Stone Age Archaeology and Paleoecology of the Geelbek Dunes, West Coast National Park, South Africa
Report on the 2002 Field Season

Introduction

Since 1998 archaeologists from the Department of Early Prehistory and Quaternary Ecology of the University of Tübingen have worked in the Geelbek Dunes of the West Coast National Park. The first three seasons focused on recovering archaeological finds and ecofacts from diverse geological settings. The last two seasons focused more on monitoring the movements of the dunes than recovering more finds from the calcrete and fossil dune surfaces preserved within the dune system. Over the years more than 30,000 finds have been piece plotted using a total station and a grid system that places finds throughout the dunes to an accuracy of a few centimeters in each dimension. Twenty-three deflation hollows have been studied in detail and artifacts have been collected over an area of several hectares. The measuring system also allows the careful monitoring of deflation within the hollows and the study of the movements of the dunes. The Geelbek research project addresses a broad range of archaeological and ecological questions spanning the MSA and LSA. Dated geological strata range in age from 250 ka to the present. One major focus of the project is to examine how traces of human activity are distributed across the landscape of the West Coast National Park. The data from the project are intended to augment the abundant information available from many excavations of caves and middens in coastal South Africa. At issue is whether or not low density archaeological occurrences traditionally viewed as being below the threshold of archaeological visibility can contribute to our knowledge of Stone Age patterns of subsistence and settlement in the region. Additionally, the projects documents the distribution of numerous classes of artifacts and ecofacts to gain a baseline for creating models of Stone Age land use in the Western Cape. Some of these observations may be relevant for archaeological inquiry in other regions.

Details of the work done to date and the aims of the project can be found in the previous four field reports on file at the South African Heritage Resource Agency and the University of Tübingen. Beyond these reports, several papers on the archaeological and geological research at Geelbek have been published in recent years (Conard et al. 1999; Conard and Kandel 2001; Felix-Henningsen et al. in press; Kandel et al. in press).

Fieldwork in 2002

The fieldwork in 2002 ran from February 18 to March 8, with two days in the dunes in early April. The crew consisted of students and staff from the University of Tübingen including Susanne Feine, Andrew Kandel, Ursula Maurer and the author. Prof. Peter Felix-Henningsen of the University of Giessen joined the team for one week to continue his ongoing geological research in Geelbek and the surrounding region.

The 2002 field season was conceived as the final of five seasons in the Geelbek Dunes, and the crew conducted its research with the goal of arriving at a good stopping point for the fieldwork. The crew examined all 22 deflation hollows that had been studied in previous years, and collected a previously unstudied deflation hollow designated Ovis. Finds on the surface were plotted and the outlines of the the hollows were measured. Figures 2 and 3 present plots of Stella and Toaster as examples of the distribution of finds within deflation bays and examples of the movement of bays over recent years. These plots illustrate the notion that the dunes provide moving "windows into the past." As the bays

move, previously exposed surfaces are reburied on the leeward side and new surfaces are exposed in the windward direction. As deflation occurs finds are exposed constantly, and, under favorable conditions, artifacts and ecofacts can be plotted and collected as they are exposed. Thus while the finds from Geelbek are collected from the surface, they often have the spatial, contextual and stratigraphic integrity of excavated materials. The detailed spatial information is of critical importance for meaningful archaeological analysis of the materials.

The approach used at Geelbek works very well for studying Later Stone Age finds from Ancient Dune I and Ancient Dune II (AD I, AD II), but is more problematic for surfaces that have deflated to the level of calcrete. Although the finds from the ancient dunes have fairly clear chronostratigraphic context, the Middle Stone Age finds are often more difficult to interpret. They usually lie in or directly atop exposed calcrete surfaces or on deflated sandy "pavements." Here the association of finds hinges on technological and typological arguments as well as the physical condition of finds. While there is little reason to anticipate major horizontal movements during deflation, much stratigraphic information about the finds is lost on such deflated surfaces.

The crew collected finds in most of the deflation hollows examined and particularly at Check, Equus, Homo, Rhino, Shelly, Snoek and Toaster, numerous finds were collected. These finds stemmed from diverse contexts including finds on calcretes, pavements, and on AD I and AD II. At Equus more fragments of ostrich eggshell bottles could be recovered from a deflated pavement. Initial results suggest that these finds are from the MSA and predate the limits of radiocarbon dating. These bottles are the oldest known artifacts of this kind. Rhino, Snoek and Toaster all yielded important lithic and faunal material from AD I, while Shelly and Toaster produced important finds from AD II.

Another aspect of the fieldwork in 2002 related to the Geelbek Object Movement Experiment (GOME) described in last year's field report. After a little more than two years the crew collected the materials from GOME. Figures 4 - 7 depict the movement of various classes of artifacts on three geological substrates as documented in four episodes of recording over the period of study. These plots show a relatively high level of mobility on loose sand, with less mobility on firm sand and calcrete. As one might expect the experiment on loose sand also provided the strongest evidence for the vertical migration of finds over time. Although exceptions exist, generally, heavy finds such as stone artifacts disperse and move in a down-slope direction as deflation proceeds on a sloping sandy matrix. Light, more two-dimensional finds including fragments of shell or ostrich eggshell at times move upslope as a result of high winds. The horizontal and vertical movement of materials is low on firm sand and still lower on calcrete. These results confirm the idea that deflation can expose finds without necessarily destroying the spatial integrity. The experiment provides qualitative and quantitative information on the movement of key classes of objects under conditions that reflect the range of settings in which finds are collected in the field.

Future Research at Geelbek

One of the main characteristics of the 2002 season was a shift away from fieldwork and toward a strengthened emphasis on the analysis and documentation of all classes of material. In the event that future scholars conduct research in the Geelbek Dunes, they should contact the author to assure that finds removed from the dunes will be recorded on the existing grid. Many artifacts from the deflation hollows were drawn and a significant number of finds were analyzed. These finds span the period from the MSA to the historic period as documented, for example, by finds of clay pipes (Figs. 8 - 22). In the coming years the Tübingen team will continue to examine the movements of the dune system, but little emphasis will be placed on collecting additional materials. This plan is consistent with the close of a first cycle of funding by the Deutsche Forschungsgemeinschaft. Now a second period of funding is needed to bring the analysis of the finds from Geelbek to publishable form.

Acknowledgements
Andrew Kandel made important contributions to the Geelbek project including coordinating the logistics for the fieldwork and managing the data collected during the season. Graham Avery of the Iziko-South African Museum supported the research by providing access to finds and coordinating the use of a field vehicle. Peter Felix-Henningsen of the University of Giessen provided much information into the chronostratigraphy and pedology of Geelbek and the surrounding region. Thanks are due Paul Sieben, and the staff of the West Coast National Park and Mary Leslie of the South African Heritage Resources Agency for their continued support of the project. Pippa Harrhoff of the Iziko-West Coast Fossil Park generously provided laboratory space for the analysis of the finds from Geelbek. Susanne Feine, Maria Malina, Ursula Maurer and Svea Rathje drew the artifacts included in this report. Andrew Kandel produced the computer plots. The research at Geelbek is funded by the Deutsche Forschungsgemeinschaft and the University of Tübingen.

Nicholas J. Conard
Langebaanweg, April 12, 2002

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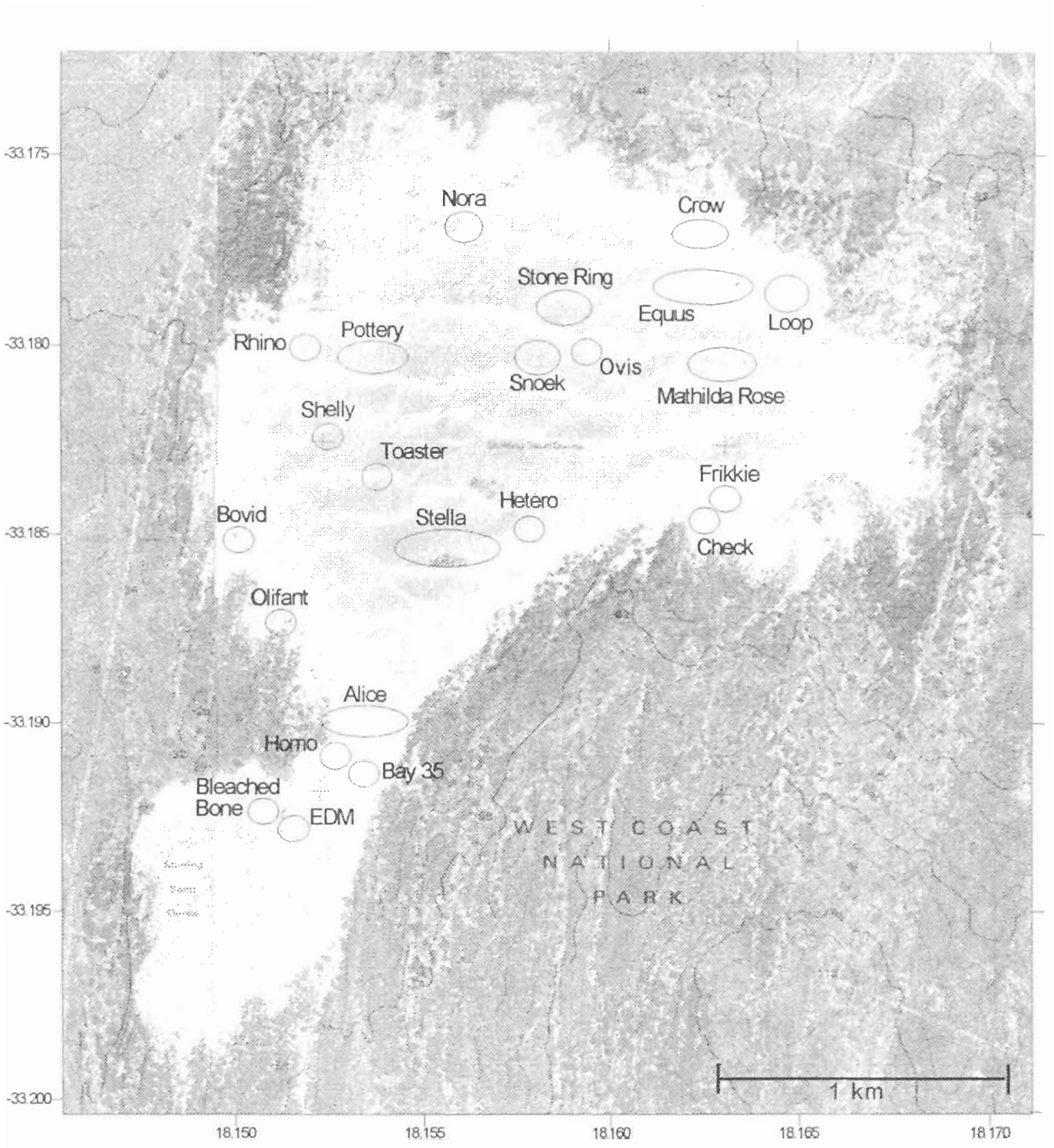
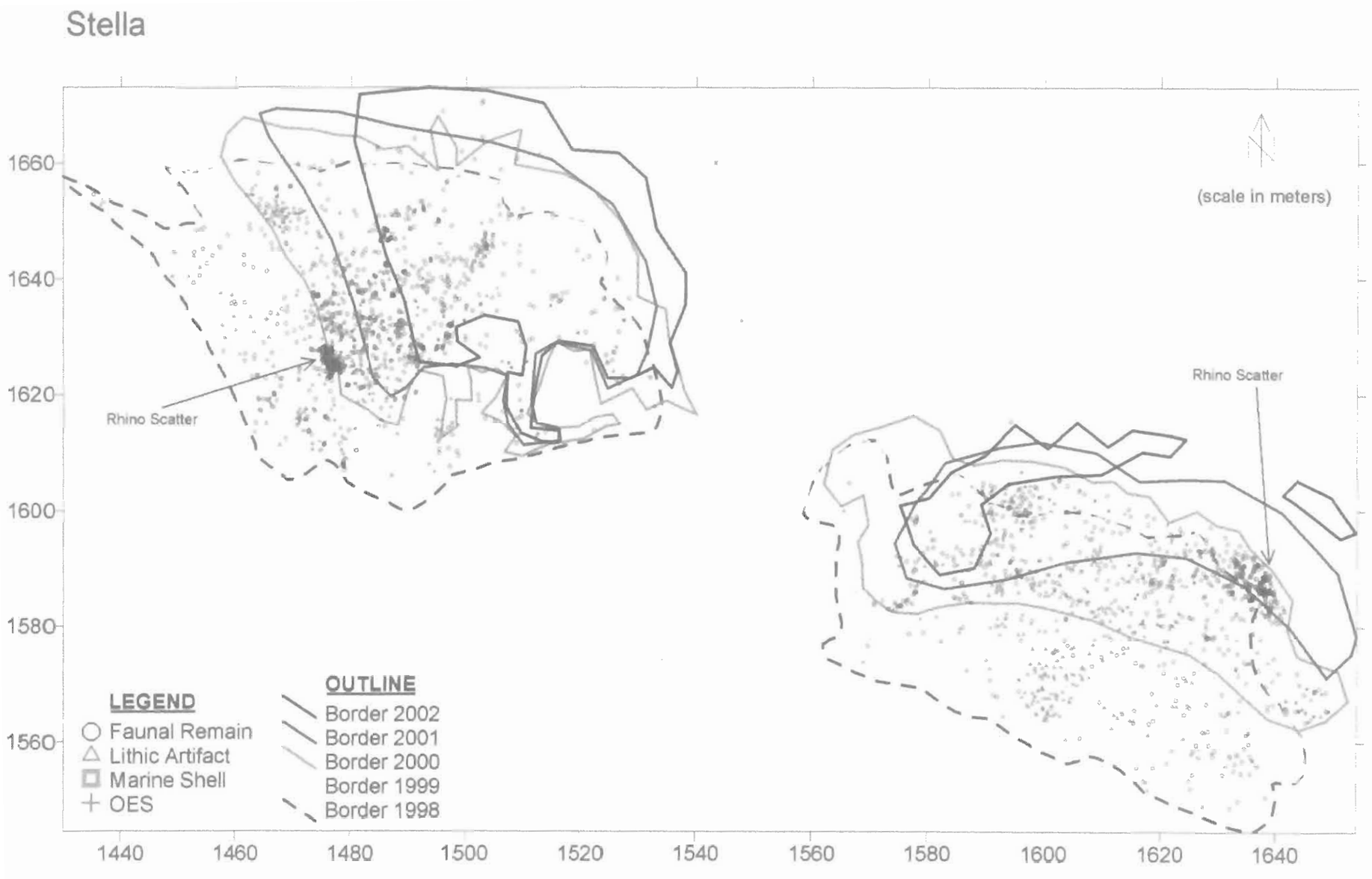


Figure 1. Geelbek. Overview of the dune system showing the location of the deflation bays studied from 1998-2002.



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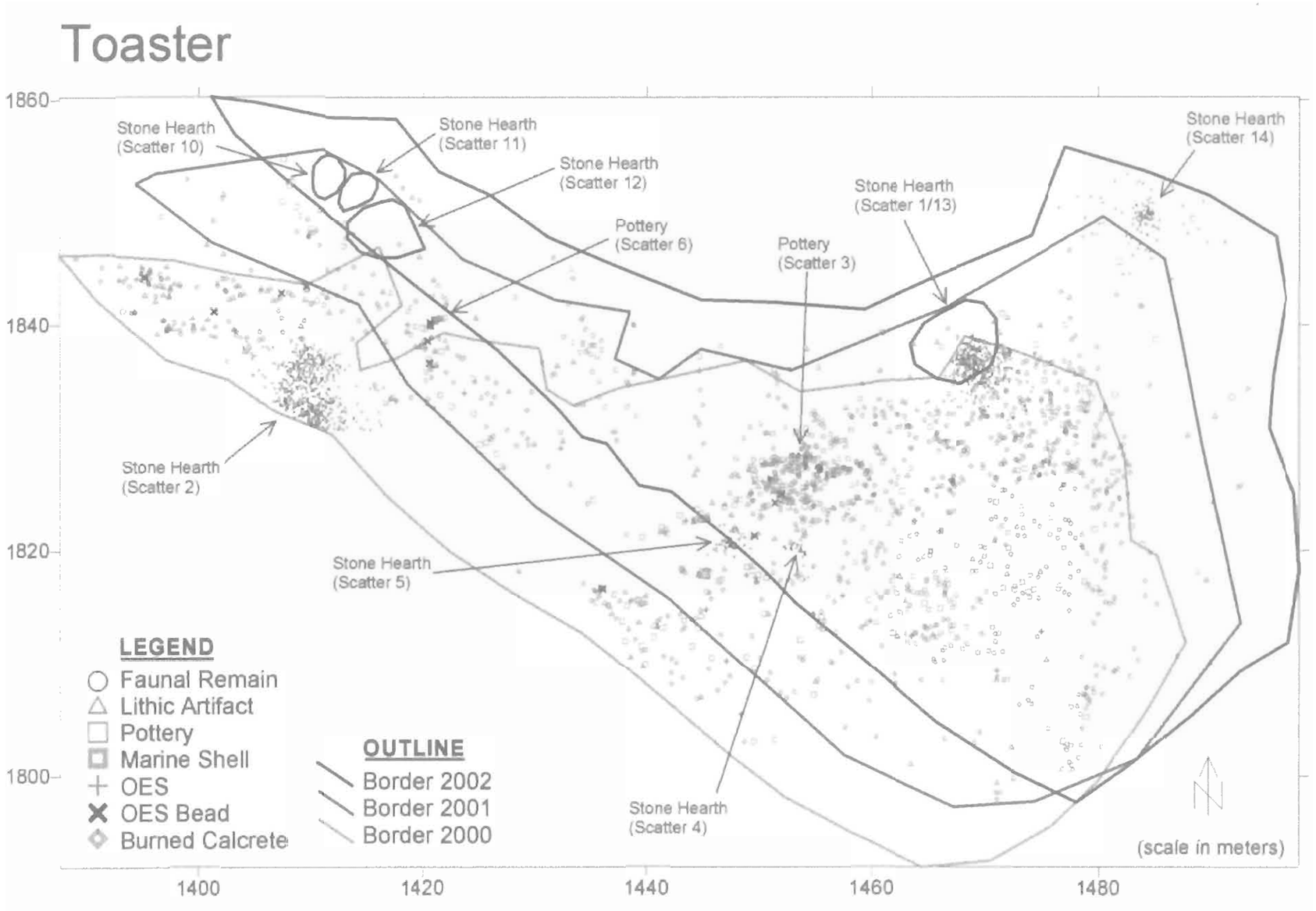


Figure 3. Geelbek. Distribution of finds and depiction of the windward migration between 2000 and 2002 in Toaster.

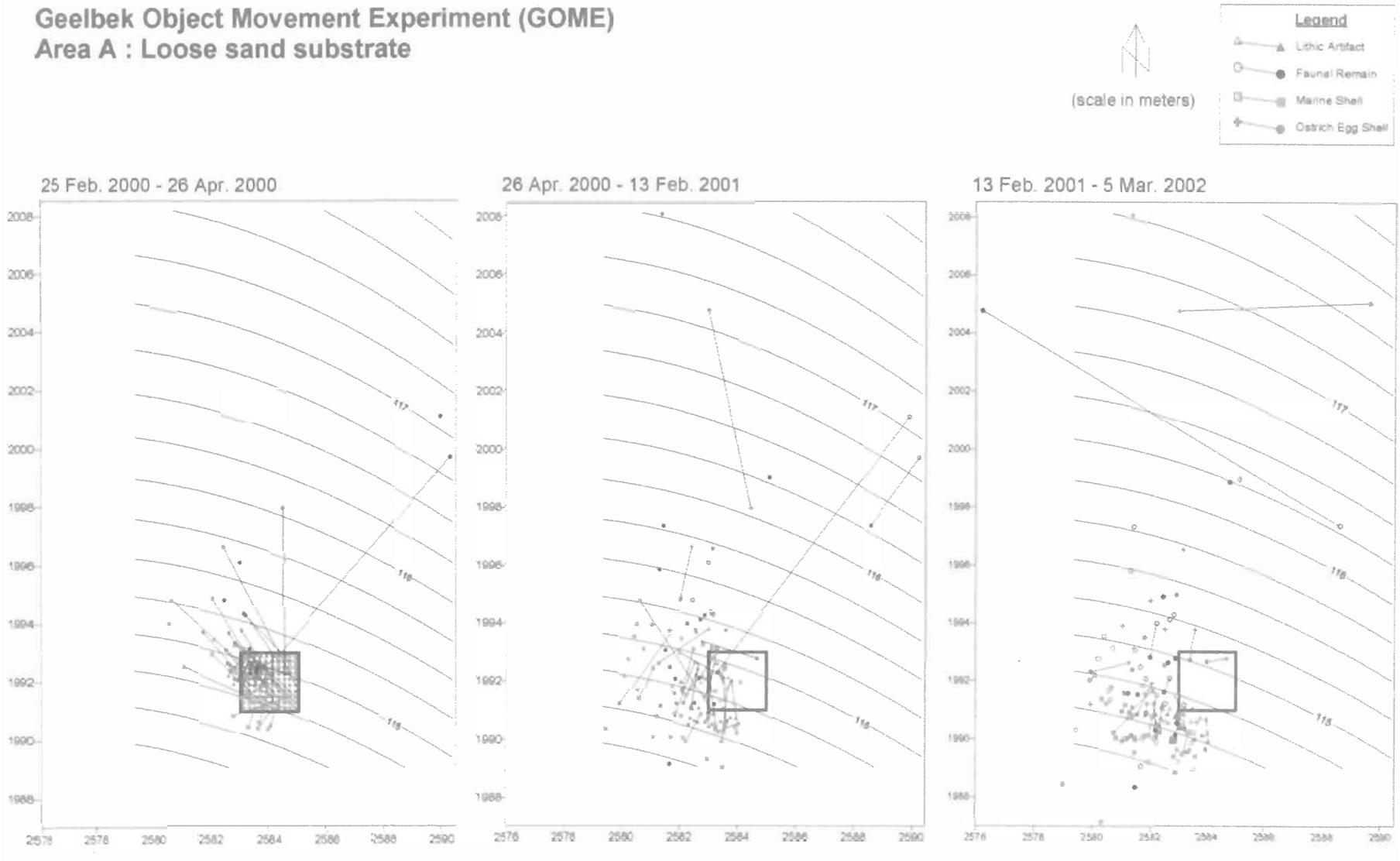


Figure 4. Geelbek Object Movement Experiment. Horizontal plots of objects on loose sand. Solid lines depict the movement of individual objects.

Geelbek Object Movement Experiment (GOME)
Area A : Loose sand substrate

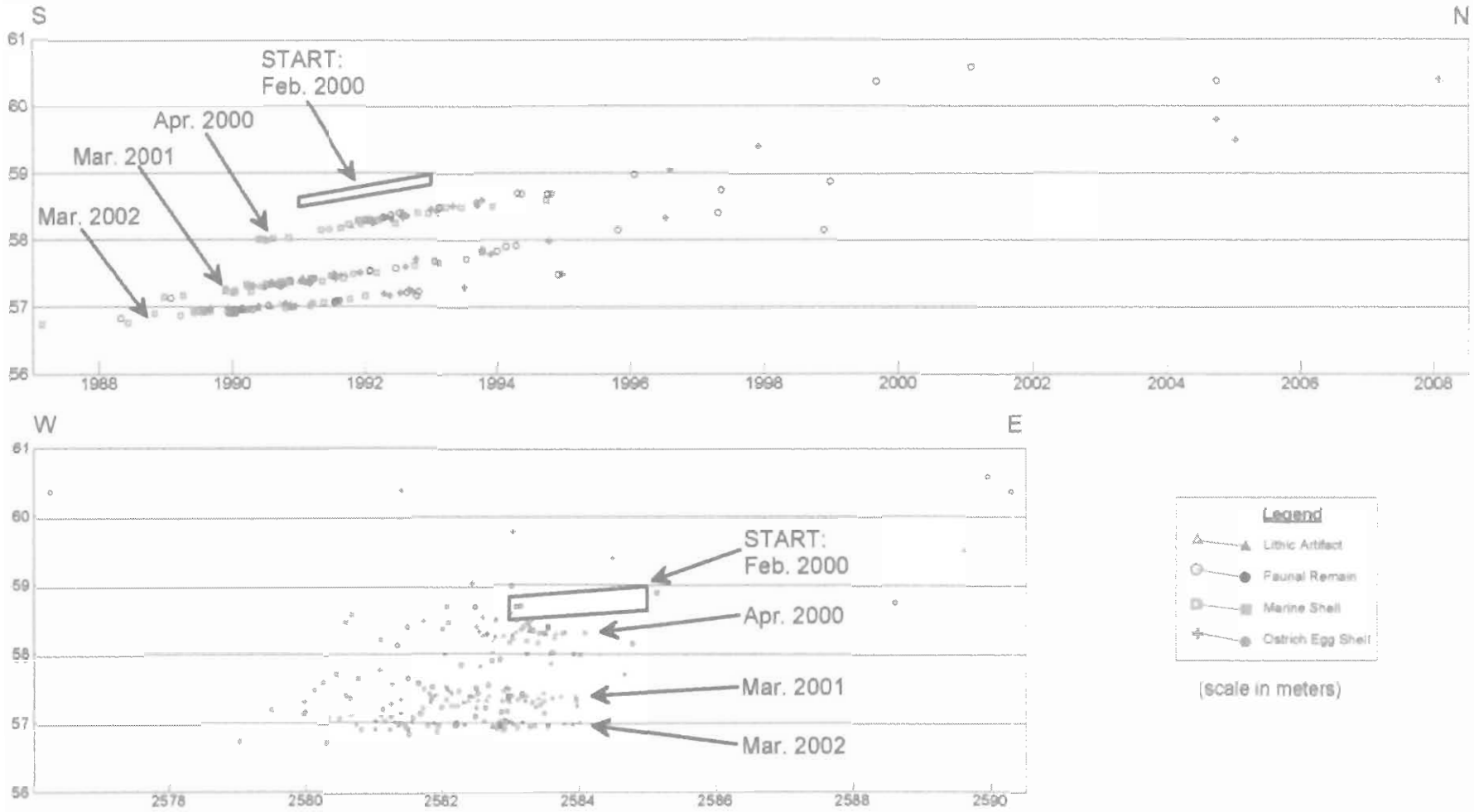


Figure 5. Geelbek Object Movement Experiment. Vertical plots of objects on loose sand. The rectangles represent the starting position of the finds on February 25, 2000.

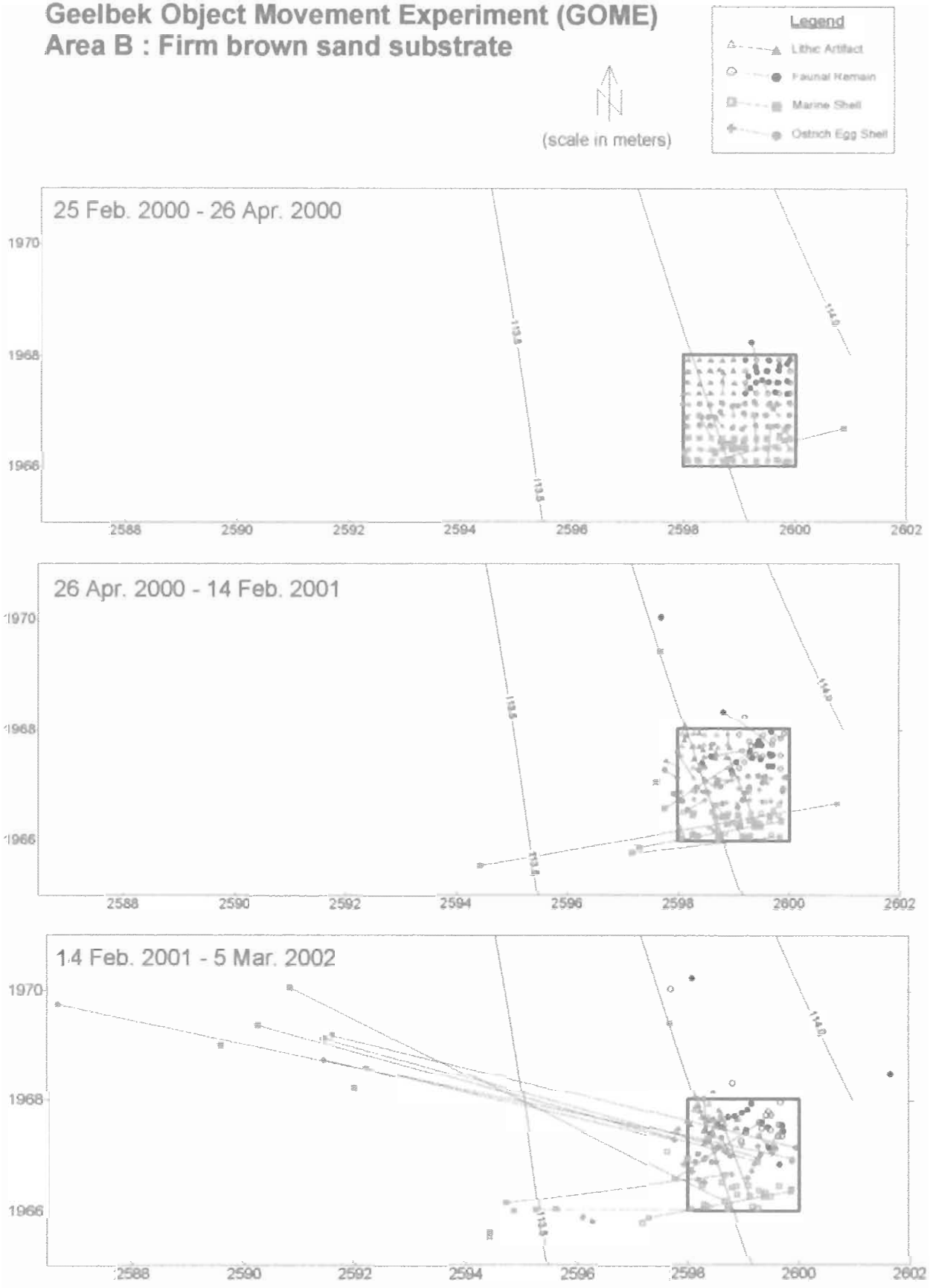


Figure 6. Geelbek Object Movement Experiment. Horizontal plots of objects on firm brown sand. Solid lines depict the movement of individual objects.

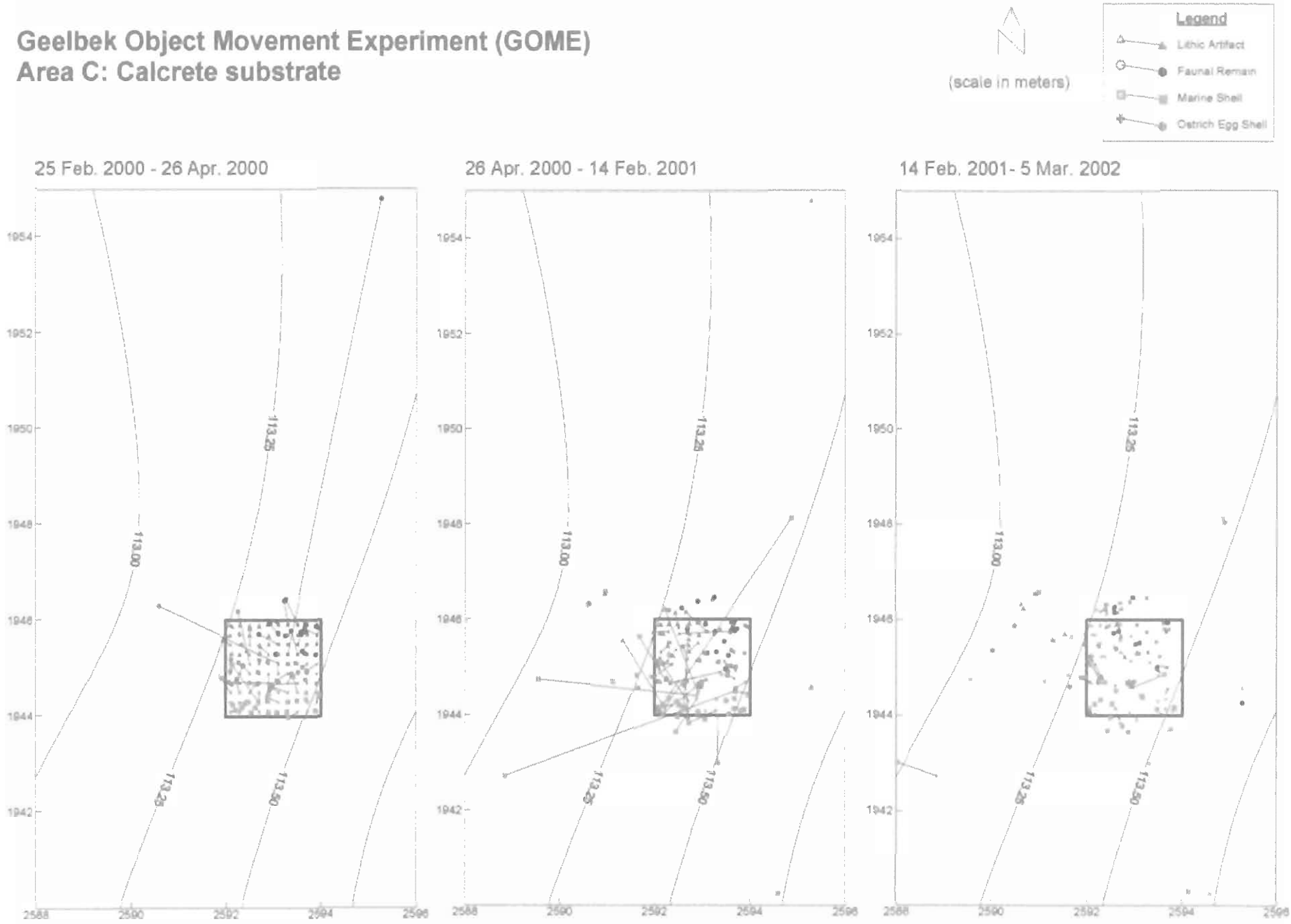
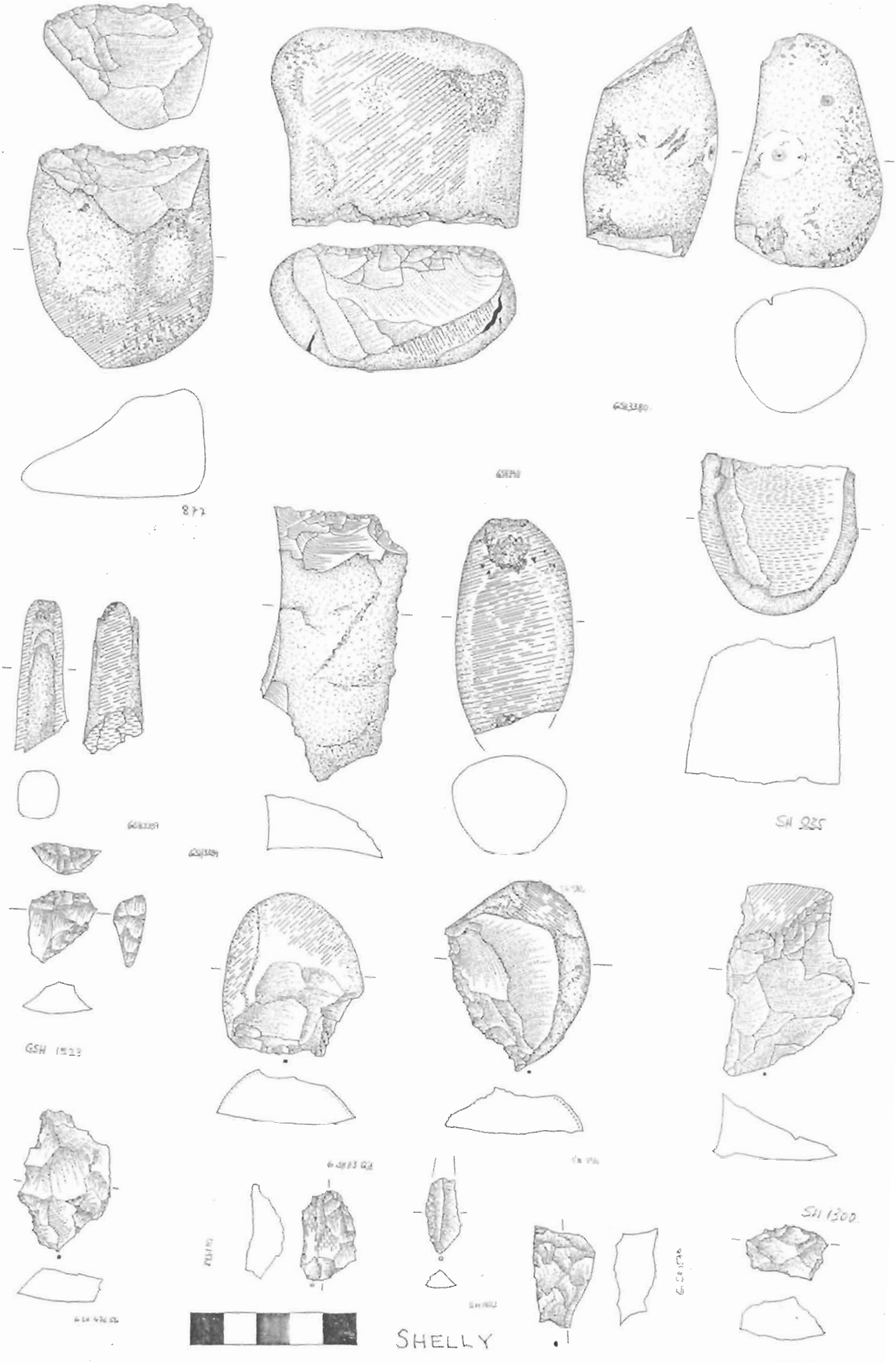


Figure 7. Geelbek Object Movement Experiment. Horizontal plots of objects on calcrete. Solid lines depict the movement of individual objects.



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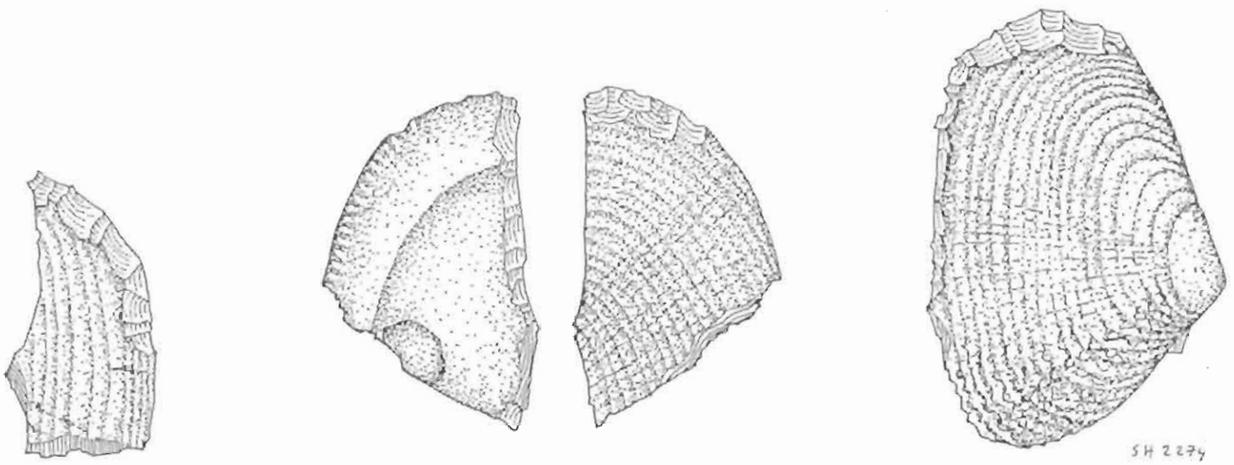
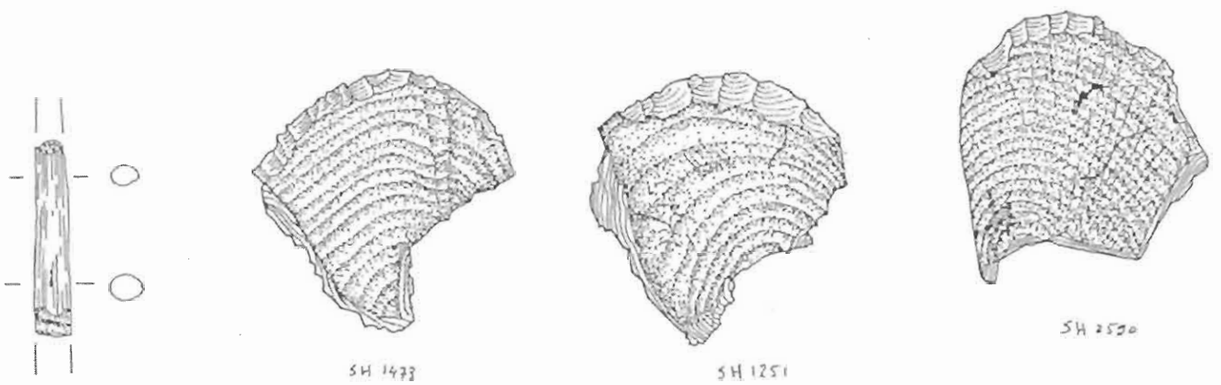
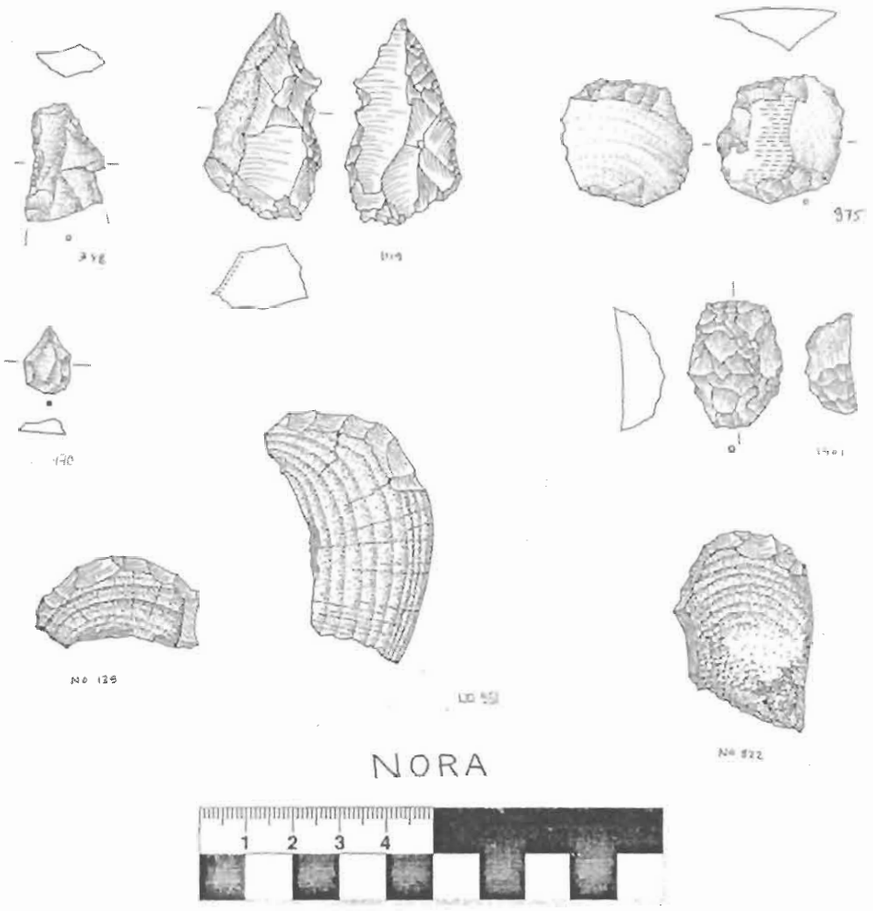




SHELLY

Figure 9



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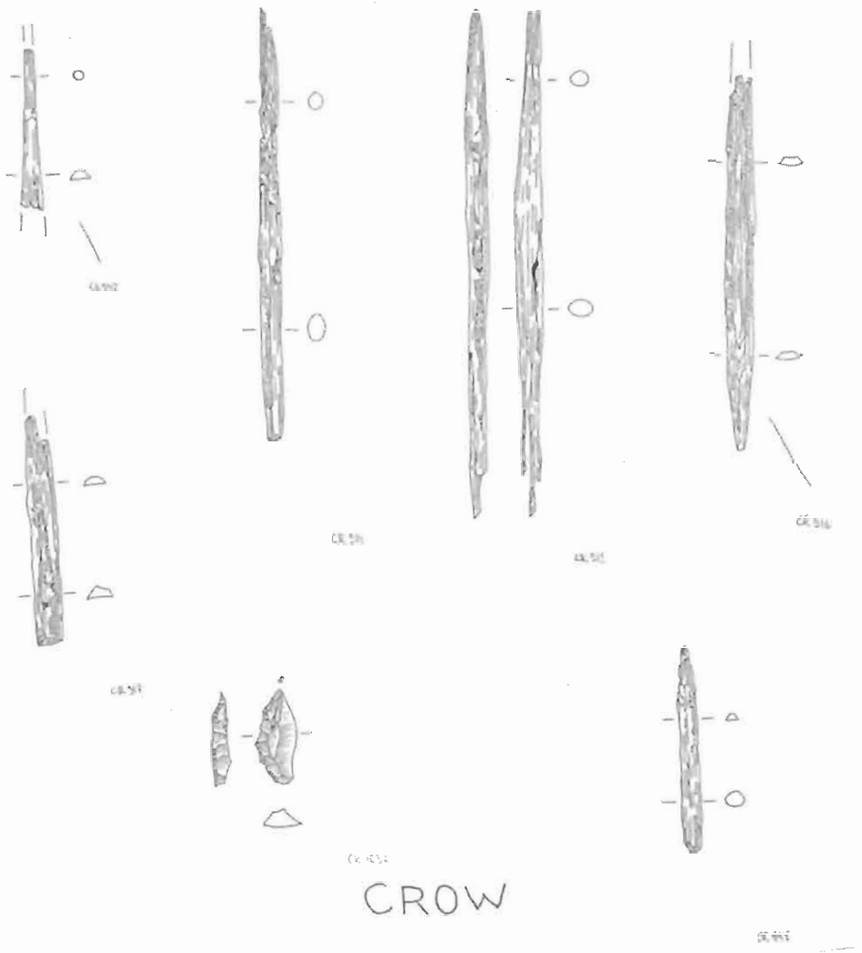

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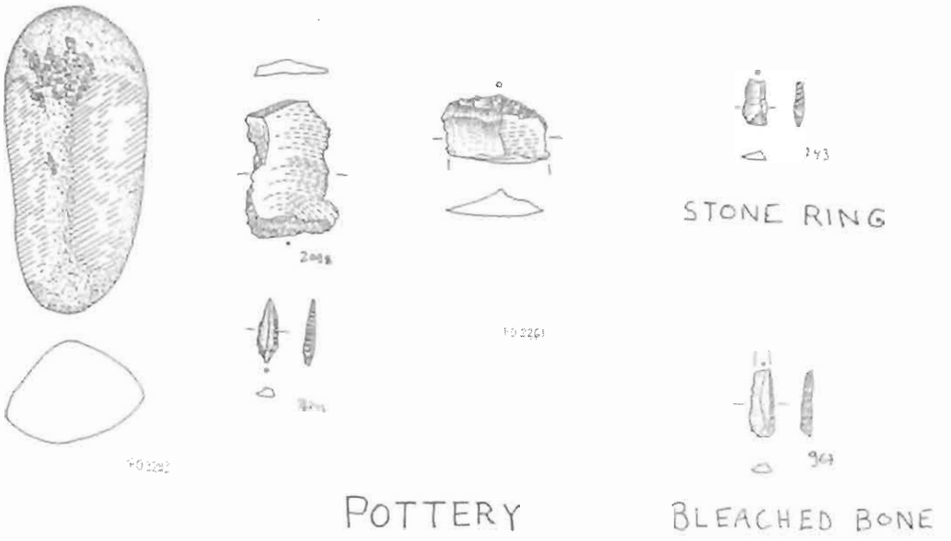

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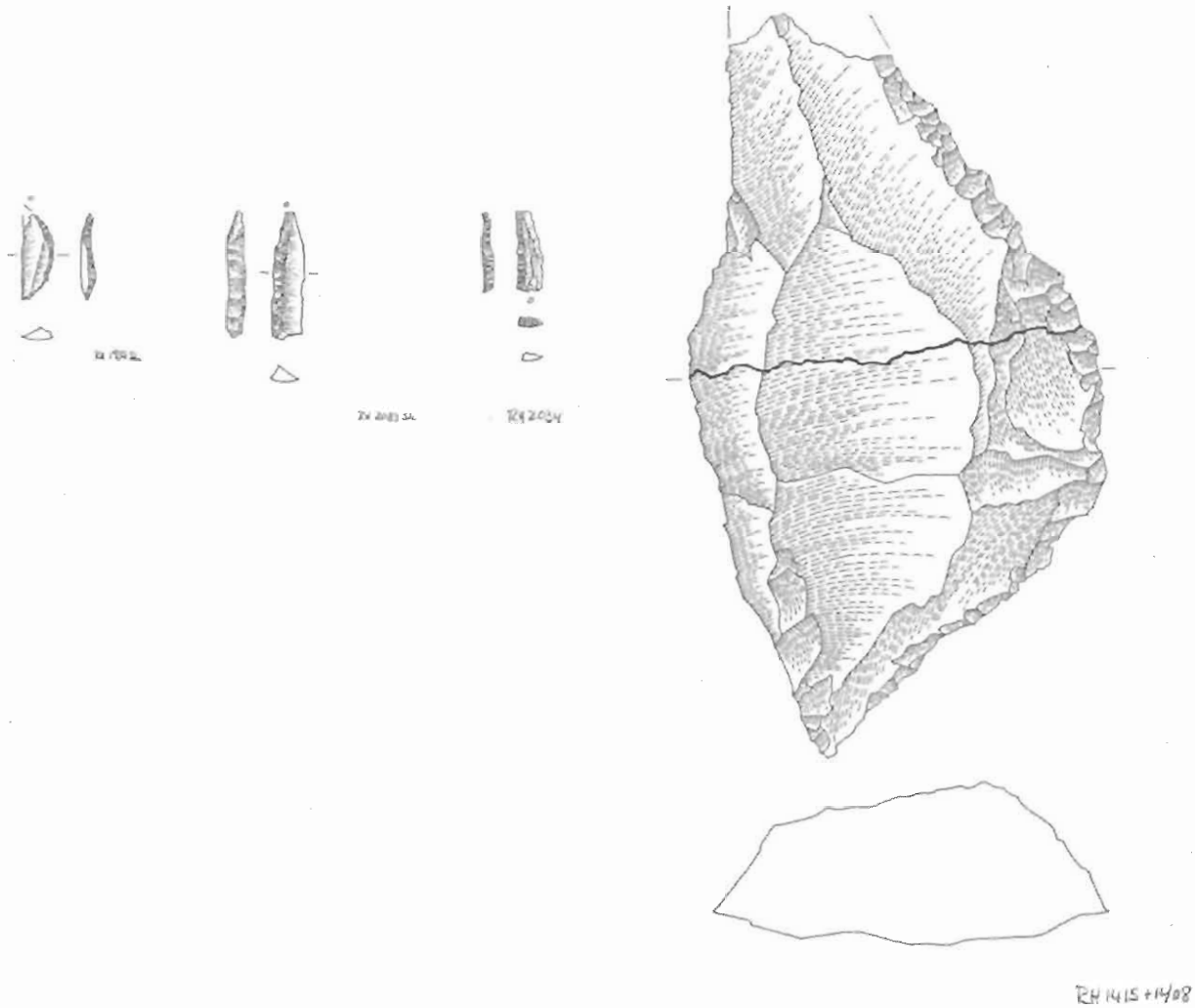

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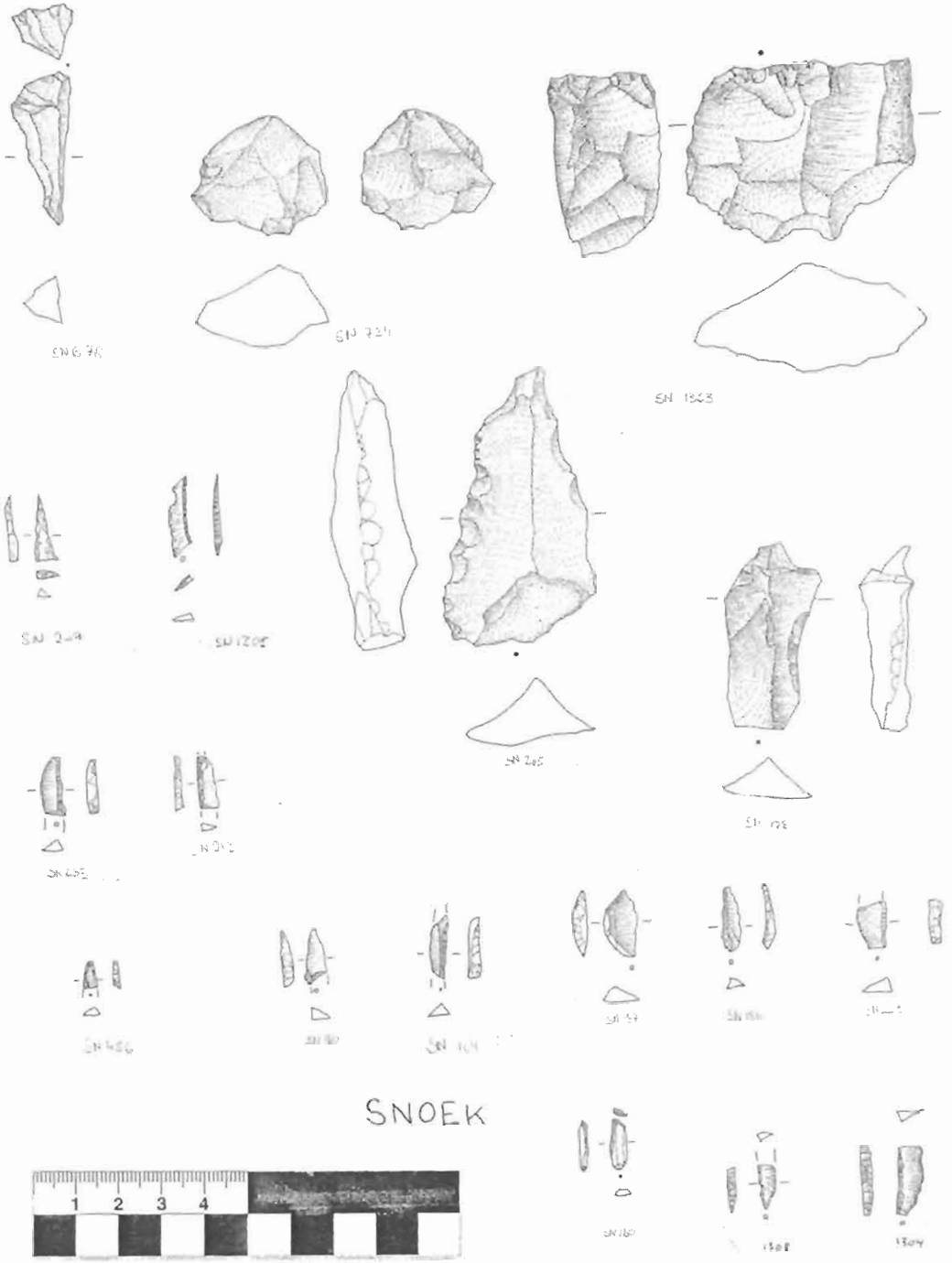

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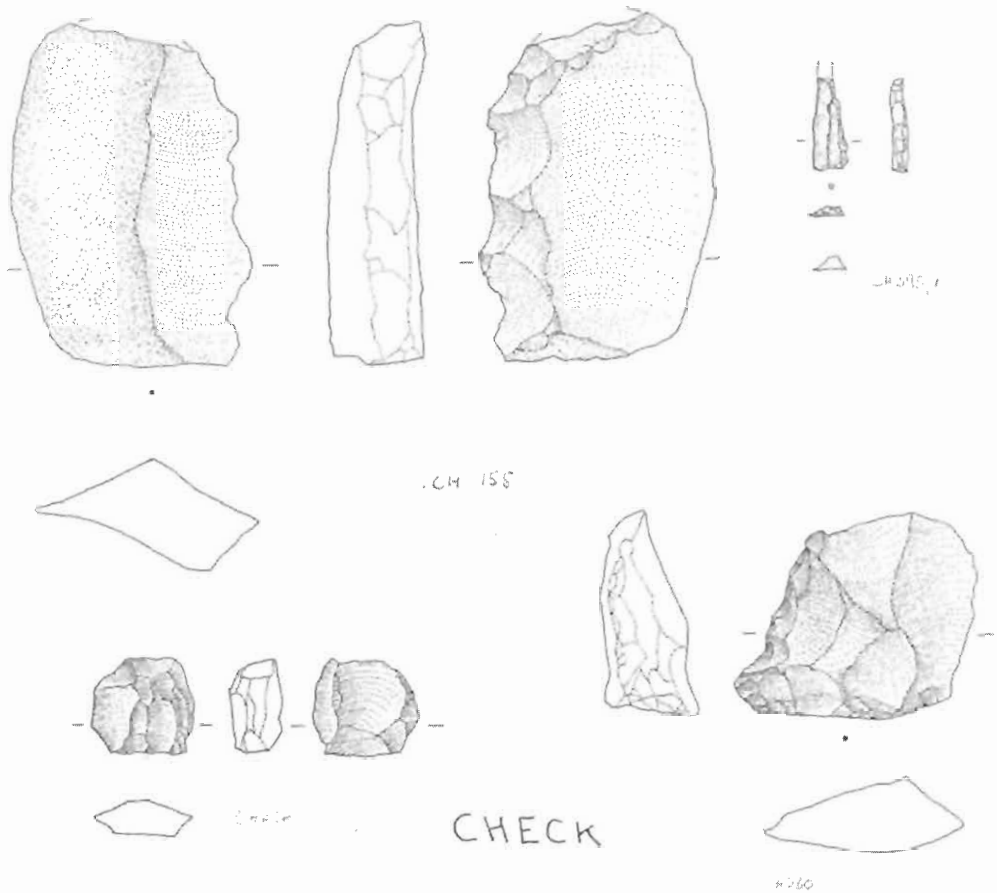

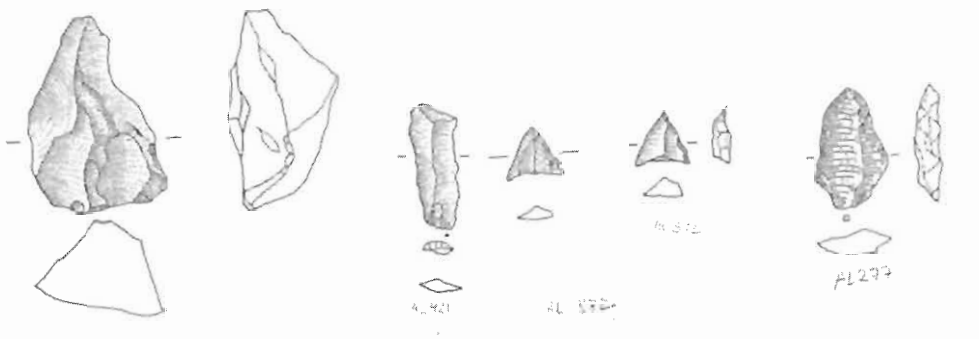

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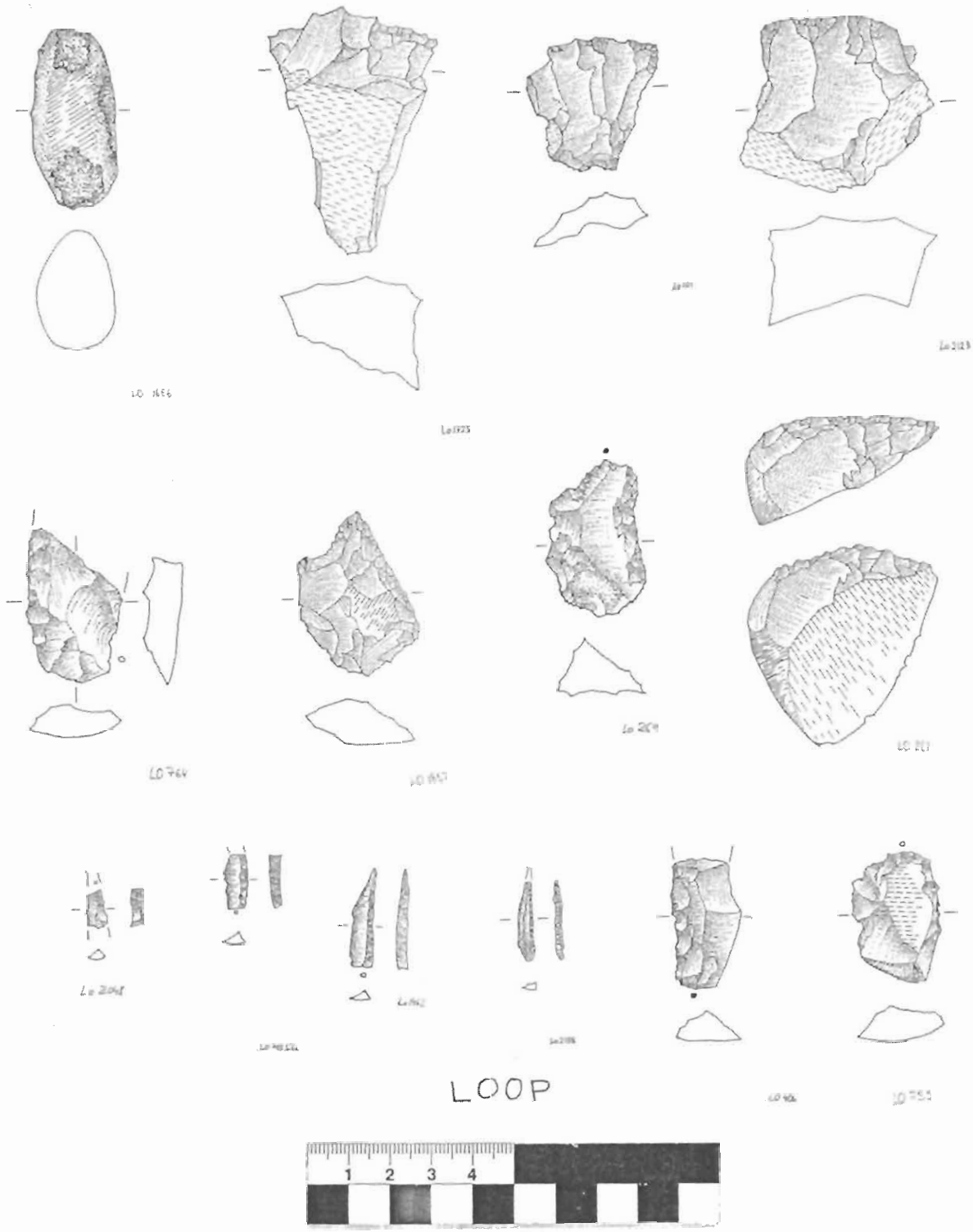

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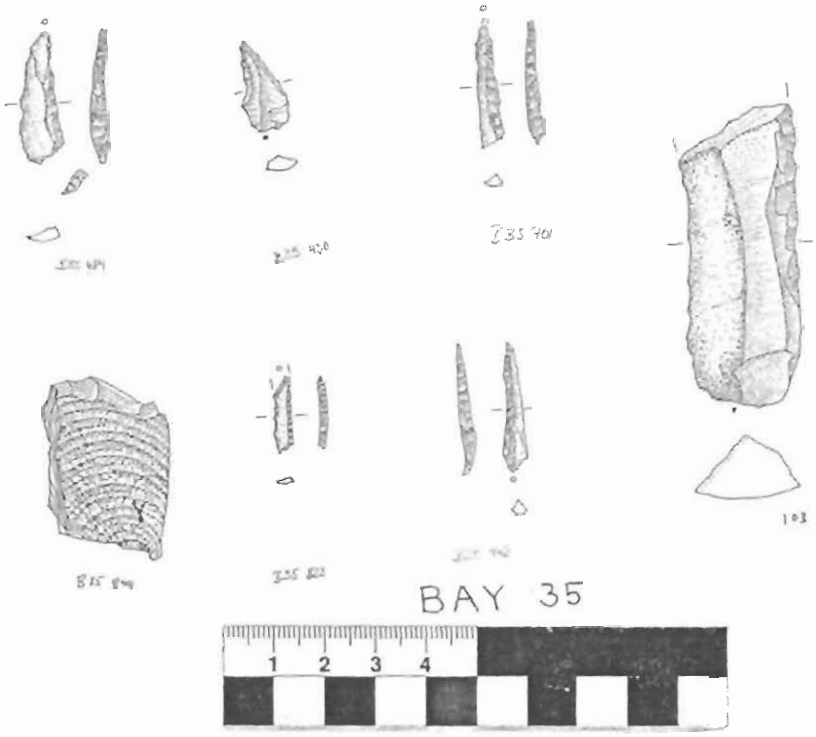

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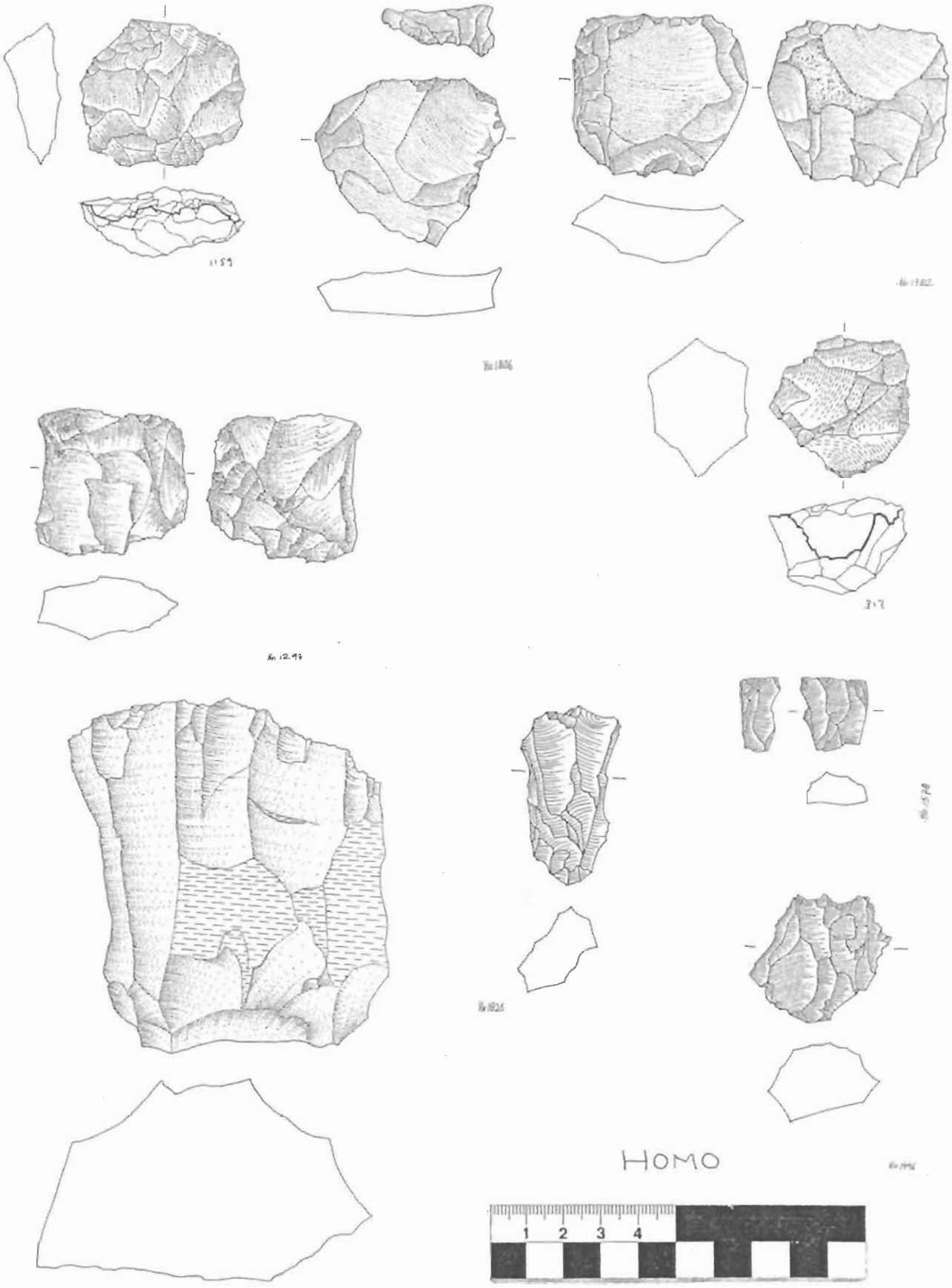

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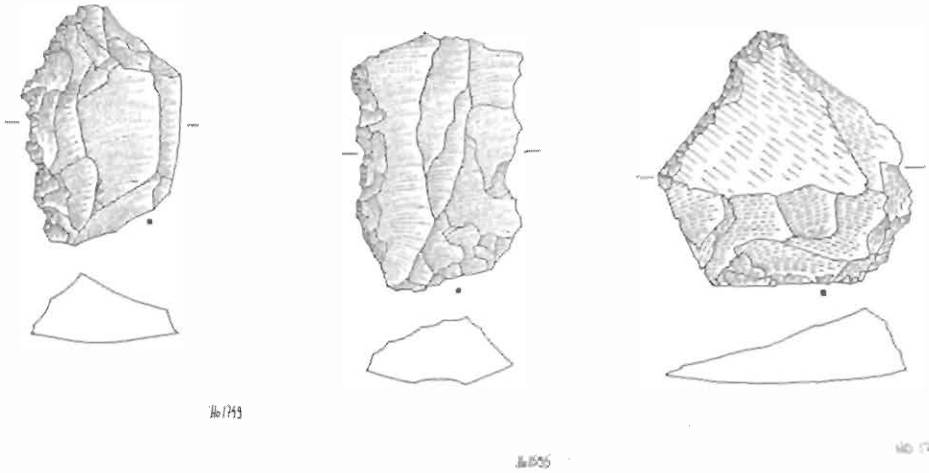

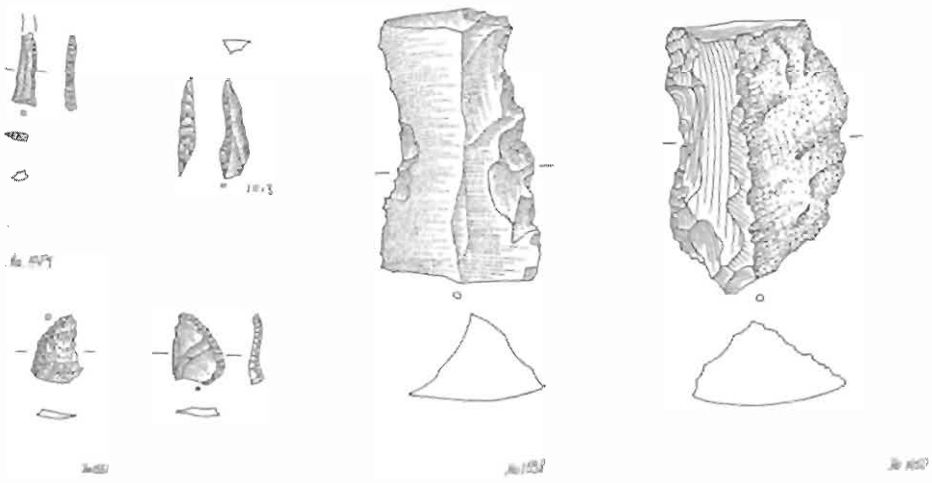

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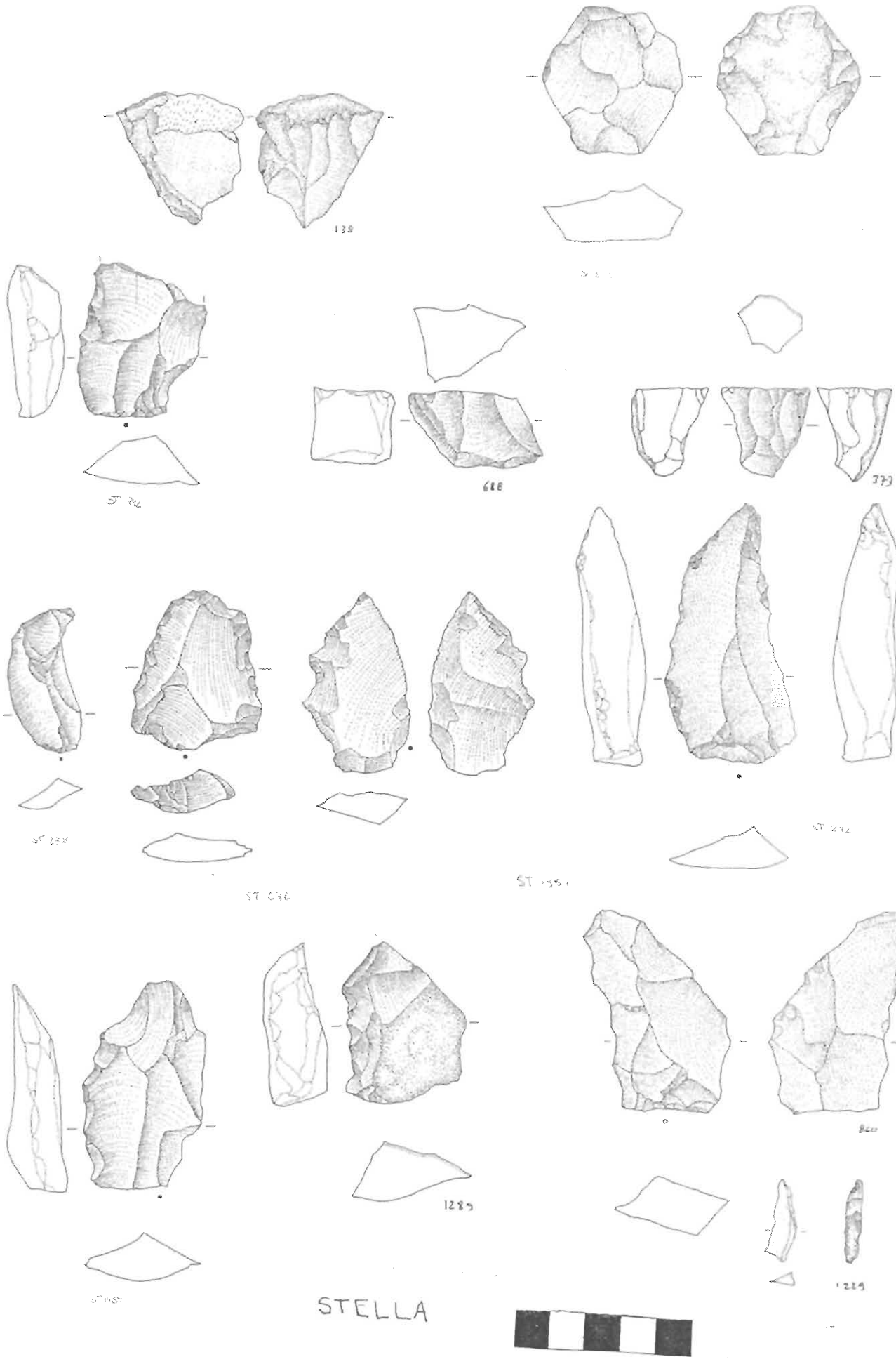

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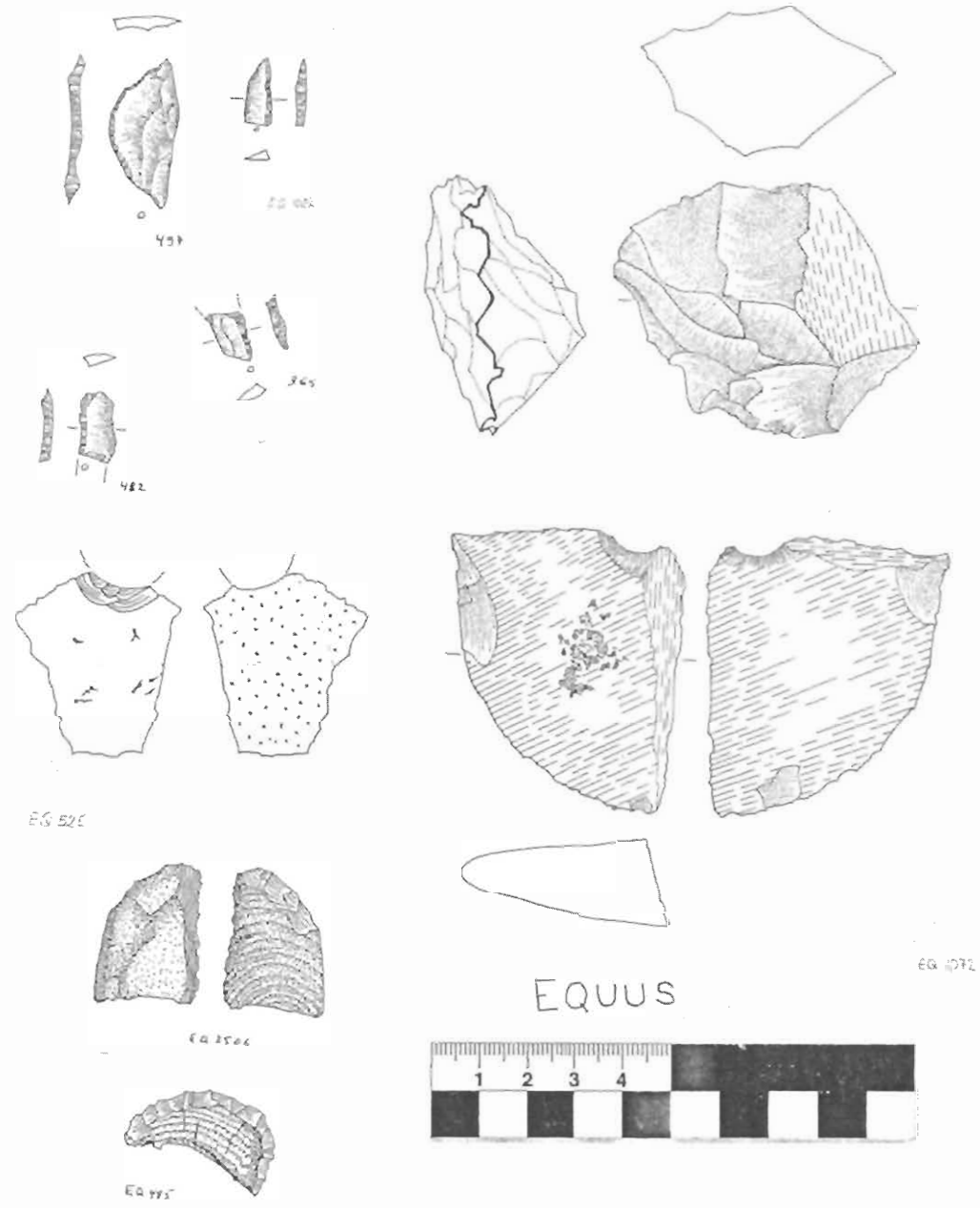

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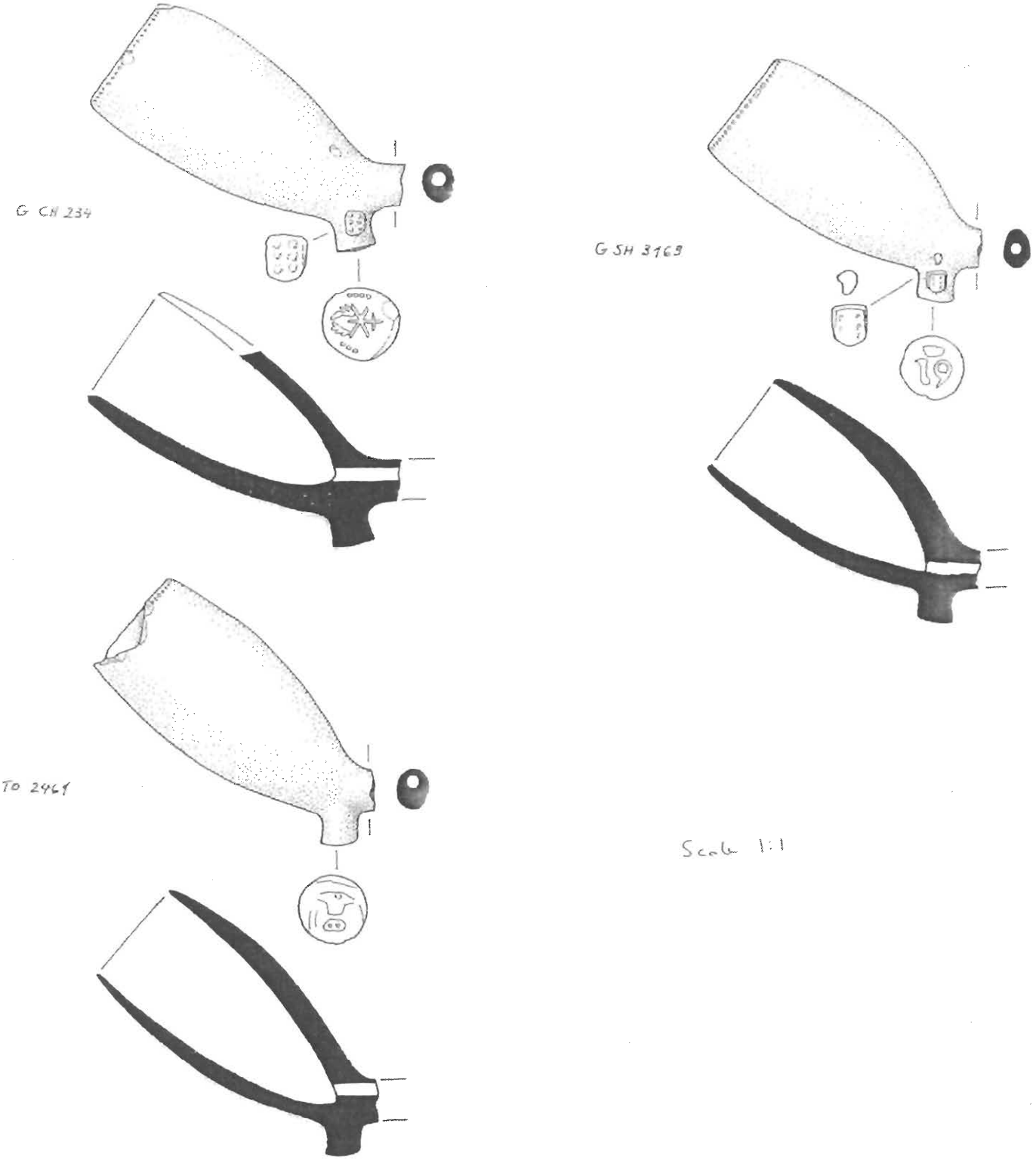

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