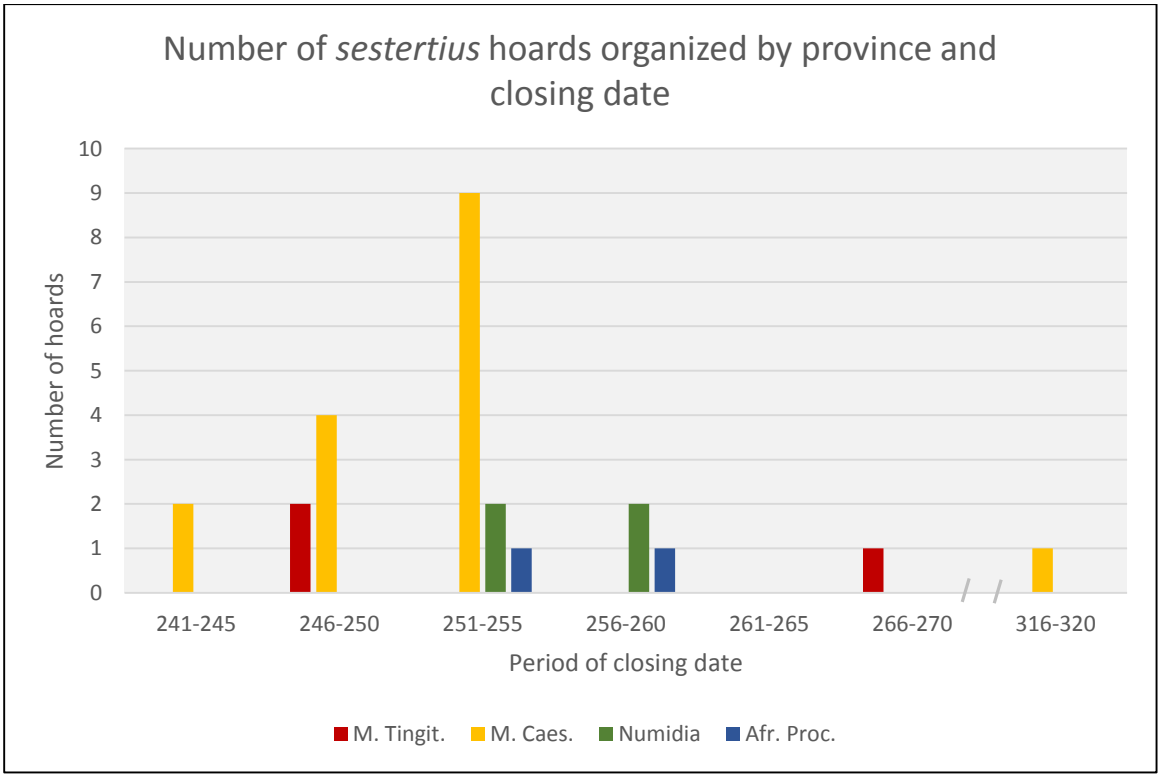

FIGURE 6: Graph representing the number of *sestertius* hoards per province organized by closing date

This graph implies that there is not an overly strong difference in closing dates among provinces, partly because of the very narrow timeframe involved. There is perhaps a slight tendency for western provinces like Mauretania Tingitana and Mauretania Caesariensis to have earlier hoards, whilst the two more eastern provinces, Numidia and Africa Proconsularis, have later hoards. It is possible that this reflects an influx of slightly later *sestertii* to the eastern North African provinces, but these more eastern hoards also contain early coins of the Julio-Claudian, Nerva-Antonine, and Severan periods, which implies a continuity in the flow of *sestertii* to these provinces and does not give the appearance of any significant deviation in the circulation patterns in the western and eastern provinces. Ultimately, it is clear that there was a move to hoard *sestertii* across North Africa in the middle of the third century, after which point they disappear from hoards almost entirely.

Even though the closing dates of these hoards are all very similar, the issues contained in the hoards vary. The final issues of the 26 hoards are relatively well grouped, with two hoards ending with Gordian III, four with Philip I, four with Trajan Decius, four with Trebonianus Gallus, one with Volusian, seven with Valerian I, one with Salonina, and one, allegedly, with Claudius II Divus. Of the two hoards not included in this tally, one hoard lacks information on its final issue, and the other is a singleton *sestertius* of Faustina I hoarded with coins of other denominations. The hoard that claims to end with a *sestertius* issue of Claudius II Divus[36] is problematic, however, due to the fact that *sestertii* had ceased to be minted a decade prior. It is far more likely this was a hoard of *sestertii* perhaps combined with misidentified larger "*moyens bronzes*" of Claudius II Augustus[37] or radiates produced posthumously. There is, however, far more variation in the initial issues of the

[36] MARION 1967, 111.
[37] HULEVIN 1984, 204.

hoards. The two large hoards in Numidia (CHREP #12317 and #12316) open with issues of Augustus. Vespasianic *sestertii* are the most common initial issues, with four hoards opening with them. There is a fairly even spread of hoards with initial issues throughout the late first, second, and early third centuries (Figure 7).

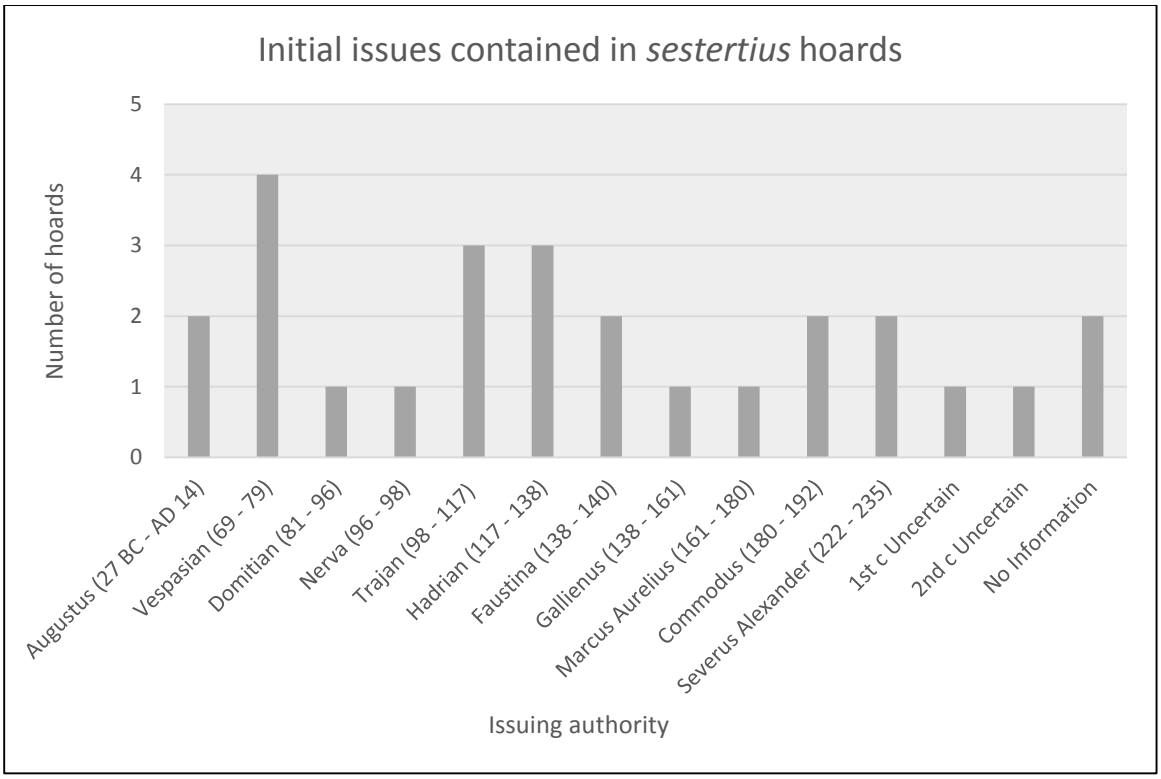

FIGURE 7: Graph representing the initial issues of *sestertius* hoards in North Africa

The range of issues contained within the hoards is rather impressive. In total, six hoards have a range of under 100 years, 15 have a range of between 100 and 200 years, and two have a range of over 200 years. There are three hoards that cannot be analyzed in this way, two because they are not reported in sufficient detail, and one because it contains only one *sestertius* along with coins of other denominations. While it would be very interesting to discover how many of each emperor's coins the hoards contained, this is an impossibility

given the nature of the recorded information about them. The majority of these hoards are listed along with the first and last emperor whose coins they contain. A discussion of the initial and final issuing authorities represented in each hoard is therefore the best that can be done with the currently published information.

The vast majority of *sestertii* hoards in North Africa are comprised purely of *sestertii*, but there are a few that contain both *sestertii* and coins of other denominations. Out of 26 hoards, only four are mixed (Table 1). These hoards are neither clustered geographically nor all located along the coastline. There is also a large disparity in hoard size, ranging from 33 total coins in CHREP #12816 to 7,499 coins in CHREP #12317.

***Sestertius* hoards with mixed denominations**				
CHREP #	**Cl. Date**	**Province**	**Location**	**Composition**
12816	3rd cent.	M. Tingit.	Banasa	5 HS; 28 DUP
	A third-century hoard. No information is given concerning the issuing authorities of either the *sestertii* or the *dupondii*.			
12311	319	M. Caes.	El Guelta	1 HS; 116 NM; 2 RAD
	The *sestertius* is of Faustina I. The *nummi* are of Constantius I (1), Maximinus Daia (4), Maxentius (7), Constantine I (81), Licinius I (10), Licinius II (1), Crispus (3), Constantine II (8), and Diocletian (1). The radiates are of Maximian I (1) and Maxentius (1).			
12317	255-6	Numidia	Guelma	7486 HS; 2 provincial HS; 2 DUP; 9 AS
	The *sestertii* range in issuing authority from Augustus to Valerian I. The "provincial *sestertii*" are of Caracalla (Apollonia) and Marcus Aurelius (Caesarea in Cappadocia). The *dupondii* are of Antoninus (1) and Marcus Aurelius (1). The *asses* are of Augustus (1), Hadrian (3), Lucius Verus (1), and Marcus Aurelius (1), with two of unidentified authority.			
12782	256-9	Afr. Proc.	Gafsa-Gabés	300 HS; 1 DUP
	The *sestertii* range in issuing date from Trajan to Valerian I. The *dupondius* is of an unknown authority.			

TABLE 1: Hoards of *sestertii* with mixed composition

CHREP #12311 is an oddity in that it consists primarily of *nummi*. Its late closing date also sets it apart. Although this hoard does include a *sestertius*, it is more accurate to think of it as a hoard of *nummi* into which one *sestertius* was mixed. It is therefore the

presence of a *sestertius* in a majority-*nummus* hoard that is surprising rather than the presence of *nummi* and *radiates* in a *sestertius* hoard.

The other three hoards, however, have similarities in their composition. Although there is a large disparity in their sizes, the three hoards are a mixture of *sestertii* with smaller base-metal coins. Unfortunately, the paucity of information recorded about the *sestertii* makes it impossible to compare issuing authorities. Although there is no closing date explicitly listed for the Banasa hoard, it is likely that this hoard closed sometime between AD 247 and 270. There are seven hoards of varying denominations in Banasa that have been recorded, and out of these, two close in 247, and four close in 270. CHREP #12816 is the only hoard of the seven that lacks a definite closing date. With this in mind, it is probable that both the hoard at Banasa and the hoard at Guelma have similar closing dates.

2.4 Hoards of *sestertii* – circulation and conclusions

Sestertii had long been part of the Roman coinage system, existing as a denomination both in the Republic and in the Empire. In Augustus's monetary reform in approximately 23 BC, the value of the *sestertius* was set at four *asses*,[38] and the coin was established in orichalcum at a theoretical weight of 27.3 g.[39] From Trajan onwards, there was an increased minting of *sestertii*.[40] The *sestertius* remained a relatively consistent weight until the third century, although the amount of zinc in the orichalcum gradually reduced and eventually was replaced entirely with lead.[41] By the 230s, the *sestertius* weighed only 23 grams, and by the

[38] BURNETT 1987, 54.
[39] CARSON 1990, 229.
[40] BURNETT 1987, 58.
[41] BURNETT 1987, 58.

reign of Trajan Decius, it had been reduced even further to 20.5 grams.[42] Production of *sestertii* had all but ceased in AD 260 under both Gallienus in Rome and Postumus in Gaul.[43]

The hoarding pattern visible in North Africa coincides closely with this brief history of *sestertius* coinage. All of the hoarded *sestertii* fall after Augustus's reform, with eight hoards opening in the first century, and twelve in the second. The large range of minting dates featured in each hoard attests to the longevity and relative stability of the *sestertius* as a denomination. It is only in the early third century that the opening of new hoards slows, most likely in response to a reduction in zinc content and weight of *sestertii*.[44] By the end of *sestertius* production AD 260, all but two of the *sestertius* hoards in North Africa had closed. Given that only one hoard containing a *sestertius* exists in the fourth century, it appears that *sestertii* were not in circulation in any significant numbers after the third century. This rather abrupt disappearance of *sestertii* suggests a wide-scale removal of the denomination from circulation for the purposes of melting down and reminting, perhaps into radiates.

There are no reported imitations of *sestertii* in the North African hoards. It is, of course, possible that imitations existed and were simply excluded from hoards, but later hoarding patterns of imitation and real radiates and *nummi* suggest that imitations circulated alongside and were hoarded indiscriminately with their legitimate counterparts. It seems unlikely that imitations were discriminated against in *sestertius* hoards but not in those of other denominations. It is more probable that the number of base-metal coins in circulation from AD 240 until approximately AD 270 was sufficient to satisfy the needs of the population, making the production of imitations unnecessary.

[42] CARSON 1990, 235.
[43] BURNETT 1987, 64-5.
[44] BURNETT 1987, 58.

Out of the 26 *sestertius* hoards discussed here, only two contain any information on the mints at which the hoarded *sestertii* were produced. The first, CHREP #12782, is located in Gafsa-Gabés, Africa Proconsularis, and includes 300 *sestertii* and 1 *dupondius*. Of these coins, 132 of the *sestertii* as well as the *dupondius* are attributed to the mint at Rome.[45] Lhotellier and Desnier, who catalogued the coins in the 1990 issue of *Trésors Monétaires*, state that the presence of these coins suggests that the trade relationship between Rome and North Africa was thriving and steady, leading to the active exchange of coins between regions.[46] Given, however, that Rome was the mint mainly responsible for producing *sestertii*, aside from the mint at Lugdunum which struck supplemental base-metal coinage for Nero and the Flavians, it is likely that these coins are simply a reflection of Rome's dominance as the base-metal mint. It is also possible that the reporting scholars were unable to recognize the subtle iconographic difference between *sestertii* of Rome and Lugdunum, and therefore all of the coins were attributed to Rome.

The second hoard, CHREP #12317, is located in Guelma and contains 7488 *sestertii* as well as 9 *asses* and 2 *dupondii*. All but two of the *sestertii* are attributed to Rome.[47] The two that are not are classified by Turcan as "*monnayage provinicial*," and are weighted equally with the *sestertii* and treated as equivalent by the author. One is of Marcus Aurelius from Caesarea in Cappadocia, and the other is of Caracalla in Apollonia.[48] While these are not proper *sestertii* in the sense that they are not senatorial issues, they are interesting in that they are provincial versions of Roman *sestertii*, attributed to legitimate emperors, and both hailing from the Anatolia region. This implies that there was at least a minor influx of coins from the east prior to this hoard's mid-third century closing date. While there is no way of

[45] LHOTELLIER and DESNIER 1990, 57-63. The authors provide a catalogue of the coins, but only include 132 *sestertii* and the single *dupondius*. They make no mention of the remaining *sestertii*.
[46] LHOTELLIER and DESNIER 1990, 56.
[47] TURCAN 1963, 9.
[48] TURCAN 1963, 123.

knowing with any certainty the route that the *sestertii*, both provincial and otherwise, took to get to North Africa, the pattern of mints does imply that the bulk of *sestertii* came from Italy with a few provincial *sestertius*-equivalents making their way to North Africa from the eastern provinces of the Empire.

2.5 Hoards of *asses* and *dupondii*

Out of all the hoards closing prior to Diocletian's provincial reorganization, only three hoards contain *asses* and *dupondii*. In all three cases, *sestertii* are also included in the hoards. Figure 8 presents a map of the find-spots of these three hoards, and Table 2 lists these three hoards and the pertinent information about them.

As Figure 8 illustrates, no hoards containing *asses* and *dupondii* are directly on the coastline. This is an unusual trend, as in the cases of *sestertii*, *denarii*, and radiates there is a strong coastal orientation to the hoarding patterns. Although it is difficult to draw solid conclusions about the hoards containing *asses* and *dupondii* because of the few data points under analysis, the fact that these hoards have a geographic pattern that is markedly different than those of other denominations suggests that this is not merely a coincidence. If hoards containing higher denominations are found along the coastline and the lowest-value coins are found in inland hoards, it suggests that these small base-metal coins may have had a higher perceived value for the local inland populace than they had for the coastal population. This may have been because the inland regions of North Africa were not suited to the intense agricultural and commercial endeavors that were undertaken along the coast, thereby leading to an inferior economic climate and a paucity of high-value coinage in circulation. If this were the case, it would explain why the local population felt inclined to include even

a few of these *asses* and *dupondii* in their hoards. There would have been few enough of higher denominations in circulation to make the hoarding of low-value coins practical.

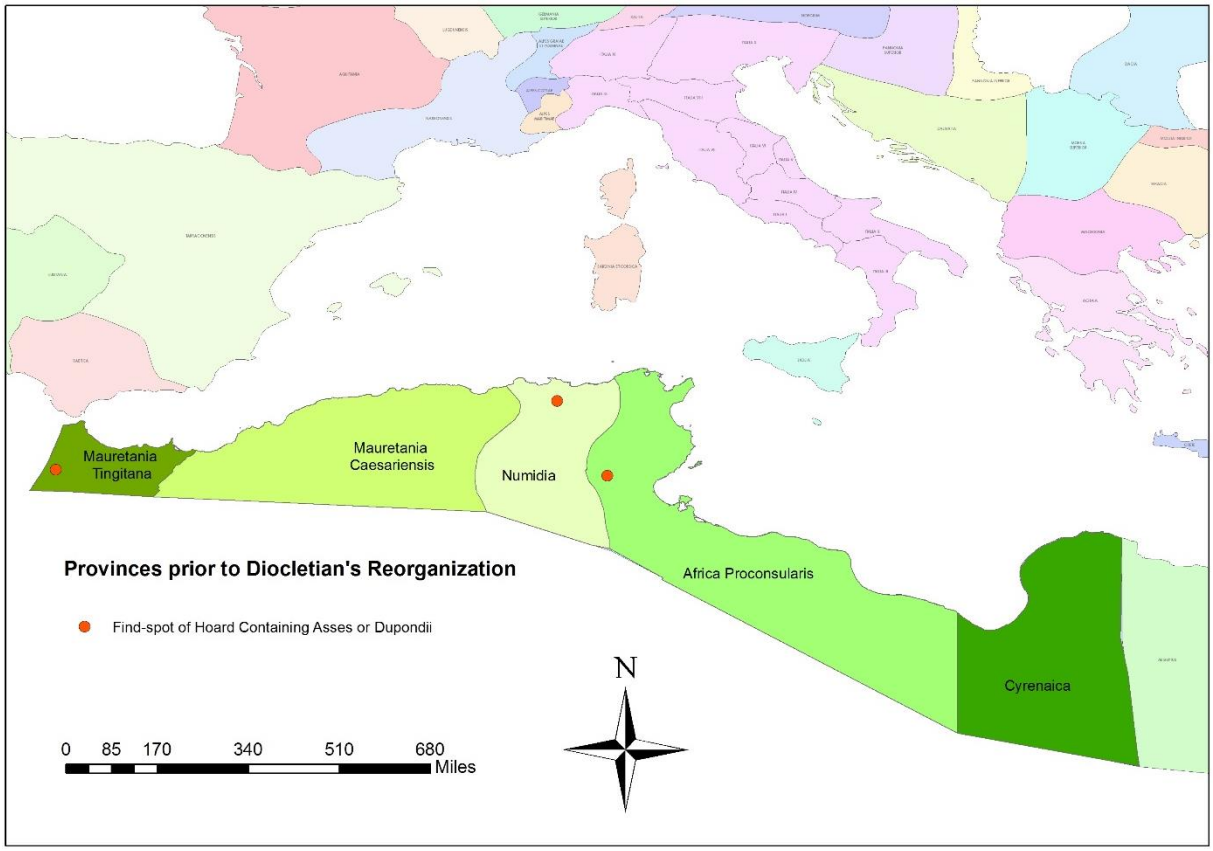

FIGURE 8: Map of the find-spots of hoards containing *asses* and *dupondii* in North Africa

Hoards containing *asses* and *dupondii*				
CHREP #	**Cl. Date**	**Province**	**Location**	**Composition**
12816	3rd cent.	M. Tingit.	Banasa	28 DUP; 5 HS
	There is no information on the issuing authorities of either the *dupondii* or the *sestertii*.			
12317	255-6	Numidia	Guelma	2 DUP; 9 AS; 7488 HS
	The *dupondii* are of Antoninus Pius (1) and Marcus Aurelius (1). The *asses* are of Augustus (1), Hadrian (3), Marcus Aurelius (1) and Lucius Verus (1), with nine unidentified. The *sestertii* range in authority from Augustus to Valerian I.			
12782	256-9	Afr. Proc.	Gafsa-Gabés	1 DUP; 300 HS
	The *dupondius* is of an unknown authority. The *sestertii* range in issuing authority from Trajan to Valerian I.			

TABLE 2: Hoards containing *asses* and *dupondii*

Given the very low value of *dupondii* and *asses*, it is logical that they would not be hoarded on their own. It would also be unlikely for them to be hoarded alongside the most valuable denominations such as *aurei*, as their value would hardly contribute to the overall value of the hoard in question. Their presence in *sestertii* hoards, then, is predictable, given the similarity in metallurgical composition of the denominations and the relative similarity of their values.

Chronologically, these three hoards fit into the same pattern visible in *sestertius* hoards as well as *denarius* hoards (Section 2.6). There are two hoards closing in the AD 250s, with one assigned to the third century with no further detail. Given the low rate of production of these small base-metal coins by this late period, it is not surprising that they should occur in only a few hoards. Additionally, the hoard data also suggest that the use of these small bronze coins was tied in with the use of *sestertii*, which makes their mutual decline during this period an expected phenomenon. The hoarded *asses* and *dupondii* do seem to have had longevity within the monetary system, however, as there is an *as* of Augustus reported in CHREP #12317 hoarded alongside *sestertii* that range from Augustus to Valerian.[49] As these three denominations, along with the *quadrans*, formed the bronze-coinage aspect of the Augustan currency system, their existence in the third-century is a testament to their usefulness to the local population.[50] There is little doubt that their underrepresentation in hoards is a result of their low value and does not necessarily imply that *asses* and *dupondii* were not active and important components of the local monetary system. This can be confirmed by the large number of scattered base-metal coins found during archaeological excavations such as the one at Carthage.[51]

[49] TURCAN 1963, 125.
[50] CARSON 1990, 229.
[51] REECE 2012, 265-280.

2.6 Hoards of *denarii*

There are five hoards containing *denarii* in North Africa with closing dates that fall after AD 250. Of these five hoards, there is one in Mauretania Tingitana, one in Mauretania Caesariensis, one in Numidia, and two in Africa Proconsularis. Only one hoard closes after Diocletian's provincial reorganization, and this only postdates the reorganization by a few years. Figure 9 shows a map of the find-spots of hoards including *denarii* in North Africa.

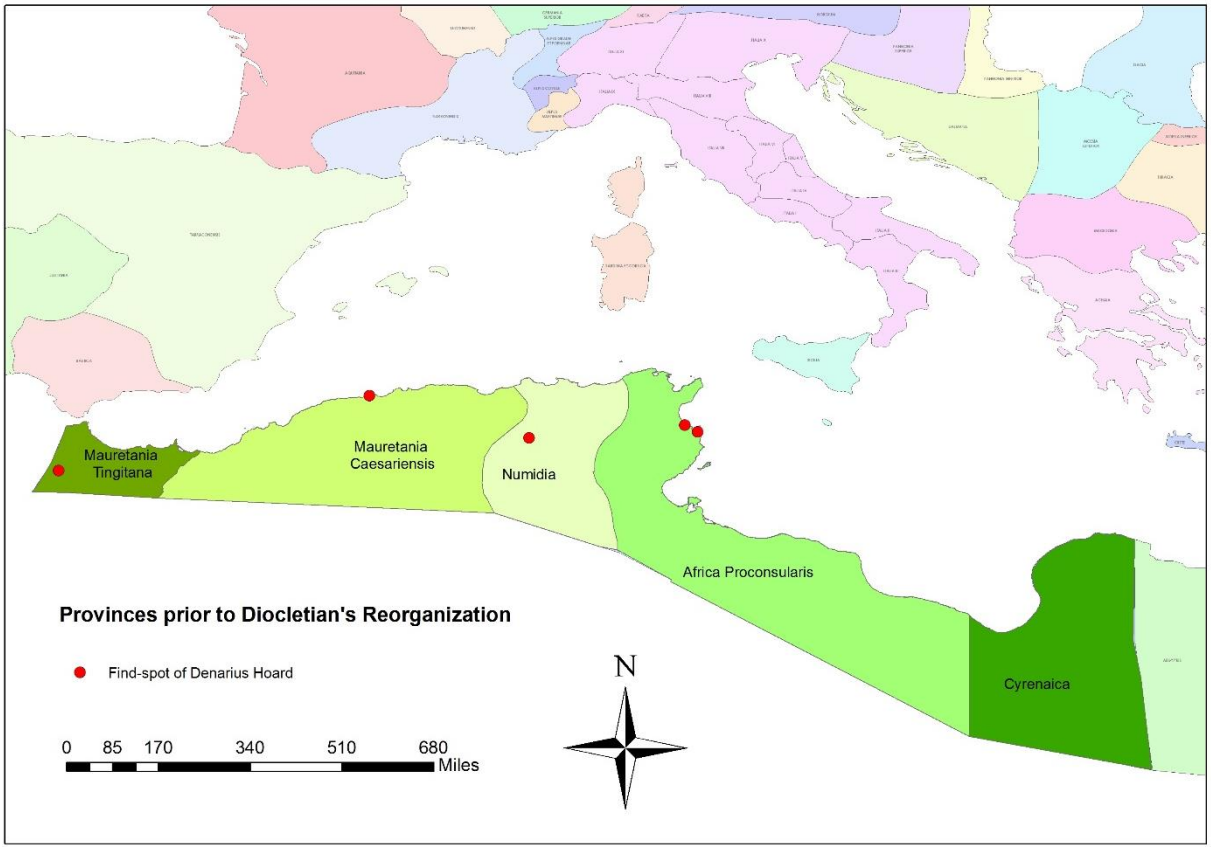

FIGURE 9: Map of the find-spots of *denarius* hoards in North Africa

The map above does not reveal any particular geographic pattern in the hoards' find-spots. The locations are spread across the map fairly evenly, with no single province holding the majority of hoards. Africa Proconsularis has two hoards, while Mauretania Tingitana, Mauretania Caesariensis, and Numidia each have one.

Chronologically, the hoards containing *denarii* have closing dates that are very similar to those of the *sestertius* hoards discussed in Section 2.3 as well as those of the *as* and *dupondius* hoards discussed in Section 2.5. There is a fairly even spread of closing dates between 253 and 275, with one outlier closing in the year 299. This information is visually represented in Figure 10 below.

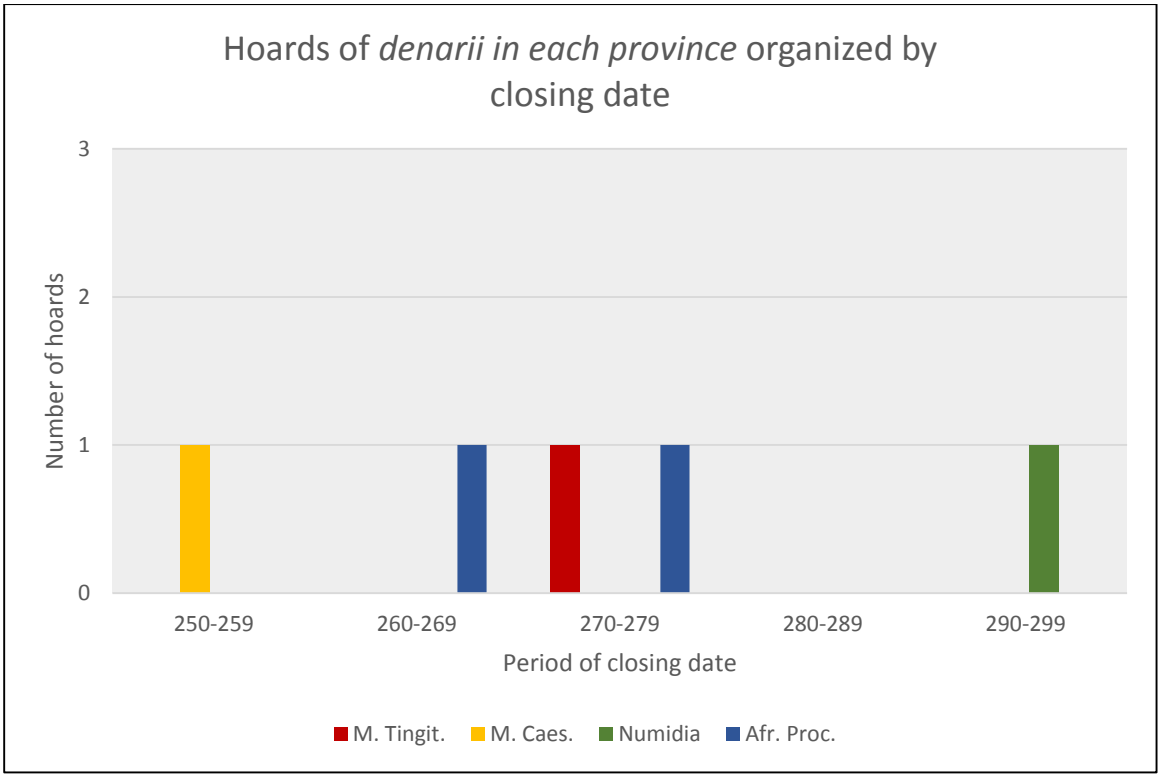

FIGURE 10: Graph representing the number of *denarius* hoards of each province organized by closing date

It should be noted that in Figure 10, for the earlier hoard in Africa Proconsularis (CHREP #12796), the closing date is reported in the literature only as the reign of Gallienus.[52] I have placed this hoard in the 260s rather than 250s on the basis that Gallienus is the final minting authority in the hoard and therefore there is a significant probability of at least one *denarius* coming from the latter half of his reign. It is, however, possible that the closing date could be during the 250s.

Although Figure 10 implies that Mauretania Caesariensis has hoards that close earlier and Numidia has hoards that close later, the extremely small number of hoards represented by this graph makes such generalities ill-advised. Instead, the very brief period of time in which all the hoards containing *denarii* in North Africa close ought to be the focal point. Within the three decades between AD 250 and 280, 80% of the *denarius* hoards closed. Even the single hoard that closes in the last decade of the third century is not that far removed from the others.

Because of the small number of hoards containing *denarii* closing after AD 250 in the entirety of North Africa, it is possible to provide a table of their pertinent data and composition (Table 3). From this table, it is clear that the number of *denarii* included in each hoard varies considerably among hoards. Three hoards contain only one *denarius*, while the largest hoard contains 601 *denarii*. Three of the five hoards are of mixed composition, all of which contain only one *denarius* in addition to coins of other denominations.

[52] SALAMA and BESOMBES 2002, 197.

***Denarius* hoards in all provinces**				
CHREP #	**Cl. Date**	**Province**	**Location**	**Composition**
12813	270	M. Tingit.	Banasa	1 DN; 32 AE
	The *denarius* is of Severus Alexander. The bronzes are of Gallienus (1) and Claudius II (22), with nine unidentified.			
12298	251-3	M. Caes.	Cherchell	75 DN
	The *denarii* are of Caracalla (1), Julia Soaemias (3), Julia Maesa (4), Elagabalus (16), Julia Paula (3), Julia Mamaea (5), Severus Alexander (20), Gordian III (10), Otacilia Severa (3), Trajan Decius (4), Herennia Etruscilla (1), Herrenius Etruscillus (1), Hostilian (1), Trebonianus Gallus (1), and Maximinus (1).			
12352	299	Numidia	Timgad	1 DN; 7 RAD
	The *denarius* is of Aurelian. The radiates are of Gallienus (1), Claudius II Aug (1), Probus (4), and Maximian (1).			
12781	275	Afr. Proc.	Fadhiline	1 DN; 4887 RAD
	The *denarius* is of Elagabalus. The radiates are of Volusian (1), Trebonianus Gallus (1), Salonina (6), Gallienus (73), Postumus (2), Claudius II (4238), Victorinus (2), Quintillus (3), Tetricus I (209), and Tetricus II (70). The *denarius* is of Elagabalus, and dates to 218-222.			
12796	253-67	Afr. Proc.	Sousse	601 DN
	The denarii are of Clodius Albinus (1), Septimius Severus (56), Julia Domna (31), Caracalla (65), Plautilla (3), Geta (27), Macrinus (2), Diadumenian (2), Elagabalus (15), Julia Maesa (8), Julia Soaemias (1), Julia Paula (1), Julia Mamaea (4), Severus Alexander (40), Orbiana (1), Maximus (2), Maximinus (64), Paulina (1), Balbinus (2), Pupienus (2), Gordian II (1), Gordian III (148), Philip I (39), Otacilia Severa (8), Philip II (12), Trajan Decius (12), Herennia Etruscilla (8), Volusian (10), Trebonianus Gallus (20), Mariniana (1), Valerian I (8), and Gallienus (8).			

TABLE 3: *Denarius* hoards in all provinces

It must be noted here that in the case of *denarii* and "small bronzes", the proper classification of these coins by the scholars reporting the hoards is questionable. It is, for example, possible that the small bronze coins reported in the *denarius* hoard in Mauretania Tingitana are radiates. It is also likely that the later "*denarii*" in CHREP #12298 and #12796 are actually radiates, given their late date and the rarity of *denarii* after Gordian III.[53] This confusion may be partially due to the occasionally ambiguous use of the word "*denarius*" to apply to any silver or silvered coin during the high Empire. Even scientific journals have been guilty of perpetuating this inaccuracy, grouping both true *denarii* and the radiate *antoniniani* under the same name.[54] With this being the case, it is entirely possible that there

[53] CARSON 1990, 234.
[54] See PENSE 1992 for one such ambiguous use of the word "*denarius*".

are errors in the classification of the coins in Table 3, but without being able to examine the coins one must accept the descriptions as reported in the literature.

Returning to Table 3, it is interesting that the two earliest hoards, CHREP #12298 and #12796, both contain large numbers of *denarii* with no other denomination mixed in. The one hoard closing in AD 270 contains small bronzes, and the two latest hoards contain only 1 *denarius* each along with radiates. Again, with the total number of hoards being so low, it is difficult to draw any firm conclusions, but this does imply that *denarii* were circulating in North Africa in large numbers early on, but that they became scarce in the 260s-270s. There do not seem to be any overarching trends in the issuing authorities of the *denarii*.

The *denarius* was a remarkably long-lived denomination. With the entirety of the Roman monetary system based around the *denarius* from the end of the third century BC onwards, the denomination was one of the most basic and important in the early Empire. It did, however, become progressively smaller, being struck at 84.95 to the pound during Augustus's reign, 156.4 to the pound at the start of Septimius Severus's, and 226.8 to the pound by Severus Alexander's.[55] The third century AD, however, saw major changes in the status of the *denarius*. In AD 215, the radiate was introduced, which effectively replaced the *denarius* between the 240s and 270s.[56]

The *denarius* hoards in North Africa with closing dates of AD 250 onward are almost exclusively comprised of coins dating to the third century. The earliest issue found in the hoards was one of Septimius Severus, struck either at the end of the second century or at the very beginning of the third. This is probably due to the fact that *denarii* were further debased under Septimius Severus to 50%, which probably resulted in these earlier, purer *denarii*

[55] DUNCAN-JONES 1994, 217.
[56] HOWGEGO 1995, 11.

being withdrawn from circulation and melted down.[57] As a result, it is to be expected that *denarii* of Septimius Severus are the earliest examples in the hoards. The rest of the *denarii* are third-century, with the latest issue reported to be a rare one of Maximinus.[58] In the five hoards discussed here, the removal of *denarii* from the active currency system and their replacement by radiates is visible. The two latest hoards, CHREP #12352 and #12781, contain only a single *denarius* each along with a larger number of radiates. They illustrate perfectly the dwindling numbers of *denarii* in the Roman Empire and the rise of the radiate as a major denomination.[59]

These *denarii* also represent the last of the high-purity silver coins to be hoarded in North Africa. There are no examples of *argentei*, minted from approximately AD 294 to 313, or the subsequent *miliarenses* or *siliquae* being hoarded in North Africa. These coins do appear in hoards around the Empire, mainly in Britain and Dacia, so their absence in North Africa is conspicuous.[60] It is unclear why these late silver coins were not hoarded in this region, but presumably the supply of *nummi* and *solidi* satisfied the economic requirements of the population.

2.7 Hoards of radiates – geography

The analysis of radiate hoards is not as straightforward as that of the *sestertius* and *denarius* hoards discussed above. Radiates underwent two significant reforms in the late third century: that of Aurelian in 274, and that of Diocletian in 294. Initially produced under

[57] CARSON 1990, 232.
[58] SALAMA 2002, 1973-4.
[59] BLAND 1996, 63-100.
[60] GUEST 2005, 28-9. For examples of *siliquae* in Roman Britain, see EVANS 1915, KING 1982, BURNETT 1984; for epigraphic evidence of early *siliquae* use in Italy, see KUBITSCHEK 1909; for an example of a late-Empire silver hoard along the Danube, see MISSONG 1868.

Caracalla in AD 215, the radiate had a weight of over 5 grams.[61] In 238, radiates weighed 4.79 g. and were 49.75% pure silver, but by 270, the weight had dropped to 2.61 g. and the fineness was averaging 2.3%.[62] Following Aurelian's reform, radiates weighed an average of 3.84 g. with an increased fineness of 4.5%.[63] Once again, however, the coinage deteriorated, leading to Diocletian's reform in 294. This later reform fixed the radiate's weight at approximately 3 g. with a negligible amount of silver in its composition.[64]

As a result of these differences in fineness and weight, radiate coin hoards as well as the radiates they contain will be broken down into three separate types, namely those predating Aurelian's reform which will be referred to as '*antoniniani'* according to convention, those after Aurelian's reform but before Diocletian's which will be called '*aureliani*', and those after Diocletian's reform which will be called 'post-reform radiates'. When referring to the overall denomination rather than a specific type, the broad term 'radiate' will be used. The early *antoniniani* are generally the highest quality of coin in terms of fineness, although those minted after AD 260 are lower in fineness than *aureliani*. The *antoninianus* could still be considered a much debased silver coin, rather than a base-metal one. *Aureliani* are similar to their earlier counterparts, but they represent an attempt to improve the quality of the denomination and are therefore considered separately. The post-reform radiates represent a significant divergence from the debased silver radiates minted prior to Diocletian's reform. These coins were properly base-metal, with only trace elements of silver that are assumed to be accidental.[65] They may have been intended as a transition-coinage designed to link the earlier, more valuable radiates with the new *nummi*.

[61] CUBELLI 1992, 4.
[62] CUBELLI 1992, 5-6.
[63] CARSON 1990, 117.
[64] SUTHERLAND 1967, 94.
[65] ERMATINGER 1996, 38.

Although the decision to use pre-reorganization provincial boundaries in the discussion of radiates is not as straightforward as it is in the cases of *sestertii* and *denarii*, there are two reasons for doing so. Firstly, out of the 38 radiate hoards reported in North Africa, 27 have closing dates prior to the provincial organization. Secondly, out of the eleven hoards that close after the provincial reorganization, only three actually contain radiates from the post-Diocletianic period. Additionally, ten of these eleven late hoards contain coins of non-radiate denominations that are typical of later time periods, so their placement within the post-Diocletianic may be influenced by these later coins.

Figure 11 shows a map of North Africa with dots marking the find-spots of radiate hoards of all three types. The red circles represent hoards terminating in *antoninianus* issues, the yellow triangles represent hoards terminating in *aurelianus* issues, and the blue circles represent hoards terminating in post-reform radiate issues. There are radiate hoards in Mauretania Tingitana, Mauretania Caesariensis, Numidia and Africa Proconsularis, but there are no radiate hoards reported from Cyrenaica. In total, there are 27 hoards terminating with *antoninianus* issues, four hoards terminating with *aurelianus* issues, three hoards terminating in post-reform radiate issues, and three hoards of unknown composition. The markers on the map are placed with as much accuracy as possible given the lack of detail in the descriptions of some hoards.

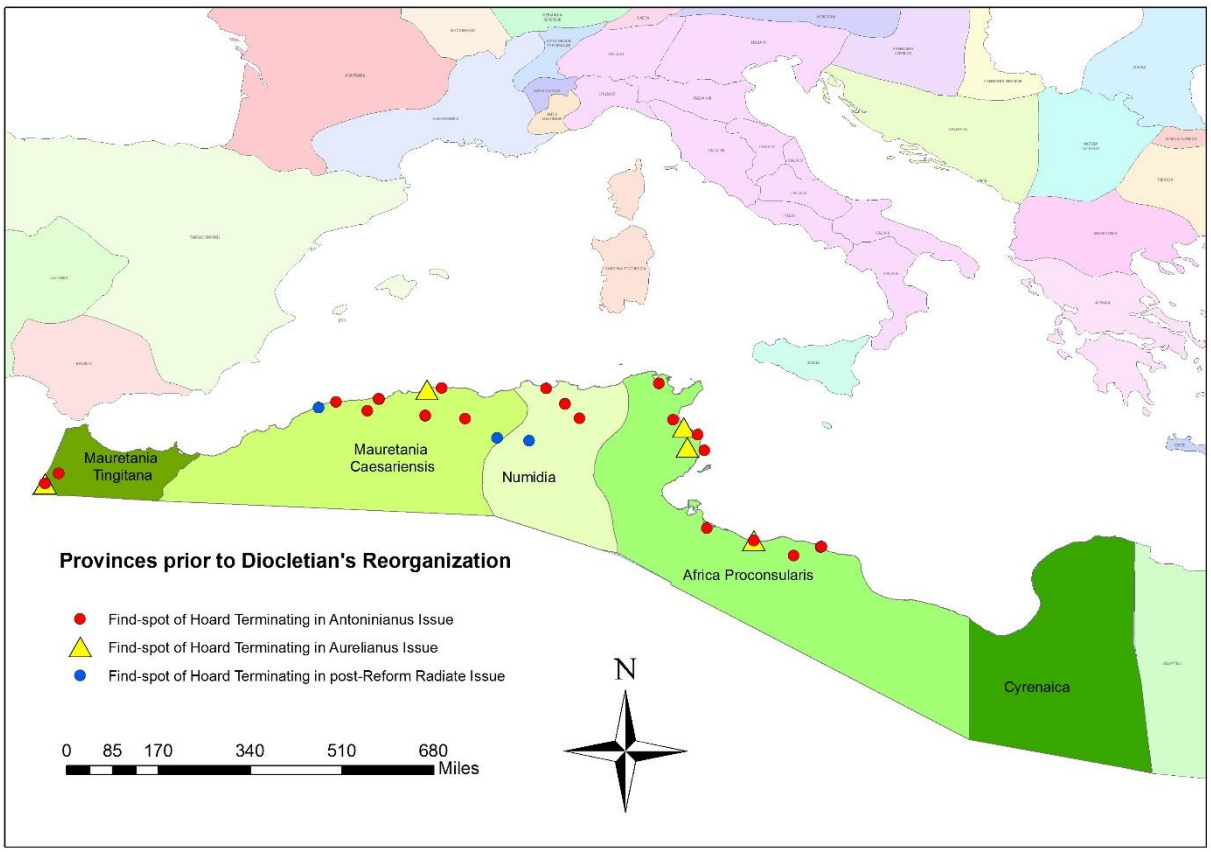

FIGURE 11: Map of the find-spots of radiate hoards in North Africa by type

One noticeable feature of this map is the slight shift in the grouping of hoards to the east, as opposed to the very westerly groupings seen in *sestertius* hoards (Figure 3) and the *denarius* hoards (Figure 9). There is a strong coastal trend among hoards of all three types, with only three relatively inland hoards in Mauretania Caesariensis. The hoards terminating in *aureliani* issues are spread very evenly across North Africa, while the three hoards terminating in post-reform radiate issues are located in Mauretania Caesariensis and Numidia.

From the map it is clear that Mauretania Caesariensis and Africa Proconsularis contain the most hoards, and this is reflected in Figure 12 which illustrates the number of hoards per province with final issues of each type. The "unknown" category is for hoards that have no information at all given about their composition other than that they include

some type of radiate coins. In cases where some coins are identified whilst others are listed only as 'uncertain' or 'unknown', the latest reported issue is used.

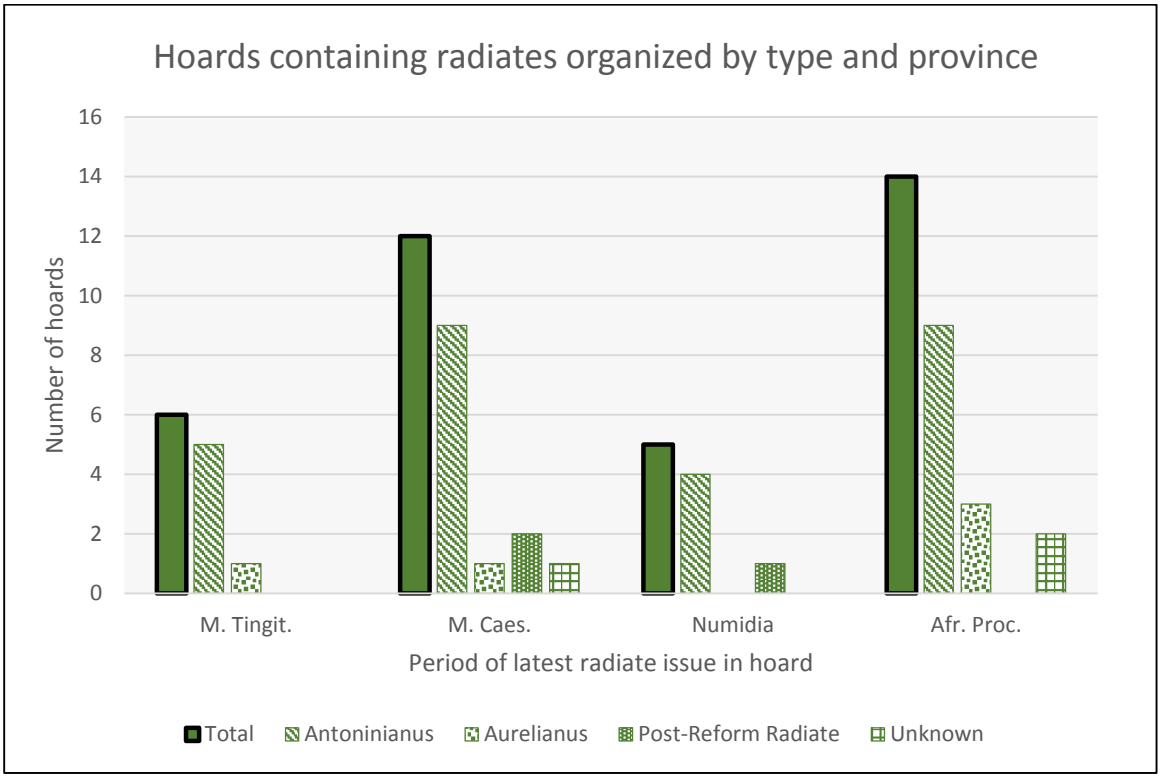

FIGURE 12: Graph representing the number of radiate hoards organized by type and province

From Figure 12, the large number of hoards terminating in *antoninianus* issues is apparent. A total of 27 hoards fall into this category, with nine in both Mauretania Caesariensis and Africa Proconsularis, five in Mauretania Tingitana, and four in Numidia. These hoards vastly outnumber those terminating in other radiate types. There are only five hoards terminating in *aurelianus* issues, with one in both Mauretania Tingitana and Mauretania Caesariensis, and three in Africa Proconsularis. Hoards that terminate in post-reform radiate issues have the fewest examples, with two in Mauretania Caesariensis and

one in Numidia. Additionally, Africa Proconsularis has two hoards for which there is no information about radiate coin type recorded at all, and Mauretania Caesariensis has one.

2.8 Hoards of radiates – chronology and composition

The hoards of radiates considered here are interesting in the chronology of their closing dates. The earliest hoard, #12788 in Africa Proconsularis, has a closing date of AD 261.[66] The latest hoard, #12362 in Mauretania Caesariensis, has a closing date of AD 540, nearly three centuries later than the earliest hoard.[67] The greatest number of hoards were deposited during the 270s, with nineteen hoards in total closing within the decade. There is, in particular, a great number of radiate hoards in Mauretania Caesariensis and Africa Proconsularis closing during this period. These two provinces also have scattered radiate hoards closing throughout the early fourth century and a very few in the fifth and sixth. The majority of radiate hoards in Mauretania Tingitana also close in the 270s, with one in the 280s as well.

[66] SALAMA 2009, 136.
[67] SALAMA 1979, 132.

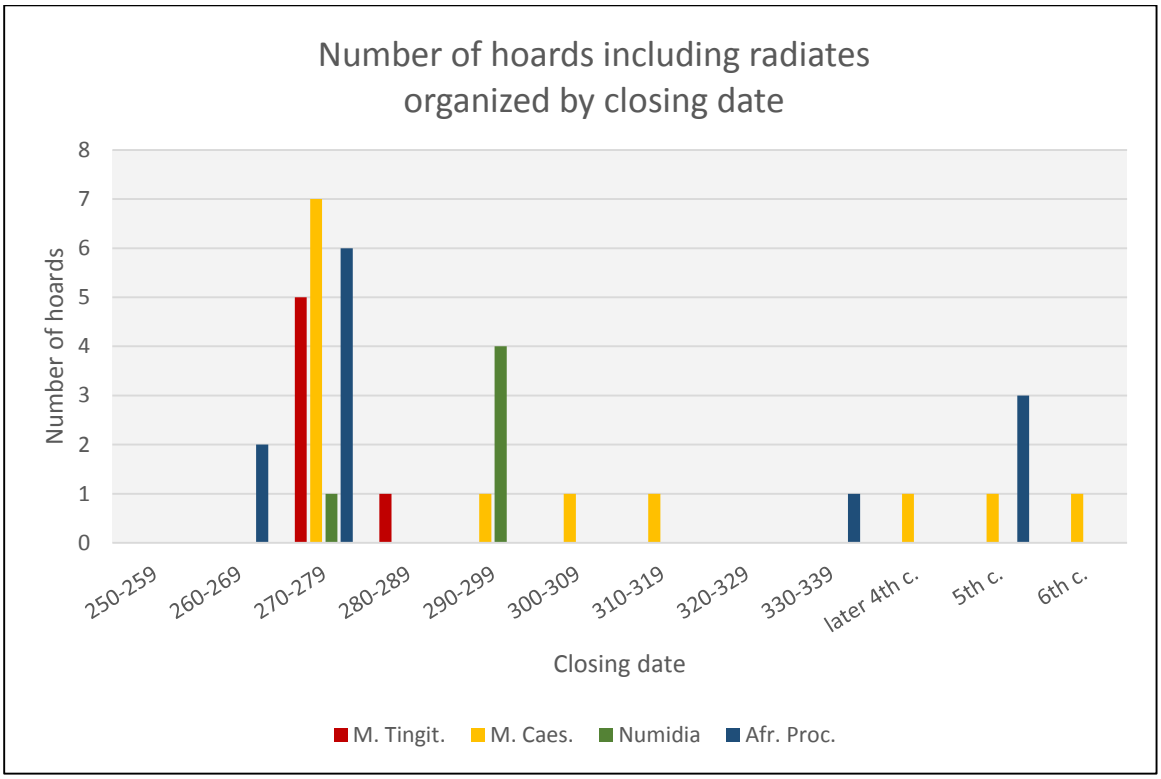

FIGURE 13: Graph representing the number of hoards including radiates organized by closing date and province

As a complement to Figure 13 above, another graph is provided which shows the chronology of the closing dates of hoards that exclusively contain radiate coins (Figure 14). These unmixed radiate coin hoards show a much clearer chronological grouping pattern. The period between AD 270 and 274 boasts the highest number of hoards closing with twelve total. The latter half of this decade, from AD 275 to 279, has the second highest number with five in total. For the next three decades, only one hoard closes per ten-year period.

From these two graphs illustrating the chronological patterning of radiate hoards, it is clear that there was a major reduction in the number of radiate hoards following the 270s. When this information is compared with the fact that out of the 38 total radiate coin hoards, 27 terminate in *antoninianus* issues, it becomes clear that Aurelian's reform had a major

effect on the hoarding pattern of these coins. With only four hoards terminating in *aurelianus* issues, and three terminating in post-reform radiate issues, it is obvious that a significant change occurred in either the supply or the valuation of radiate coins in North Africa in the 270s.

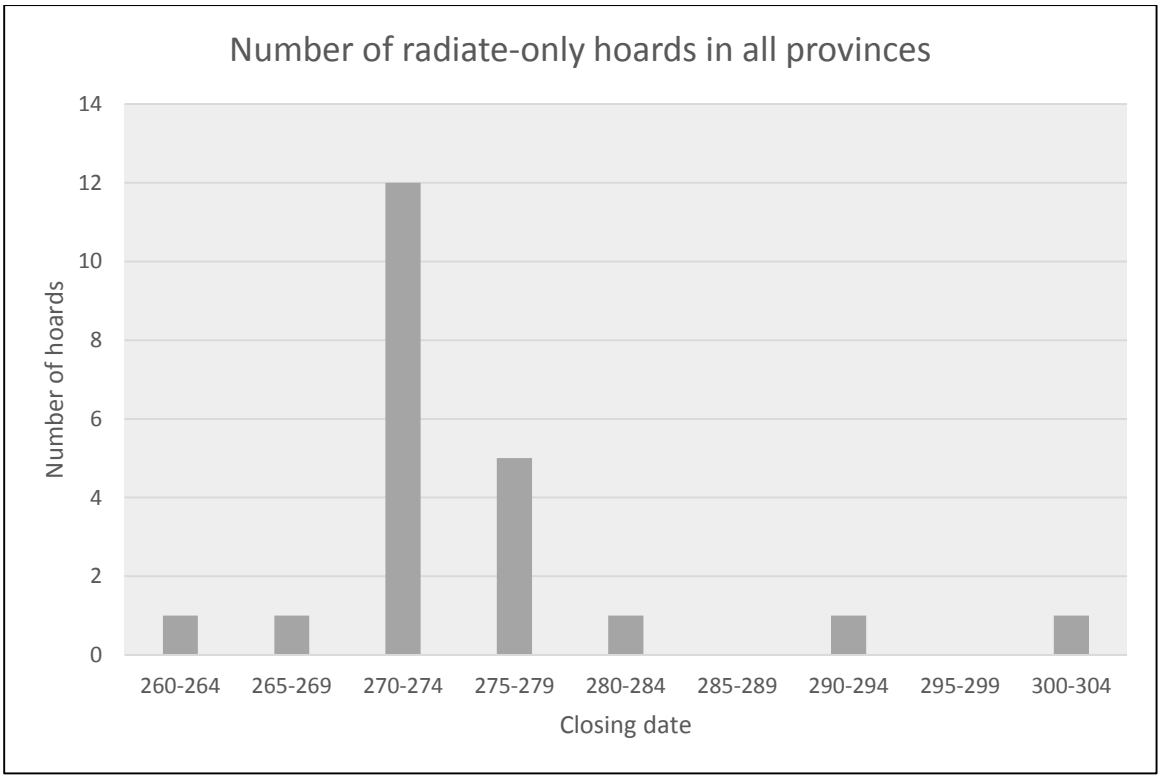

FIGURE 14: Graph representing the number of radiate-only hoards in all provinces by closing date

In assessing the number of individual hoarded radiates of each type per province, graphs do not do the data justice. There is a large enough disparity in the number of radiate coins of each type that a graph's scale would have to be so large that post-reform radiates would be almost invisible. Tables, although not as visually appealing as graphs, provide a more accurate representation of the data.

Table 4 lists the number of hoarded radiates from each period per province with CHREP #12778 included. Table 5 presents the same data, but excludes CHREP #12778 from the coin count. These tables illustrate that there is a correlation between the number of radiate hoards terminating in each type (Figure 12) and the number of individual hoarded radiates of each type in the region; there are more hoards terminating in *antoninianus* issues than any other radiate type, and there are more hoarded *antoniniani* than any other type of radiate.

The number of hoarded radiates per province – all hoards					
Type	**M. Tingit.**	**M. Caes.**	**Numidia**	**Afr. Proc.**	**TOTAL per type**
Antoninianus	277	2929	3202	51895	58303
Aurelianus	1	6	4	9	20
Post-Reform Radiate	0	64	1	0	65
Unknown	0	385	0	2101	2486
TOTAL per prov.	278	3384	3207	54005	60874

TABLE 4: The number of hoarded radiates per province with all hoards included

The number of hoarded radiates per province – CHREP #12778 excluded					
Type	**M. Tingit.**	**M. Caes.**	**Numidia**	**Afr. Proc.**	**TOTAL per type**
Antoninianus	277	2929	3202	11517	17925
Aurelianus	1	6	4	7	18
Post-Reform Radiate	0	64	1	0	65
Unknown	0	385	0	2065	2450
TOTAL per prov.	278	3384	3207	13589	20458

TABLE 5: The number of hoarded radiates per province, CHREP #12778 excluded

These tables also emphasize just how incredibly rare *aureliani* coins are in North Africa. Even though there are five hoards terminating in *aurelianus* issues, there is only an average of 4 *aureliani* per hoard. The number of post-reform radiates is not much higher,

but it brings the average number of post-reform radiate per hoard terminating in this type to 22. In stark contrast, the number of hoarded *antoniniani* in North Africa is massive, even without CHREP #12778 included in the coin count. With this hoard excluded, the average number of hoarded *antoninaini* per hoard terminating in this type is 663.

As is made evident by the difference in the numbers of hoarded radiates included in each table above, CHREP #12778 is a major outlier in the corpus of North African radiate hoards. This hoard, discovered in 1973 in El Djem, Tunisia, part of ancient Africa Proconsularis, was found as a result of agricultural ploughing and was buried in a baked clay jar with a flat bottom.[68] The hoard contained 40,416 radiate coins, approximately half of which have been inventoried.[69] Ultimately, for statistical reasons, the hoard is excluded from the analysis of the number of hoarded radiate coins because its inclusion bloats the data and leads to an unrealistic view of North African radiate hoards.

Another interesting feature of radiate hoards in North Africa is that they include a large number of radiates both real and imitation, from the Gallic Emperors. The Gallic Empire, which functioned quite independently from the true Roman Empire to its east, formed after Postumus usurped power in the region during AD 259.[70] He was succeeded briefly by Marius in 268, followed by Victorinus until 270, and then Tetricus I and his son Tetricus II until 274.[71] In terms of the Roman Empire, this span of time overlaps with the reigns of Gallienus, Claudius II, Quintillus and Aurelian.

Out of the 38 radiate hoards, 19 contain radiates from the Gallic Empire. There is one hoard in Mauretania Tingitana, five in Mauretania Caesariensis, four in Numidia, and nine in Africa Proconsularis (Figure 15). This means that the majority of radiate hoards in

[68] SALAMA 2009, 137.
[69] See LANTERI 2005 and DEPEYROT 2013 for an inventory and discussion of this hoard.
[70] DRINKWATER 1974, 293.
[71] DRINKWATER 1974, 294.

Numidia, just under half the hoards in Mauretania Caesariensis, and just over half the hoards in Africa Proconsularis contain Gallic radiates. Only one out of five hoards in Mauretania Tingitana contains Gallic issues. In all 19 hoards, the Gallic *antoniniani* are combined with radiates from the Roman Empire. There are no purely Gallic hoards. With CHREP #12778 excluded for the reasons detailed above, there are in total 7,189 Gallic radiates in these hoards, with 6 of Postumus, 1 of Marius, 16 of Victorinus, 3,949 of Tetricus I, 86 of Tetricus II, 50 of Tetricus and Victorinus, and 3,040 of Tetricus I and II. In hoards containing both Gallic and Roman radiate coins there are 12,448 radiate coins attributed to the Roman Emperors. This gives a ratio of approximately one Gallic radiate coin per two Roman radiate coins in the hoards containing both types. Interestingly, Gallic radiate coins appeared in all five hoards that contain Roman Empire radiates terminating with *aureliani* (CHREP #12778 included), although there were no Gallic radiate coins in hoards containing post-reform radiates. Another interesting occurrence is that in every hoard containing Gallic issues there are radiates of Claudius II.

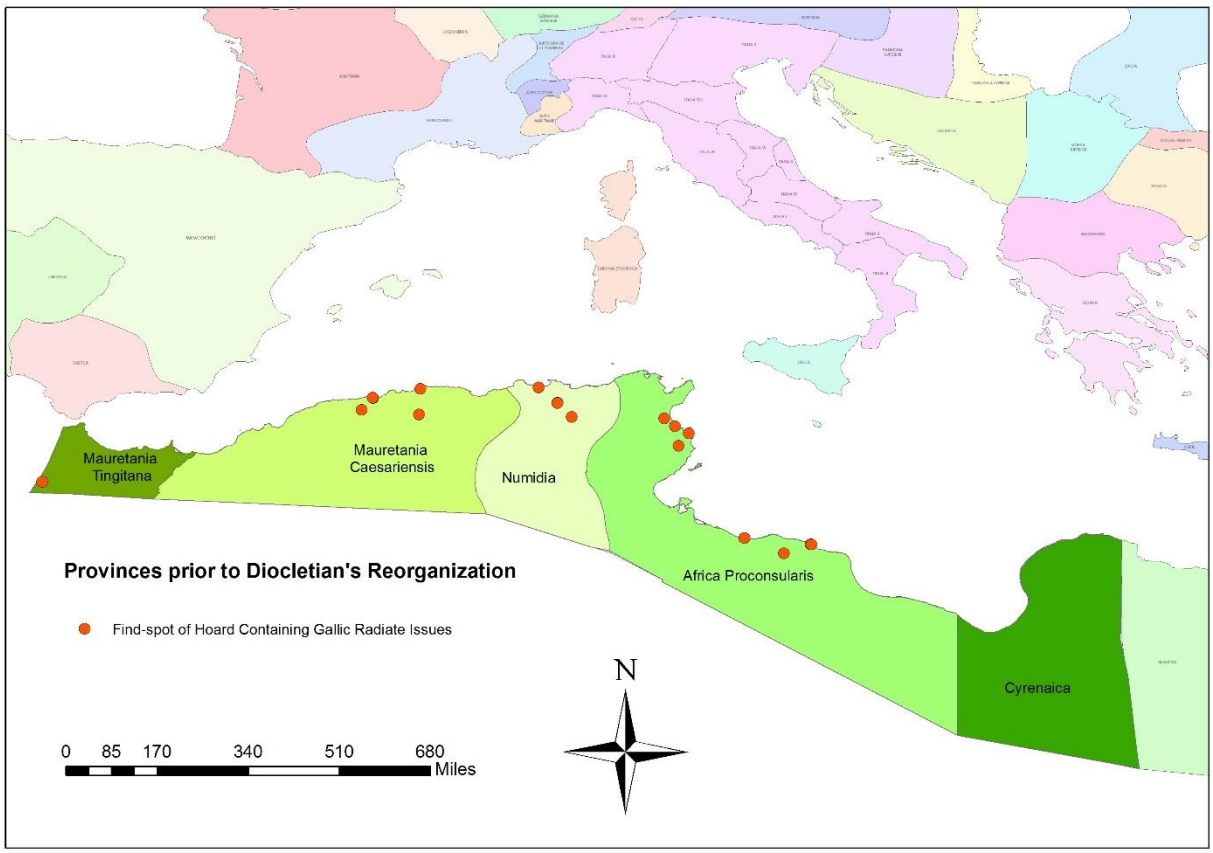

FIGURE 15: Map of the find-spots of radiate hoards in North Africa containing issues from the Gallic Empire

One third of the hoards containing radiate coins reported in North Africa for this time period have mixed compositions. Africa Proconsularis has the largest number of mixed radiate coin hoards, followed by Mauretania Caesariensis with two, and Numidia with one. There are no mixed radiate hoards in Mauretania Tingitana, but with only two radiate hoards reported from the region at all, the lack of mixed radiate hoards is probably not meaningful. These hoards typically have later closing dates than their unmixed counterparts, although the earliest closing date for a mixed radiate hoard is AD 275. The *nummus* is the most common denomination to be combined with radiates, with the occasional inclusion of *sestertii*, *denarii*, and small bronzes. Table 6 lists these ten mixed hoards along with pertinent information about them.

Radiate hoards with mixed composition				
CHREP #	**Cl. Date**	**Province**	**Location**	**Composition**
12311	319	M. Caes.	El Guelta	2 RAD (post-reform); 116 NM; 1 HS
	Radiates are of Maximian I and Maxentius. The *nummi* span in date from 301-3 through 318, and are issued by Diocletian (1), Maximian I (1), Constantius I (1), Maximinus Daia (4), Maxentius (7), Constantine I (81), Licinius I (10), Licinius II (1), Crispus (3), and Constantine II (8). The *sestertius* is of Faustina I, dating to 141.			
12356	430	M. Caes.	Tipasa	1 RAD (*antoninianus*); 67 NM; 3 AE Auto
	The radiate is of Claudius II Divus dating to 170. The 67 *nummi* are unattributed with the exception of Constantine I (1) and Valentinian III (1). The three small autonomous bronzes of Carthage date to the fifth century.			
12362	540	M. Caes.	Tipasa	3 RAD (*antoniniani*); 731 NM; 3 AE Auto
	The radiates are of Claudius II Divus (1), Gallienus (1), and Tetricus I (1). The 731 *nummi* are unattributed and undated. One small bronze is of Thrasamund, and two are autonomous from Carthage.			
12352	299	Numidia	Timgad	7 RAD (*anton.*, *aurel.*, and post-reform); 1 DN
	The radiates are of Gallienus (1), Claudius II (1), Probus (4), and Maximian I (1). The *denarius* is of Aurelian.			
12372	c. 360	Afr. Proc.	Lepcis Magna	n? RAD (*antoninianus*); n? NM
	Apparently 1800 coins total including barbarous radiates and *nummi*. The only barbarous radiates that are attributed are Claudius II (2), Victorinus (1), Tetricus I (1), and Tetricus II (1). The nummi are unattributed and undated, but included are FEL TEMP REPARATIO (aes 3) type and SPES REPVBLICE (ae 4) type.			
12377	410	Afr. Proc.	Lepcis Magna	1 RAD (unk); 38 NM
	The radiate is unattributed and undated. 22 of the *nummi* are unattributed, with the rest being of House of Constantine (7), Constantius II (2), Julian (1), Valens (2), House of Valentinian (1), Gratian (1), and Theodosius I (2).			
12383	310-37	Afr. Proc.	Sabratha	352 RAD (unk); 4 NM
	The radiates are imitations, undated and unattributed. The *nummi* are of the House of Constantine and undated.			
12384	425-55	Afr. Proc.	Sabratha	824 RAD (*antoniniani*); NM 28
	The radiates are of Gallienus (4), Claudius II (207), and imitation Tetricus I (613). The coins of Tetricus I are thought to be imitations. The *nummi* span in authority from Constans II to Valentinian III, but no further detail is given.			
12764	408	Afr. Proc.	Bou Garmin	1 RAD (radiate); NM 14
	The radiate is of Gallienus. The *nummi* are of Constantine I (1), Constantine II (1), Julian (1), Valens (1), Gratian (4), Valentinian II (1), Theodosius I (2), Arcadius (2), and Flavius Victor (1).			
12781	275	Afr. Proc.	Fadhiline	4886 RAD (radiate); 1 DN
	The radiates are of Volusian (1), Trebonianus Gallus (1), Salonina (6), Gallienus (67), imitation Gallienus (6), Postumus (2), Claudius II Divus (4115), imitation Claudius II Divus (20), Claudius II Aug (93), imitation Claudius II Aug (10), imitation Victorinus (2), Quintillus (3), Tetricus I (145), imitation Tetricus I (64), Tetricus II (58), and imitation Tetricus II (12), and 281 uncertain. The *denarius* is of Elagabalus, and dates to 218-222.			

TABLE 6: Hoards of radiates with mixed composition

From this table, certain patterns become evident. The two hoards that are mixed with *denarii*, CHREP # 12352 and 12781, have the earliest closing dates of all the mixed radiate hoards. These are the only two mixed radiate hoards to close in the third century, which is when the grand majority of radiate-only hoards close. The fifth- and sixth-century mixed radiate hoards also tend to have a smaller number of radiates. CHREP #12764, #12377, and #12356, closing in 408, 410, and 430 respectively, each contains only one radiate, whilst the only sixth-century mixed radiate coin hoard, CHREP #12362, closing in 540, has only three. These hoards imply that although radiates were very uncommon by the fifth and sixth centuries, they were still in existence and considered a viable currency. The use of radiates at such a late date is indicative of the decaying Roman Empire and monetary system, which forced local populations into using whatever currency was available even if it was significantly outdated. An outlier in that argument is CHREP #12384, closing between 425 and 455, which has 824 radiates. Due to the early dating of the radiates in this hoard and the close chronological grouping of issuing authorities, however, it is highly probable that these coins were hoarded around the end of the third century and were not still in active circulation when the 28 *nummi*, which date from Constans II through Valentinian III, were added later. Therefore, it ultimately appears that by the start of the fifth century, radiates were a rare commodity.

Interestingly, the two hoards at Tipasa both include small autonomous bronzes. Small bronzes from Carthage are contained in both, with one small bronze from the Vandal king Thrasamund contained in the later hoard.[72] These are the only two hoards in the entirety of North Africa reported to contain autonomous bronzes. Given the very low value of these coins, it is likely that they were used in small, daily transactions and were not placed in hoards frequently. Although it is not immediately clear why Tipasa has two hoards

[72] SALAMA 1979, 132.

containing them, the significant physical distance between Tipasa and Carthage, almost linear 450 miles, suggests that these small bronzes had quite a large range of circulation.

Radiate hoards in North Africa also include a significant number of imitation radiates, with 12 of the 33 radiate hoards including at least some imitations. These 12 hoards are listed in Table 7 along with their contents. Ten hoards close at the end of the third century, with one closing in the early fourth, and one closing in the early to mid-fifth.

Radiate hoards that include imitation radiates				
CHREP #	**Cl. Date**	**Province**	**Location**	**Composition**
12810	270	M. Tingit.	Thamusida	88 RAD (*antoniniani*)
	Imitations: Claudius II Divus (44) Real: Elagabalus (1), Valerian I (1), Salonina (5), Gallienus (15), Quietus (1), Claudius II Aug (20), Quintillus (1)			
12808	274	M. Tingit.	Thamusida	33 RAD (*antoniniani* and *aureliani*)
	Imitations: Claudius II Divus (24), Tetricus I (1) Real: Gallienus (2), Salonina (1), Claudius II Aug (4), Probus (1)			
12372	270-275	Afr. Proc.	Lepcis Magna	n? RAD (unk); n? NM
	Imitations: Claudius II Aug (n?), Claudius II Divus (n?), Victorinus (n?), Tetricus I (n?), Tetricus II (n?) Real: It is uncertain whether any real radiates exist in this hoard. All unidentified *nummi* are listed as real.			
12818	275	M. Caes.	Tipasa	94 RAD (*antoniniani*)
	Imitations: Claudius II Aug (2), Tetricus I (7) Real: Gallienus (19), Salonina (1), Claudius II Aug (13), Claudius II Divus (33), Tetricus I (12), Tetricus II (6), Unknown (1)			
12781	275	Afr. Proc.	Fadhiline	4886 RAD (*antoniniani*); 1 DN
	Imitations: Claudius II Aug (10), Claudius II Divus (3941), Tetricus I (228), Tetricus II (89), Victorinus (2) Real: Volusian (1), Salonina (6), Gallienus (67), Claudius II Aug (92), Claudius II Divus (207), Tetricus I (145), Tetricus II (58), Trebonianus Gallus (1), Postumus (1), Quintillus (3), Unidentified (36).			
12382	276-282	Afr. Proc.	Sabratha	300 RAD (*antoniniani* and *aureliani*)
	Imitations: Postumus (1), Victorinus (1), Tetricus I or Victorinus (1), Claudius II Divus (21), Tetricus I (20), Tetricus II (2), Aurelian (1), Probus (1), Unreadable (81), Unidentified (162) Real: Claudius II Divus (1), Tetricus II (1), Unidentified (1), Blanks (5)			
12821	290-99	Numidia	Aïn-Elmarikan	2777 RAD (*antoniniani*)
	Imitations: Claudius II Divus (731), Tetricus I (1274), Victorinus or Tetricus I (241), Tetricus II (509) Real: Claudius II Aug (22)			
12822	290-99	Numidia	Announa	22 RAD (*antoniniani*)
	Imitations: Claudius II Divus (9), Victorinus or Tetricus I (13) Real: none			
12823	290-99	Numidia	Announa	63 RAD (*antoniniani*)
	Imitations: Claudius II Divus (22), Victorinus or Tetricus I (35) Real: possibly the six unidentified radiates			
12366	290-99	Afr. Proc.	Abbiar-Miggi	3950 RAD (*antoniniani*)
	Imitations: Tetricus I or II (3025) Real: Claudius II Divus (925)			
12383	310-337	Afr. Proc.	Sabratha	352 RAD (unk); 4 NM
	Imitations: Unidentified (352) Real: The four unidentified *nummi* are listed as real.			
12384	425-455	Afr. Proc.	Sabratha	824 RAD (*antoniniani*); 28 NM
	Imitations: Tetricus I (613) Real: Gallienus (4), Claudius II Aug (6), Claudius II Divus (201). The 28 *nummi*, which span from Constans II through Valentinian III, are listed as real.			

TABLE 7: Radiate hoards that include imitation radiates

In total, there are 11,463 imitation radiates across all twelve hoards. Since this tally cannot take into account CHREP # 12372 because there is no numerical information about this hoard's imitations, this number is almost certainly an underestimate. J. Chameroy estimates that eleven more hoards in North Africa contain imitations, but as there is no proof of this, they have been omitted from the discussion here.[73] Additionally, it is also likely that the El Djem hoard (CHREP #12778) included imitations, but it is unclear in the literature which coins are real and which are imitations, thus precluding accurate analysis. Of these 11,463 imitation radiates, 4815 are from Roman Emperors including 4792 of Claudius II Divus alone, 6068 are from Gallic Emperors, and 580 are unattributed. Of the Gallic Emperors, Tetricus I has the most with 2143 imitations, followed by Tetricus II with 606, Victorinus with three, and Postumus with one. There are also 3025 imitation radiates attributed to either Tetricus I or Tetricus II, and there are 290 imitation radiates attributed to either Tetricus I or Victorinus. In summary, 84% of the hoarded Gallic radiates are reported to be imitations, whilst only 37% of the Roman Empire ones are reported as such. As Salama points out, however, it is frequently difficult to tell imitations from official issues, and therefore the numbers may be skewed.[74]

2.9 Hoards of radiates– circulation and conclusions

The radiate hoards in North Africa provide a very interesting insight into the circulation of billon coinage in the region during the last half of the Empire. The closing dates of the hoards indicate that there was a surge of hoarding behavior during the AD 270s, after which radiates appear to have occupied a very minimal role in North African coin hoards. This

[73] CHAMEROY 2010, 348-353.
[74] SALAMA 2009, 135.

hoarding is likely a result of Aurelian's monetary reform which occurred in the middle of this decade. The very large number of *antoniniani* in the region, coupled with the paucity of *aureliani* and post-reform radiates, supports this assertion. The data from hoards indicate that *antoniniani* were injected into the North African economy with relative frequency and consistency, while the later radiates trickled in in very small numbers. It is, however, difficult to tell whether the supply of radiates actually diminished drastically in the 270s or whether old *antoniniani* were being shipped to North Africa subsequent to the introduction of the *aurelianus* and were hoarded at a later date. In both cases, the hoarding pattern would appear similar; the terminal issue would still pre-date Aurelian's reform whether the hoards were deposited in the 270s or after.

This transfer of outdated *antoniniani* to North Africa is an idea that is supported by a number of scholars familiar with the region's economy. From the late 260s and through the reign of Aurelian, the mint at Rome was producing a great number of *antoniniani* of Claudius II Divus.[75] These issues were also imitated at various illegitimate Italian and North African mints.[76] At the same time, the Gallic Emperors were producing radiates at Cologne and Trier. This bloating of the currency system from the abundance of radiates may have been the cause of serious inflation, ultimately leading to Aurelian's attempt to reform the monetary system.[77] When Aurelian defeated the Tetrici in AD 274, he withdrew the Gallic radiates from circulation in Gaul, Spain, and Italy.[78] It seems highly probable that some of these withdrawn Gallic radiates ended up being shipped to North Africa to supplement the existing currency.[79]

[75] BEN HADJ NACEUR-LOUM 2012, 445.
[76] SALAMA 2009, 137.
[77] CHAMEROY 2010, 336-7.
[78] BEN HADJ NACEUR-LOUM 2012, 445.
[79] SALAMA 2009, 138. Included in quoted correspondence between Salama and M. D. Hollard.

Approximately half of all radiate hoards contain Gallic radiates, and there is much support for the idea that these radiates were exported in bulk to North Africa at this time. First, given North Africa's loyalty to the legitimate Roman Emperors rather than the Gallic usurpers, it seems unlikely that the Gallic radiates would have been obtained through commerce or direct contact. Secondly, and perhaps even more tellingly, all the hoards that do contain Gallic radiates also contain radiates of Claudius II Divus. This combination of Gallic issues and Claudius II Divus issues is exactly what is expected to have been injected into North Africa. Thirdly, there are no Gallic issues of other denominations in North Africa, suggesting that an organic exchange of coinage through trade or interpersonal contact did not occur. Lastly, the large number of hoards that terminate in issues dating to the AD 270s suggests that there was a multitude of such coins circulating in the region. As it is difficult to pinpoint when exactly these hoards were deposited, it is unclear exactly how long radiates represented a large part of the local currency. No matter when the hoards themselves were buried, the hoarding pattern of radiates certainly supports the hypothesis that there was a mass relocation of Gallic and Claudius II Divus radiate coins to North Africa around the time of Aurelian's reign.

This bloating of the economy due to too many radiates also led to another of the interesting features of radiate hoards in North Africa. As made clear by the data reported in Section 2.8, there are barely any hoarded *aureliani*, and there are only a few hoarded post-reform radiates. This phenomenon may be partially due to the fact that in order for the Empire to absorb the excess number of radiates, there was a major decline in the production of *aureliani* starting in the latter part of Aurelian's reign and continuing possibly until

Diocletian's.[80] This lack of hoarded *aureliani* and post-reform radiates in North African hoards, is, then, a logical outcome of the monetary production trends in Rome at the time.

The large radiate hoard of El Djem, CHREP #12778, which was discussed in the previous section, provides an excellent sample of the radiates circulating in North Africa. Of the 19,656 coins that have been studied in this hoard, some interesting patterns emerge. Radiate coins of Gallienus and Claudius II Augustus comprise 22.48% and 12.48% of the hoard respectively.[81] Radiates of Claudius II Divus, however, comprise 54.17% of the hoard.[82] The rest of the coins span chronologically from Valerian to Probus. There are only two coins of the latter emperor reported, but this does prove that the hoard included *aureliani* and not just *antoniniani*. It is possible that the hoard was intended only to include *antoniniani*, and the few *aureliani* were accidental inclusions. It is perhaps more likely, however, that the hoard included coins of Probus intentionally, and the paucity of hoarded *aureliani* simply mirrors the fact that very few of these coins were in circulation.

It is unclear exactly why so many radiates were hoarded together in CHREP #12778. There is a difference of 35,530 coins between it and the next largest radiate hoard, CHREP #12781 located at Fadhiline, Tunisia.[83] Salama postulates that the hoard might have been part of the treasury of the ancient town of Thysdrus, which was a major olive oil production center by the end of the third century.[84] It is also possible that the hoard belonged to an extremely wealthy private citizen, perhaps a merchant of this oil. No matter who owned the hoard, it is likely to have been connected with the production of olive oil, the source of the town's wealth.

[80] SALAMA 2009, 139.
[81] BEN HADJ NACEUR-LOUM 2012, 441, 449.
[82] BEN HADJ NACEUR-LOUM 2012, 449.
[83] SALAMA 2009, 133.
[84] SALAMA 2009, 139.

The literature concerning North African radiate hoards does not frequently contain information about where each coin was minted. The radiates attributed to Gallic emperors can be logically assigned to either Cologne or Trier, but the lack of recorded mintmarks and iconography makes it difficult to differentiate between the two. As for the non-Gallic radiates, the situation is even less clear. Out of the almost 61,000 radiates known to have been hoarded, only 170 *antoniniani*, 4 *aureliani*, and 63 post-reform radiates are reported with their mints. Of the *antoniniani*, 163 (96%) are from Rome. Another four are from Milan, and three are from Siscia. Although these data reflect only a very small portion of the hoarded *antoniniani* in North Africa, it does appear that the mint at Rome was the principal producer of these coins. The breakdown of mints for the *aureliani* is similar to that of the *antoniniani*, with three attributed to Rome, and one attributed to Siscia. Predictably, the pattern of mints shifts dramatically for post-reform radiates. As part of Diocletian's reform, he overhauled the minting system, opening new mints and reducing the output of others. This is the one radiate type for which there is relatively complete information concerning mints. Sixty-three of the 65 total post-reform radiates are documented with their mints. Of these 63 post-reform radiates, 29 (46%) are from Carthage, 13 (21%) are from Rome, 11 (17%) are from Cyzicus, 9 (14%) are from Alexandria, and 1 (.01%) is from Ticinum.

The minting pattern of *antoniniani* and *aureliani* is relatively straightforward and implies that, while Gallic radiates may have been withdrawn from circulation by Aurelian and subsequently shipped in large numbers out of Gaul, there was also a stream of radiates minted at Rome entering North Africa. The minting pattern of post-reform radiates presents quite a different picture. There is a much stronger trend toward radiate production in North Africa and the East. Rome, which produced the grand majority of pre-Diocletianic radiates, is responsible for a mere 21% of the hoarded post-reform radiates in the region. This implies

a shift, almost certainly a result of Diocletian's monetary reform, from radiates being sent to North Africa from the western provinces of the Empire to radiates being sent to North Africa from the East and from within the region itself.

CHAPTER THREE

Coin Hoards in the Context of post-Diocletianic Provinces

3.1 Introduction to the post-Diocletianic evidence

Whilst Chapter 2 details the coin hoards that are logically examined with respect to the provincial layout prior to Diocletian's reorganization at the start of the fourth century, this chapter addresses those hoards that are best analyzed in the context of the Diocletianic provinces. Hoards containing *nummi* and *solidi* all fall into this category, and as such, they will be discussed in terms of their placement within the North African provinces as of approximately AD 303. There are no hoards of silver denominations such as *argentei* or *siliquae* reported in North Africa during this period, and therefore this discussion is necessarily restricted to billon and gold denominations.

Prior to Diocletian's provincial reorganization, there were four main provinces in North Africa – Mauretania Tingitana, Mauretania Caesariensis, Numidia, and Africa Proconsularis – as well as a fifth, Cyrenaica, which is frequently omitted from discussions of Roman North Africa but does sometimes contain relevant hoards. As a result of

Diocletian's systematic division of the Empire in order to reduce the amount of power that any one individual could gain, these five provinces were reduced in size and their borders were redrawn. Mauretania Tingitana is the only province that remained largely as it had been before the reorganization. Pre-reorganization Mauretania Caesariensis was divided to form Mauretania Caesariensis in the west and Mauretania Sitifensis in the east. Numidia and the western area of Africa Proconsularis underwent major changes in their boundaries, and formed Numidia Cirtensis, Numidia Militiana, Africa Proconsularis, and Byzacena. The central and eastern parts of pre-reorganization Africa Proconsularis was redubbed Tripolitania, and Cyrenaica became Libya Superior. In sum, the five provinces that had existed before Diocletian's reign became nine, with some undergoing far greater changes in size and shape than others.

In this chapter, hoards will be discussed in much the same way as they were in Chapter 2. Maps illustrating the find-spots of hoards are as accurate as possible, and each dot on the map ought to be understood to indicate the location of hoards rather than the quantity, as occasionally more than one hoard occurs in the same location. Tables of hoards will be included where appropriate, and other hoards will be referenced with their CHREP number and listed in full in the catalogue.

3.2 Hoards of *nummi* – geography

In AD 294 when Diocletian introduced his now completely debased post-reform radiate, the denomination of *nummus* was also created. Occasionally called *folles* in the literature, these *nummi* were considerably heavier than *aureliani* at 10 grams, and they ostensibly contained

the same 5% silver content,[85] as evidenced by the inscription XXI on some of the coins.[86] As C. E. King has proven, however, the average silver content of these coins was actually closer to 2.75%.[87] These *nummi* had a bold appearance with their large size and silver-washed surface, and their aesthetics must have been a welcome improvement to that of the small, less valuable-looking *aureliani*. The exact face value of this coin has been debated at length, but it is clear from Diocletian's Currency Edict that they were valued more highly than the contemporary post-reform radiates.[88]

More coin hoards in North Africa contain *nummi* than any other denomination. In total, there are 51 hoards reported to be either entirely or partially comprised of *nummi*. The find-spots of these *nummus* hoards are shown in Figure 16 in the context of the Diocletianic provinces.

[85] BURNETT 1987, 128.
[86] For a full discussion of alternate interpretations of the XXI inscription on *nummi*, see HARL 1985.
[87] KING 1993, 19.
[88] ABDY 2012, 586.

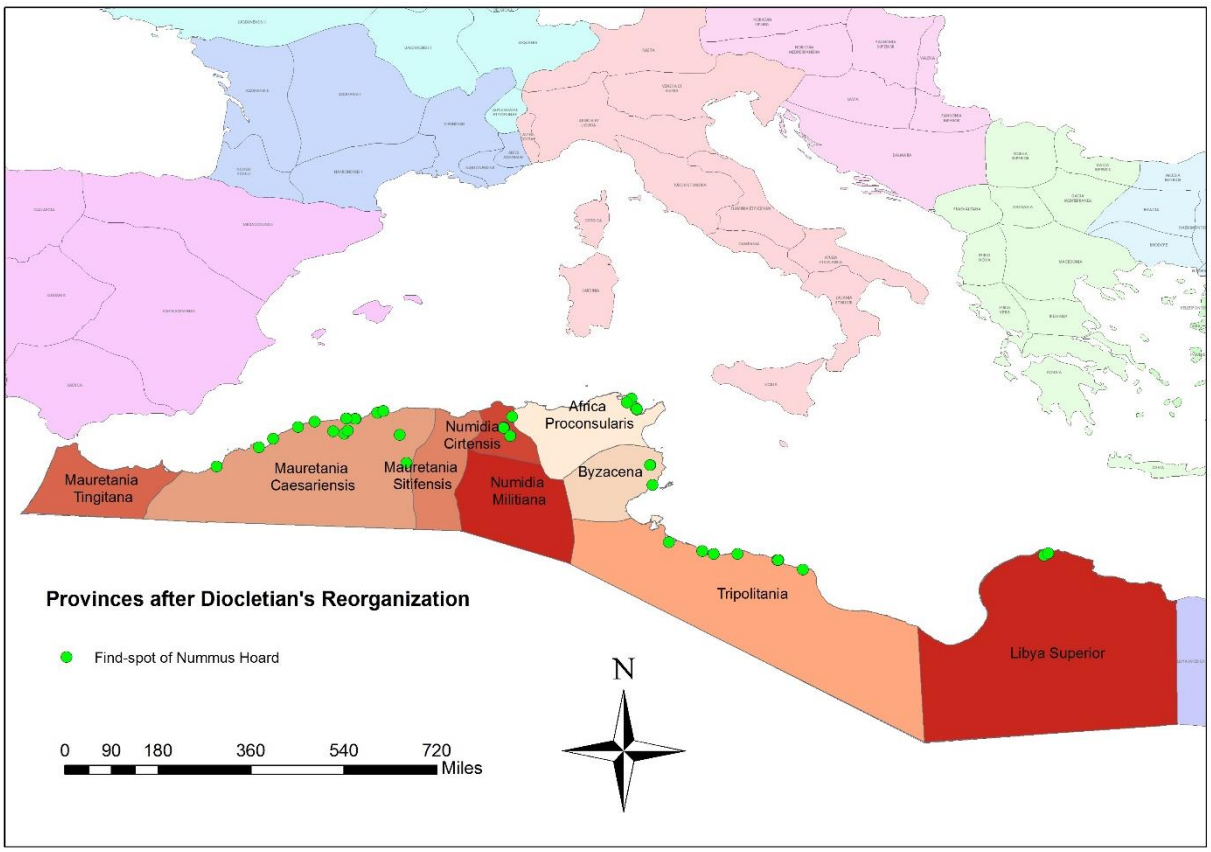

FIGURE 16: Map of the find-spots of *nummus* hoards in North Africa

Figure 16 reveals some interesting geographical trends. There are no *nummus* hoards reported in Mauretania Tingitana, and there are none in the inland province of Numidia Militiana. Mauretania Caesariensis has the most hoards with a total of 22, while Tripolitania has the second highest number with 14. A graph of the number of *nummus* hoards per province is provided in Figure 17. There is also a strong coastal trend among the find-spots of *nummus* hoards, with the vast majority being deposited in close proximity to the coast. The hoards in Numidia Cirtensis do tend to have a slightly more inland orientation, and there are two hoards in Mauretania Caesariensis that are decidedly inland, specifically CHREP #12365 and #12337. Perhaps the most obvious geographical outliers, however, are the two *nummus* hoards in Libya Superior. There is a distance of almost 500 miles between

them and the westernmost hoards in Tripolitania, rendering them the most geographically isolated of the *nummus* hoards.

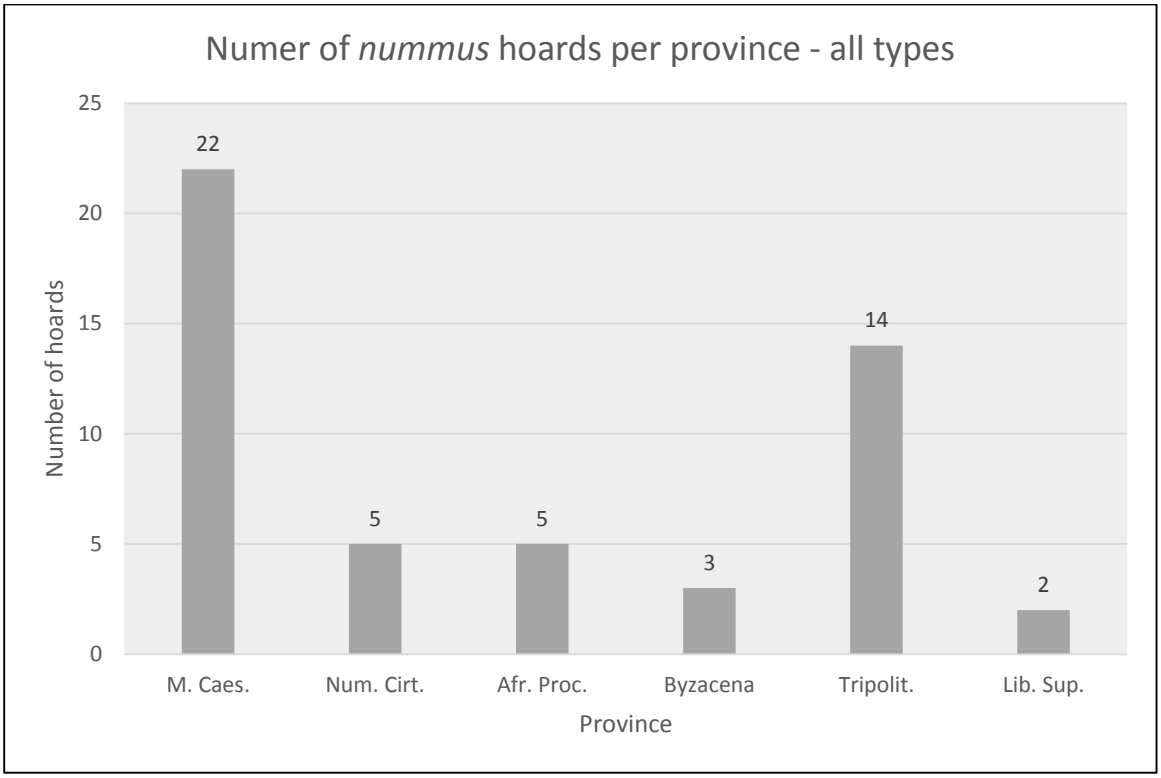

FIGURE 17: Graph representing the number of *nummus* hoards per province

The similarity between the overall pattern of *nummus* hoard find-spots and that of the radiate hoard find-spots implies that *nummi* and radiates had similar areas of circulation. This geographical correlation combined with the close chronological link between the end of radiate hoarding and the beginning of *nummus* hoarding suggests that *nummi* took over the economic function of radiates within the region.

Much like the radiate denomination, not all of these *nummus* hoards truly belong in the same category. There were multiple changes that occurred in the composition and weight of the *nummus* over time. When the *nummus* was first introduced, it was struck at a weight

of 10 grams, and approximately 32 to the pound.[89] In AD 307, the *nummus* suffered its first major reduction in weight, and was reduced to 6.8 grams (48 to the pound).[90] There were a few more reductions in the weight and purity of the denomination prior to AD 318, ultimately resulting in a coin with a weight of 3.4 grams and a silver content reduced from 5% to 1%.[91] In 318, a change in the coinage occurred, probably due to the major debasement in the west and Licinius's reforms in the east, resulting in new designs for the coins and different hoarding patterns.[92] From 318 until 348, there were a number of smaller changes made to the content and design of *nummi*, which are summarized in Table 8. In AD 348, a new type of *nummi* was minted with the inscription "FEL TEMP REPARATIO" (FTR), or the restoration of happy times. These FTR coins had three distinct sizes and purities, the first being 5.3 grams and 2.5% silver, the second being 4.3 grams and 1.5% silver, and the third being 2.4 grams and entirely base-metal.[93] It is not known exactly what value each type of FTR coin was given.

The weight and composition of *nummi* between AD 318 and 348			
Date Range	**Design Type**	**Weight**	**Silver Content**
318 – 320	VICTORIAE LAETAE	3 g.	5%
320 – 324	BEATA and VOTA	3 g.	2%
324 – 330	PROVIDENTIAE	3 g.	2%
330 – 335	GLORIA (2 standards)	2.5 g.	2%
335 – 341	GLORIA (1 standard)	1.7 g.	1%
341 – 348	Two Victories	1.7 g.	0%

TABLE 8: The weight and composition of *nummi* between AD 318 and 348.
Adapted from Burnett (1987) p. 132.

[89] CARSON 1990, 143.
[90] BURNETT 1987, 131.
[91] CARSON 1990, 150.
[92] BURNETT 1987, 131.
[93] BURNETT 1987, 133.

As a result of these changes within the denomination, the *nummus* hoards are divided into three main groups: those containing pre-307 *nummi*, those containing *nummi* from 307-318, and those containing post-318 *nummi*. Although Burnett argues that the coins from AD 294 through 318 can be grouped together due to the similarity in their design and their behavior within hoards, they will here be broken into two groups in order to emphasize the difference between the coins of the original high quality and those after debasement had begun.[94]

Unfortunately, the numismatic information provided in the archaeological reports of *nummus* hoards in North Africa is quite poor on the whole. This lack of information makes it impossible to discuss the smaller changes in *nummus* coinage that occurred from 318 onwards, so all *nummi* post-318 are grouped together out of necessity. FTR coinage is the one type for which enough detail is provided to facilitate a separate discussion of the data. Sixteen of the 47 hoards have not been recorded in enough detail to ascertain which of these three main groups of *nummi* the hoards contain. Eleven additional hoards definitely contain *nummi* from one group, but are not recorded in enough detail to determine whether they contain any from the others as well. In total, only 20 hoards, or 42% of all *nummus* hoards identified here, have data sufficient to determine with certainty which types of *nummi* are included in the hoard.

Given this categorization of *nummus* hoards by type, the map of find-spots can be broken down further. Figure 18 provides a map of the find-spots of hoards containing pre-307 *nummi*, hoards containing 307-318 *nummi*, and hoards containing post-318 *nummi*, with each type of *nummus* hoard clearly identified. Hoards are only included on these maps if

[94] BURNETT 1987, 131.

they have solid evidence for containing *nummi* of the type in discussion. Similarly, a single hoard containing more than one type of *nummi* is marked by all applicable symbols overlaid.

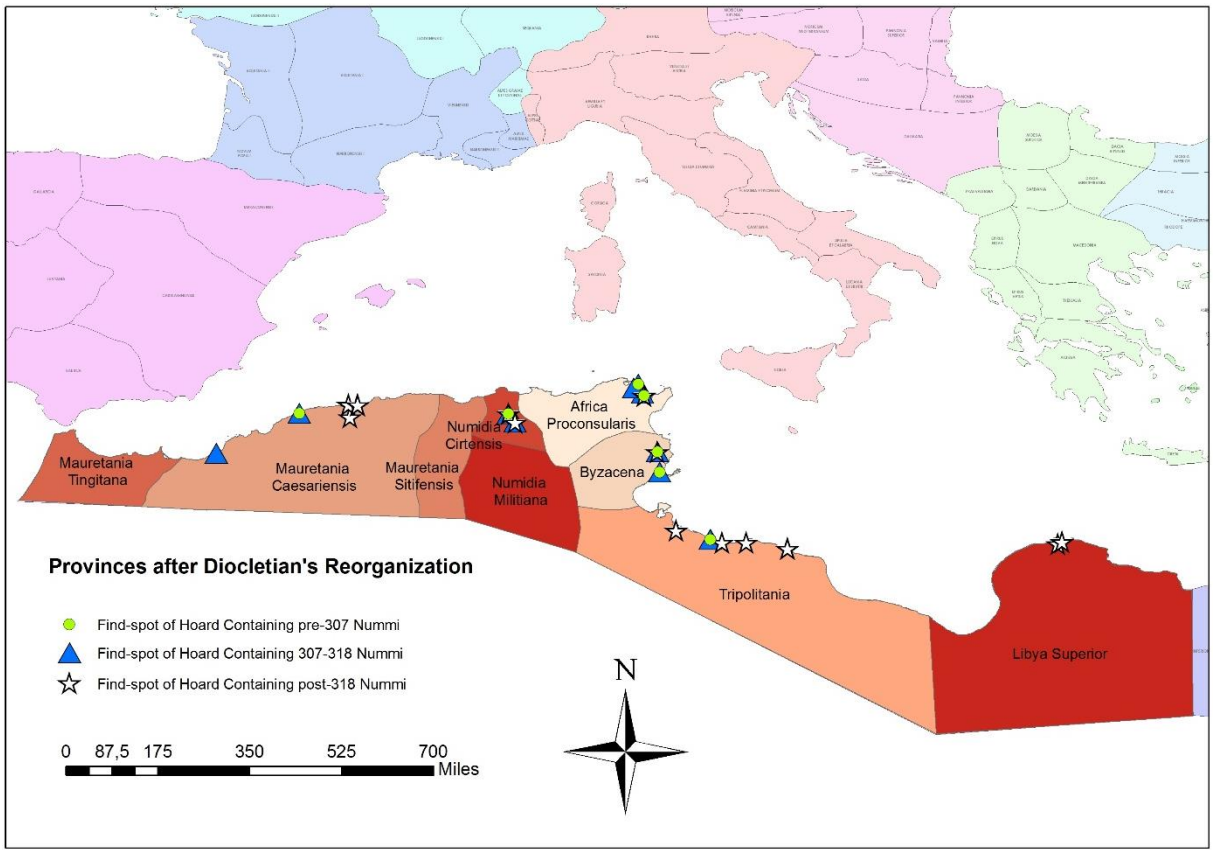

FIGURE 18: Map of the find-spots of *nummus* hoards in North Africa organized by type

As is evident in the map above, there is a fairly even distribution of each hoard type across the North African region. Each province that contains *nummus* hoards has hoards of all three types, with the exception of Libya Superior which only has hoarded *nummi* from the post-318 time period. The difference in number of marked hoards between Figure 16 in which all *nummus* hoards are depicted and Figure 18 in which only hoards that have

information concerning *nummus* type are depicted is illustrative of the poor quality of recording afforded to *nummus* hoards.

A graph of the number of hoards of each type organized by province is given in Figure 19. When a single hoard contains two types of *nummi*, it is counted twice, once for each type that is included. Only one hoard, CHREP #12252 in Misrata, Tripolitania, contains all three chronological types of *nummi*. Hoards for which there is no mention of *nummi* date or type are placed in the "no info" category.

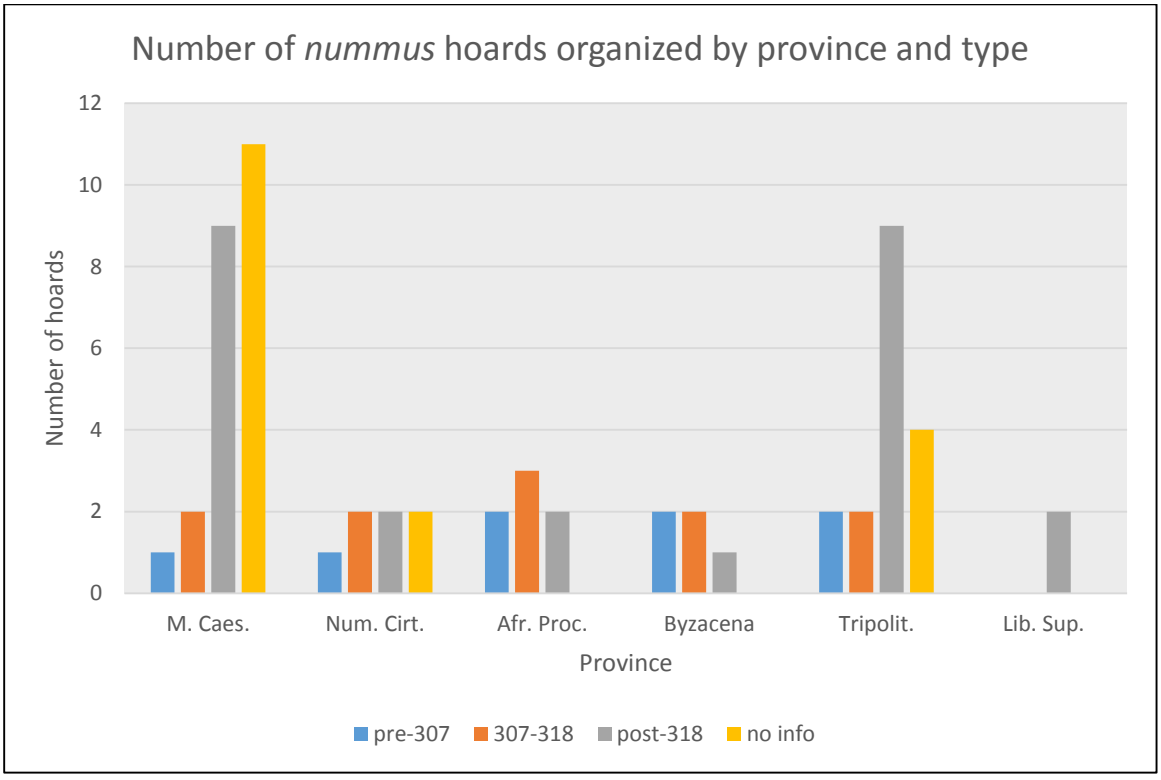

FIGURE 19: Graph of the number of *nummus* hoards organized by province and type

From the graph above, it is clear that hoards containing pre-307 *nummi* exist in relatively low numbers, with either one or two hoards in each province, while hoards containing 307-318 *nummi* have either two or three hoards in each province. The number of hoards containing post-318 *nummi* fluctuates the most, with Tripolitania boasting eight such hoards, Mauretania Caesariensis with six, and the other provinces with either one or two. Libya Superior is again the outlier with only two hoards reported, both of which belong in the post-318 category.

3.3 Hoards of *nummi* – chronology and composition

The *nummus* hoards in North Africa have closing dates that span from the early fourth century through the mid-sixth. The hoards with the earliest closing dates are CHREP #12378 and #12379, both located in Mangub, Tripolitania and closing in AD 310-11. The hoard with the latest reported closing date is CHREP #12362, located in Mauretania Caesariensis and closing in AD 540. Figure 20 provides a graph of the closing dates of all *nummus* hoards in North Africa.

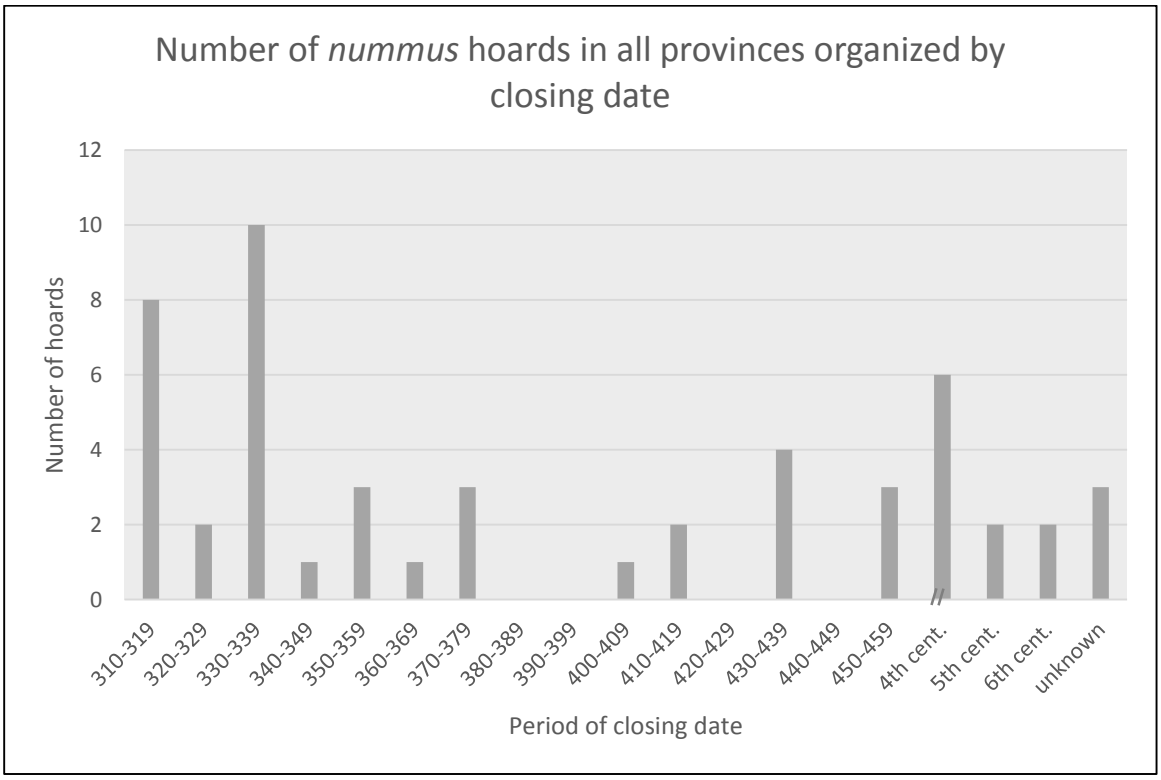

FIGURE 20: Graph representing the number of *nummus* hoards organized by closing date

Based on Figure 20, it appears that the two decades during which the most hoards closed are the 310s and the 330s. In general, the grand majority of *nummus* hoards have closing dates during the fourth century. There are 32 hoards reported to have fourth-century closing dates, while there are only 11 reported to close during the fifth. Only two hoards, CHREP #12362 and #12374, close during the sixth century.

Given the existence of three main types of *nummi* in the North African hoards, it is prudent to identify the chronologic trends among the hoards containing each type. Figure 21 provides a graph of the closing dates of hoards containing pre-307 *nummi*, Figure 22 provides the same for hoards containing 307-318 *nummi*, and Figure 23 provides the same

for post-318 *nummi*. From these three graphs, a better understanding of the deposition patterns of each *nummus* type within each province can be gained.

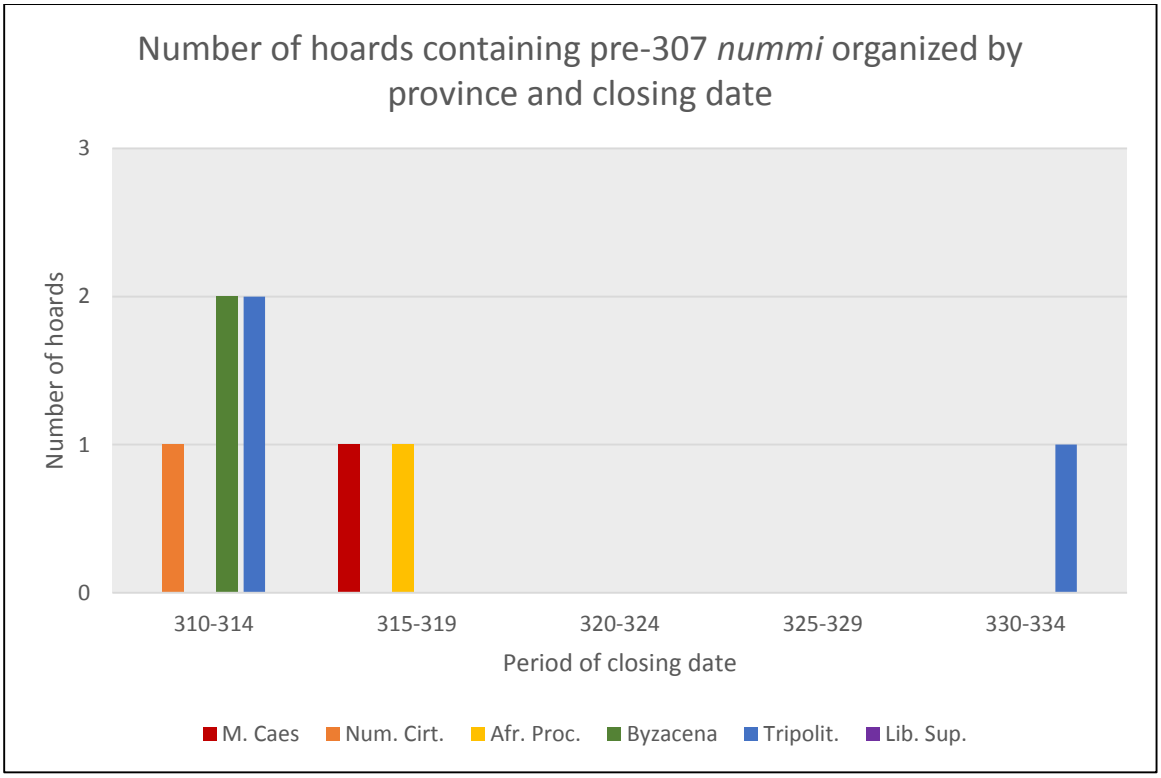

FIGURE 21: Graph representing the number of hoards containing pre-307 *nummi* organized by province and closing date.

From Figure 21 above, it is apparent that the majority of hoards containing pre-307 *nummi* close between AD 310 and 319. Five hoards close in the first half of this decade, while two close in the latter. One Tripolitanian hoard closes in AD 333, but this is the Misrata hoard (CHREP #12252), which is an outlier hoard due to its massive size of 107,000 coins. There is also a fairly even spread of hoards of this type across the provinces that contain *nummus* hoards in general, with each province containing between one and three hoards.

The chronological pattern of hoards containing *nummi* from between 307 and 318 (Figure 22) is quite similar to that of the pre-307 *nummus* hoards described above. Eight hoards close prior to AD 320, while two close between 320 and 324. Once again, the Misrata hoard is the only hoard to close in the 330s, and there is one outlying hoard from Numidia Cirtensis that closes in the early fifth century (CHREP #12364).

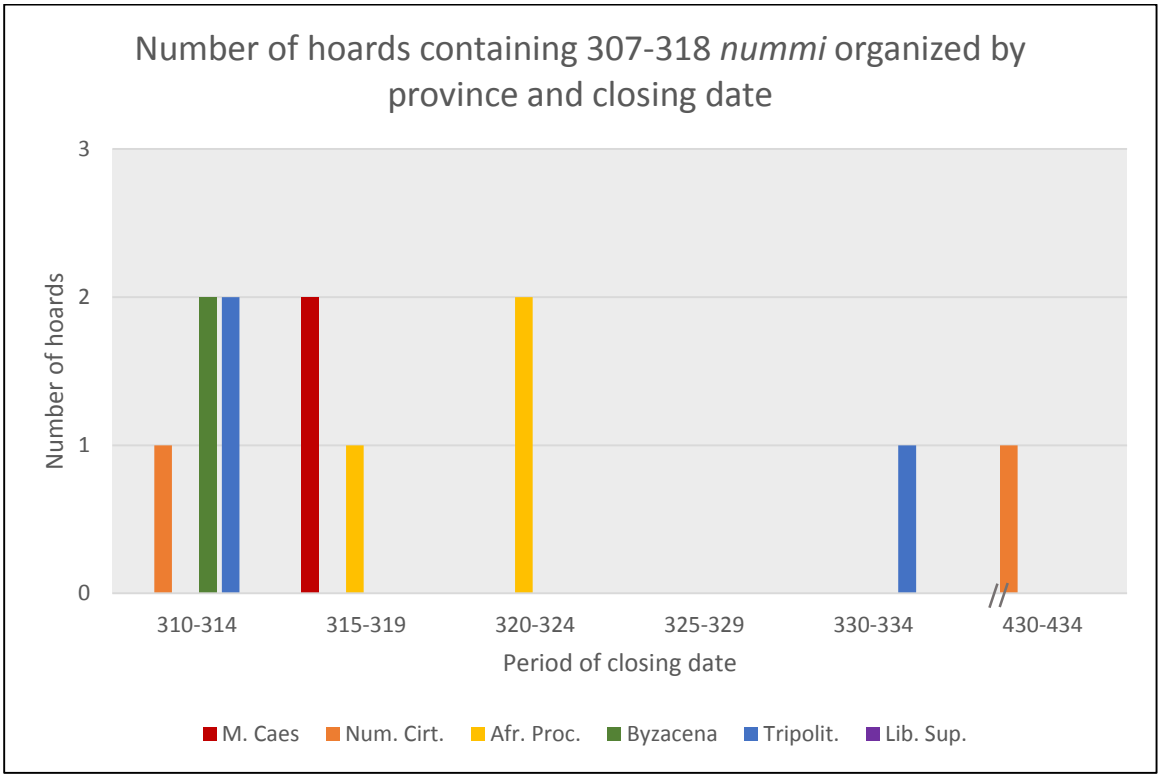

FIGURE 22: Graph representing the number of hoards containing *nummi* from 307-318 organized by province and closing date

In his discussion of the history of the *nummus* denomination, Burnett states that it appears that nearly all of these coins were demonetized and replaced in AD 318.[95] The chronological hoarding patterns of both the pre-307 *nummi* and those dated to between 307

[95] BURNETT 1987, 131.

and 318, with the exception of those in the Misrata hoard, support this assertion. The clustering of closing dates prior to this year suggests a major change in either the monetary or the sociopolitical environment. If a wide-scale demonetization had taken place, it is expected that those in possession of purer, more valuable *nummi* would have entrusted them to a hoard for safekeeping.

The closing dates of post-318 *nummus* hoards look rather different from those of the two earlier types. The earliest hoard to close is the Misrata hoard (CHREP #12252) which closes in 333, followed closely by CHREP #12290, a hoard in Mauretania Caesariensis which closes in 335. The hoard with the latest firmly recorded closing date is CHREP #12362, which closes in 540. A graph of all post-318 *nummus* hoards organized by closing date and province is provided in Figure 23.

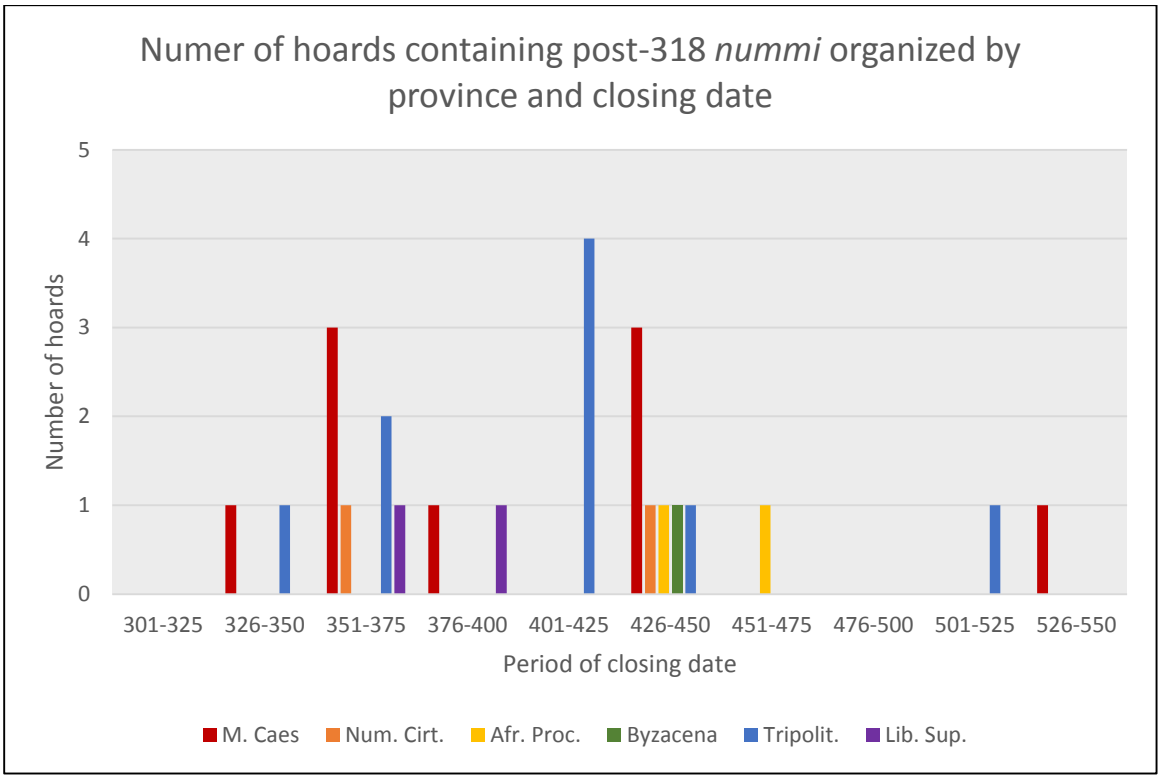

FIGURE 23: Graph representing the number of hoards containing post-318 *nummi* organized by province and closing date

It is also noteworthy that post-318 *nummi* appear almost exclusively in hoards without any *nummi* minted before 318. Out of the 25 hoards that are reported to contain post-318 *nummi*, twelve are certain to contain exclusively late *nummi*. Of the remaining ten hoards, it is highly likely that eleven of them are also exclusively late *nummi*, but there is not enough information to confirm this. The reason that these eleven hoards are unable to be accurately classified is that they are reported only with their earliest issuing authority rather than a specific coin issue, and in the cases of Licinius I, Constantine I, and the 'House of Constantine', it is impossible to rule out completely a pre-318 coin being in the hoard even though it is highly probable that this is not the case. There are only two hoards that certainly contain pre-318 *nummi* as well as post-318 coins. The Misrata hoard is one of these, as is CHREP #12364, which contains two *nummi* of Constantine I dated to AD 313 and 316.[96]

Although the data concerning the number of hoarded *nummi* per province is not complete, it is possible to give a brief overview of the existing data (Table 9). This table shows both the number of hoarded *nummi* when all hoards are included as well as the number of *nummi* when the three major outlier hoards (CHREP #12379, #12252 and #12364) are excluded. In a few cases, the exact number of coins in a hoard is not listed, but there is a vague reference to the number in terms of hundreds or thousands. For the sake of completeness, Table 9 includes these references as well.

[96] SALAMA 2005, 39.

The number of *nummus* hoards and hoarded *nummi* per province			
Province	**# of Hoards**	**# of Nummi (all hoards)**	**# of Nummi (excl. outliers)**
M. Caes.	19	3,492 + "hundreds" + "sev. thousand"	3,492 + "hundreds" + "sev. thousand"
Num. Cirt.	5	14,824	1,342
Afr. Proc.	5	4,740	4,740
Byzacena	3	354	354
Tripolit.	13	134,307 + "sev. thousand"	6,994 + "sev. thousand"
Lib. Sup.	2	502	502
TOTAL	47	156,104 + uncertain number	15,309 + uncertain number

TABLE 9: The number of *nummus* hoards and hoarded *nummi* per province

From the table above, it is clear that Tripolitania includes the vast majority of hoarded *nummi* when the outlier hoards are included. When the outliers are removed from the dataset, Tripolitania still has the most *nummi*, albeit by a far narrower margin. It is possible that if the reference to "several thousand" was clarified for both the hoard in Mauretania Caesariensis and the hoard in Tripolitania, Mauretania Caesariensis might have the most hoarded *nummi* with outliers excluded.

The FEL TEMP REPARATIO issues in *nummus* hoards are also of importance in analyzing the circulation pattern of *nummi* in North Africa. There are ten hoards that are reported to contain FTR issues, and their find-spots are marked in Figure 24 below. There is a wide geographical spread amongst these hoards, with hoards clustered in Mauretania Caesariensis, Numidia Cirtensis, Africa Proconsularis, and Libya Superior.

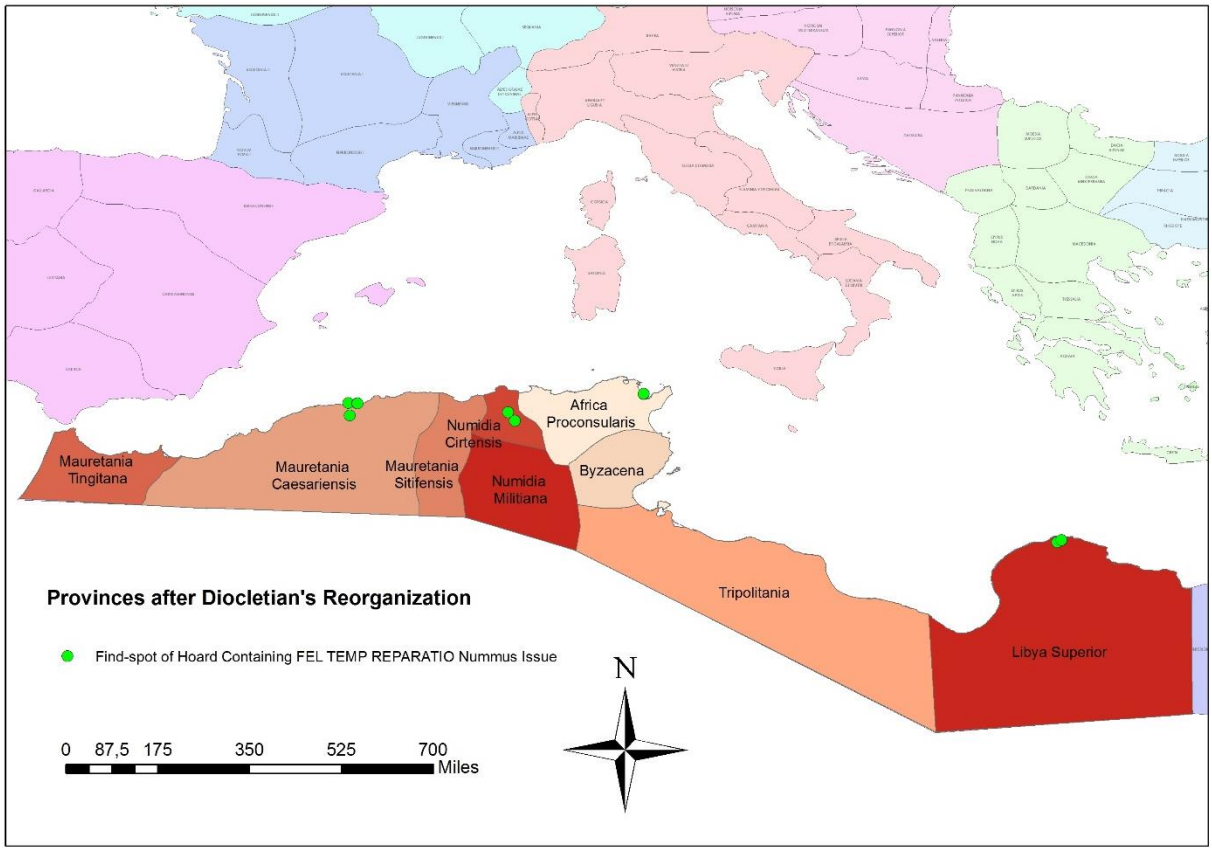

FIGURE 24: Map of the find-spots of *nummus* hoards containing FEL TEMP REPARATIO issues

Not surprisingly, nine of the ten *nummus* hoards containing FTR issues are comprised exclusively of post-318 *nummi*, with the exception of CHREP #12364, the large hoard from Sigus. Additionally, there is a tendency amongst these hoards to contain only *nummi* minted after AD 348. Five hoards contain exclusively post-348 coins, namely CHREP #12312, #12300, #12302, #12768 and #12387. Aside from these, two hoards contain only a few pre-348 *nummi*, with CHREP #12361 containing one *nummus* of Licinius I and CHREP #12355 containing one *nummus* of Constantine I and one of Constans II that are solidly dated before 348.[97] The three remaining hoards, CHREP #12364, #12772, and #12367 contain a significant number of pre-348 *nummi* as well as those minted after the

[97] SALAMA 2005, 48, 51.

introduction of the FTR type. A complete inventory of the hoards containing FTR issues is given in Table 10.

***Nummus* hoards containing FEL TEMP REPARATIO issues**				
CHREP #	**Cl. Date**	**Province**	**Location**	**Composition**
12312	351-4	M. Caes.	El Khemis	NM 58 (post-318)
	Nummi are of Constantius II (49) and Constantius Gallus (9).			
12300	354	M. Caes	Cherchell	NM 32 (post-318)
	Nummi are of Constans (5), Magnentius (6), Decentius (4), Constantius Gallus (6), Constans II (11).			
12361	429-30	M. Caes	Tipasa	NM 85 (post-318)
	Nummi are of Licinius II (1), Magnentius (3), Constantius Gallus (2), Julian (3), Valentinian I (1), Valens (2), Gratian (1), Honorius (3), Constans II (65), Valentinian III (1), Unknown (3).			
12355	c. 450	M. Caes	Tipasa	NM 101 (post-318)
	Nummi are of Constantine I (1), Magnentius (2), Julian (5), Valentinian I (5), Valens (12), Theodosius I (4), Arcadius (5), Honorius (4), Constans II (35), Valentinian III (2), Unknown (26).			
12302	355	N. Cirt.	Constantine	NM 170 (post-318)
	Nummi are of Constantius I (2), Constantius II (117), Constans (9), Magnentius (25), Decentius (12), Constantius Gallus (5).			
12364	430	N. Cirt.	Sigus	NM 13,482 (307-318; post-318)
	Nummi are of many authorities ranging from Constantine I through Johannes.			
12768	434-5	N. Cirt.	Carthage	NM 82 (post-318)
	Nummi are of Julian (2), Valentinian I (13), Valens (3), Gratian (7), Valentinian II (6), Theodosius I (12), Arcadius (10), Honorius (5), Constans II (14), Johannes (3), Valentinian III (1), Unknown (5). The radiate is of Claudius II Augustus.			
12772	455	N. Cirt.	Carthage	NM 3,942 (post-318)
	Nummi are of many authorities from the House of Constantine, House of Theodosius, and House of Valentinian.			
12367	364-78	Lib. Sup.	Al Baïda	NM 259 (post-318)
	Nummi are of Constantine I (1), House of Constantine (209), Julian (1), House of Valentinian (1), Unknown (47).			
12387	Late 4th c.	Lib. Sup.	Chahat	NM 243 (post-318)
	Nummi are of Constantius Gallus (6), Julian (6), Constans II (37), Unknown (194).			

TABLE 10: *Nummus* hoards containing FEL TEMP REPARATIO issues

Unlike earlier reforms to the *nummus* denomination such as that which occurred in AD 318, the introduction of the FTR issues does not seem to coincide with a disappearance of earlier *nummus* coinage. With half of the hoards containing pre-348 *nummi*, the hoard

data implies that while there was a tendency to group coins of similar value and type in hoards, there were still plenty of *nummi* from the first half of the third century in circulation.

As Burnett notes, forgers took particular interest in FTR issues, and there were a significant number of imitations made.[98] There are, however, no imitation FTR coins in North African hoards. Whether this is because the forged coins were identifiable and therefore left out of hoards intentionally or whether they were simply not present in large numbers in North Africa is debatable. It is also possible that this lack of identified imitation FTR coins is due to the reporting scholars being unable to identify such coins.

The *nummus* hoards discussed here were not completely devoid of imitations, though. There are four hoards that are reported to include imitations, but it is very likely that the number would be higher in the event of more accurate and detailed studies of the hoards. CHREP #12355 contains 26 imitations of uncertain design and two of Valentinian III, CHREP #12362 contains an unknown number of fifth century imitation *nummi*, CHREP #12772 includes 56 local copies and 20 of uncertain authority, and CHREP #12364 contains one of Theodosius II, two of Priscus Attalus, one of Julian II, 13 of unknown design, and 1,221 of Honorius. All of these imitation *nummi* that are reported in detail are copies of the legitimate issues of fifth century emperors. This indicates not only a potential shortage of coinage in the region, but also Rome's tenuous control over North African monetary circulation by this time.

[98] BURNETT 1987, 133.

3.4 Hoards of *nummi* – circulation and conclusions

Nummi are the most pervasive denomination of hoarded coin in post-250 North Africa. There are both a higher number of hoards containing *nummi* and more individual hoarded *nummi* than any other denomination. With Diocletian's monetary reform, *nummi* clearly became the default currency for much of the commerce and daily transactions in the region. There are a few *nummus* hoards that contain other denominations alongside *nummi*, but the fact that these tend to contain relatively few non-*nummus* coins indicates that *nummi* were the primary currency, and the other coins were in the minority.

As for the circulation of various types of *nummi*, there does not seem to be much of a change in the behavior of the pre-307 coins and the coins dated to 307-318. Both groups of coins are hoarded together relatively consistently, and there is no obvious change in the treatment or the perception of value of each type. In AD 318, however, there does appear to have been a move to demonetize the earlier currency. There is a clear break in the hoarding pattern in this year, and, with only one exception, the hoards containing post-318 *nummi* do not contain earlier issues. This implies that North Africa was subject to the same demonetization of *nummi* that was apparent in the rest of the Empire, which suggests that the region and its monetary system were still well-integrated at the start of the fourth century.

The change in circulation that came with the minting of FEL TEMP REPARATIO issues in AD 348 is less pronounced than the one in AD 318, but it is still evident in the hoarding pattern. With 50% of the hoards with FTR issues only containing coins minted after 348, and an additional 20% only containing a very few pre-348 coins, it is clear that there was an appreciable shift in the circulation of *nummi* at this time. Burnett argues that there was a demonetization in 354, as evidenced by the absence of earlier coins in hoards

and the creation of forgeries by overstriking coins minted before this year.[99] It certainly seems likely that this was the case, but the lingering of earlier *nummi* in the monetary system does suggest that the demonetization may not have had an immediate and all-encompassing effect on North Africa. Earlier issues may still have been used in some places, for example those rural areas that were not in direct commercial contact with Rome, which would account for their continued use even after their apparent demonetization.

This delay is also perhaps an early sign of the coming failure of Roman control over North Africa's monetary system. By the fifth century, it is clear that imitations were circulating with some frequency within the region. Imitation *nummi* have been reported in four *nummus* hoards, all with either fifth- or sixth-century closing dates. Given that these coins were imitations of rather poor quality yet were still being hoarded implies that there was a paucity of coinage in circulation at this time, and the local population was using whatever coins they could with little thought to legitimacy. With the fall of the Western Roman Empire in the latter half of the fifth-century, this absence of Imperial oversight is to be expected.

As a result of the late minting dates of the hoarded *nummi* and the consequent inclusion of a mintmark on the coinage, there is good evidence for which mints had struck coins that ended up in North Africa. Nineteen out of the 47 *nummus* hoards have at least a partial record of which mints are featured in the hoard. The compiled data for these hoards is given in Table 11.

[99] BURNETT 1987, 133.

Mints represented in *nummus* hoards					
Mint	**Pre-307**	**307-318**	**318-347**	**Post-348**	**Total**
London		14	5		19
Trier		38	16	10	64
Lyon	1	28	20	24	73
Arles		29	15	33	77
"Mint in Gaul"	133				133
Ticinum	83	8	28		119
Rome	9867	614	35	351	10867
Ravenna				2	2
Ostia	1	6438			6439
Aquileia	3	3	12	28	46
Siscia			15	12	27
Thessalonica			9	21	30
Heraclea		1	7	9	17
Cyzicus			7	45	52
Constantinople			7	82	89
Nicomedia			4	19	23
Antioch				11	11
"Eastern"			415		415
Alexandria				1	1
Carthage	3170				3170
Total	**13258**	**7173**	**595**	**648**	**21674**

TABLE 11: Mints represented in *nummus* hoards

Although this table is by no means comprehensive due to the fact that 32 *nummus* hoards were not reported with their mints, it does suggest some overarching trends. *Nummi* dating prior to AD 318 were mostly struck at western mints either in Britain, Gaul, or Italy. Exceptions to this are the one *nummus* dating to 307-318 from Heraclea, and the 3170 pre-307 *nummi* struck at Carthage. Following the demonetization and replacement of coinage in AD 318, *nummi* begin to stream in from eastern mints as well as those in the west.

There are a few possible reasons for this phenomenon's occurrence. With the Western Roman Empire weakening, there may have been an economic and political refocusing in the East, resulting in North Africa becoming more involved commercially with the Eastern Empire than with the Western. A rise in commercial activity with the East

would have led to an increase in the exchange of coinage between regions, potentially increasing the number of eastern *nummi* in North Africa. Another possibility is that these eastern mints were producing a large percentage of the new *nummi* for the Empire, and therefore much of the new coinage being shipped to North Africa had its origin at these mints. The history of the eastern mints offers some support for this second possibility. For example, the mint at Cyzicus was increased from six to ten *officinae* in 347 in order to accommodate increased production of the new FTR coinage.[100] This heightened output of coinage can be seen in the data presented in Table 11.

The *nummus* hoards in North Africa are one of the more interesting type of hoard in this region in that they mirror the major events affecting the rest of the Empire. The hoarding pattern of *nummi* from different time periods and the trends in the mints from which they originate are indicative of the late monetary reforms, changes in the Empire's political and economic position, and Rome's weakening control on North Africa. This was arguably the last Roman denomination to be used commonly in the region, as local imitations, Vandalic issues, and eventually Muslim issues came to be dominant.

3.5 Hoards of *solidi* - geography

There are a surprising number of Roman gold hoards dating to post-AD 250 North Africa attested to in the literature. Twenty-four hoards containing *solidi* have been recorded with varying levels of detail. As expected given the paucity of gold throughout the Empire in the third century, no hoards containing *aurei* have been reported for this time period.[101] Figure 25 shows the locations of each gold hoard in North Africa. Each find-spot is placed with as

[100] CARSON 1990, 268.
[101] BLAND 2013, 263-80.

much accuracy as possible, but in some cases the archaeological reporting of a *solidus* hoard's discovery is so poor in quality that the most specific information available about a hoard's find-spot is the name of a region.

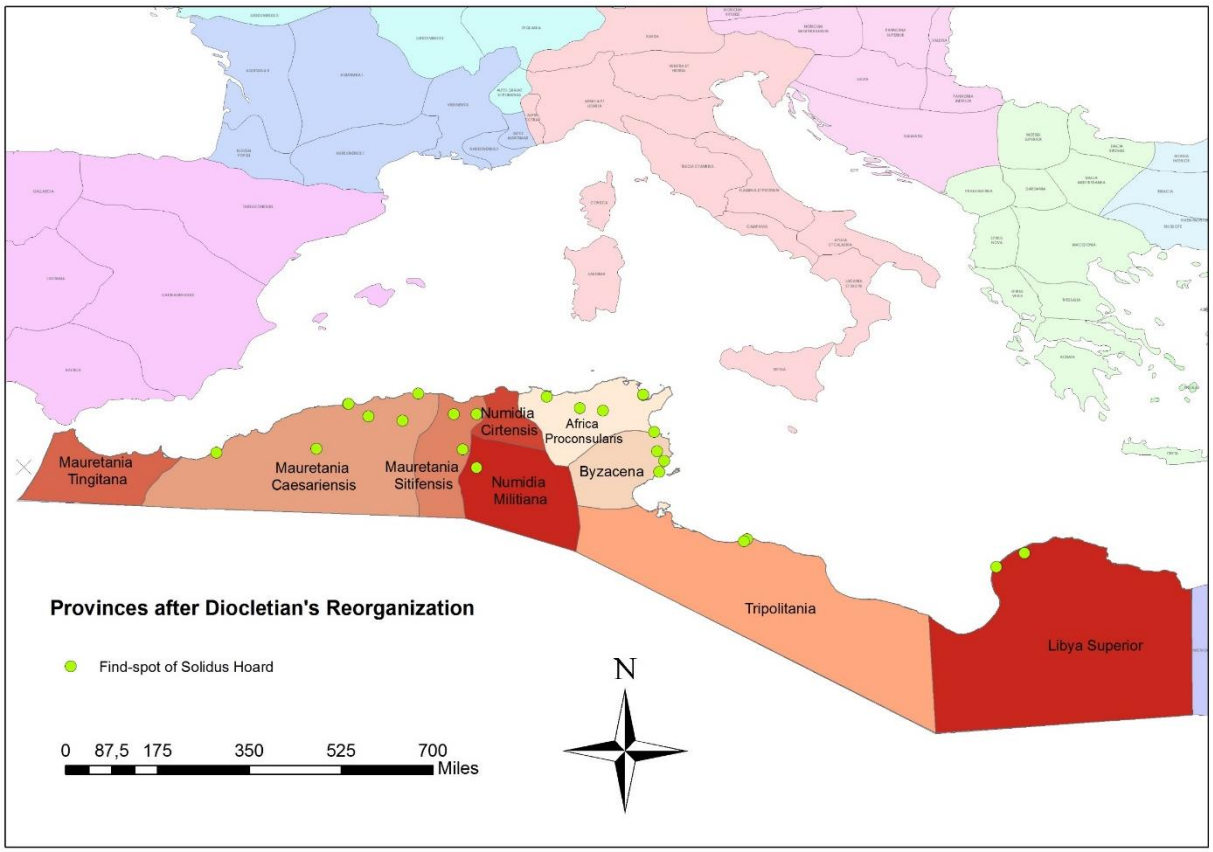

FIGURE 25: Map of the find-spots of *solidus* hoards in North Africa

Two features of this map stand out in particular. The first is the fact that, while there is a tendency for the hoards to be located along the coastline, there is less of a coastal trend visible for these hoards than there is for denominations such as *nummi* or *radiates*. There are a total of six hoards that are decidedly inland, two in Mauretania Caesariensis, two in Mauretania Sitifensis, one in Numidia Militiana, and one in Africa Proconsularis. There do not appear to be any significant similarities in topography or geological features among

these six find-spots. For example, they do not all fall along waterways, or in mountains, or on highly fertile land. The cohesive features among all of them are their population and economy. Three of these locations, Tiaret (Tingartia) in Mauretania Caesariensis, Djemila (Cuicul) in Mauretania Sitifensis, and Biskra (Vescera) in Numidia Militiana, were prior military settlements, while two others, Sour el-Ghozlane in Mauretania Caesariensis and Tobna (Thubunae) in Mauretania were situated along the border of the Roman territory. It is clear from epigraphic and archaeological evidence that Cuicul had served as a military stronghold before Diocletian's reign, providing security to the border between Numidia and Mauretania and reinforcing Roman occupation.[102] Probably founded by Nerva at the close of the first century AD, Cuicul assured safe communication not only between Cirta in the east and Sitifis in the west, but also, and more importantly, from the port of Igilgili to the inland military administrative center at Lambaesis in the south.[103] The *castrum* at Biskra was built in the pre-*limes* area of Numidia in order to protect the region[104] and cut off the approach from Mauretania.[105] Sour el-Ghozlane in Mauretania Caesariensis, whilst not directly military in nature, pre-dated the Romans and lay just 10 km south of a stone reading *LIMES PRAFR*, marking the edge of Roman Africa.[106] It became a *municipium* under Septimius Severus and remained an active and well populated area.[107] Similarly, Tobna occupied a position on a border, being located just north-east of the *Fossatum Africae*.[108] Thugga in Africa Proconsularis was the least military-oriented of the six settlements, having predated the Roman arrival and flourishing as a civilian center even before its promotion to *municipium* by Septimius Severus in AD 205.[109]

[102] ALLAIS 1938, 11.
[103] LESCHI 1953, 9.
[104] PICARD 1949, 177.
[105] MOMMSEN 1909, 319.
[106] OUIS 2006, web.
[107] OUIS 2006, web.
[108] BARADEZ 1949, 20.
[109] CARTON 1910, 42.

These six settlements are not unlikely places for gold hoards to be found, even despite their inland nature. Tiaret, Cuicul and Biskra would have been frequented by Roman legionaries, and it is quite likely that Sour el-Ghozlane and Tobna, given their locations along military borders, would have had significant military contact. The Roman Army required large amounts of money to function, making the presence of gold coinage logical. Although Thugga was not as militarized as the other five settlements, the age and the established economy of the town make it a not unlikely place for gold to have been used in transactions, at least in a limited way.

The other noticeable feature in Figure 25 is the lack of any gold in Mauretania Tingitana and Numidia Cirtensis. While it is surprising that no gold hoards have been reported in Mauretania Tingitana, especially given the Spanish and French involvement in the region during the eighteenth and nineteenth centuries, this absence is partially explained by the fact that there are very few hoards reported from that province at all from the late Empire. Only ten hoards have been reported in total, and between these there are only two find-spots: Banasa and Thamusida. It is entirely possible that gold hoards in the area did exist, but went unreported. As for Numidia Cirtensis, it is unclear as to precisely why the province lacks any gold hoards.

Aside from the broad geographic patterning of gold hoards in North Africa, it is also of interest to investigate the number of *solidus* hoards per province (Figure 26). This graph shows clearly that Mauretania Caesariensis boasts the largest number of gold hoards with eight, followed closely by Africa Proconsularis with six. The more eastern provinces of Byzacena, Tripolitania, and Libya Superior have two gold hoards each, while the inland province of Numidia Militiana has only one.

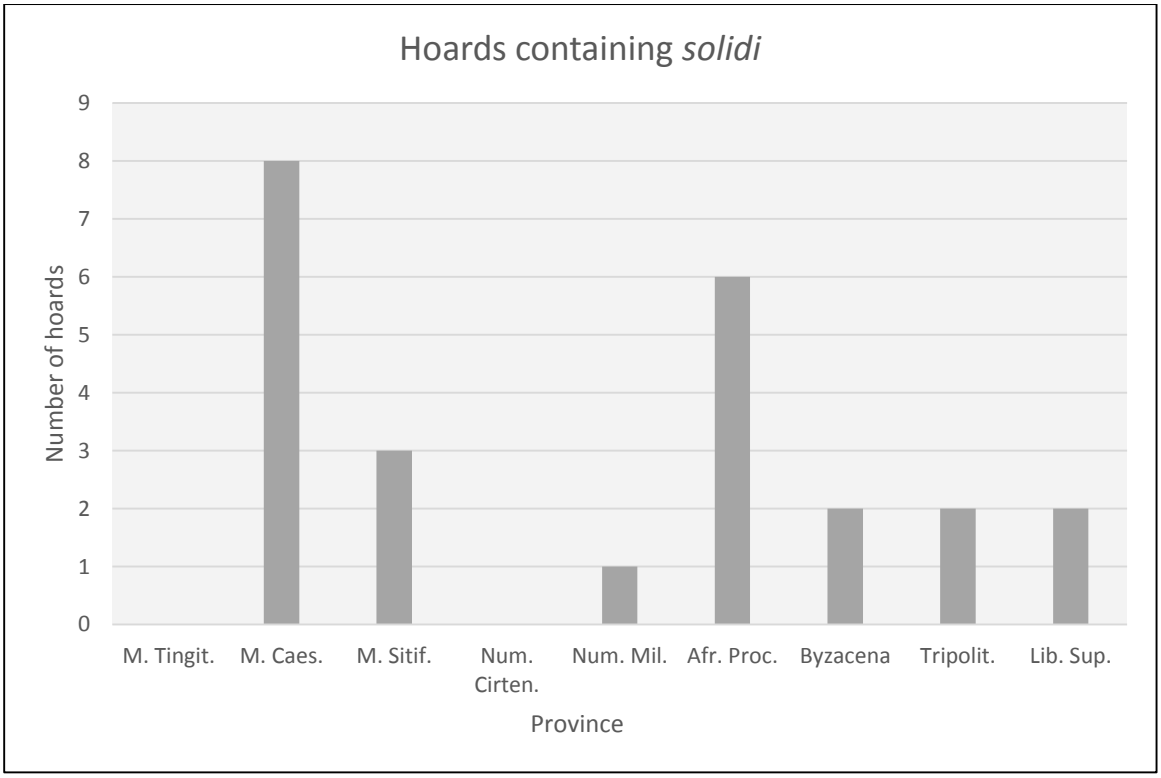

FIGURE 26: Graph representing the number of *solidus* hoards per province

Interestingly, when the number of actual hoarded *solidi* per province is investigated, the picture looks very different (Figure 27). Africa Proconsularis has the most *solidi* by far, with 1735 coins. The province with the next highest number is Libya Superior with 430. The extremely high number of Africa Proconsularis is due mainly to a large hoard at Chemtou with 1645 *solidi*. This hoard is in some ways anomalous, but I have chosen to include it in the overall coin count because gold coins are not likely to have been removed *en masse* from circulation for administrative reasons or to be melted down and restruck. It is more likely that this hoard, given its reported deposition date of approximately AD 425, was buried in response to the unrest caused by the Vandal invasion.[110] These coins, therefore, are understood to be actively functioning within the region's economy. Why they were hoarded is of course unknowable, but they must have either belonged to a fabulously

[110] SALAMA 2005, 54.

wealthy individual, or were in the possession of a governmental official. It is also possible that this large hoard was connected to the marble trade. Chemtou has extensive quarries of *marmor numidicum*, one of the most widely exported marbles of the Roman Empire[111] used for both massive public works and the decoration of private houses.[112] The expense of purchasing such revered material would have meant that a great deal of money changed hands in Chemtou. In this context, a very large hoard of gold coins does not seem out of place.

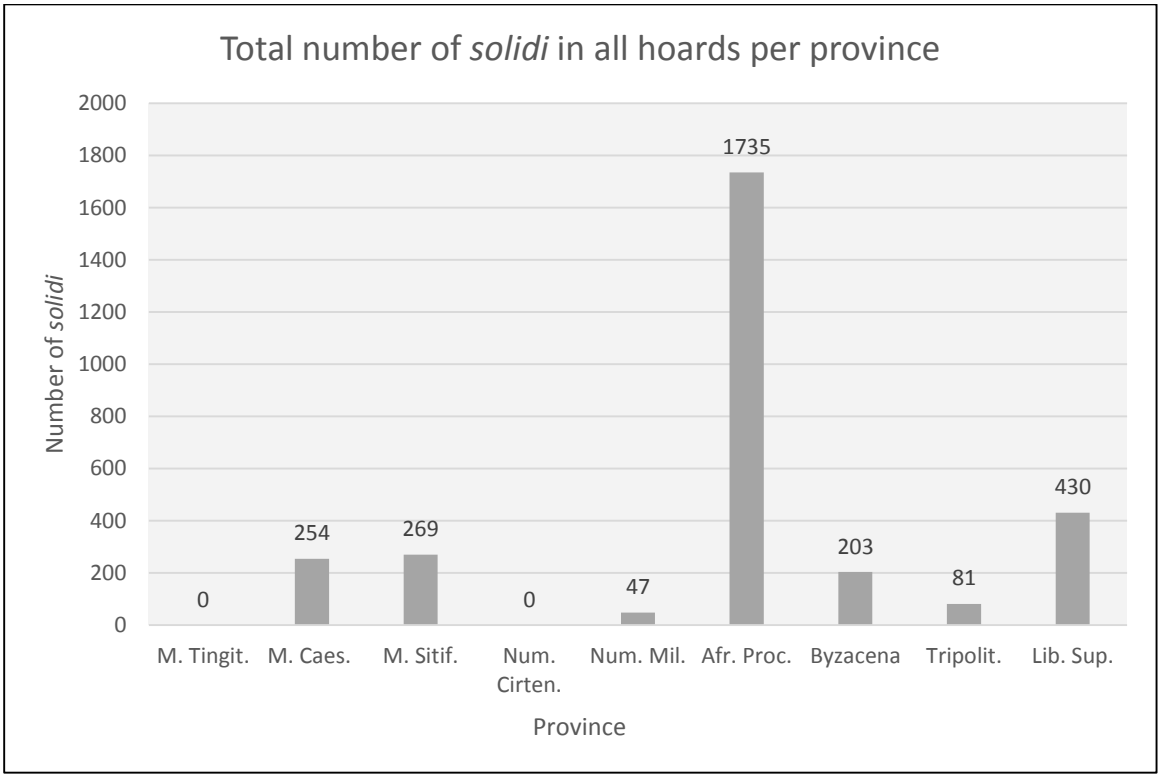

FIGURE 27: Graph representing the number of hoarded *solidi* per province

[111] MAYER 1992, 503.
[112] VON RUMMEL 2010, 48.

3.6 Hoards of *solidi* – chronology and composition

Solidi hoards in North Africa also feature an interesting chronological pattern. Out of 24 total hoards, only two have closing dates within the fourth century. The remaining 22 hoards are from the fifth and sixth centuries. Figure 28 illustrates the number of *solidi* hoards in all provinces organized by their closing dates. Because of the vagueness with which some of the hoards' closing dates are reported, the hoards are sorted into quarter-century periods rather than exact years, as this would have been impossible to determine in multiple cases.

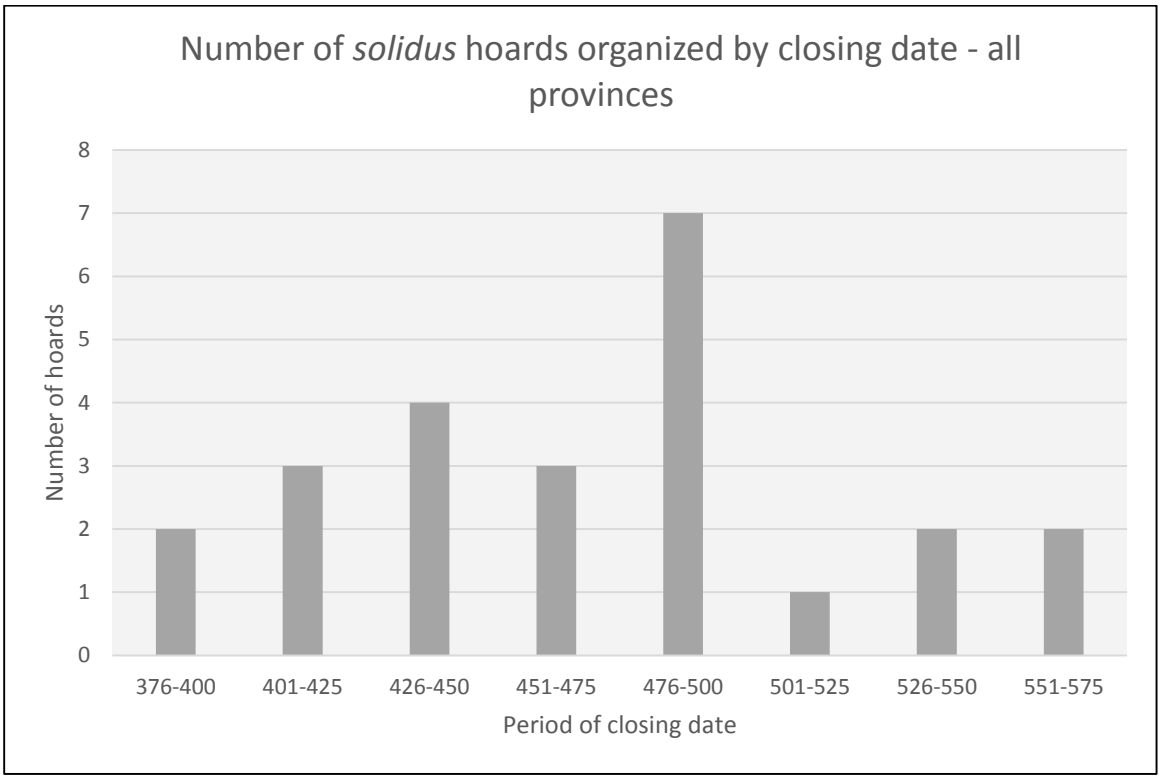

FIGURE 28: Graph representing the number of *solidus* hoards organized by closing date

Immediately of interest is the lateness of the range of closing dates. Although this thesis examines hoards from AD 250 onwards, there are no gold hoards at all reported with

closing dates between 250 and 387. This absence of gold hoards in the third century is a trend across the Empire, although the absence of gold hoards for the majority of the fourth century is a bit more unusual.[113]

There are only two fourth-century gold hoards, both located in Libya Superior at Sidi-Bou-Said. The compositional information given about both is scanty; the first, CHREP #11774, has a closing date of AD 388 and contains 390 *solidi*, ranging in date from AD 353 through 388. The earliest issues in the hoard are those of Constantius II with emission period AD 353 through 361.[114] The second hoard, CHREP #12385, has been published in very little detail. Its discovery is mentioned in the 1968 edition of *Libya Antiqua*, and the only details provided are its composition of 40 Roman gold coins, four necklaces composed of medals from the reign of Constantine I, and four gold miniature columns. Its unusual find-spot within an ancient oil tank is also noted.[115] Because the medals are dated to Constantine I which provides a *terminus post quem* for the hoard, and because of the hoard's similarity in proximity to CHREP #11774, the hoard is loosely dated to the late fourth century. It is possible, of course, that it falls outside this period, but this is the best estimate that can be gleaned from the information given. These are the only two reported gold hoards located in Libya Superior post-AD 250.

The remaining 22 gold hoards from Mauretania Caesariensis, Mauretania Sitifensis, Numidia Militiana, Africa Proconsularis, Byzacena, and Tripolitania have fifth- and sixth-century closing dates. Figure 29 provides a breakdown of the number of *solidi* hoards in

[113] See BLAND 2013 for a good discussion of this lack of third-century gold and relevant die studies.
[114] DÜRR and BASTIEN 1984, 218. This publication provides the most comprehensive discussion of the hoard. For preliminary mentions and discussions of the hoard, see REECE 1975, 54; CASEY 1976, 76; CASEY 1977,
80-1.
[115] AL-SA'DAWIYAH 1968, 206-7.

each province with closing dates falling within each quarter-century. Mauretania Tingitana and Numidia Cirtensis have been excluded due to their not having *solidi* hoards.

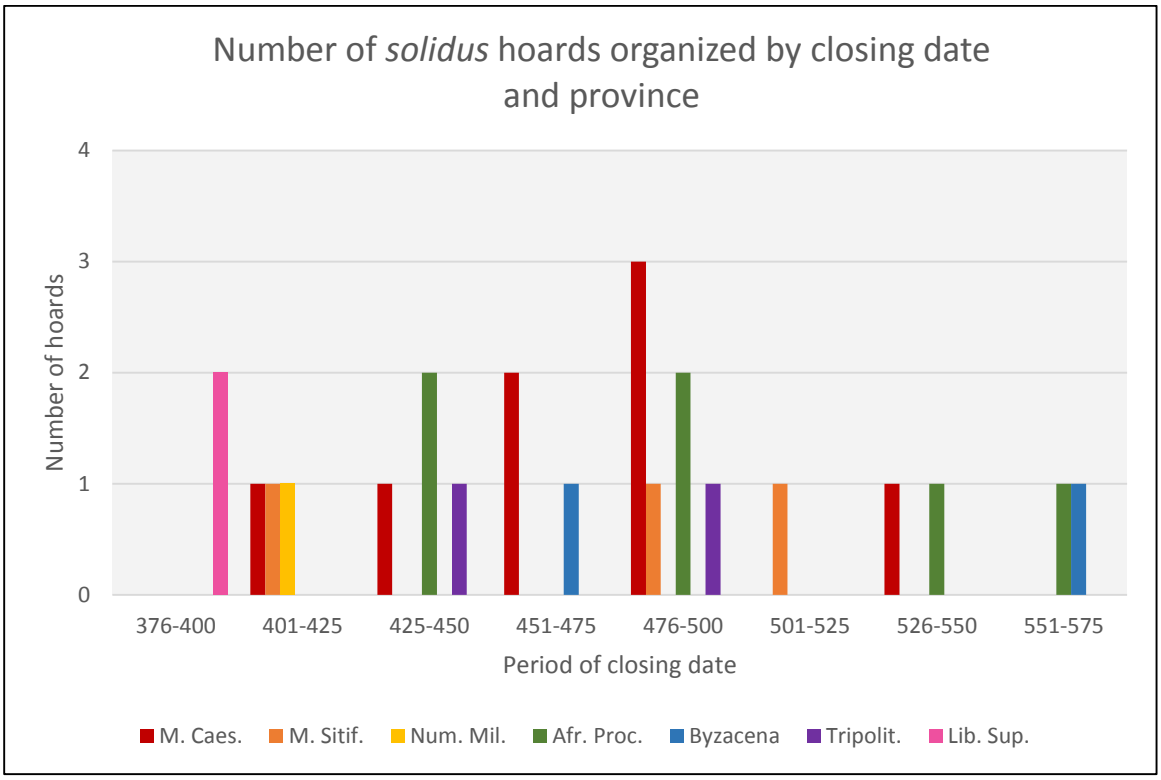

FIGURE 29: Graph representing the number of *solidus* hoards organized by closing date and province

This graph shows a fairly even distribution of closing dates among each province's hoards. A possible exception to this is Numidia Militiana, which has one hoard (CHREP #12287) with 47 *solidi* and a closing date of AD 408.[116] This hoard was previously discussed as the inland hoard at Biskra. Given the coastal-heavy patterning of *solidi* hoard find-spots,

[116] SALAMA 2002, 1985.

it is not surprising that there few hoards of varying time periods reported in an entirely inland province.

In order to illustrate which emperors had *solidi* circulating in Roman North Africa, it is helpful to provide a table showing the authorities behind hoarded *solidi* (Table 12). This table should not be considered complete, however, as there are multiple hoards for which there is no specific information given regarding the number of each issuing authority's coins in the collection. This table takes into account only the coins for which an exact number of any given authority's coins is given. For example, CHREP #12336 in Mauretania Caesariensis is listed as containing *solidi* of Honorius and Theodosius II, but there is no information on how many coins of each emperor are present, nor indeed how many coins were contained in the hoard itself.[117] Such being the case, the numerical values listed for any one issuing authority may be lower than they would be otherwise. This is particularly true for those in Mauretania Caesariensis, as four hoards out of eight do not have complete information. Into this category also fall one hoard in Africa Proconsularis, and one hoard in Byzacena. For hoards where a number of *solidi* are given but no issuing authority is listed, the total number of unattributed *solidi* is placed in the 'unknown' row in Table 12.

[117] Salama (2002) 1977.

Issuing authorities of hoarded *solidi* organized by province								
Authority	**M. Cae.**	**M. Sitif.**	**N. Mil.**	**A. Proc.**	**Byza.**	**Tripolit.**	**Lib. Sup.**	**TOTAL**
Constantius II							1	1
Julian							1	1
Jovian							1	1
Valentinian I				78				78
Valens				24				24
Gratian							53	53
Valentinian II							80	80
Theodosius I				5			155	155
Aelia Flaccilla							2	2
Arcadius				403			67	67
Maximus							1	1
Honorius	30	3	45	1133				1211
Priscus Attalus				1				1
Theodosius II	30	53	2	37	4	3		129
Constantine III				3				3
Jovinus				1				1
Valentinian III		1		8				9
Pulcheria		1		2				3
Eudoxia		1		2				3
Marcian	3	24		6		4		37
Petron. Max.				1				1
Leo I	29	77		10		23		139
Verina				1				1
Majorian		1						1
Libius Severus		1						1
Anthemius		1						1
Julius Nepos						1		1
Zeno	32	87				31		150
Basiliscus	3	15				4		22
Anastasius		4						4
Unknown	126	2		9	203	15	2	358

TABLE 12: The number of hoarded *solidi* per issuing authority within each province

This table shows clearly the early nature of *solidi* hoards in Libya Superior, but it also becomes evident that Africa Proconsularis has early issues as well, even though the province's hoards close later. Honorius, Theodosius II, Marcian, and Leo I have the most widespread issues based upon the number of provinces in which their *solidi* are found.

Out of the 25 hoards of *solidi* reported in North Africa, only one contains coins of another denomination as well. The large hoard at Chemtou (CHREP #11936) is reported by Salama to have held one *semis* of Honorius.[118] This does, however, seem likely given that *semisses* ceased to be struck during the reign of Antoninus Pius, although briefly revived under the reign of Trajan Decius.[119] It is not clear, then, what the denomination of this coin is, although it is perhaps a small base-metal *nummus* that resembles a *semis* in its size and weight. It was, however, clearly highlighted by the author as a non-*solidus*, thereby making it certain that the hoard at Chemtou was a mixed hoard. All of the other hoards exclusively contain *solidi*. Given the very high value of *solidi,* it is logical that they would be hoarded separately and kept apart from more commonplace coins of lesser value. It is possible the *semis* in the hoard at Chemtou was an accidental inclusion, as its value is irrelevant in comparison with that of the *solidi*.

3.7 Hoards of *solidi* – circulation and conclusions

The hoards of *solidi* that have been found in North Africa provide an important insight into the use of gold in the region. Whereas for other denominations there are typically site finds to help complete the picture of circulation, there is only one reported instance of gold being found outside of a hoard, and even this report is questionable in its validity. In a discussion of the excavations at Dellys (Rusccuru) that took place in the 1860s, "*Monnaies en or de Léon I, Anastase, Justinien, Héraclius, Zenon*" are listed as site finds now in the collection of a certain M. Lacour.[120] Although there is no mention of these coins being hoarded, it does seem unlikely that, in the absence of any other gold site finds in North Africa during this

[118] SALAMA 2005, 54.
[119] CARSON 1990, 46.
[120] GAVAULT 1895, 139-141.

time, there would happen to be gold coins of five different emperors found scattered at one archaeological site. Unfortunately, in light of the poor quality of the report, it is impossible to know with any certainty whether these coins were hoarded or simply scattered as individual finds.

It is of course possible that individual gold coins have existed as site finds and simply gone unreported. Given the high value of these coins and the general lack of oversight concerning the reporting and sale of antiquities in modern North Africa, it is not unlikely that such a coin, if found by a non-archaeologist, would be removed and sold in an undocumented way. The existence of gold site finds must therefore not be considered an impossibility, even if there is no written evidence for them.

It is fortunate that out of the 24 *solidus* hoards discussed here, six include at least partial inventories of their coins' mints. The *solidi* originate from far fewer mints than other denominations did, with only seven mints represented in the data (Table 13). This is most likely a reflection of the fact that gold was typically struck only at the comitatensian mint, which was based upon the current location of the emperor.[121] In total, 224 *solidi* are recorded with their mints.

[121] HENDY 1985, 386-94.

Mints represented in *solidus* hoards		
Mint	**# of Coins**	**Issuing Authorities**
Arles	1	Majorian (1)
Lyon, Arles, Trier	3	Constantine III (3)
Milan	2	Honorius (1); Anthemius (1)
Ravenna	70	Honorius (69); Libius Severus (1)
Thessalonica	6	Leo I (6)
Constantinople	134	Honorius (1); Theodosius II (29); Marcian (8); Leo I (73); Zeno (23)
"Eastern"	8	Zeno (6); Priscus Attalus (1); Jovinus (1)

TABLE 13: Mints represented in *solidus* hoards

There are two discrepancies in the data above that require further discussion. Although Salama records that the *solidi* of Priscus Attalus and Jovinus are from the Eastern mint, this is unlikely.[122] The only mints known to have produced coinage for Priscus Attalus are Rome and Narbonne.[123] Additionally, Jovinus is known to have minted gold coinage only at Trier, Lyon and Arles.[124] In these two cases, the mint reported by Salama in the literature appears to be incorrect, and these coins should be reattributed to their proper mints.

The majority of the *solidi* with reported mints are of Constantinople. Ravenna has the second highest number, with half as many as Constantinople. The remaining mints have only a few *solidi* in the hoard data, suggesting that although coins from these mints were used in North Africa, they did not comprise a large part of those in circulation. The balance from east to west is fairly even, with mints in Gaul, Italy, modern Turkey, and the east all present. This is a similar balance as is present in the later *nummus* hoards. This suggests that by the fifth century, North Africa was receiving both precious-metal and base-metal coinage from all across the Roman Empire.

[122] SALAMA 2005, 54.
[123] KENT 1994, 138-41.
[124] KENT 1994, 152-3.

CHAPTER FOUR

Conclusions

4.1 Concluding remarks

The previous two chapters of this thesis have presented the hoard data for post-AD 250 Roman North Africa. The hoards were grouped by denomination, and their geographical, chronological, and compositional trends were identified and explained. With this information as a guide, it was possible to outline the circulation pattern of each denomination. From these patterns, a broad picture of North Africa's monetary system and makeup begins to emerge.

This new, comprehensive view of late North African coin hoards has the potential to impact scholarly understanding of both North Africa's role within the Empire and coin circulation as a whole. Because cumulative information on the contents of North African coin hoards has been unavailable to numismatists until very recently, North Africa is rarely taken into account in the literature. This has led to an imperfect understanding of Roman coin circulation, and the trends elucidated in this thesis necessitate the reexamination of current theories.

4.2 New data and old theories

There are multiple studies and theories that could benefit from reanalysis in light of this new North African coin hoard data, a few of which will be addressed here in illustration of this point. One such study is Jerome Mairat's doctoral thesis on the coinage of the Gallic Empire. As documented in Chapter 2, North African hoards contain a significant number of Gallic radiates. Mairat states that Gallic radiates are occasionally found in parts of the Empire not ruled by the Gallic emperors, but when they do appear, it is only "very rarely and only in very small numbers."[125] While this may be true for some areas, it is certainly not for North Africa, where there are 7,189 Gallic radiates found in hoards. When the large outlier hoard at El Djem (CHREP #12778) is excluded from the data, Gallic radiates make up 35% of the hoarded radiates in the region. With the El Djem hoard included, the figure drops to 11%. In both cases, however, Gallic radiates make up a significant proportion of the hoarded radiates. It has been argued earlier in this thesis that the presence of Gallic radiates is due to the collection and removal of these coins from circulation in the Western Empire and their subsequent injection into the North African monetary supply. If true, this does place the North African hoards into a slightly different category than those that contain Gallic radiates subject to more organic circulation, but the presence of these radiates in North Africa adds an interesting new facet to the study of Gallic coinage. Additionally, it confirms Mairat's statement that there was no illegality in the use and circulation of Gallic radiates outside the Gallic Empire.[126] The North African hoard evidence strongly suggests that radiates of the Central and Gallic Empires were considered interchangeable in terms of value and legitimacy.

[125] MAIRAT 2014, 232.
[126] MAIRAT 2014, 245.

North Africa is not the only region distant from Gaul to have Gallic radiates in circulation, however. In the excavations conducted at Sardis in the mid-twentieth century, a total of 26 imitation Gallic radiates were found.[127] While this number may seem low compared to the 7,189 found in North Africa, these Gallic radiates comprise 13% of the reported coin finds in Sardis. Additionally, the excavations at nearby Aphrodisias found two coins of Tetricus I and II as well as 63 imitation Gallic radiates, which represent 30% of the pre-Diocletianic coins found in the excavations.[128] Buttrey's suggestion that western Anatolia, in which Sardis and Aphrodisias were located, "suffered a dearth of new coinage after Aurelian which was partly filled by imitations from the western end of the Empire" is supported by this data.[129] The existence of Gallic radiates in these two settlements combined with the very small number of *aureliani* – five in Sardis and four in Aphrodisias – is reminiscent of the monetary situation in North Africa at the end of the third century. It seems likely, then, that in regions around the Empire where there was a shortage of coinage after Aurelian took power, Gallic radiates were imported to satisfy the local need for currency.

The presence of so many late gold hoards in North Africa is also worth discussing as it reinforces preexisting theories concerning the absence of hoarded gold during the third century followed by a resurgence of gold hoards across the Empire from the fourth century onward. There is, however, a question of why in particular North Africa should adhere to this wider trend in gold hoarding. In some regions, the rise in gold hoarding can be partially attributed to military presence, as soldiers were sometimes paid in coined gold during the later years of the Empire.[130] This is not the case in North Africa, however, as there were only two legions ever stationed in the region, both of which pre-date the resurgence of gold;

[127] BUTTREY 1981, 93.
[128] MACDONALD 1974, 279.
[129] BUTTREY 1981, 94.
[130] KENT 1956, 192.

the *I Marciana Liberatrix* existed only from AD 68 to 69,[131] while the *III Augusta* lasted from the reign of Augustus through Diocletian.[132] The presence of gold therefore cannot be a result of military activity. It is also possible that the lack of late silver coinage hoarded in the region may be attributed to the absence of the military after Diocletian's reign. Both *siliquae* and *miliarenses* were conceived as military coinage, used for paying soldiers' salary and bonuses.[133] This does not explain why Vandalic copies of silver coinage have been found in North Africa, but it may explain the apparent lack of legitimate *siliquae* and *miliarenses* in hoards.

It seems more likely that the large number of gold hoards in North Africa is a result of the burgeoning agrarian movement of the late Empire. A study by Jairus Banaji has argued that, especially in the eastern provinces, there was structural change in rural society in the mid-fourth century that led to a more complex, intense agricultural system promoted by the aristocracy.[134] It is plausible that a similar change took place in North Africa. If this were the case, then the presence of gold hoards would be a reflection of the continued important role North Africa had in agricultural production. Given that such agricultural pursuits would naturally be enhanced and supported by the new role of the *solidus* as a "stable high-value coinage", the presence of many hoards would be expected.[135] It should also be noted that the somewhat inland nature of many of these hoards – a divergence from most denominations which tend to be clustered on the coast – also supports an interpretation of agricultural use. Additionally, by the late Empire, a gold standard was maintained and adhered to. As gold did not fluctuate in value, the multiple cash taxes levied on Roman citizens, including taxes on land ownership and economic station, were expected to be paid

[131] POLLARD and BERRY 2012, 119.
[132] LE BOHEC 1994, 205.
[133] BANAJI 2007, 43. See also KING 1987, 43 for a discussion of military iconography on *siliquae*.
[134] BANAJI 2007, 4-5.
[135] BANAJI 2007, 213.

in gold coinage. Hoarding gold, then, would have been a logical way of collecting money to pay taxes or saving money made from the sale of agricultural goods.

This idea of late-Empire aristocratic involvement and the importance of North Africa's agricultural production is in keeping with the work that Daniel Hoyer conducted on Roman North Africa prior to Aurelian's reign. The direct link between coin hoards and agro-economic status is maintained from the period covered in Hoyer's research to that discussed in this thesis. There is also a similar thread of aristocratic involvement in the region found in both time periods. Hoyer discusses the idea of euergetism in detail, mostly in relation to public building products.[136] Although North Africa underwent significant monetary changes between the early and late Empire, there are certainly similarities in the narrative that the coin hoards from each period provide.

Another area where the data collected from North African coin hoards could have a meaningful impact is the study of inter-regional circulation. Although the data on mint-marked coins in North Africa is by no means complete, it does provide some clues as to the overall pattern of coinage entering the region. The compiled data from the hoards suggest that there was a transition around the time of Diocletian from coins in North Africa originating at western mints to coins originating at a combination of western and eastern mints. The radiate hoards provide the clearest illustration of this, while *nummus* hoards also imply a shift in minting pattern around the year AD 318. It is probable that the reform of the minting system enacted by Diocletian was at least partially responsible for this, but it may also have been due to increased trade or contact with the Roman East.

While studying the mintmarks on hoarded coins in North Africa is interesting in its own right, it can also assist in the understanding of coin circulation outside of North Africa.

[136] HOYER forthcoming, part 1.2.

In Hispania during the mid- to late third century, there were a significant number of hoarded coins attributed to Eastern mints, particularly Antioch.[137] Because of the great geographical distance between Hispania and the East, it has been postulated that these coins were entering Hispania via North Africa.[138] The coin hoard evidence in North Africa, however, simply does not support this theory. While there are coins from eastern mints present in the African provinces, they were markedly absent during the period of time that eastern coins were appearing in Hispania. Additionally, there are only eleven coins from Antioch reported in the North African hoards, and these are *nummi* from the post-348 era. Although this does not absolutely preclude the channeling of eastern coins through North Africa into Hispania, the fact that there are no eastern coins represented in mid- to late third century North African hoards does make it a highly unlikely occurrence. Instead, it may be the case that there was direct shipment of eastern coinage into Hispania to fill a local need.

The fact that Roman North Africa was geographically isolated yet economically integrated with the rest of the Empire placed it in a singular situation in terms of monetary circulation. It is therefore interesting to examine North African coin circulation in relation to that of other regions. While there are similarities among the circulation patterns of certain denominations in North Africa and those of other parts of the Empire, there is no region with which North Africa shares the circulation patterns of every denomination. This assertion is supported by the data from *sestertius* hoards and radiate hoards in North Africa.

After examining the trends in the North African *sestertius* hoard data, it is clear that North Africa shares its chronological pattern of *sestertius* circulation with Italy. In both provinces, third-century *sestertii* are vastly more common than their second-century

[137] MARTÍNEZ MIRA 1998, 119-180; MARTÍNEZ MIRA 2002, 297-307; MARTÍNEZ MIRA 2005, 207-36. This three-part inventory of coin hoards in Hispania contains relatively complete information on the mints represented in each hoard.
[138] MAIRAT 2014, 237.

counterparts.[139] In contrast, Britain and Gaul were mostly relying on old, second-century *sestertii* during the third-century AD.[140] The similarity between North Africa and Italy does not hold true for all denominations, however. It has been established that North Africa had an abundance of *antoniniani* in hoards but only a few *aureliani* and post-reform radiates. Interestingly, this is a pattern also exhibited in Northern Europe and parts of Asia Minor.[141] This is not, however, the case in Italy, where *aureliani* were circulating in large numbers.[142] As such, it is clear that even though North Africa may behave like Italy when it comes to *sestertius* hoards, the similarity in circulation patterns between the two regions is not necessarily the rule.

This inconsistency in circulation patterns among various regions within the Roman Empire has been cited by Howgego as a sign of monetary disintegration associated with the 'third-century crisis'.[143] The data compiled here from North African hoards certainly supports this statement. North Africa had its own unique set of circulation patterns which do not precisely mirror those of any other region. Various trends such as the presence of numerous Gallic issues, the absence of *aureliani* and post-reform radiates, and the abundance of coins from certain emperors such as Claudius II set North Africa apart as a region. It is hoped that the hoard data that is collected in this thesis will facilitate further discussion of North Africa's numismatics and economy and will promote further comparison between North Africa and other major regions of the Roman Empire.

[139] CALLU 1969, 118-9; HOWGEGO 1995, 138.
[140] CALLU 1969, 124-30; HOWGEGO 1995, 138.
[141] BURNETT 1987, 124.
[142] HOWGEGO 1995, 138.
[143] HOWGEGO 1995, 137.

4.4 The future of research

Although the numismatic community has been slow to embrace North Africa as a region where an intensive study of coin hoards is practical, such research has become increasingly in vogue. Short catalogues of coins have been compiled and published by Salama, Callu and others from the 1970s onwards, but the integration of all Roman North African hoards into a single database was not attempted until quite recently. Georges Depeyrot's unpublished 2011 document is the first of such attempts, and it represents a great effort to catalogue the principal North African hoards composed of both Roman and local, autonomous issues from the late Republic through the late Empire. Daniel Hoyer's doctoral dissertation improved upon Depeyrot's work by providing the most up-to-date and comprehensive list of North African hoards closing prior to the mid-third century. It is hoped that this thesis, which undertakes the compilation and discussion of hoards from the mid-third century to the end of Roman involvement in North Africa, will act as the next step in the progression toward a more complete view of the monetary climate within Roman North Africa.

There is still, however, a great deal of room for further research on the subject of North African coin hoards. There is a pressing need for the reexamination of multiple coin hoards for which information is suspect, sparse, or nonexistent. Although the current locations of some hoards are uncertain, there are many in museums and private collections within both Europe and North Africa that could be reviewed with relative ease. An improved database with verified information on denomination, issuing authority, and mint would be of inestimable assistance in solidifying the narrative of North African coin circulation.

Additionally, while North African coin hoards have now been researched throughout the majority of the region's existence, there has yet to be written a single integrated study of both the pre-250 and post-250 data. Similarly, this thesis has been devoted to hoard data

only; site finds have not been discussed. Any comprehensive corpus of North African coin hoards would benefit greatly from an equally-weighted investigation of site finds. This inclusion would shed light on the presence and circulation of small, low-value denominations in the region, thereby illuminating the region's local economy and daily transactions.

The continued study of coinage in Roman North Africa has the potential to influence significantly the current understanding of coin circulation within the Empire. The region's vast size, geographical placement, and economic importance make it a fascinating and important area where Roman monetary history is concerned. Recent work on the subject has brought North Africa into conversation with the other regions of the Roman Empire, and it is hoped that continued scholarly efforts will yield a more complete picture of coin circulation within the Empire as a whole.

Appendix: Catalogue of Coin Hoards

Abbreviations

AIIN	Annali: Instituto Italiano di Numismatica
An.EPHE	Annuaire de l'École Pratique des Hautes Études
AntAfr	Antiquités Africaines
BSFN	Bulletin de la Société Française de Numismatique
CN	Cahiers Numismatiques
L'AfrRom	L'Africa Romana
L'AntTar	L'Antiquité Tardive
LibAnt	Libya Antiqua
MEFRA	Mélanges de l'École Française de Rome, Antiquité
MÖNG	Mitteilungen der Österreichischen Numismatischen Gesellschaft
NC	The Numismatic Chronicle
RevAfr	Revue Africaine
SNB	Symposium numismatico de Barcelona
TM	Trésors Monetaires
QADL	Quaderni di Archeologia della Libya

AP	Africa Proconsularis
BYZ	Byzacena
CYR	Cyrenaica
LS	Libya Superior
MC	Mauretania Caesariensis
MS	Mauretania Sitifensis
MT	Mauretania Tingitana
N	Numidia
NC	Numidia Cirtensis
NM	Numidia Militiana
TR	Tripolitania

CHREP #	Location/Name	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
11774	Sidi-Bou-Said; Benghazi	Libya	CYR/LS	388	SO 390 [Constantius II – Valentinian II]	Bland (1997) *L'AntTar* 5 p.47
11914	Tobna	Algeria	MC/MS	395-410	SO 2	Bland (1997) *L'AntTar* 5 p.47
11936	Chemtou; Simitthu; Simittus	Tunisia	N/AP	425-426	SO 1645; SEMIS 1 [Valentinian I – Theodosius II]	Salama (2005) *CN* 166 p.54
11937	Cherchell; Chercell II	Algeria	MC/MC	411-24	SO 110 [some of Honorius]	Bland (1997) *L'AntTar* 5 p.47
11960	Carthage V	Tunisia	AP/AP	425-456	SO 8 [? – Theodosius II]	Salama (2002) *L'AfrRom* 14.3 p.1990 Bateson *et al.* (1990) *NC* 150 p.177
11992	Tripoli	Libya	AP/TR	450	SO 15	Bland (1997) *L'AntTar* 5 p.47
12006	Cherchell; Chercell III	Algeria	MC/MC	457-90	SO 65 [Theodosius II – Basiliscus]	Salama (2002) *L'AfrRom* 14.3 p.1973
12052	Siga; Takembrit	Algeria	MC/MC	474-91	SO 18 [Honorius – Zeno]	Bland (1997) *L'AntTar* 5 p.47
12077	Djemila II; Cuicul	Algeria	MC/MS	491-526	SO 174 [Theodosius II – Anastasius]	Salama (2002) *L'AfrRom* 14.3 p.1978
12252	Misrata; Misurata	Libya	AP/TR	333	NM 107000 [Diocletian – House of Constantine]	Lanteri (2005) p.69-78; Depeyrot (2013) p.112-7
12268	Aïn Bessem	Algeria	MC/MC	254	HS at least 25 [Hadrian – Valerian]	Salama (2004) *CN* 161 p.29
12270	Aïn Meddah	Algeria	MC/MS	492	SO 93 [Honorius – Anastasius]	Salama (2002) *L'AfrRom* 14.3 p.1977-8
12274	Aïn Temouchent IV	Algeria	MC/MC	254-55	HS 44 [Hadrian – Salonina]	Salama (2004) *CN* 161 p.29
12275	Aïn Trab	Algeriea	N/AP	c. 250s	HS 60 [Commodus – Trajan Decius]	Salama (2004) *CN* 161 p.29
12276	Algiers; Icosium	Algeria	MC/MC	337-40	50 coins [? – House of Constantine]	Callu (1986) *MEFRA* 98.1 p.165-216 Salama and Callu (1990) p.104

CHREP #	Location/Name	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12277	Algiers; Icosium; La Madaleine Trésor	Algeria	MC/MC	337-40	205 coins [? – Constantine I]	Callu (1986) *MEFRA* 98.1 p.165-216 Salama and Callu (1990) p.104
12278	Algiers; Icosium; Rue de la Marine	Algeria	MC/MC	330-48	NM n? "hundreds" [House of Constantine]	Berbrugger (1858) *RevAfr* 3 p.69
12279	Algiers; Icosium	Algeria	MC/MC	341	Small hoard [House of Constantine]	Salama (1979) *SNB* 2 p.134
12280	Algiers; Icosium; Quartier de la Marine	Algeria	MC/MC	306-402	NM n? "several thousand"	Salama (1979) *SNB* 2 p.134
12286	Bettioua II	Algeria	MC/MC	337	NM 73 [House of Constantine]	Salama (1979) *SNB* 2 p.126
12287	Biskra; Veskera	Algeria	N/NM	c. 408	SO 47 [Honorius – Theodosius II]	Salama (2002) *L'AfrRom* 14.3 p.1985
12290	Cherchell; Chercell	Algeria	MC/MC	335	NM 28 [House of Constantine]	Leveau (1983) *AntAfr* 19 p.149-50
12291	Cherchell; Chercell	Algeria	MC/MC	late 4th cent.	c. 400 coins, probably radiates and *nummi* [Tetricus – Arcadius]	de Chancel (1856) *RevAfr* 1 p.55
12292	Cherchell; Chercell	Algeria	MC/MC	253-4	HS 46 [Trajan – Valerian]	Waille (1904) *RevAfr* 48 p.85-91 Salama (2004) *CN* 161 p.129
12295	Cherchell; Chercell; Stade Militaire I	Algeria	MC/MC	364-78	NM 200-300 [? – Valentinian I]	Salama (2004) *CN* 161 p.29
12296	Cherchell; Chercell; Stade Militaire II	Algeria	MC/MC	254-55	HS c. 500 [Flavian era – Valerian]	Salama (1979) *SNB* 2 p.129 Salama (2004) *CN* 161 p.29
12298	Cherchell; Chercell; Tennis Club	Algeria	MC/MC	251-3	DN 75 [Caracalla – Treboninaus Gallus]	Salama (1979) *SNB* 2 p.130 Salama and Besombes (2002) *TM* 20 p.190-1
12299	Cherchell; Chercell; Western Necropolis	Algeria	MC/MC	335	NM 29 [House of Constantine]	Salama (1979) *SNB* 2 p.130
12300	Cherchell; Chercell	Algeria	MC/MC	354	NM 32 [Constans – Decentius]	Salama and Hollard (2009) *TM* 23 p.208
12301	Cheurfa	Algeria	MC/MC	249	HS 120 [Vespasian – Philip I]	Salama (1979) *SNB* 2 p.137 Salama (2004) *CN* 161 p.29

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12302	Constantine I	Algeria	N/NC	355	NM 170 [House of Constantine]	Salama and Hollard (2009) *TM* 23 p.203-7
12303	Constantine II	Algeria	N/NC	346-8	NM 254	Salama and Callu (1990) p.108-9
12304	Constantine; Cirta	Algeria	N/NC	311	NM 118 [Maxentius]	Salama and Callu (1990) p.97
12307	Djinet	Algeria	MC/MC	c. 300	RAD 55 (*antoniniani* and *aureliani*) [Quintillus – Diocletian]	Salama (1979) *SNB* 2 p.136
12308	Djinet	Algeria	MC/MC	254	HS 79 [Vespasian – Trebonianus Gallus]	Salama (1979) *SNB* 2 p.136
12310	El Arrouch	Algeria	N/NC	337-40	NM 800 [House of Constantine]	Salama and Callu (1990) p.108
12311	El Guelta	Algeria	MC/MC	318-9	HS 1 [Faustina I]; RAD 2 (post-reform); NM 116 [Diocletian – Constantine 2]	Salama (1961) *AIIN* 7-8 p.284-93
12312	El Khemis; Affreville	Algeria	MC/MC	351-4	NM 58 [Constantius II – Constantius Gallus]	Salama (1960) *BSFN* 15.8 p.465-6
12314	Féradja	Algeria	MC/MC	337-40	NM 70 [House of Constantine]	Salama and Callu (1990) p.104
12315	Grarem	Algeria	MC/NC	253	HS 225 [Trajan – Trebonianus Gallus]	Salama (2004) *CN* 161 p.29
12316	Guelma I	Algeria	N/AP	256	HS 3000-4000 [Augustus – Valerian]	Salama (2004) *CN* 161 p.29
12317	Guelma II	Algeria	N/AP	255-6	HS 7486; AS 7; DUP 2; HS (prov) 2; UNK 2 [Augustus – Gallienus]	Turcan (1963) p.65-123
12318	Hadjadj	Algeria	MC/MC	249	HS n?	Salama (1979) *SNB* 2 p.127
12319	Hamman Righa; Aquae Calidae	Algeria	MC/MC	254-5	HS 201 [Domitian – Valerian]	Salama (2004) *CN* 161 p.29-31
12320	Khemis el Khechna	Algeria	MC/MC	251	HS 224 [Vespasian – Trajan Decius]	Salama (2004) *CN* 161 p.29

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12321	Ksar Sbahi	Algeria	N/NC	251-3	HS 80 [Severus Alexander – Volusian]	Salama (2004) *CN* 161 p.29
12322	Medea; Lambdia	Algeria	MC/MC	491	SO 32 [Theodosius II – Zeno]	Salama (2002) *L'AfrRom* 14.3 p.1976
12323	Ngaous; Nicivibus	Algeria	MC/NM	298-302	RAD 62 (post-reform) [Diocletian]	Salama and Callu (1990) p.95-6
12324	Omaria; Oran	Algeria	MC/MC	242-4	HS n? [? – Gordian III]	Salama (2004) *CN* 161 p.29
12325	Ouled Khalifa	Algeria	MC/MC	271-4	RAD 1379 (*antoniniani*) [Gallienus – Tetricus II]	Salama (2009) *AntAfr* 43 p.136
12327	Rouina	Algeria	MC/MC	337-40	NM 33 [House of Constantine]	Salama and Callu (1990) p.104
12328	Bordj Bou Arreridj	Algeria	MC/MS	270	RAD 240 (*antoniniani*) [Quintillus – Claudius II Div.]	Salama (2009) *AntAfr* 43 p.136
12329	Sidi Amar	Algeria	MC/MC	c. 450s	SO 29 [Honorius – Marcian]	Salama (2002) *L'AfrRom* 14.3 p.1974
12330	Sidi Brahim	Algeria	MC/MC	249	HS 50 [Hadrian – Trajan Decius]	Salama (1979) *SNB* 2 p.128
12331	Skikda; Rusicade	Algeria	N/AP	c. 274	RAD 227 (*antoniniani*) [Claudius II – Tetricus I]	Callu (1974) *MEFRA* 86 p.528
12332	Souma Irumien; Grand Kabylie	Algeria	MC/MC	?	AR n? likely Arabic not Roman	Salama (2002) *L'AfrRom* 14.3 p.1977 Salama and Besombes (2002) *TM* 20 p.192
12335	Sour el Ghozlane	Algeria	MC/MC	260-75	RAD 64 (*antoniniani*) [Claudius II Div. – Tetricus II]	Salama (2009) *AntAfr* 43 p.138
12336	Sour el Ghozlane	Algeria	MC/MC	423-40	SO n? [Honorius – Theodosius II]	Salama (2009) *AntAfr* 43 p.139
12337	Sour el Ghozlane	Algeria	MC/MC	337-40	NM 42 [House of Constantine]	Salama (2009) *AntAfr* 43 p.140
12339	Taher	Algeria	MC/NC	249-50	HS 50 [? – Trajan Decius]	Salama (2004) *CN* 161 p.29

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12340	Siga; Takembrit	Algeria	MC/MC	318	NM 4; Tetradrachm 4; Silver Drachm 1 [Claudius II Aug. – Constantine I]	Salama (1979) *SNB* 2 p.125
12341	Tamentfoust	Algeria	MC/MC	"late"	NM 117	Salama (1979) *SNB* 2 p.135
12342	Tamentfoust	Algeria	MC/MC	4th – 5th cent.	4th and 5th c. coins	Salama (1979) *SNB* 2 p.135
12343	Tamentfoust	Algeria	MC/MC	254	HS 273 [Vespasian – Trebonianus Gallus]	Salama (1979) *SNB* 2 p.136
12346	Tenes	Algeria	MC/MC	"late"	NM 80	Anonymous (1857) *RevAfr* 2 p.9
12347	Tenes	Algeria	MC/MC	270	RAD 1104 (*antoniniani*) [Valerian – Quintillus]	Callu (1974) *MEFRA* 86.1 p.536
12349	Tiaret	Algeria	MC/MC	474-91	SO n? [Theodosius II – Zeno]	Salama (2002) *L'AfrRom* 14.3 p.1971-3
12350	Tigava; El Kherba	Algeria	MC/MC	337-40	71 coins	Salama and Callu (1990) p.104
12351	Tigzert; Iomnium	Algeria	MC/MC	c. 270s	RAD 330 (*antoniniani*) [Gallienus – Quintillus]	Laporte (1980) *BSFN* 35.5 p.695-7
12352	Timgad	Tunisia	N/NM	299	RAD 7 (*antoniniani, aureliani and post-reform*); DN 1 [Gallienus – Maximian I]	Salama (2002) *L'AfrRom* 14.3 p.1982-4
12353	Timziouine; Lucu	Algeria	MC/MC	244	HS 40 [Commodus – Gordian III]	Salama (2004) *CN* 161 p.29
12354	Tipasa; Ampitheatre	Algeria	MC/MC	420-30	239 coins [Gallienus – Maximus]	Salama (1979) *SNB* 2 p.132
12355	Tipasa; Maison des Fresques I	Algeria	MC/MC	c. 450	NM 101 [Constantine I – Valentinian III]	Salama (2005) *CN* 166 p.48-9
12356	Tipasa; Maison des Fresques II	Algeria	MC/MC	430	NM 67; 3 auto AE; RAD 1 (*antoninianus*) [Clauidus II Div. – Valentinian III]	Salama (1979) *SNB* 2 p.132
12361	Tipasa; Au nord de la nécropole de Mat.	Algeria	MC/MC	429-30	NM 85 [Licinius II – Valentinian III]	Salama (2005) *CN* 166 p.51-52

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12362	Tipasa; Mur Nord	Algeria	MC/MC	c. 540	RAD 3 (*antoniniani*) [Gallienus – Tetricus]; AE 4; NM 731 [Constantine I – Justinian]	Salama (1979) *SNB* 2 p.132
12363	Zougala	Algeria	MC/MC	337-40	NM 105	Salama and Callu (1990) p.104
12364	Sigus	Algeria	N/NC	430	NM 13482 [Constantine I – Johannes]	Salama (2005) *CN* 166 p.39-44
12365	Amoura	Algeria	MC/MC	337-40	NM 1471 [House of Constantine]	Salama and Callu (1990) p.104
12366	Abbiar-Miggi; Abiar Miggi	Libya	AP/TR	271-4	RAD 4001 (*antoniniani*) [Claudius II Div. – Tetricus I]	Salama (2009) *AntAfr* 43 p.136
12367	Al Baïda; El-Beida; Balagrae; Al Bayda	Libya	CYR/LS	364-78	NM 259 [House of Constantine – Valentinian I]	Goodchild (1967) *LibAnt* 3-4 p.205
12368	Al Khums; Al Khoms	Libya	AP/TR	363	NM(?) n? possibly site finds [House of Constantine]	Munzi (2000) *LibAnt* n.s.4 p.99-128
12369	Gargaresh; Tripoli	Libya	AP/TR	306-402	NM n? "sev. thousand" [most date to Constantius II]	Bakir (1967) *LibAnt* 4 p.243
12370	Gasr Selim; Homs	Libya	AP/TR	270-5	RAD 874 (*antoniniani*) [Gallienus – Aurelian]	Macaluso (1992) *QADL* 15 p.331
12372	Lepcis Magna Theatre	Libya	AP/TR	?	1800 coins; possibly radiates [Claudius II Aug. – Tetrcius I] and *nummi*	Macaluso (1992) *QADL* 15 p.332
12373	Lepcis Magna Market	Libya	AP/TR	395-423	NM 114 [Constantine I – House of Theodosius]	Goodchild (1967) p.115
12374	Lepcis Magna Shop; Trésor 1458	Libya	AP/TR	c. 510s	NM 2115 [House of Theodosius – Anastasius]	Goodchild (1967) p.116
12375	Lepcis Magna; Trésor 1574	Libya	AP/TR	c. 370s	NM 138 [Constantine I – Valens]	Goodchild (1967) p.115
12376	Lepcis Magna; Trésor 1317	Libya	AP/TR	c. 410	NM 535 [Constans – Honorius]	Goodchild (1967) p.115
12377	Lepcis Magna; Trésor 1362	Libya	AP/TR	c. 410	NM 38; RAD 1 (uncert) [House of Constantine – Honorius]	Goodchild (1967) p.115

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12378	Mangub; Trésor A	Libya	AP/TR	310-11	NM 2208 [Maxentius]	Salama (1967) *LibAnt* 4 p.24
12379	Mangub; Trésor B	Libya	AP/TR	310-11	NM 20313 [Maxentius]	Salama (1967) *LibAnt* 4 p.24
12382	Sabratha Region 3	Libya	AP/TR	276-82	RAD 300 (*antoniniani* and *aureliani*) [Postumus – Probus]	Macaluso (1992) *QADL* 15 p.331
12383	Sabratha	Libya	AP/TR	310-37	RAD 352 (uncert.); NM 4 [House of Constantine]	Callu (1974) *MEFRA* 86.1 p.530 Macaluso (1992) *QADL* 15 p.331
12384	Sabratha	Libya	AP/TR	425-55	RAD 824 (*antoniniani*) [Gallienus – Tet. I]; NM 28 [Constans II – Valentinian III]	Callu (1974) *MEFRA* 86.1 p.538
12385	Sidi bu Zeid; Benghazi	Libya	CYR/LS	4th cent.	SO 40	Al-Sa'dawiyah (1968) *LibAnt* 5 p.206
12386	Tripoli; Oea	Libya	AP/TR	476	SO 66 [Theodosius II – Basiliscus]	Salama (2002) *L'AfrRom* 14.3 p.1999
12387	Chahat	Libya	CYR/LS	Late 4th cent.	NM 243 [Constantius II – Julian]	Goodchild (1967) *LibAnt* 3-4 p.206
12763	Bou Arkoub	Tunisia	AP/AP	4th cent.	Coins from 4th century	Salama (1982) p.514
12764	Bou Garmin; Villa Magna	Tunisia	AP/TR	408	RAD 1 (*antoninianus*); NM 14 [Constantine I – Arcadius]; 2500 coins?	Saladin (1914) p.590-4
12766	Carthage	Tunisia	AP/AP	300-400	Coins from 4th century	Salama (1982) p.514
12768	Carthage; Thermes d'Antonin	Tunisia	AP/AP	434-35	RAD 1 (*antoninianus*); NM 81 [Constans II – Valentinian III]	Salama (2005) *CN* 166 p.55-7
12770	Carthage; Nécropole Vandale	Tunisia	AP/AP	Late 5th cent.	SO 7 [Honorius – Leo I]	Salama (2002) L'*AfrRom* 14.3 p.1987-9
12771	Carthage	Tunisia	AP/AP	300-400	Coins from 4th century	Lafaurie (1974) *An.EPHE* p.450
12772	Carthage	Tunisia	AP/AP	455	NM 3942 [Constantine I – Valentinian III]	Mostecky (1985) *MÖNG* 25 p.72-3

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12773	Carthage-Gammarth	Tunisia	AP/AP	320	NM 28; possibly 1600 originally [Licinius I – Constantine I]	Salama (1961) *AIIN* 7-8 p.265
12774	Dar-bel-Ouar	Tunisia	AP/AP	274	RAD 1000 (*antoniniani*) [Gallienus – Tetricus II]	de Bray (1903) p.52-7
12775	Djebébiana; Jebiniana	Tunisia	AP/AP	251-3	HS 8 [Julia Mamaea – Trebonianus Gallus]	Salama (2004) *CN* 161 p.37
12776	El Djem; El Jem; Thydrus	Tunisia	AP/BYZ	314	NM 25 [Maximian I – Licinius I]	Loriot (1972) *BSFN* 27.2 p.161
12777	El Djem; El Jem; Thydrus	Tunisia	AP/BYZ	364-75	SO n?	Salama (2002) *L'AfrRom* 14.3 p.1996
12778	El Djem; El Jem; Thydrus	Tunisia	AP/BYZ	c. 274	RAD 41339 (*antoniniani*) [Valerian I – Aurelian]	Salama (2009) *AntAfr* 43 p.136
12779	El Djem; El Jem; Thydrus	Tunisia	AP/BYZ	450	NM 50 [Galla Placidia – Valentinian III]	Salama (2005) *CN* 166 p.59
12781	Fadhiline	Tunisia	AP/BYZ	275	RAD 4887 (*antoniniani*); DN 1 [Volusian – Quintillus]	Salama (2009) *AntAfr* 43 p.139-56
12782	Gafsa-Gabès	Tunisia	AP/BYZ	256-9	HS 300 [Trajan – Valerian I]	Lhotellier and Desnier (1990) *TM* 12 p.57-63
12783	Ghar el Melh; Ghar el Melkh	Tunisia	AP/AP	317	NM 581 [Maxentius]	Salama (1982) p.532-4
12786	Henchir Thina; Thaenae	Tunisia	AP/BYZ	c. 450s	SO n? [includes 4 of Theodosius II]	Salama (2002) *L'AfrRom* 14.3 p.1998
12787	Henchir Thina; Thaenae	Tunisia	AP/BYZ	312	NM 279 [Maxentius]	Salama (1982) p.532-4
12788	La Chebba; Ras Kaboudia	Tunisia	AP/BYZ	261	RAD 36 (*antoniniani*) [Valerian I – Quietus]	Salama (2009) *AntAfr* 43 p.136
12791	Sfax I; Taparura	Tunisia	AP/BYZ	376	NM(?) 4349	Salama and Callu (1990) p.112
12794	Sousse; Hadrumentum	Tunisia	AP/AP	275-6	RAD 94 (*antoniniani* and *aureliani*) [Gallienus – Tacitus]	Salama (2009) *AntAfr* 43 p.136

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12795	Sousse; Hadrumentum	Tunisia	AP/AP	474	SO 64 [Arcadius – Leo I]	Salama (2002) *L'AfrRom* 14.3 p.1995
12796	Sousse; Hadrumentum	Tunisia	AP/AP	253-68	DN 603 [Clodius Albinus – Maximus]	Salama and Besombes (2002) *TM* 20 p.197-8
12798	Thibar	Tunisia	N/AP	337	118 coins	Salama and Callu (1990) p.103
12799	Utique	Tunisia	AP/AP	253-68	RAD 147 [Gordian III – Gallienus]	Salama (2009) *AntAfr* 43 p.136
12800	Basse Medjerda-Utique	Tunisia	AP/AP	322	NM 107 [House of Constantine]	Salama and Callu (1990) p.102
12805	Sour Djouab; Rapidum	Algeria	MC/MC	270	RAD 50 (*antoniniani*) [Gallienus – Claudius II Aug.]	Laporte (1980) *BSFN* 35.5 p.695-7
12807	Tigzert; Iomnium	Algeria	MC/MC	6th cent.	SO n?	Salama (1979) *SNB* 2 p.137
12808	Thamusida I; Sidi Ali ben Ahmed	Morocco	MT/MT	276-82	RAD 33 (*antoniniani and aureliani*) [Gallienus – Probus]	Callu *et al*. (1965) p.216-8
12809	Thamusida II; Sidi Ali ben Ahmed	Morocco	MT/MT	270	RAD 37 (*antoniniani*); AE 2 [Claudius II Aug.]	Callu *et al*. (1965) p.262
12810	Thamusida I; Sidi Ali ben Ahmed	Morocco	MT/MT	276-82	RAD 88 (*antoniniani*) [Elagabalus – Quintillus]	Callu *et al*. (1965) p.216-8
12811	Banasa Ia; Sidi Ali bou Djenoun	Morocco	MT/MT	247	HS 9 [Faustina I – Philip I]	Salama (2004) *CN* 161 p.33-4
12812	Banasa II; Sidi Ali bou Djenoun	Morocco	MT/MT	270	RAD 26 (*antoniniani*) [Gallienus – Claudius II Div.]	Marion (1967) *AntAfr* 1 p.111
12813	Banasa III; Sidi Ali bou Djenoun	Morocco	MT/MT	270	RAD 32 (*antoniniani*) [Gallienus – Claudius II Div.]; DN 1 [Sev. Alexander]	Marion (1967) *AntAfr* 1 p.111
12814	Banasa IV; Sidi Ali bou Djenoun	Morocco	MT/MT	270	RAD 62 (*antoniniani*) [Gallienus – Claudius II Div.]	Marion (1967) *AntAfr* 1 p.111
12815	Banasa V; Sidi Ali bou Djenoun	Morocco	MT/MT	270	HS 79 [Marcus Aurelius – Claudius II Div.]	Marion (1967) *AntAfr* 1 p.111

CHREP #	Location/City	Country	Province	T.P.Q.	Numismatic Info.	Scholarship
12816	Banasa Ib; Sidi Ali bou Djenoun	Morocco	MT/MT	3rd cent.	HS 5; DUP 28	Salama (2004) *CN* 161 p.34
12817	Banasa Ic; Sidi Ali bou Djenoun	Morocco	MT/MT	247	HS 14 [Trajan – Philip I]	Salama (2004) *CN* 161 p.34-5
12818	Tipasa; Nècropole Porte Cèsarèe	Algeria	MC/MC	275	RAD 94 (*antoniniani*) [Gallienus – Tetricus II]	Salama (1979) *SNB* 2 p.133
12819	Djebèbiana; Jebiniana	Tunisia	AP/AP	575	SO 7	Bland (1997) *L'AntTar* 5 p.47
12820	Thugga; Dougga	Tunisia	AP/AP	550	SO 4	Bland (1997) *L'AntTar* 5 p.47
12821	Aïn-Elmarikan	Algeria	N/AP	290	RAD 2777 (*antoniniani*) [Claudius II Aug. – Tetricus II]	Assoul and Chameroy (2010) *BSFN* 65.2 p.42
12822	Announa I; Thibilis	Algeria	N/AP	280	RAD 22 (*antoniniani*) [Claudius II Div. – Tetricus I]	Turcan (1984) p.35-42
12823	Announa II; Thibilis	Algeria	N/AP	280	RAD 63 (*antoniniani*) [Claudius II Div. – Tetrcius I]	Turcan (1984) p.55-80
12824	Sfax II; Taparura	Tunisia	AP/BYZ	390	NM(?) 2442	Salama and Callu (1990) p.113

Bibliography

ABDY, R. (2012) "Tetrarchy and the House of Constantine." *The Oxford Handbook of Greek and Roman Coinage*. Ed. W. E. Metcalf. Oxford: Oxford University Press. 584-600.

AL-SA'DAWIYAH, A. (1968) "Cyrenaica." *Libya Antiqua* 5: 205-8.

ALLAIS, Y. (1938) *Djemila*. Paris: Société d'édition "Les Belles Lettres".

ANDERSON, J. G. C. (1932) "The Genesis of Diocletian's Provincial Re-organization." *Journal of Roman Studies* 12: 24-32.

ANONYMOUS (1857) "Antiquités du Cercle de Ténés." *Revue Africaine* 2: 4-13.

APPLEBAUM, S. (1979) *Jews and Greeks in Ancient Cyrene*. Leiden: E. J. Brill.

ARNOLD, W. T. (1914) *The Roman System of Provincial Administration to the Accession of Constantine the Great*. 3rd ed. Oxford: B. H. Blackwell.

ASSOUL, N. and J. CHAMEROY (2010) "Note sur le trésor d'imitations radiées d'Aïn-Elmarikan (Algérie)." *Bulletin de la Société Française de Numismatique* 65.2: 42-5.

BAKIR, T. (1967) "Archaeological News 1965-1967 (Tripolitania)." *Libya Antiqua* 3-4: 241-251.

BANAJI, J. (2007) *Agrarian Change in Late Antiquity: Gold, Labour, and Aristocratic Dominance*. Oxford: Oxford University Press.

BARADEZ, J. (1949) *Fossatum Africae: Recherches aériennes sur l'organisation des confins sahariens a l'épooque romaine.* Paris: Arts et Métiers Graphiques.

BARKER, G. W. W. (1996) *Farming the Desert: The UNESCO Libyan Valleys Archaeological Survey*. Vol. 1. Paris: UNESCO Publishing.

BATESON, D. *et al*. (1990) "The Early Nineteenth-Century Jackson Collection of Coins from Carthage." *The Numismatic Chronicle* 150: 145-177.

BEN HADJ NACEUR-LOUM, Z. (2012) "Le trésor de *divo Claudio* d'El Jem." *L'Africa Romana* 19.1: 441-450.

BERBRUGGER, A. (1858) "Chronique." *Revue Africaine* 3: 63-74.

BLAND, R. (1996) "The development of gold and silver coin denomination, A.D. 193-253." *Coin Finds and Coin Use in the Roman World*. Ed. C. E. King and D. G. Wigg. Berlin: Gebr. Mann Verlag. 63-100.

BLAND, R. (1997) "The changing patterns of hoards and precious-metal coins in the Late Empire." *L'Antiquité Tardive* 5: 29-55.

BLAND, R. (2013) "What happened to gold coinage in the 3rd century A.D.?" *Journal of Roman Archaeology* 26: 263-80.

BLAND, R. and X. LORIOT (2010) *Roman and Early Byzantine Gold Coins found in Britain and Ireland*. London: Royal Numismatic Society.

BURNETT, A. (1984) "Clipped Siliquae and the end of Roman Britain." *Britannia* 15: 163-168.

BURNETT, A. (1987) *Coinage in the Roman World*. London: Seaby.

BUTCHER, K. (1993) *Small Change in Ancient Beirut: the coin finds from BEY 006 and BEY 045: Persian, Hellenistic, Roman and Byzantine periods.* Beirut: The American University of Beirut.

BUTTREY, T. V. *et al.* (1981) *Greek, Roman, and Islamic coin finds from Sardis*. London: Harvard University Press.

CALLU, J.-P. (1969) *La politique monétaire des empereurs romains de 238 à 311*. Paris: E. de Boccard.

CALLU, J.-P. (1974) "Remarques sur le trésor de Thamusida III: les *Divo Claudio* en Afrique du Nord." *MEFRA* 86.1: 523-47.

CALLU, J.-P. (1986) "Aspects du quadrimestre monétaire: la périodicité des différents de 294 à 375." *MEFRA* 98.1: 165-216.

CALLU, J.-P. *et al*. (1965) *Thamusida: fouilles du service des antiquités du Maroc, 1 texte*. Paris: E. de Boccard.

CARSON, R. A. G. (1990) *Coins of the Roman Empire*. London: Routledge.

CARTON, L. B. C. (1910) *Thugga: ruines de Dougga*. Tunis: L. Niérat & A. Fortin.

CASEY, P. J. (1976) "Roman Hoards." *Coin Hoards* 2: 43-77.

CASEY, P. J. (1977) "The Barke (Sidi Bu Said) Hoard: A preliminary note." *Coin Hoards* 3: 80-81.

CHAMEROY, J. (2010) "Un trésor d'imitations radiées provenant d'Algérie: circulation et thésaurisation des monnaies aux noms de Victorin et des Tétricus en Afrique du Nord." *Quaderni Ticinesi, Numismatica e Antichità Classiche* 39: 331-364.

CHRISTIANSEN, E. (2004) *Coinage in Roman Egypt, the hoard evidence*. Aarhus: Aarhus University Press.

CUBELLI, V. (1992) *Aureliano Imperatore: la rivolta dei monetieri e la cosiddetta riforma monetaria*. Florence: La Nuova Italia Editrice.

DE BRAY, M. (1903) "Une trouvaille de monnaies romaines du III^{e} siècle." *Bulletin de la Société Archéologique de Sousse* 1: 52-57.

DE CHANCEL, A. M. (1856) "Province D'Alger." *Revue Africaine* 1: 52-60.

DEPEYROT, G. (2013) "Les très gros trésors de Misurata (Libye) (4^{e} S.), religion, armées, ou économie, comment les interpreter?" *OMNI, revue international de numismatique* 6: 112-117.

DRINKWATER, J. F. (1974) "Coin Hoards and the Chronology of the Gallic Emperors." *Britannia* 5: 293-302.

DUNCAN-JONES, R. (1994) *Money and government in the Roman Empire*. Cambridge: Cambridge University Press.

DÜRR, N. and P. BASTIEN (1984) "Trésor de Solidi (353-388)." *Schweizerische Numismatische Rundschau* 63: 205-258.

ERMATINGER, J. W. (1996) *The Economic Reforms of Diocletian*. St. Katharinen: Scripta Mercaturae Verlag.

EVANS, A. (1915) "Notes on the Coinage and Silver Currency in Roman Britain from Valentinian I to Constantine III." *The Numismatic Chronicle and Journal of the Royal Numismatic Society* 15: 433-519.

FIELDS, N. (2010) *Roman Conquests: North Africa*. Barnsley: Pen & Sword Military.

GAVAULT, M. (1895) "Antiquités de Dellys (Cissi)." *Bulletin Archéologique du Comité des Travaux Historiques et Scientifiques*: 132-141.

GOLDSWORTHY, A. (2006) *The Fall of Carthage*. London: Orion Books Ltd., Pheonix Press.

GOODCHILD, R. G. (1967) "A coin-hoard from "Balagrae" (El-Beida), and the earthquake of A.D. 365." *Libya Antiqua* 3-4: 203-212.

GOODCHILD, R. G. (1976) *Libyan Studies: Select Papers of the late R. G. Goodchild*. London: Paul Elek.

GRAHAM, A. (1902) *Roman Africa: an outline of the history of the Roman occupation of North Africa based chiefly upon inscriptions and monumental remains in that country*. London: Longmans, Green, and Co.

GUEST, P. S. W. (2005) *The Late Roman Gold and Silver Coins from the Hoxne Treasure*. London: The British Museum Press.

HARL, K. W. (1985) "Marks of Value on Tetrarchic Nummi and Diocletian's Monetary Policy." *Pheonix* 39.3: 263-270.

HENDY, M. F. (1985) *Studies in the Byzantine Monetary Economy c. 300 – 1450*. Cambridge: Cambridge University Press.

HIERNARD, J. (1992) "Les Decouvertes De Monnaies D'Or Romaines En Poitou, Limousin, Saintonge Et Angoumois: Typologie Des Sites Et Circulation." *L'Or Monnaye III; Trouvailles De Monnaies D'Or Dans L'Occident Romain*. Ed. C. Brenot and X. Loriot. Paris: Centre National De La Recherche Scientifique. 101-18.

HOWGEGO, C. (1995) *Ancient History from Coins*. London: Routledge.

HOYER, D. "Buying a Province, Building an Empire: Money, Markets, and Growth in Roman Africa from Augustus to Aurelian." *ISAW Papers* forthcoming.

HULEVIN, H. (1984) "L'atelier de Rome sous Claude II le Gothique (Aurei, deniers, quinaires et moyens bronzes." *Quaderni Ticinesi. Numismatica e Antichità Classiche* 13: 199-213.

KENRICK, P. and A. BUZAIAN (2013) *Cyrenaica*. London: Society for Libyan Studies, Silphium Press.

KENT, J. P. C. (1956) "Gold Coinage in the Later Roman Empire." *Essays in Roman Coinage presented to Harold Mattingly*. Oxford: Oxford University Press. 190-204.

KENT, J. P. C. (1994) *The Roman Imperial Coinage*. Vol. 10. London: Spink and Son Ltd.

KING, C. E. (1982) "Late Roman Silver Hoards in Britain and the Problem of Clipped Siliquae." *The British Numismatic Journal* 51: 5-31.

KING, C. E. (1987) *Roman Silver Coins. V: Carausius to Romulus Augustus*. London: Seaby.

KING, C. E. (1993) "The Fourth Century Coinage." *L'«Inflazione» nel Quarto Secolo D.C.* Rome: Istituto Italiano di Numismatica. 1-87.

KUBITSCHEK, W. (1909) "Eine Stiftung aus Feltre." *Numistatische Zeitschrift* 42: 47-66.

LACTANTIUS. *De Mortibus Persecutorum*. Ed. J. Pesenti. Mediolani: Augustae Taurinorum, 1922.

LAFAURIE, J. (1974) "Numismatique Romaine et Médiévale." *Annuaire École Pratique des Hautes Études*: 449-453.

LANTERI, R. (2005) "Numismatics and the database: the Misurata (Libya) treasure experience." *Neothemi: ICT and Communicating Cultures*: 69-78.

LAPORTE, J. (1980) "Trésors de Maurétanie Césarienne enfouis sous Aurélien." *BSFN* 35.5: 695-697.

LE BOHEC, Y. (1994) *The Imperial Roman Army*. London: B. T. Batsford, Ltd.

LESCHI, L. (1953) *Djemila, Antique CVICVL*. Alger: Imprimerie Officielle.

LEVEAU, P. (1983) "Recherches sur les nécropoles occidentales de Cherchel (Caesarea Mauretaniae). 1880-1961." *Antiquités Africaines* 19: 85-173.

LHOTELLIER, R. and DESNIER, J. (1990) "Trésor de Sesterces de Tunisie." *Trésors Monétaires* 12: 55-63.

LIVY. *The War with Hannibal: Books XXI-XXX of The History of Rome from its Foundation*. Trans. B. Radice. Middlesex: Penguin, 1965.

LORIOT, X. (1972) "Fragment d'un trésor de folles découvert en Tunisie." *BSFN* 27.2: 160-3.

MACALUSO, R. (1992) "I 'radiati barbari' e la circolazione monetaria in Tripolitania nel IV secolo d.C." *Quaderni di Archeologia della Libya* 15: 327-332.

MACDONALD, D. J. (1974) "Aphrodisias and Currency in the East, A.D. 259-305." *American Journal of Archaeology* 78.

MAIRAT, J. (2014) *The coinage of the Gallic Empire*. Oxford: The University of Oxford.

MARION, J. (1967) "Note sur la Contribution de la Numismatique a la Connaissance de la Maurétanie Tingitane." *Antiquités Africaines* 1: 99-118.

MARTÍNEZ MIRA, I. (1998) "Tesorillos del S. III d.C. en la Península Ibérica." *Lucentum* 14-16: 119-80.

MARTÍNEZ MIRA, I. (2002) "Tesorillos del S. III d.C en la Península Ibérica (II)." *Lucentum* 19-20: 297-307.

MARTÍNEZ MIRA, I. (2006) "Tesorillos del S. III d.C. en la Península Ibérica (III)." *Lucentum* 23-4: 207-36.

MATTINGLY, D. J. (1988) "Oil for export? A comparison of Libyan, Spanish and Tunisian olive oil production in the Roman empire." *Journal of Roman Archaeology* 1: 33-56.

MAYER, M. (1992) "Los programas decorativos lapídeos de algunas cuidades del Africa Romana y la circulación de algunas materiales africanos." *L'Africa Romana* 10: 503-513.

MILLAR, F. (1977) *The Emperor in the Roman World (31 BC – AD 337)*. London: Gerald Duckworth & Co. Ltd.

MISSONG, A. (1868) "Fund römischer Siliquen aus den Jahren 360-367." *Wiener Numismatische Monatshefte* 4: 248-267.

MOMMSEN, T. (1909) *The Provinces of the Roman Empire, Vol. II*. Trans. W. P. Dickson. London: Macmillan and Co., Ltd.

MOSTECKY, H. (1985) "Ein Münzhort von Karthago aus der Zeit vor dem Vandalensturm." *Mitteilungen der Österreichischen Numismatischen Gesellschaft* 25: 69-73.

MUNZI, M. (2000) "Leptis Magna-Khoms, villa romana al porta: un contest monetale di età giulianea." *Libya Antiqua* n.s. 4: 99-128.

OUIS, D. (2006) "Ère Romaine: Auzia." *Sour El Ghozlane*. Web. 19 Apr. 2015.

PENSE, A. W. (1992) "The Decline and Fall of the Roman Denarius." *Materials Characterization* 29.2: 213-222.

PICARD, G. C. (1949) "Castellum Dimmidi." *Revue des Études Anciennes* 51: 177-179.

POLLARD, N. and J. BERRY (2012) *The Complete Roman Legions*. London: Thames & Hudson Ltd.

POLYBIUS. *The Rise of the Roman Empire*. Trans. F. W. Walbank. Middlesex: Penguin, 1979.

RAVEN, S. (1993) *Rome in Africa*. 3rd ed. London: Routledge.

REECE, R. (1975) "Roman and Byzantine Hoards." *Coin Hoards* I: 46-57.

REECE, R. (2012) "Coins from the British excavations at Carthage: a summary and discussion." *The Journal of Archaeological Numismatics* 2: 265-280.

ROGAN, J. (2011) *Roman Provincial Administration*. Chalford: Amberley Publishing.

SALADIN, H. (1914) "Note sur les fouilles exécutées à Bou-Gornine en 1913 et en 1914 par M. le Lieutenant Fiévet." *Bulletin Archéologique du Comité des Travaux Historiques et Scientifiques*: 590-594.

SALAMA, P. (1960) "Petit trésor monétaire découvert à Affreville, Chélif." *BSFN* 15.8: 465-7.

SALAMA, P. (1961) "Sur un lot monetaire Constantinien decouvert au Guelta (Algerie)." *Annali: Instituto Italiano di Numismatica* 7-8: 253-294.

SALAMA, P. (1967) "Les trésors maxentiens de Tripolitaine: rapport préliminaire." *Libya Antiqua* 3-4: 21-27.

SALAMA, P. (1979) "Huit siècles de circulation monétaire, sur les sites côtiers de Maurétanie centrale et orientale, IIIe s. av. J.-C./ Ve s. après J.-C." *Symposium numismatico de Barcelona* 2: 109-146.

SALAMA, P. (1982) "Monnaies rares de l'empereur Maxence dans le trésors de Tripolitaine." *Actes du 9ème Congrès International de Numismatique: Berne, Septembre 1979, Volume I*: 511-534.

SALAMA, P. (2002) "La chasse aux trésors dans le Maghreb classique." *L'Africa Romana* 14.3: 1955-2000.

SALAMA, P. (2004) "La rareté des trésors de sesterces en Afrique Proconsulaire." *Cahiers Numismatiques* 161: 27-43.

SALAMA, P. (2005) "Le trésor de Sigus et ses comparatifs." *Cahiers Numismatiques* 166: 37-59.

SALAMA, P. (2009) "Le Trésor de Fadhiline (Tunisie): *Antoniniani* réguliers et irréguliers d'ateliers Italiens et Gaulois." *Antiquités Africaines* 43: 131-162.

SALAMA, P. and P.-A. BESOMBES (2002) "Le trésor de deniers d'Aïn Témouchent et ses satellites dans l'Afrique romaine." *Trésors Monétaires* 20: 185-222.

SALAMA, P. and J.-P. CALLU (1990) "L'approvisionnement monétaire des provinces africaines au IVe siècle." *L'Afrique dans l'Occident romain (Ier siècle av. J.-C.-IVe siècle ap. J.-C.). Actes du colloque de Rome (3-5 décembre 1987)*: 91-116.

SALAMA, P. and D. HOLLARD (2009) "Constantine et Cherchel, deux trésors romains d'Algérie: *maiorinae* de 348 à 354." *Trésors Monétaires* 23: 197-211.

SUTHERLAND, C. H. V. (1967) *The Roman Imperial Coinage VI: From Diocletian's reform (A.D. 294 to the death of Maximinus (A.D. 313).* London: Spink and Son Ltd.

TACITUS. *Historiarum Libri*. Trans. C. D. Fisher. Oxford: Clarendon Press. 1936.

TURCAN, R. (1963) *Le Trésor de Guelma: étude historique et monétaire*. Paris: Arts et Métiers Graphiques.

TURCAN, R. (1984) *Trésors Monetaires de Tipasa et d'Announa*. Paris: Diffusion de Boccard.

VON RUMMEL, P. (2010) "Ricerche e Scavi Tedesco-Tunisini a Simitthus (Chimtou, Tunisia)." *Forma Vrbis* 15.9. Roma: Sydaco Editrice.

WAILLE, V. (1904) "Nouveau rapport sur les fouilles de Cherchel (1903-1904)." *Revue Africaine* 48: 56-91.

WALTON, P. J. (2012) *Rethinking Roman Britain: Coinage and Archaeology*. Wetteren: Moneta.