Technical Reports of the Australian Museum, Online

a peer-reviewed, open-access, serial publication of the
Australian Museum Research Institute
1 William Street, Sydney NSW 2010

ISSN 1835-4211 (online)
https://doi.org/10.3853/issn.1835-4211

Number 27 · 19 December 2018

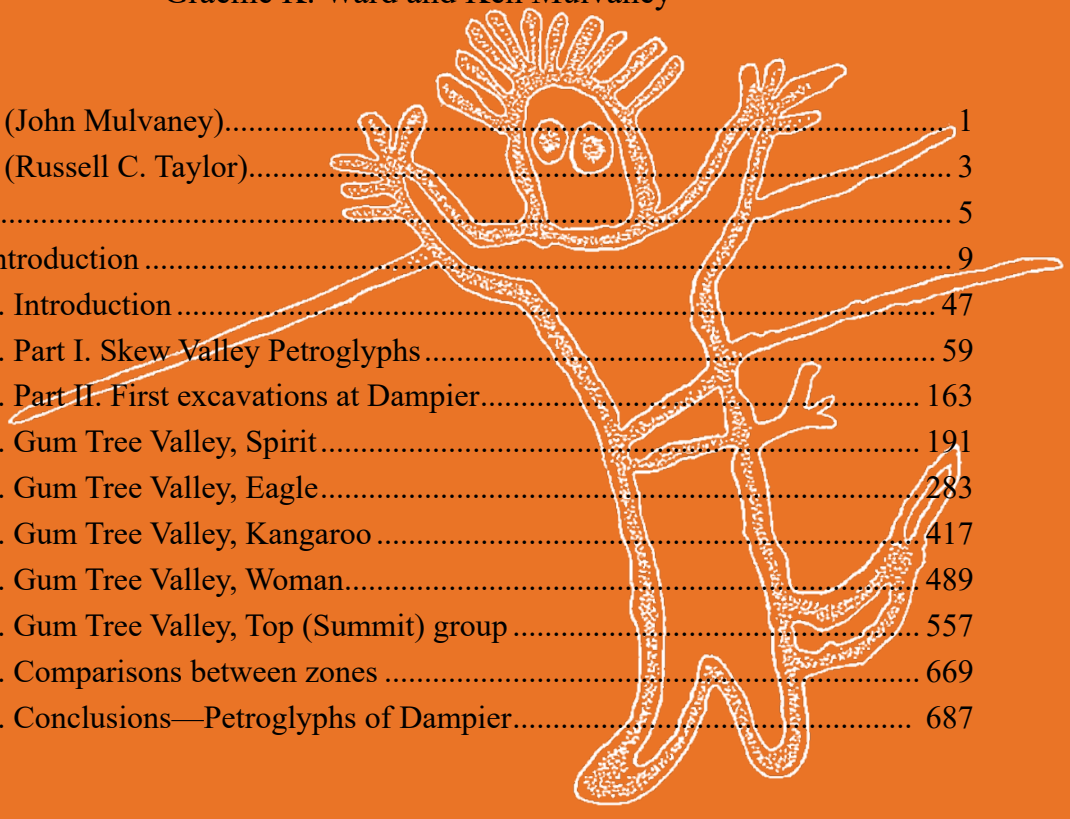
Archaeology and Petroglyphs of Dampier (Western Australia)
an Archaeological Investigation of Skew Valley and Gum Tree Valley

by

Michel Lorblanchet

edited by

Graeme K. Ward and Ken Mulvaney



Published by the Australian Museum, Sydney, Australia.
The Australian Museum is a statutory authority of,
and principally funded by, the NSW State Government.

Lorblanchet, Michel, 2018. *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney. *Technical Reports of the Australian Museum, Online* 27: 1–690.

[Published online-only by the Australian Museum, Sydney, as 14 PDF, the bibliographic details for which are listed below. A contents table at the beginning of each one of the 14 PDFs has DOI links interconnecting all works in this volume.]

Mulvaney, Derek John, 2018. Petroglyphs of Dampier—foreword. In Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley, ed. Graeme K. Ward and Ken Mulvaney, pp. 1–2. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1684

Taylor, Russell C., 2018. Petroglyphs of Dampier—foreword. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, p. 3. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1685

Ward, Graeme K., 2018. Petroglyphs of Dampier—preface. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, pp. 5–8. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1686

Ward, Graeme K., and Ken Mulvaney, 2018. Archaeology and petroglyphs of Dampier—editors' introduction. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, pp. 9–45. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1687

Lorblanchet, Michel, 2018a. General introduction to the research at Dampier. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 1, pp. 47–58. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1688

Lorblanchet, Michel, 2018b. The Petroglyphs of Skew Valley. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 2 (part I), pp. 59–161. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1689

Lorblanchet, Michel, and Rhys Jones, 2018. The first excavations at Dampier (Western Australia), and their place in Australian archaeology (with addendum on radiocarbon dating of Skew Valley midden). In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 2 (part II), pp. 163–190. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1690

Lorblanchet, Michel, 2018c. The Spirit Figure Group at Gum Tree Valley. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 3, pp. 191–282. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1691

Lorblanchet, Michel, 2018d. The Eagle Group at Gum Tree Valley. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 4, pp. 283–416. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1692

Lorblanchet, Michel, 2018e. The Kangaroo Group at Gum Tree Valley. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 5, pp. 417–488. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1693

Lorblanchet, Michel, 2018f. The Woman Group at Gum Tree Valley. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 6, pp. 489–555. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1694

Lorblanchet, Michel, 2018g. The Summit of Gum Tree Valley. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 7, pp. 557–668, with addenda by Jacques Evin and George Kendrick. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1695

Lorblanchet, Michel, 2018h. Comparisons between the six zones studied in Skew Valley and Gum Tree Valley. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 8, pp. 669–686. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1696

Lorblanchet, Michel, 2018i. Petroglyphs of Dampier—general conclusions. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 9, pp. 687–690. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1697

Author

Michel Lorblanchet joined the *Centre national de la recherche scientifique* (CNRS, France) in 1969 to study the Palaeolithic rock art of France. After graduating in 1972 from Université Sorbonne (Paris) with a doctorate in Prehistory, he was employed from 1974 to 1977 at the Australian Institute of Aboriginal Studies to conduct research into indigenous Australian rock art. From his base in Canberra, he participated in projects in Far North Queensland and in western Victoria. Between 1975 and 1976, he conducted the fieldwork at Dampier, Western Australia, on which this monograph is based, and made two further fieldtrips there in 1983 and 1984. He returned to France in 1977 to the *Centre de Préhistoire du Pech Merle* (Cabrerets). Lorblanchet was appointed *Directeur de recherches au CNRS* in 1995; he retired in 1999 and lives near Saint Sozy in the Lot Valley where he continues to research and publish about rock art. He is the author of many papers and several books on European Palaeolithic art (some are listed in the editors' introduction) as well as reports and this monograph on his Australian researches.

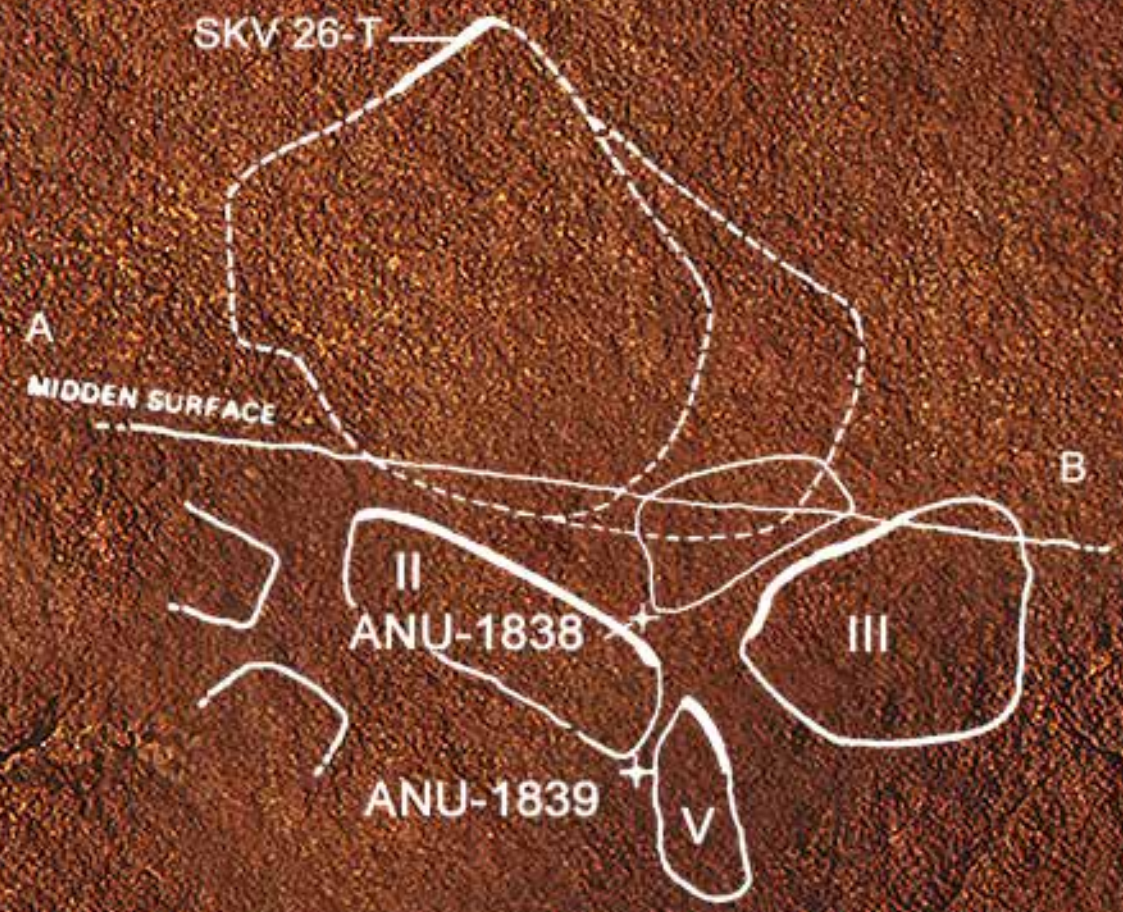
Volume Editors

Graeme K. Ward has conducted archaeological and ethno-archaeological fieldwork in the island Pacific and Australia. He gained his doctorate from The Australian National University and was employed at the Australian Institute of Aboriginal Studies where he was involved with administration of research programs including the national Rock Art Protection Program. Subsequently, as Research Fellow and Senior Research Fellow at the Australian Institute of Aboriginal and Torres Strait Islanders Studies he undertook research into Indigenous cultural landscapes in northern Australia with traditional knowledge-holders of cultural heritage places. He is the author of various research papers, of three monographs and editor of many collections of archaeological papers; he served as the editor of the Institute's journal, *Australian Aboriginal Studies*, for several years. Currently he is a visitor at the Department of Archaeology and Natural History, School of Culture, History and Language, College of Asia and the Pacific, of The Australian National University.

Ken Mulvaney has lived and worked for the past ten years on the Burrup Peninsula, where he is the Principal Advisor Cultural Heritage for Rio Tinto Iron Ore. Prior to this, Ken spent many years in the Northern Territory working with Aboriginal traditional owners documenting their cultural heritage places and land affiliations. He first came to the Burrup in 1980 when employed by the Western Australian Museum as member of a team documenting archaeological sites in areas destined for construction of a petrochemical processing plant. His doctorate from the University of New England is the first such study on the prehistory of the Dampier Archipelago. He is author of many articles on rock art and Aboriginal culture, and is currently affiliated with the Centre for Rock Art Research and Management, University of Western Australia.

Chapter 2, Part I

Petroglyphs of Skew Valley



Technical Reports of the Australian Museum, Online (2018) No. 27, pp. 59–161.
ISSN 1835-4211 (online)
https://doi.org/10.3853/j.1835-4211.27.2018.1689

The Petroglyphs of Skew Valley

Michel Lorblanchet

Directeur de Recherches au CNRS (Centre National de la Recherche Scentifique, retired 1999),
Centre de Préhistoire du Pech Merle, Cabrerets, France, and, during the studies reported here:
Australian Institute of Aboriginal Studies, Canberra, Australia (1974–1977)

Lorblanchet, Michel. 2018. The Petroglyphs of Skew Valley. In *Archaeology and Petroglyphs of Dampier (Western* Australia*), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, chapter 2 (part I), pp. 59–161. *Technical Reports of the Australian Museum, Online* 27, pp. 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1689

Introduction to Skew Valley

The general map (Fig. 2.1) of archaeological remains of Skew Valley and Gum Tree Valley near Dampier (Western Australia) reveals an obvious proximal relationship between the various water sources, shell clusters and dense concentrations of petroglyphs. Petroglyphs are rare or absent in the areas between the shell middens. They become, however, more numerous as one approaches the shell mounds, which themselves are marked by the presence of water sources most often by semi-permanent pools in the beds of temporary watercourses. Throughout the area, the strongest concentrations of petroglyphs thus are associated with habitation. There are some exceptions, notably at the summit of Gum Tree Valley where a group of petroglyphs exist despite the area now lacking water.

In Skew Valley, petroglyphs are particularly numerous in the immediate vicinity of the shell middens that we excavated and near the other mounds that peter out about 80 m upstream from the first. There are a few petroglyphs scattered across the hills dominating the valley but here, as elsewhere, concentrations are less dense than those around the shell middens. On the eastern edge of the excavated midden, at the foot of the slope covered by large blocks, almost all the rocks are carved, so that here the density of the petroglyphs is greater on the eastern side of the valley than on the western slope (Fig. 2.2). The reason for the greater concentration is that the eastern slope is in direct contact with the shell middens comprising the centre of the inhabited area. This is a new indication of the close association between the habitations and the petroglyphs.

At about 50 m to the east of the excavated mound, in a small stepped gorge sheltering a series of pools with potable water, the petroglyphs on the bedrock walls and fractured blocks are extremely numerous (Fig. 2.3). The shells of the bivalve *Anadara granosa*[1] scattered around the petroglyphs show that, even if the builders of the Skew Valley shell mounds were settled in the most accessible and the wider parts of the valley, close to the water sources, they also visited the nearby gorge where their many petroglyphs are near potable water.

As it was not possible to record all the Skew Valley petroglyphs—they are too numerous—we concentrated our study on an area of about 21 × 7 m at the foot of the eastern slope as it connects with the edge of the shell middens (Fig. 2.4). In this sample area of about 150 m^2, we recorded all of the petroglyphs; there were 112 carved surfaces incorporating 328 motifs (Appendix {p. 114}; Chapter 2, Part II). Details of petroglyphs recorded beyond the sample area, and uncovered by the excavation, are provided in the relevant sections below.

The mean density of the petroglyphs, which reaches its maximum in this region, is thus 2.1 per square metre. Bearing in mind the total area containing petroglyphs at Skew Valley (about 50 000 m^2 in all), the high density of petroglyphs in the gorge around the water sources, and its diminution as one moves away from the water and the shells, the total number of petroglyphs of the whole of Skew Valley could be estimated as between 20 000 and 25 000.

The distribution map of carved blocks in the sample area (Figs 2.5 and 2.6) reveals a strong central concentration, which is clearly emphasized by the density curves of the petroglyphs made according to the methods of B. de Jekhowsky (1964) (Fig. 2.7). This map also reveals two concentration zones of petroglyphs: one in the centre, situated in front of the highest point of the shell mound (at

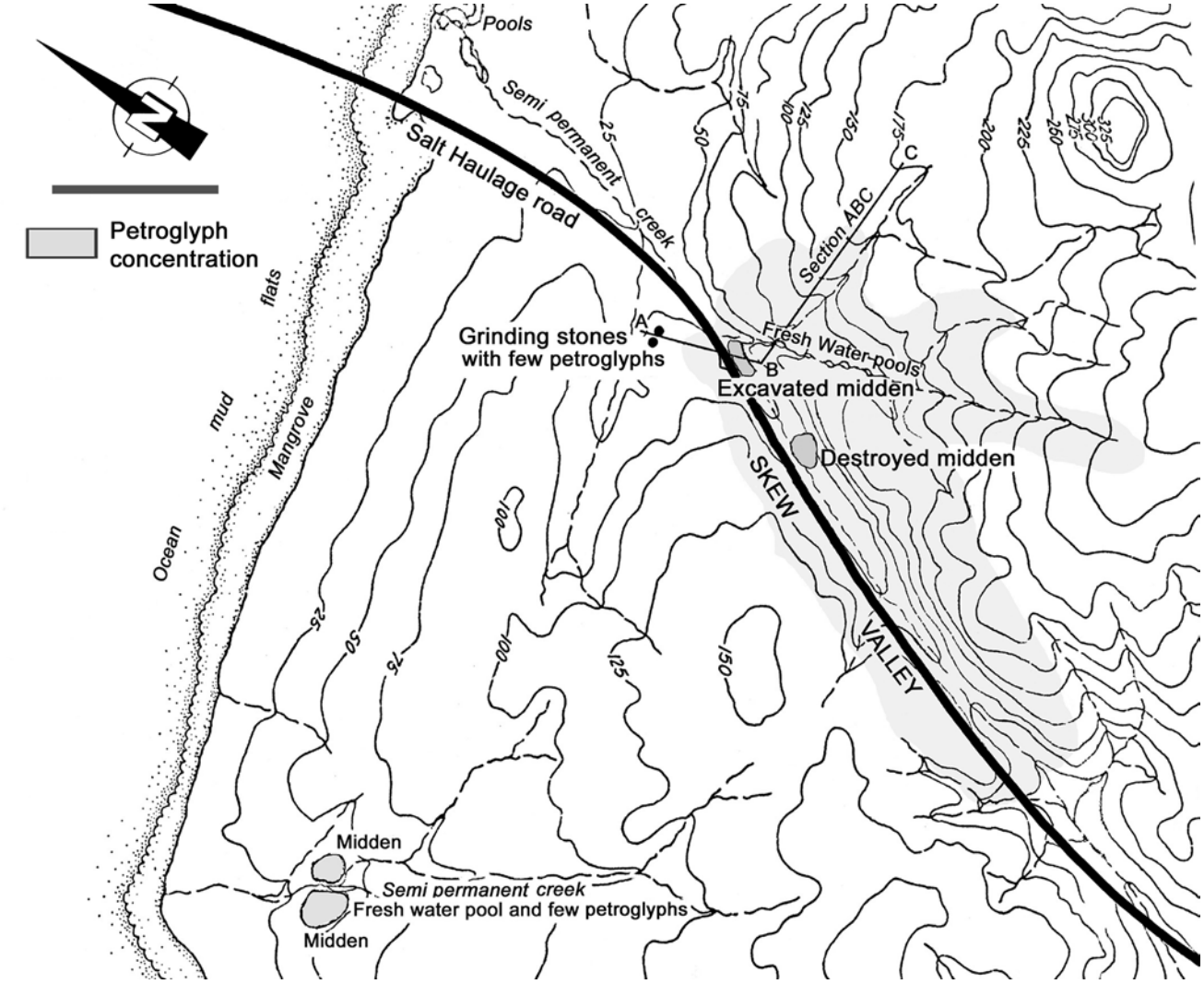


Figure 2.1. Skew Valley middens and petroglyph concentrations.

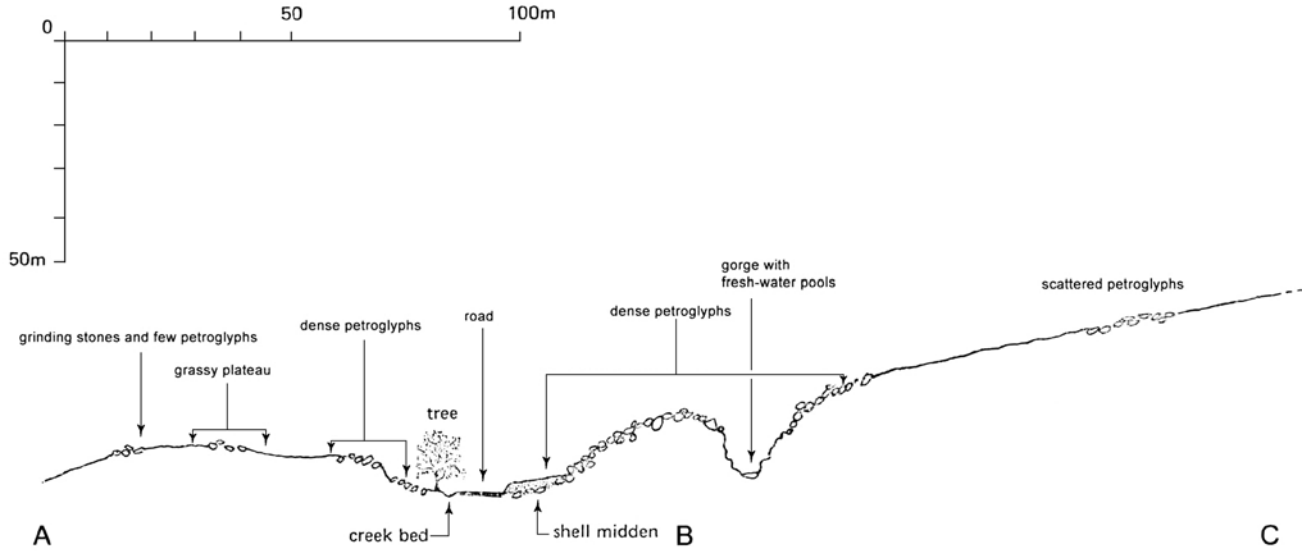


Figure 2.2. Skew Valley cross-section through the excavated midden. A, B and C refer to sections indicated on diagram.

the 9.50 metre contour), and a lesser one to the north that dominates the path leading to the gorge and nearby water sources.

Such a distribution is thus characterized by an interesting phenomenon: the close relationship of the central zone of the inhabited area, that is, of the mound, with the zone of maximum density of petroglyphs. This is revealed also by the density map of the distribution of artefacts and shell remains among the carved blocks at the foot of the slope (Fig. 2.8). The petroglyphs are clearly linked to the habitation, most of them being the work of shell collectors between 7500 and 2500 years ago.

Figure 2.3. Scene at small gorge on a tributary of Skew Valley Creek, about 60 m from the Skew Valley midden. There are fewer petroglyphs, but fresh water and welcome shade.

Summary

The petroglyphs of Skew Valley are characterized by:

1 The rarity of deeply patinated designs, and the abundance of those that are lightly patinated or have a fresh appearance.
2 The rarity of the techniques of grooving or carving into deep furrows.
3 The preponderance, on the other hand, of the technique of superficial marking with little punctations, most of the subjects being fully pecked, made completely of small punctations. Such a technique imparts to the motifs a clear colour and often a lighter contrast: they appear less distinctly on the granophyre background.

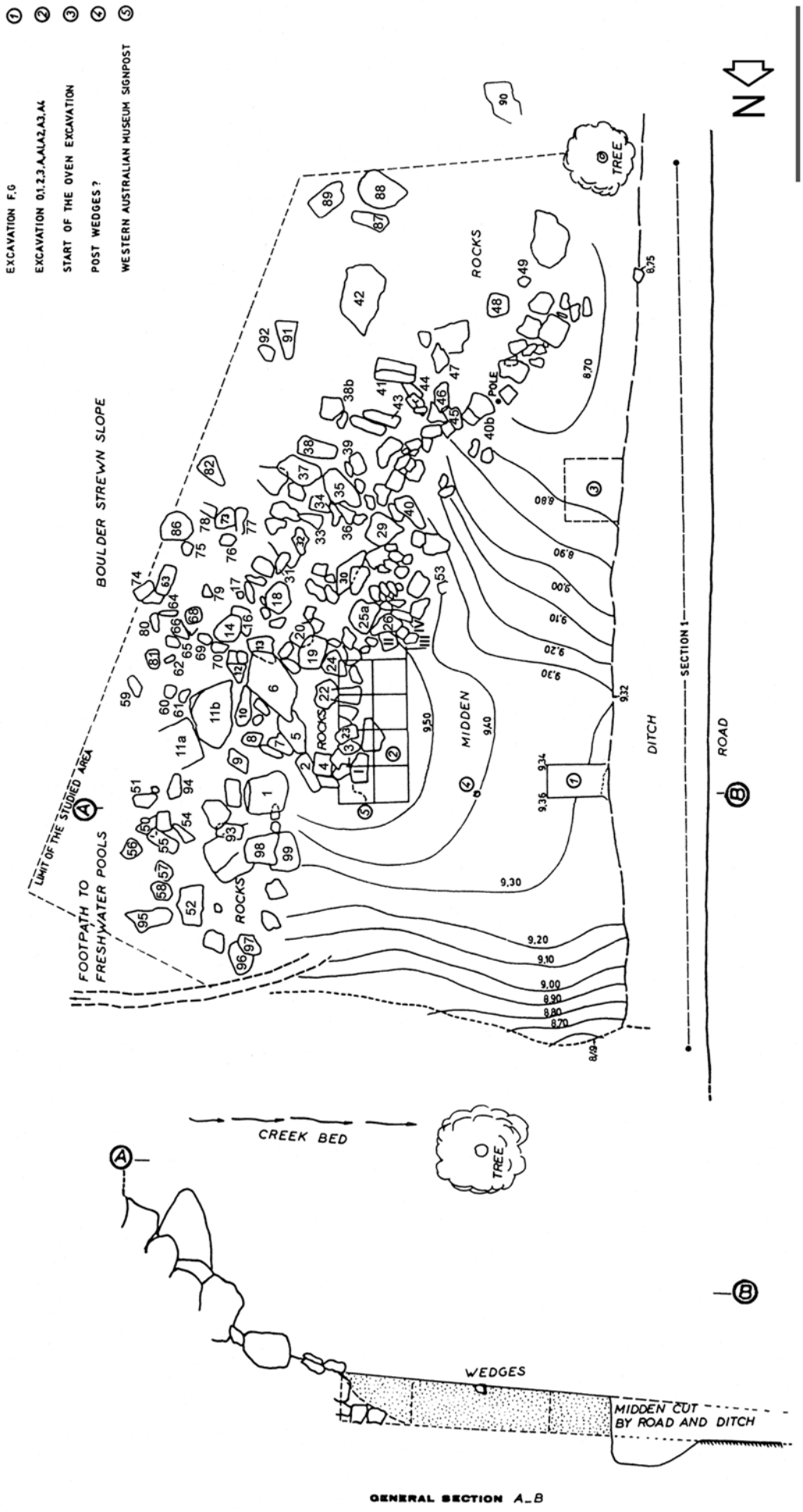


Figure 2.4. General plan and cross-section of the Skew Valley midden and adjacent rock slope with position of carved blocks. Scale 5 m.

Figure 2.5. Skew Valley, photograph of rock slope section of sample area on edge of midden showing the numbered carved blocks.

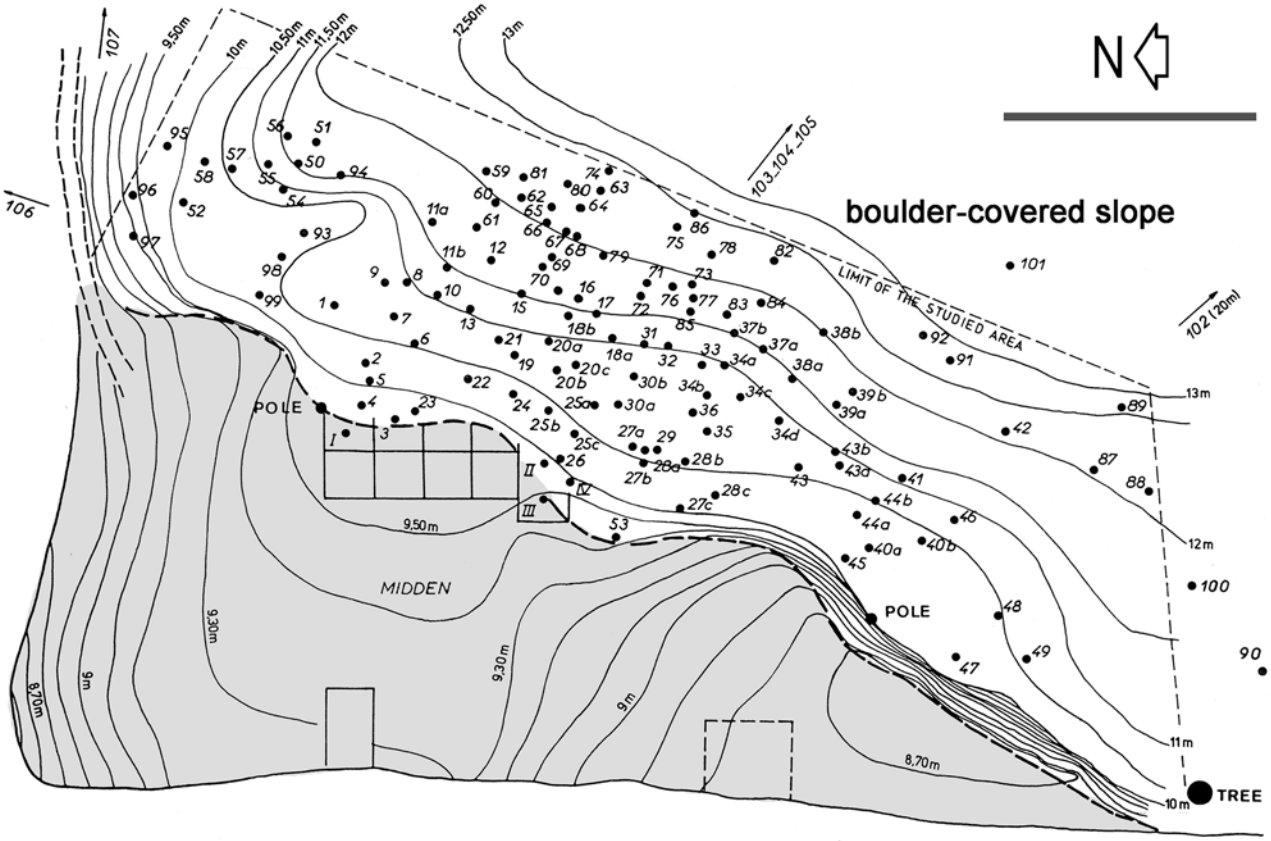


Figure 2.6. Skew Valley, distribution of petroglyphs in sample area adjacent to midden. Grey shading indicates extent of midden. Scale 5 m.

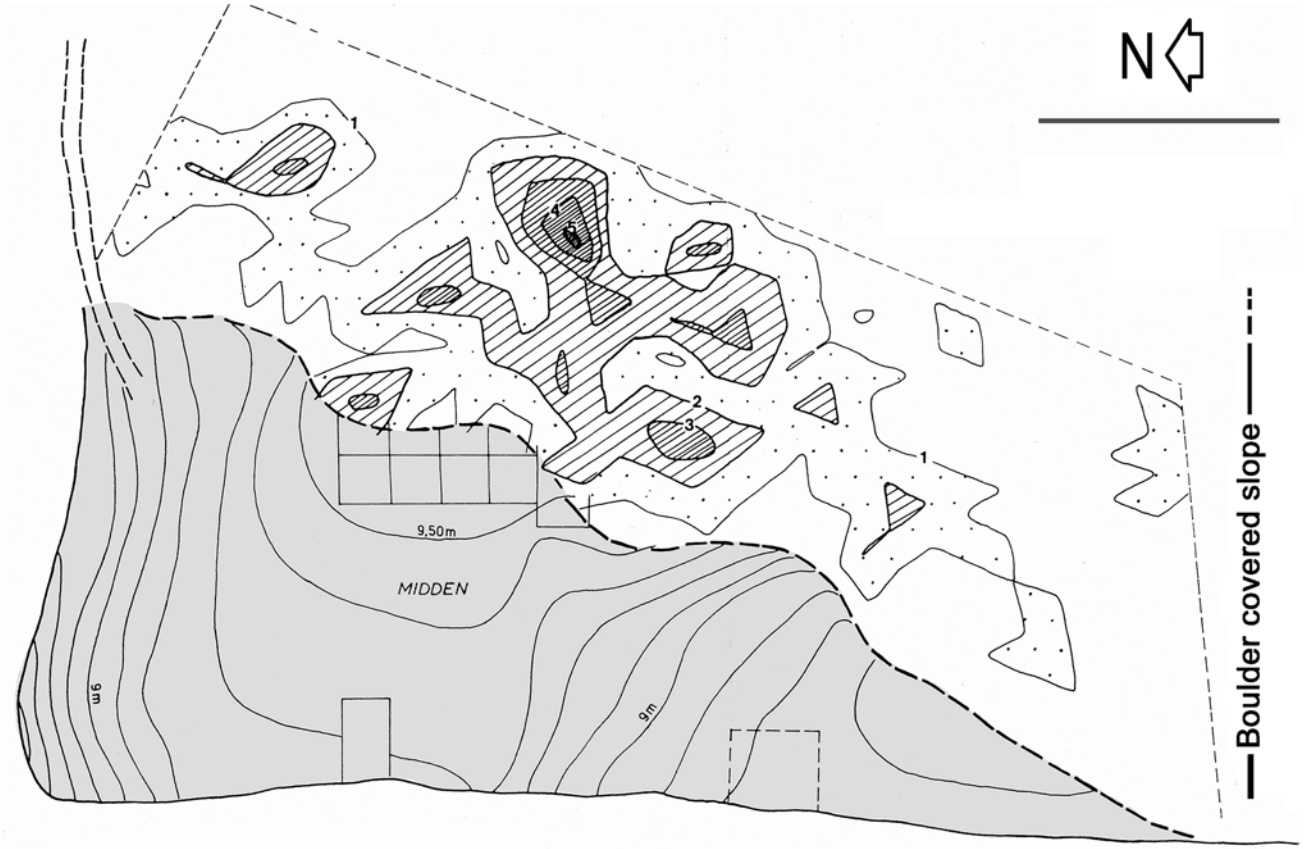


Figure 2.7. Skew Valley map of petroglyph density (using the Jekhowsky method). Base of rock slope is indicated by the dotted line. Scale 5 m.

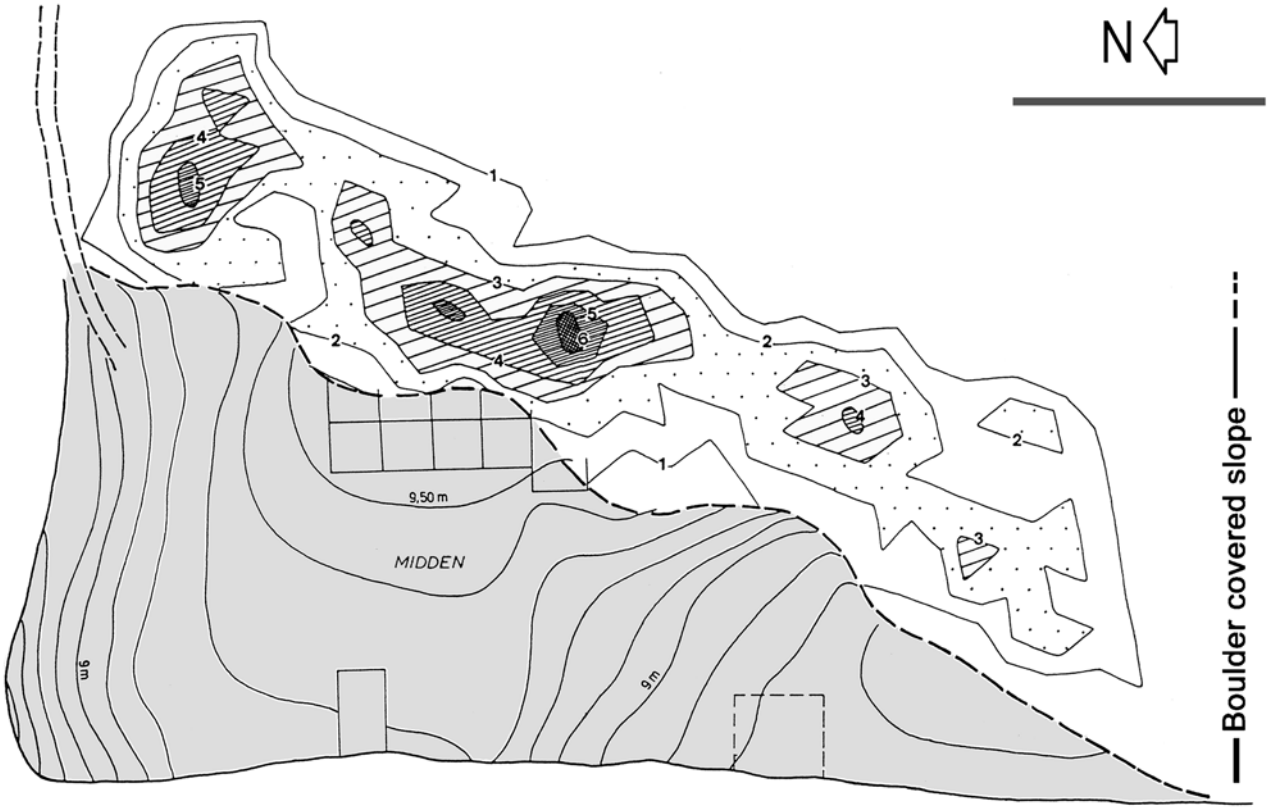


Figure 2.8. Skew Valley. Density of artefacts and shells on the edge of the midden. Base of rock slope is indicated by the dotted line. Scale 5 m.

Skew Valley. Carved blocks uncovered in the excavation

Excavation of the Midden at Skew Valley

One of the purposes of the excavation, carried out at the foot of the block-covered slope, was to find carved blocks within the deposit, and to date the deposit and hence the petroglyphs (Lorblanchet, 1977, 1992). Because the petroglyphs were so dense on the eastern margin of the midden, it was likely that some of them were buried among the shells.

Situation of the finds

The excavation of the Skew Valley midden brought to light carved blocks from within the deposit (Figs 2.9 and 2.10). Four of the granophyre rocks that were uncovered *in situ* bore recognizable motifs; a fifth one had a simple carved groove.

Carving I is located in Square 0 on the northern vertical face of the block. The top of this rock and the upper part of the northern face were exposed above the surface of the midden, but the whole carved motif was buried in shells.

Carving II occupies the upper face of a west-sloping slab of Square A4, totally buried in shells. A large block entirely exposed and bearing a small human stick figure on the summit (SKV-26 {p. 121}) partly overlaps Carving II. We had to tilt this block to excavate underneath and to completely uncover Carving II.

Carving III is on the east-sloping face of a block whose top corner only was protruding above the surface of the midden, the motif itself being almost entirely buried in shells.

Carving IV bears a small motif on the nearly horizontal upper face of a large slab, which had only one corner exposed, the motif being totally hidden.

Carving V bears a simple linear groove on its vertical western face.

Carvings II, III, IV and V are grouped together in Square A4 and the excavation of this square was extended to uncover all of the carved rocks.

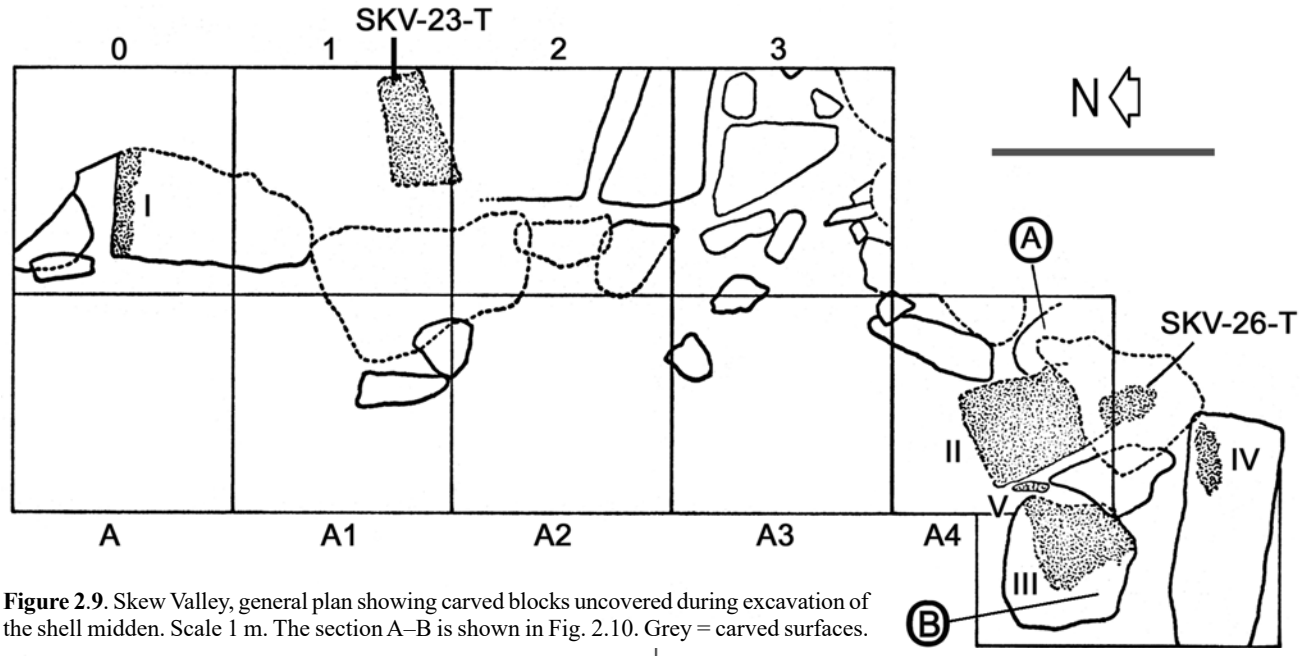


Figure 2.9. Skew Valley, general plan showing carved blocks uncovered during excavation of the shell midden. Scale 1 m. The section A–B is shown in Fig. 2.10. Grey = carved surfaces.

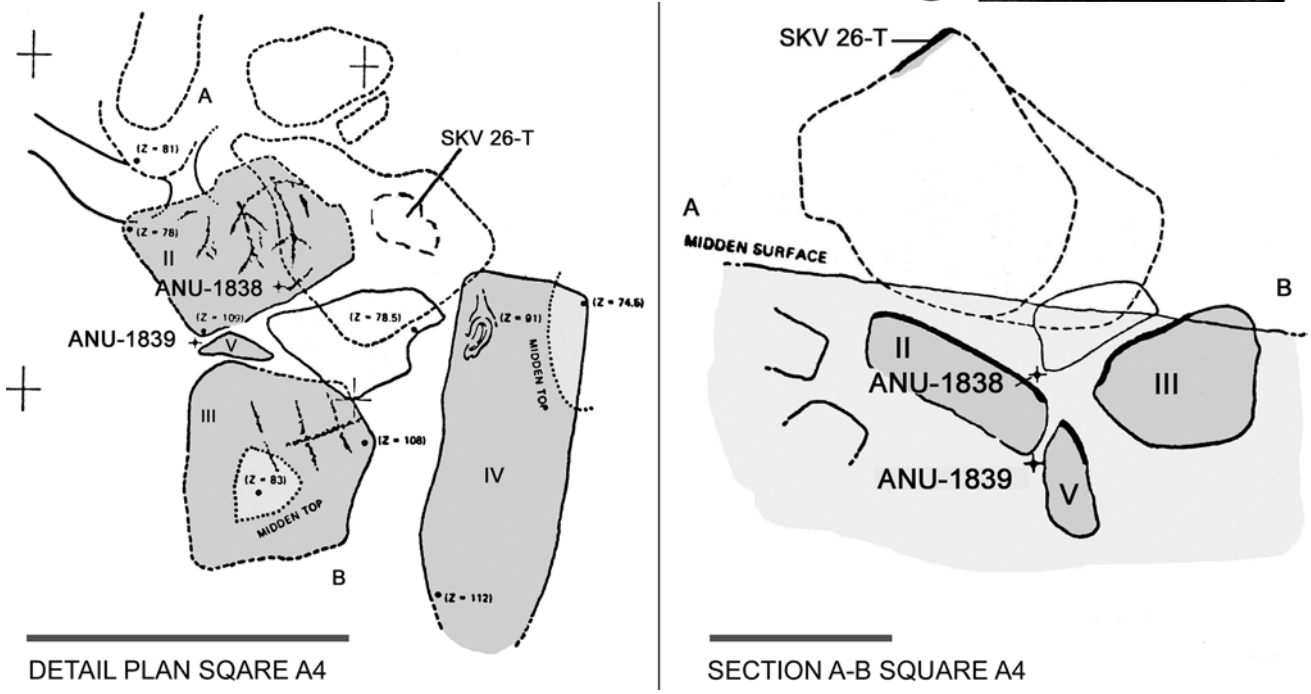


Figure 2.10. Skew Valley midden excavation Square A4. Left: Detailed plan, grey fill shows carved surfaces (ANU-1838: 2240–2700 cal BP). Scale 1 m. Right: Cross-section A–B, grey fill shows carved surfaces (ANU-1839: 3000–3400 cal BP). Scale 0.5 m.

Table 2.1. Skew Valley. Contexts of samples collected for radiocarbon analysis.

sample	sample context	relationship to carved blocks	material	lab code
SKV-5	A4, Layer 1, top of Spit 10	covering bottom of Carving I	*Anadara granosa*	ANU-1837
SKV-6	A4, Layer 1, Spit 4	covering the bottom of the tilted carved surface of Carving II	*Anadara granosa*	ANU-1838
SKV-7	A4, Layer 1, base of Spit 7, top of Spit 8	floor beneath Carving II	*Anadara granosa*	ANU-1839

Table 2.2. Skew Valley. Results of radiocarbon analyses and their calibration.

lab code	radiocarbon (14C age) years BP	(lab) error factor	cal curve	95.4% (two sigma) age range Cal BP (rounded)	relative area under distribution
ANU-1837	3770	80	3	3420–3870	1.000
ANU-1838	2770	70	3	2240–2700	0.994
ANU-1839	3410	80	3	3000–3420	1.000

Recording method

None of the motifs on the excavated blocks is well preserved. Some of their details are obscure whereas others are more obvious. They were recorded several times in different lights. During excavation, they were observed at various times of the day with the sun's rays striking them at different angles. The motif of Carving III was more visible in the morning light, whereas Carving I was extremely well lit at sunset. Photographs were taken at different times of the day and at night using a flash. The flash was constantly moved around the carved surface in order to light different parts of the motifs. Successive tracings of photographs at night in front of the carved blocks, with the motifs being lit from different directions, allowed us to decipher the details. The final record was made by direct tracing on the rocks at night guided by the information acquired from the previous stages.

Dating of the Skew Valley Midden

Of the nine shell samples from the excavation that were submitted to the radiocarbon dating laboratory of The Australian National University (Table 2.1; Chapter 2, Part II), three relate directly to the carved blocks uncovered in the excavation of the Skew Valley midden (ANU-1837, -1838 and -1839). The most likely results (as indicated by the factors in the "relative area" columns of Table 2.2) date this part of the upper stratum of the midden to between about 3600 and 2500 years ago (to within a range of between 3870 and 2240 cal BP at two standard deviations). Importantly, they provide securely dated contexts for Carvings I and II recovered from the excavation. (Chapter 2, Part II, Addendum, p. 189, provides details of further samples and calibrated radiocarbon determinations for the midden.)

Description of the Petroglyphs recovered from the excavations

Carving I

The motif is 400 mm high and 270 wide. This is a linear drawing formed of pecked and then slightly abraded grooves, usually ten mm wide and two or three mm deep (Figs 2.11, 2.12).

The surface is covered with tiny depressions due to corrosive action of the damp deposit. The lower part of the petroglyph is better conserved than its upper part. It would seem that the block bearing this motif is lying upside down. It probably rolled down before the deposition of this part of the midden and then was buried by the accumulation of shells. The motif depicts a row of three 'human' stick figures in profile, linked to each other, with round 'heads' and raised 'arms'. The two at the left, depicted as 'males', are drawn in the conventional manner used for many stick figures (even in frontal representation), while the right one is in a possible 'sitting position'—another convention used for stick figures in profile all over Australia. This third motif seems to hold a curved or hooked instrument that could represent a boomerang.

These motifs can be read in different ways: Either the three stick figures are each linked to another by their 'penis' in a sexual scene, or the motifs were accidentally linked by their 'legs' by the natural superficial erosion of the rock. The first interpretation seems to be the correct one because there is no obvious erosion process and there are other similar groups of 'male' stick figures in the Dampier area (Fig. 2.13):

1 One hundred metres to the east of the midden, on the eastern side of the first freshwater pool, several stick figures in profile display the same conventions as in Fig. 2.13. Two of them (Fig. 2.13: A) are linked together by the 'penis' of the one on the left; and
2 To the northeast of Dampier, in a small valley, are two spectacular panels of petroglyphs with stick figures in profile. One of these panels is known as the 'Climbing Men'. On the southern slope of the valley facing the 'Climbing Men' several tall and thin 'male' stick figures are linked together in an obvious 'sexual' composition; these also inform the reading of the Skew Valley petroglyphs (Fig. 2.13: H and I). However, the sexual intention of these motifs is not certain; the link between the figures could be a single symbolic representation of the kinship relationship between individuals.

The technique and the style of these stick figures, with a round 'head' and the 'arms' bent forward with a round 'fist', are quite the same as those of Skew Valley. Other motifs of the Dampier area, even without any sexual connotation, display similar general features as seen in the Carving I motif: similar size, same technique of linear grooving, 'arms'

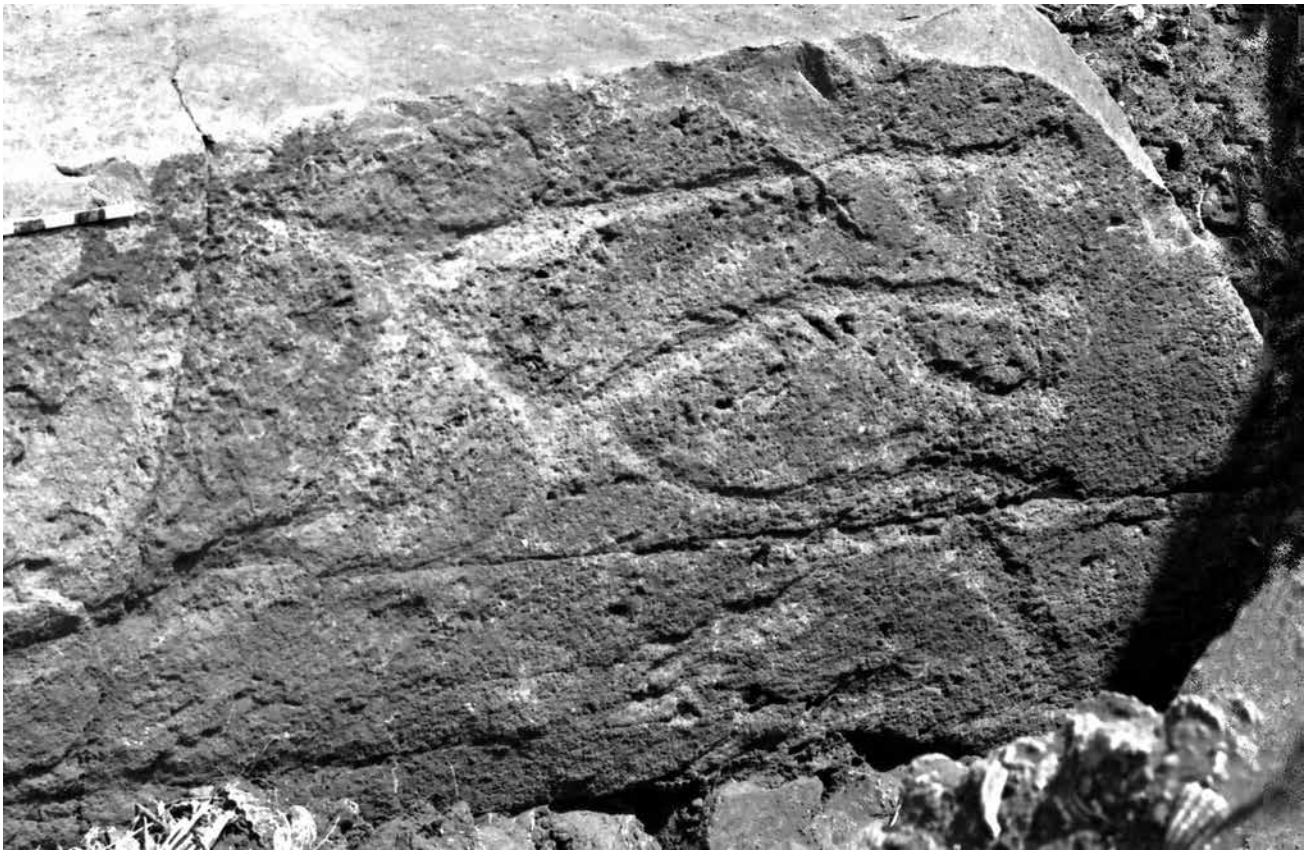


Figure 2.11. Skew Valley. The block in situ was lying upside-down, that is, with 'heads' of 'human figures' to the bottom of the image.

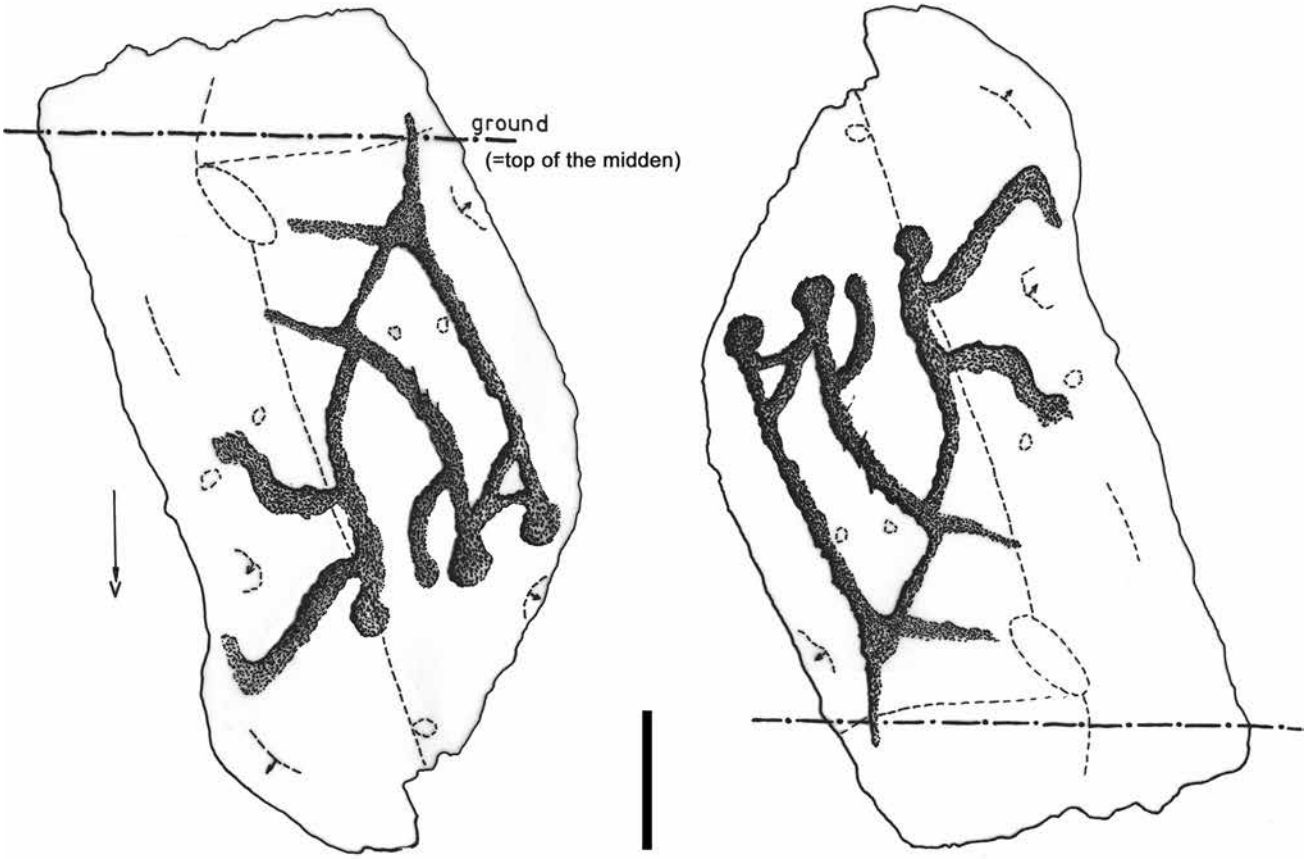


Figure 2.12. Skew Valley Carving I. Left: Tracing of carving in situ; Right: Petroglyph oriented in correct position. Scale 100 mm.

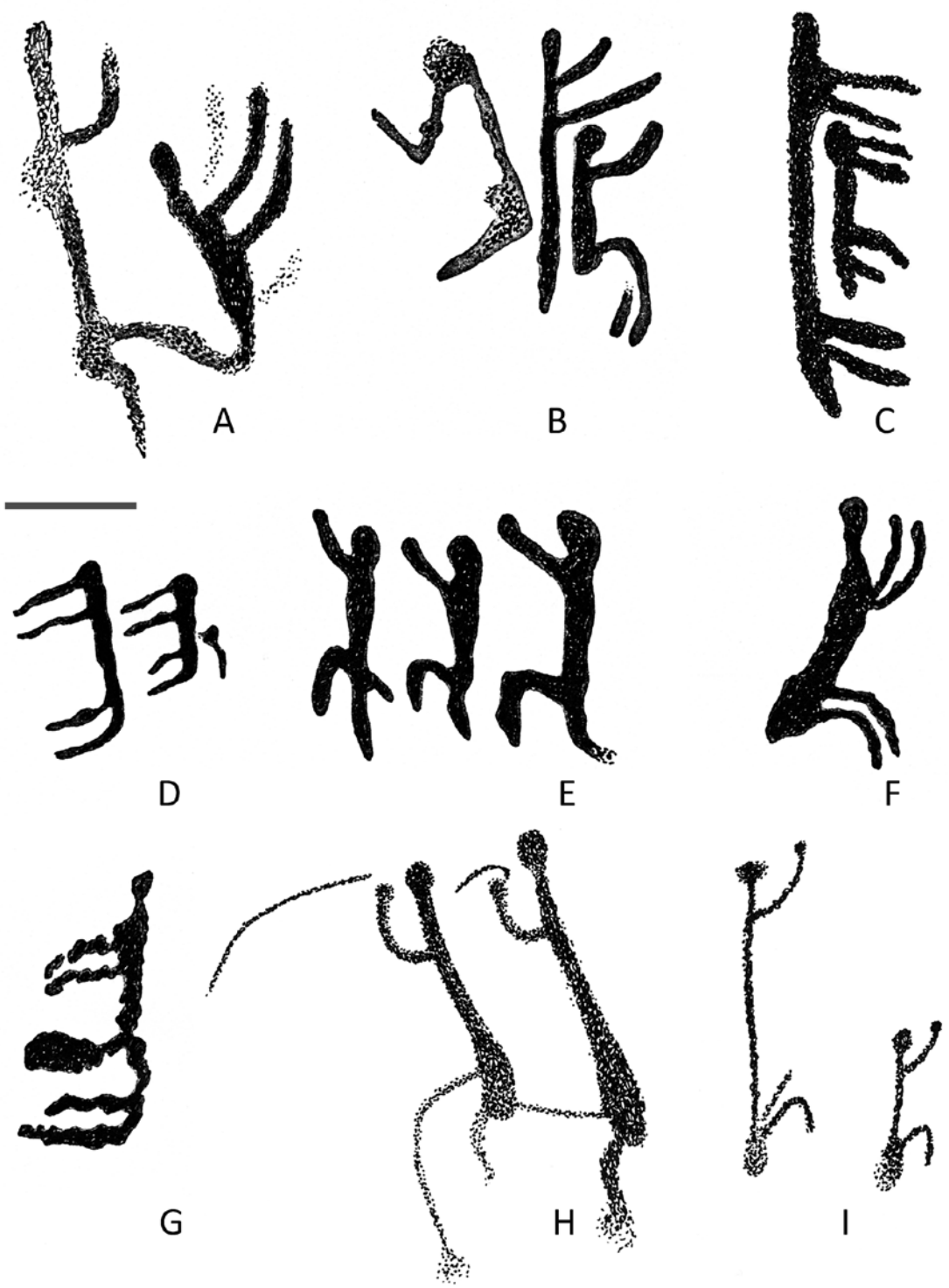


Figure 2.13. Examples of stick figures in profile in Dampier rock art. Scale 100 mm. A and B: Skew Valley near the first fresh-water pool near the excavated shell midden. C: Skew Valley Motif 73. D: Gum Tree Valley (GTV) Spirit Figure Group, Carved Panel 9. E: Part of group called 'The Altar', Hunters Valley. F: GTV Kangaroo Group. Panel 25 motif associated with a 'bird'. G: GTV Woman Group, Panel 67a 'male' figure. H and I: 'Climbing Men' site.

lifted, round 'heads' and bent or straight 'legs'. In Hunters Valley, a few kilometres to the east of Skew Valley Midden, a magnificent group of petroglyphs called 'the Altar', showing varied subjects and techniques, includes a row of stick 'men' in profile (Fig. 2.13: E). These types of stick figures are also encountered at the entrance to Gum Tree Valley in the 'Spirit Figure Group' on Carved Panel 9. The possible 'boomerang' of the right motif is similar in shape to other depictions at GTVK (outside sampling zone) on Panel 13 (Chapter 5, Appendix).

A shell sample taken *in situ* (A4, Layer 1, top of Spit 10: ANU-1837: 3770±80 radiocarbon years BP) covering the bottom of Block I was dated to about 3500 years ago (3420–3870 cal BP at two standard deviations). Therefore, the motifs are older than that date and they could be much older as they are no longer in their original place.

Carving II

This slab was severely damaged by its long duration underground. Its surface was darkened and pitted by corrosion and flaked in several places, only the deepest grooves of the motif are conserved. The block is halved by a small ridge (Fig. 2.14). On the northern part, a few extremely faint grooves belong to an indistinct, unidentifiable motif (Fig. 2.15). On the southern part, at least two stick figures of different sizes are still visible and seem to be linked together. Either they were intentionally linked or this impression has been brought about by accidental flaking during the carving or by erosion processes acting from grooves being close together.

The right one is a 'male' and the left one is not gender specific. They present the same technique of shallow pecked and abraded grooves as Carving I. Under the right 'arm' of each stick figure there appears a vertical groove perhaps belonging to other stick figures. At the bottom of the taller stick figure, light pecking covers a small area. A shell sample (ANU-1838: 2770±70 BP) covering the bottom of the tilted carved surface was dated to about 2470 years ago (2240–2700 cal BP at two standard deviations). Therefore, Block II is older than that date. A further sample (ANU-1839: 3410±80 BP) taken from the floor on which the block leans was dated to 3210 years ago (3000–3420 cal BP at two standard deviations).

Carving III

The motif occupies an east-sloping face of a round rock whose top corner was protruding above the midden but the motif itself was buried in shells.

The technique used for making this motif is a little different from that of the previous blocks. It is a linear design but the pecking is made of separate tiny punctures, not linked together by subsequent abrasion (Figs 2.16, 2.17). There is no real groove, as on the other carvings. This motif, 170 mm long and 220 wide, is not easy to read because the surface itself is partly pitted by corrosion and flaked in some areas. It consists of a vertical axis perpendicularly crossed by at least two shorter lines. It seems again to be a stick figure similar to the several specimens that are carved on the blocks on the slope overlooking the midden, only a few metres from the excavation (e.g., SKV-18a {p. 120} and -19W {p. 120}).

At the top of the carved block, another pecked line partly obliterated by erosion is still noticeable. It might be part of another motif; or, if it belongs to the main motif, it could have been originally formed by three horizontal lines crossing the vertical line. The bottom of Carving III was very close to Carving II and at the same level, so the two petroglyphs are roughly of the same period, that is, before about 2500 years ago (ANU-1838: 2240–2700 cal BP).

Carving IV

A small motif on this block, 200 mm long and wide, is difficult to see and perhaps incomplete, as it is faint along part of its northern edge. It is a curled linear design of shallow pecked, abraded grooves, seven to ten mm wide and one to three mm deep and is very patinated (Figs 2.18, 2.19). Snake depictions are known in the Dampier area although they are not very common. Most of them are representations of curled 'snakes' as on Carving IV. Two parallel lines at the extremity of the motif were also recorded. This motif was buried in shells, but was found only 100 mm below the surface, that is, 30 mm above the carbon sample dated to 2500 year ago.

Thus, from this shell date and from the shell deposition rate, one can extrapolate a date older than about 2500 or 2600 years ago for Carving IV. (The surface of the midden itself has been shown to be about 2300–2200 years old.)

Carving V

A simple linear patinated groove, 200 mm long, is on the vertical western face of a smaller rock between Carvings II and III. Its stratigraphical position shows that it is older than 3210 years (ANU-1839: 3410±80 BP).

Discussion

The carved blocks found within the excavation indicate that certain types of linear pecked and grooved motifs, among which 'human' stick figures are recognizable, are older than about 3600 years (age range 3420–3870 cal BP). Some of these motifs are on rocks that are not in their original position. Of course, this indication does not solve all the dating problems posed by a rock-art study in this area, since many other motifs and various carving techniques are visible in the vicinity of the midden, but it is a first and therefore important contribution to the objective dating of Dampier petroglyphs.[2]

Skew Valley. Descriptions of the Petroglyphs

During our first two periods of fieldwork at Dampier we used 70 person-days, about 550 hours of work, to record 112 carved surfaces and 328 petroglyphs inside the sample area. All of them were photographed and described and over 270 were traced (those that were not recorded in detail were indecipherable or 'indeterminate'). A further three panels outside the sample area were traced and 100 more motifs were photographed.

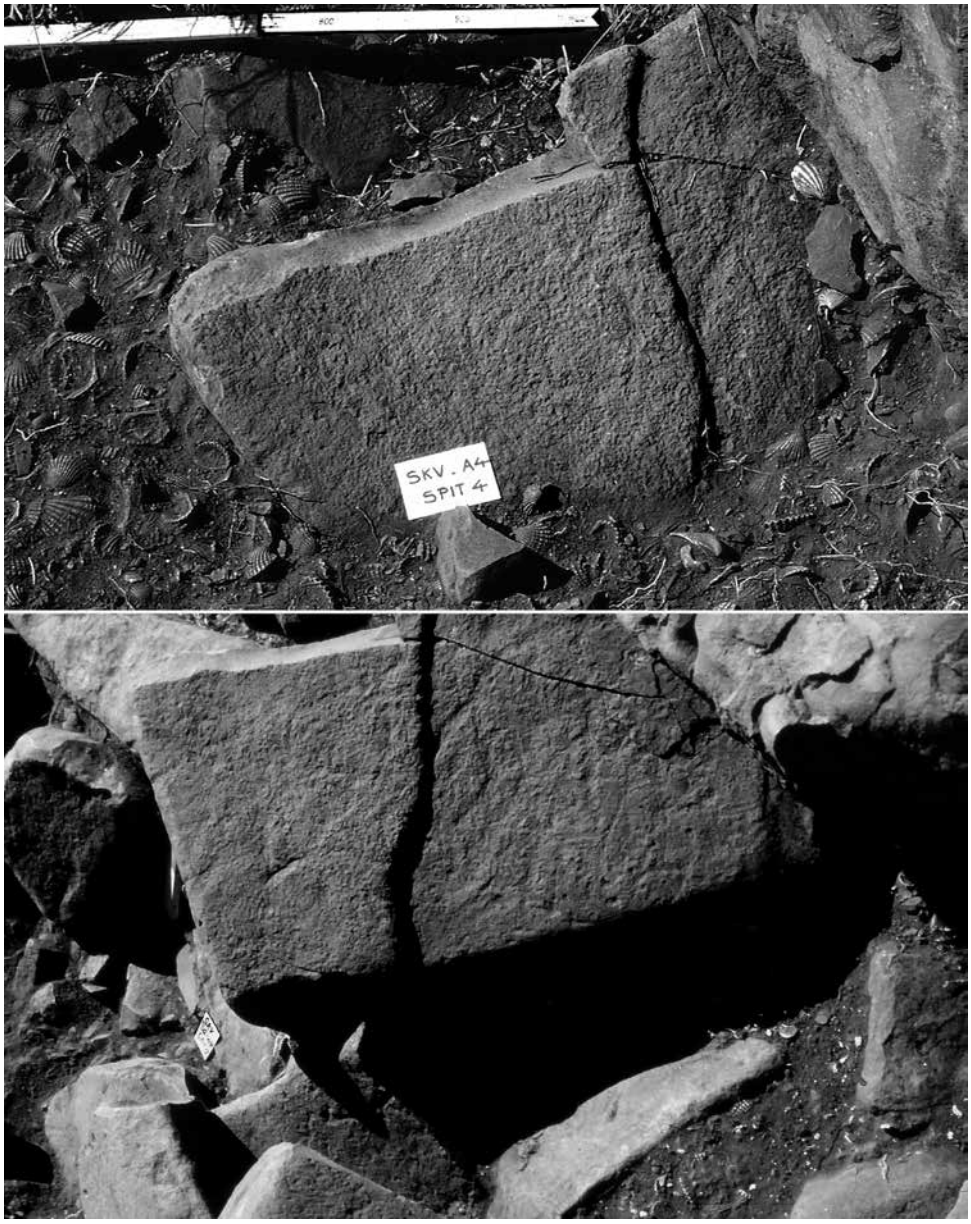


Figure 2.14. Skew Valley Carving II in situ. *Upper:* early in the excavation (Spit 4). Scale about 400 mm. *Lower:* block completely exposed.

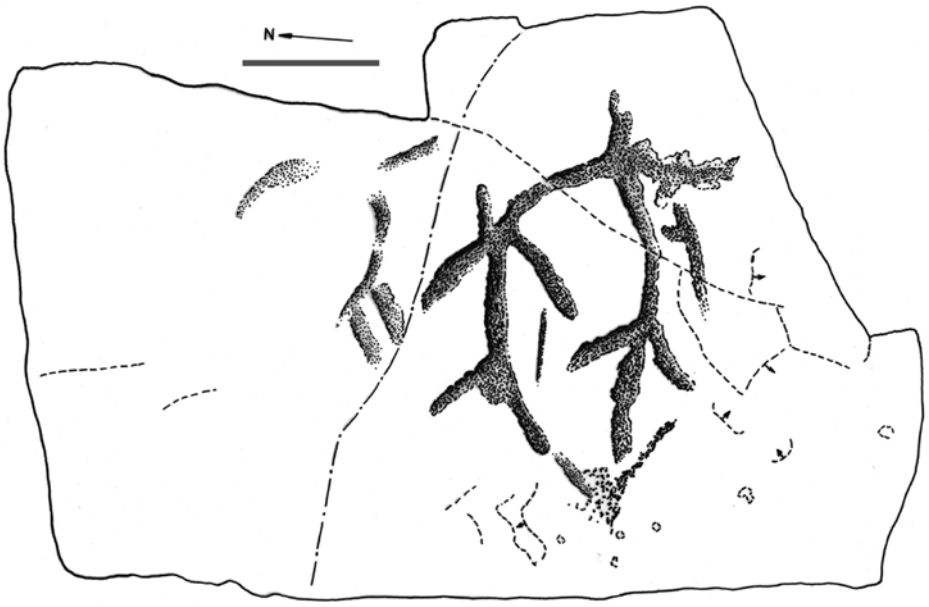


Figure 2.15. Skew Valley tracing of Carving II (Square A4) after recovery from excavation of the midden. Scale 100 mm.

Figure 2.16. Skew Valley Carving III recovered during excavation of the midden. Scale 100 mm.

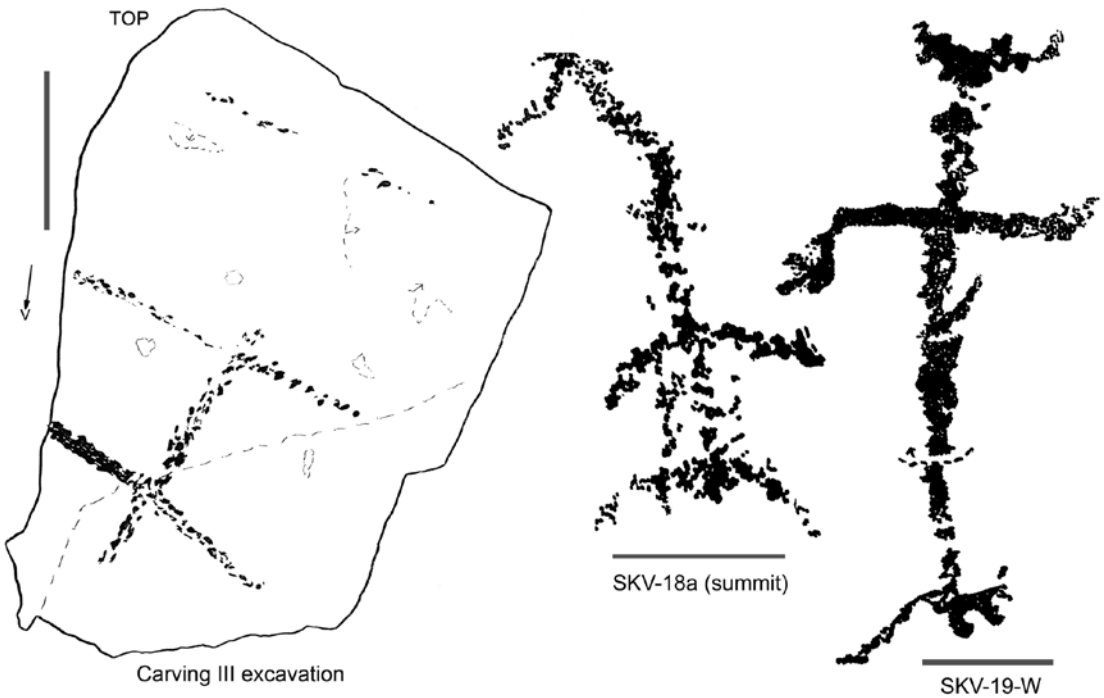


Figure 2.17. Left: Skew Valley Carving III uncovered during excavation of the midden. Scale 100 mm. Right: Skew Valley, examples of the same type of motif as Carving III. Scale 100 mm.

Figure 2.18. Skew Valley Carving IV uncovered during excavation of the midden. Right: tops of partly buried blocks protruding from shell midden.

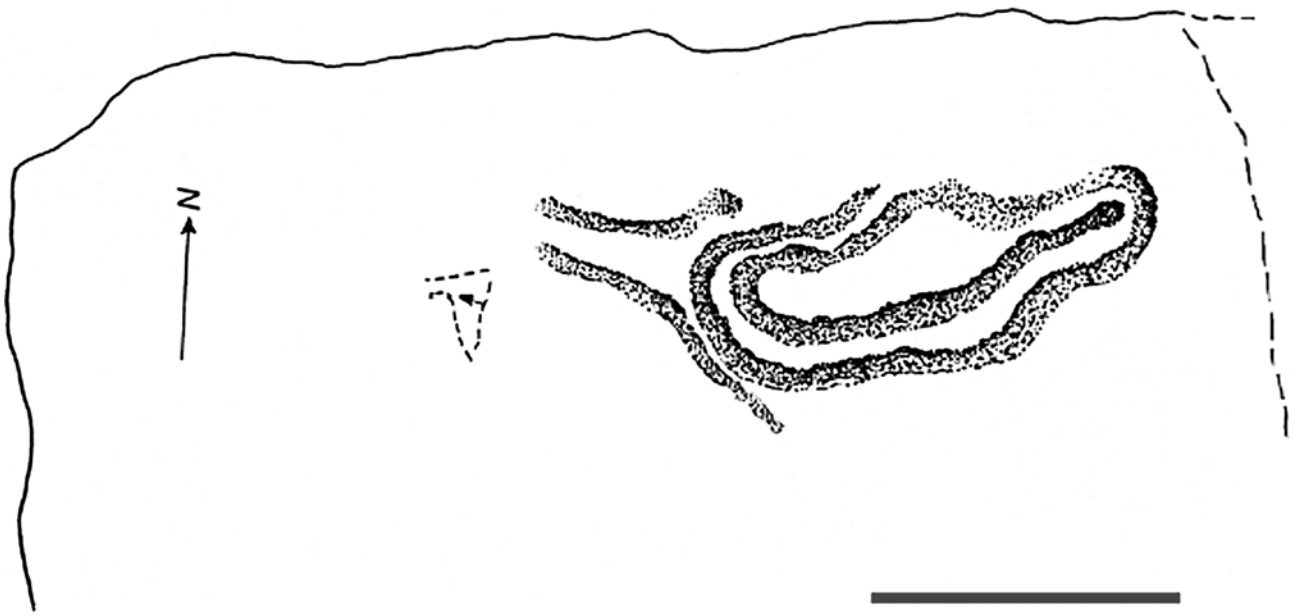


Figure 2.19. Skew Valley tracing of coiled 'snake' on Carving IV. Scale 100 mm.

The petroglyphs recorded on the slopes surrounding the Skew Valley midden totalled 317 in number (Table 2.3). They were recorded and photographed using the techniques described in the Introduction. An analysis of the numbers of various motifs recorded—according to the categories described earlier—is provided by Table 2.3. Table 2.4 summarises the further 12 motifs on the carvings on blocks recovered during the Skew Valley excavation, and Table 2.5 provides details of a further 26 motifs recorded in areas beyond the sample zone. (Table 2.6 has the key to the sub-headings.)

Tables 2.7 and 2.8 provide summaries of the results of analyses of motifs recorded in the Skew Valley sample area and from the excavation. Table 2.7 lists motif types by number and calculated percentages, and Table 2.8 shows number and percentages of occurrences of the subject, and—in the rightmost column—percentage of occurrences of the subject by number of panels.

Depictions of Humans

A total of 92 representations of 'humans' were recorded inside the sample area. Another six were uncovered during excavation of the shell mound (Chapter 2, Part I: *Carved blocks uncovered in the excavation*) and eight were recorded outside of the sample area for comparison.[3] The human representations are extremely abundant in Skew Valley: they represent almost 30% of the total number of petroglyphs and 40% of identified designs.

About half of the carved surfaces depict anthropomorphic themes. In the assemblage, 'human' motifs, which are the most dominant motifs, are three to four times more numerous than 'animal' motifs or geometrical designs.

Sizes of 'human' motifs

The mean length of 'human' figures is 250 mm, with a range of 560 mm (Table 2.9).

The population of 'human' motifs at Skew Valley is relatively homogeneous. Besides an important group of anthropomorphs (mostly stick figures whose heights are in the range 150–300 mm) there is a small group of motifs in the range 500–550 mm (Fig. 2.20). Across all Skew Valley and Gum Tree Valley sample areas, the Skew Valley human figures are the smallest. This is probably because of the rock support, the granophyre, which is harder to carve that the gabbro of Gum Tree Valley.

Types of 'human' motif

'Human' figures are commonly 'stick figures' with 'torso' and 'limbs' drawn stiff and straight (I use Brandl's (1978: 23) definition of 'stick figure' "… on the basis of [its] dominant trait, namely, the stick-like shape of the body and the limbs"). All of them are thin except one (Appendix: SKV-1-W {p. 115}),[4] which can be categorized as being 'obese'. When the motifs are complete (that is, fully drawn), 67% are 'male', 18% are gender-neutral, and for 14% the gender cannot be identified because the motifs are in poor condition. Of the 'males' 20% have an oval 'penis' that seems exaggerated in size (for example, SKV-34-TW {p. 123}, -46-W {p. 132} and -102-NW {p. 156}), and the others have a simple line representing their 'genitalia'. Depictions of females with 'breasts' and 'vulva' are absent. However, outside the sample area (on Panel SKV-102-NW {p. 156}) one can see a motif in profile whose 'head' has been covered with a more recent 'male' motif. With its protruding 'abdomen', this motif, about 200 mm high, probably portrays a pregnant woman. It is identical to the rare images of pregnant women represented in profile at Gum Tree Valley, notably the one in the 'Group of Woman' (Chapter 6).

Despite the uniformity of their 'stick figure' style of representation, the 'human' motifs of Skew Valley are quite varied. Two main and one minor categories within the same general type can be identified (Fig. 2.21).

Type A. Simple line figures. The motifs of the first category are simple representations (for example, Motifs SKV-10-W {p. 117}, -11-TE {p. 118}, -41-NNE {p. 126}, -59-NW) of long thin 'men' whose 'arms' and 'legs' usually are directed downwards but which, in some cases, can have 'arms' raised (SKV-10-W {p. 117}). The 'gender' is sometimes portrayed as round (e.g., SKV-11a-W {p. 119}); sometimes the 'head' might be enlarged to each side by a horizontal line (SKV-18-NW {p. 120}, -19-W {p. 120}, -26-T {p. 121}).

Type A represents about 40% of the total number of 'human' motifs. The average length of this category of motif is only 200 mm.

Type B. Figures holding 'implements'. The second category comprises more detailed characters holding in their 'hands' various 'objects' or 'weapons' (Figs 2.22, 2.23, 2.25), and often with elaborate 'head' adornment (Figs 2.21, 2.25). These motifs represent 58% of the total. Their average height is 300 mm. Twenty percent hold an 'implement' in a 'hand': in three cases this 'implement', represented by a straight line, may depict a spear (SKV-11b-TM {p. 118}, -48-W {p. 133}, -92-T {p. 152}).

In ten other cases the 'implement' takes the form of a small arc and can only represent a boomerang (Fig. 2.21). These 'human' motifs often have a 'boomerang' in each 'hand' (SKV-11a-W {p. 119}, -20-WNW). Moreover, some others (SKV-11a-S {p. 119}, -46-W {p. 132}) carry under their 'arms' some carved objects parallel to the 'body'; these also possibly depict boomerangs that were carried fastened in the 'belt' just as Aboriginal men might be seen doing in contact times (e.g., Jones, 1996: 38). These same two motifs (SKV-11a-S {p. 119}, -46-W {p. 132}) show lateral expansions at waist level, and these can be interpreted as depicting either boomerangs held in a belt or some sort of ornament. One motif (SKV-11a-W {p. 119}) shows an oval ring under the left arm; this could be interpreted as a shield.

One stick figure (SKV-74-W {p. 143}) holds in its 'left hand' a great curved object suggesting a rope. Another stick figure (SKV-42-W {p. 129}) holds either a 'boomerang' or a 'woomera' since it is closely associated with an 'Emu' that has been pierced by a 'spear' (Fig. 2.24).

The types of 'weapons' held by the 'human' motifs at Skew Valley can be categorized easily. 'Spears' are represented by straight lines with a pointed end without any 'barb' (Fig. 2.21). 'Boomerangs' (Fig. 2.22) are a simple curve, a more-or-less well-defined crescent (Peter n.d.). One of them (SKV-73-NNW {p. 142}), however, seems to show a double curve.

Other stick figures seem to carry a 'hooked boomerang': one is on a slab (SKV-1 {p. 114}) that was uncovered during the excavation of the shell midden; another example is the stick figure in profile (SKV-63-NW {p. 138}); the motif SKV-11a-W {p. 119} also has under its 'right arm' a bent artefact that appears to depict a hooked boomerang.

There is a clear carving (Fig. 2.25; SKV-107-W {p. 159}) suggesting coitus in the style typical of this subject in the Dampier area: the 'male' is on top wearing a 'headdress', holding a 'boomerang' in each hand, and with two 'boomerangs' and a sort of 'club' at the 'waist'. These last two

Table 2.3. Skew Valley. Carvings recorded in sample area (n = 317).

carved surface number	'human' stick figures		'animals'							'tracks'			geometrics								other	indeterminates
SKV-																							
1-S	1																					1
1-W	2																					
2-SW							1		1													
3-N														1								4
4-T																						1
5-T																						1
6-T																						1
7-S																						1
8-T																						1
9-S																						1
10-W	1				1								1									2
11a-TE	2							30				1										3
11a-W	1																					
11a-S	1																					
11b-TM	3											2										6
12-T																						1
13-SW																						1
14-S																						1
15S-NW																						2
16-T																						1
17-NW	1																					
18a-NE	4																					
18b-T	1																					2
19-W	1																					
20a-WNW	1																					2
20b-SE																						1
20c-T																						1
21-W																						1
22-NW	1																					
23-T																						
23-N	1	1 ft																				
24-W										2												
25-NW	1						1															3
26-T	1																					
27-SW	2											1					1					
28-T																						3
29-S	3										7											
30-T																						1
31-W										2												
32-W	1									2												1
33-T																						1
34-TW	1													2		1		1		1		
35-W	1						3					1		1			1			3		
36-T		2 h																				
37a-SNW											2					1						
38a-T							1															
38b-T	2																					
38b-S	4																					
39-NW	1																					3
40-W	1																					
41-NNE	6																					1
42-W	2			1														1				
43-T							1															
44-T							1															
45-T												1										
46-W	1																					

Table 2.3 (continued). Skew Valley. Carvings recorded in sample area (n = 317).

carved surface number	'human' stick figures		'animals'							'tracks'			geometrics								other	indeterminate
SKV-																						
47-T																						1
48-W	2		1																			1
49-W	1																					
50-W	1																				14	
51-S														1								
52-T											8											
53-E										2												
54-W																						1
55-T																						2
56-W																5						
57-N																						2
58-NW																						1
59-NW	3																					
60-W	1																					
61-SW											1											
62-SW	1																					
63-NW	3																					
64-NW																						1
65-T	1																					
66-W				1																		
67-NW																		1			1	
68-NW						1																
69-T	2																	1				2
70-NW						1									1					1		
71-SW	1					1																2
72-T																						1
73-NNW	7																					
74-W	3			3																		
75-W	3																					
76-N																		1				
77-NNW														1								2
78-T						1						5										
79-SE	1																					
80-W	1																					
81-W				1																		
82-SW	2																					3
83-WNE	5																					
84-NW																						1
85-SW	3																					
86-T	1																					
87-W	2			1			1															
88-S			1																			
89-W							1															
90-T											2										1	
91-W														1								
92-T	1	5h																				1
93-T																1						
94-W																						2
95-NW																						1
96-T																						2
97-T																						
98-T																						1
99-T																						1
totals	93	8	2	7	1	4	10	30	1	8	20	11	1	7	1	9	1	5	0	5	16	76

Table 2.4. Skew Valley. Carvings uncovered by the excavation (n = 12).

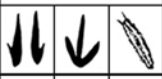
carved surface number	'human' stick figures		'animals'							'tracks'			geometrics								other	indeterminates
SKV-																						
I	3																					1
II	2																					3
III	1																					0
IV	0				1																	1
totals	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5

Table 2.5. Skew Valley. Carvings recorded in areas beyond the sample zone (n = 26); * a plant.

carved surface number	'human' stick figures		'animals'							'tracks'			geometrics								other	indeterminates
SKV-																						
100-NW			1				1															1
101-W															1							—
102-NW	4																				1*	—
103-T																						—
104-NW				1																		—
105-T											5											—
106-SW				1	1			2	1													—
107-W	2																					—
108-W	2			1																		1
totals	8	0	1	3	1	0	1	2	1	0	5	0	0	0	1	0	0	0	0	0	1	2

Table 2.6. Skew Valley. Key to tables 2.3–2.5.

'humans'		'animals'		'animal prints'		geometric forms	
	'human' figure		'kangaroo'		'kangaroo foot print'		circular form
	'human foot' or 'human hand'		'bird'		'bird foot print'		arc-like form
			'snake'		'turtle track'		concentric arcs
			'turtle'				bi-lobe form
			'fish'				triangular form
			'eggs'				oval form
			'lizard'				linear form
							punctations (dots)

'boomerangs' have slightly different shapes: on the left side, the 'boomerang' has a regular curve slightly unsymmetrical, whereas on the right side the 'boomerang' is strongly bent at the base. Thus, they could both be interpreted as 'hooked boomerangs' especially the right one.

A small 'human' stick figure seems to be holding in its 'left hand' a kind of 'spear' or 'elbowed pick' (Fig. 2.23: SKV-48-W (top) {p. 133}), but it is difficult to know with certainty whether this element is a real representation of a weapon or an unfinished image.

Table 2.7. Skew Valley. Inventory of motifs from sample area and excavation. Each motif is counted as one unit including those that are in a group. That is, if there is one motif on a panel, it is counted as one unit; if there are six identifiable motifs on a panel, those are considered as six units. An 'indeterminate' motif is one that is clear but cannot be identified as a depiction of some recognizable object; it cannot be classified into one of the categories used here. An 'indeterminable' motif is one that is unclear; its condition today makes it indecipherable.

type of figure	number	percentage (including indeterminables)		percentage (excluding indeterminables)	
'human' figures					
'humans'	94				
'humans in coitus'	4 (in two scenes)				
totals			29.9		39.6
'human'					
'hands'	7	2.1		2.8	
'feet'	1	0.3		0.4	
totals			2.4		3.2
animal depictions					
'kangaroo'	2	0.6		0.8	
'bird'	7	2.1		3.2	
'snake'	2	0.6		0.8	
'marine turtle'	4	1.2		1.6	
'fish'	10	3.0		4.0	
'lizard'	1	0.3		0.4	
'eggs' (in groups)	31	9.4		12.5	
totals			17.2		23.3
'animal prints'					
of 'kangaroo'	8	2.4		2.2	
of 'bird'	20	6.0		8.0	
of 'turtle'	11	3.3		4.4	
totals			11.8		14.6
geometric motifs					
circular form	1	0.3		0.4	
arc-like form	7	2.1		3.2	
bi-lobate form	9	2.7		3.6	
triangular form	1	0.3		0.4	
oval form	5	1.5		2.0	
linear form	6	1.8		2.4	
cross-like form	1	0.3		0.4	
totals			9.0		12.5
indeterminate motif	15		4.5		6.0
indeterminable motif	81		24.6		—
total of all graphics	328		100		99.2

In addition, five 'human' stick figures, in close proximity to one another, have three or four great curved parallel lines crossing their 'bodies' (SKV-79-SE {p. 147}, -80-W {p. 145}, -82-SW {p. 148}, -86-T {p. 149}). It is difficult to see some representations of boomerangs in these large features; they are different from the small arc-like shapes that appear to be held in the 'hands' of other 'human' stick figures. A single small motif (SKV-87-W {p. 150}), unfortunately poorly preserved, seems to be topped with an arc.

Type B. Figures with 'headdresses'. Anthropomorphs with elaborate 'headdresses' are included in category B (Figs 2.21, 2.26). They represent 18% of the total 'human' motifs. Dampier figures with 'headdresses' are depictions of 'male' individuals—according to their representation of sex. Most of these 'headdresses' (Fig. 2.26) are forked, or prong-like, and made of three to five vertical lines. The 'headdress' of one stick figure (SKV-46-W {p. 132}) is a more complex structure that includes large parallel arcs and circles. SKV-63-NW {p. 138} and out-of-sample SKV-108-W {p. 160} (Fig. 2.27: 'The Sitting Man') may exhibit a long 'headdress' of conical form of a type once common. Motif SKV-50-W {p. 134} has rounded lobes on each side of the 'head'; this might suggest ears or be part of the headdress.[5] Motif SKV-102-NW {p. 156} (also from outside the sample zone) seems to possess large 'ears' as well as enlarged 'hands' and 'feet' (Fig. 2.21). In two instances (Fig. 2.26: 11a-S and 63-NW), the 'head' is separated vertically by a middle line; this might be a convention for the representation of eyes.

Table 2.8. Skew Valley. Inventory of motifs by subject (number of panels = 112).

type of figure	number of occurrences of the subject	percentage of occurrences of the subject (including indeterminables)		percentage of occurrences of the subject (excluding indeterminables)		percentage of occurrences of the subject by number of panels	
'human' figures							
'humans'	51	30.7		43.5		45.5	
'humans in coitus'	2	1.1		1.7		1.7	
totals			37.7		45.2		47.3
'human'							
'hands'	2	1.1		1.7		1.7	
'feet'	1	0.5		0.8		0.8	
totals			1.6		2.5		2.6
'animal' representations							
'kangaroo'	2	1.1		1.7		1.7	
'bird'	6	3.5		5.1		5.3	
'snake'	2	1.1		1.7		1.7	
'marine turtle'	4	2.3		3.4		3.5	
'fish'	7	4.1		5.9		6.2	
'lizard'	1	0.5		0.8		0.8	
'eggs' (in groups)	1	0.5		0.8		0.8	
totals			13.1		18.8		19.6
'animal prints/tracks'							
of 'turtle'	6	3.5		5.1		5.3	
of 'bird'	4	2.3		3.4		3.5	
of 'kangaroo'	4	2.3		3.4		3.5	
totals			8.3		11.9		12.5
geometric motifs							
circle	1	0.5		0.8		0.8	
arc	9	5.3		7.6		8.0	
bi-lobate motif	2	1.1		1.7		1.7	
triangle	1	0.5		0.8		0.8	
oval	5	2.9		4.2		4.4	
line	4	2.3		3.4		3.5	
cross	1	0.5		0.8		0.8	
totals			13.7		19.6		20.5
indeterminate motif	1	—	0.5	—	0.8	—	0.8
indeterminable motif	50	—	29.9	—		—	44.6
total of all graphics	167	—	100	—	100	—	—

Table 2.9. Skew Valley. Size of human figures.

dimension	mm
mean height	250
maximum height	640
minimum height	80
range of variation	560
standard deviation	87.6
number measured	85

Type C. Stick figures with exaggerated 'hands' and 'feet'. Images of the third category are much less abundant than the first two, representing only one-fifth of the 'human' motifs. They are mostly 'human' stick figures with 'feet' and 'hands' of exaggerated size. The biggest motif on slab numbered SKV-73-NNW {p. 142} (Fig. 2.21) possesses a 'right foot' longer than the 'leg', and a 'right hand' that looks also too big.[6]

A spindly 'human' stick figure (SKV-102-NW {p. 156}) also has gigantic 'hands' and 'feet'. As is common at Skew Valley, 'feet' were represented as if they were drawn from below. Anthropomorphs with exaggerated 'feet' and 'hands' are seen elsewhere on Dampier Island, notably at the entrance of Gum Tree Valley about 1 km to the south of Skew Valley.

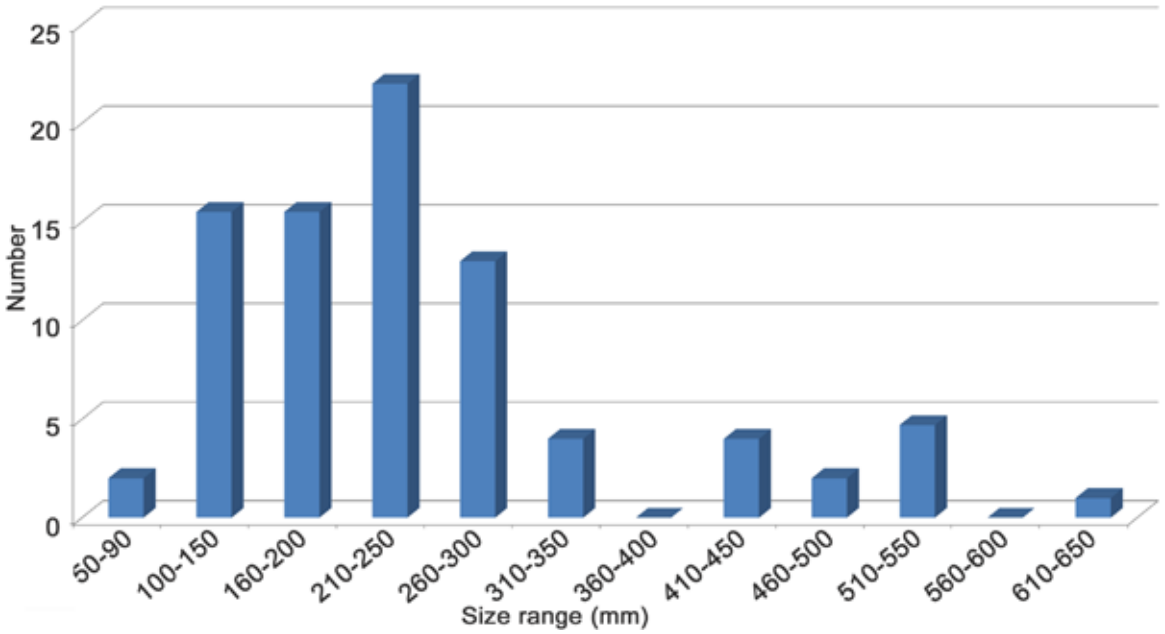


Figure 2.20. Skew Valley. Distribution of size ranges of human figures. Vertical axis = number. Horizontal axis = size ranges.

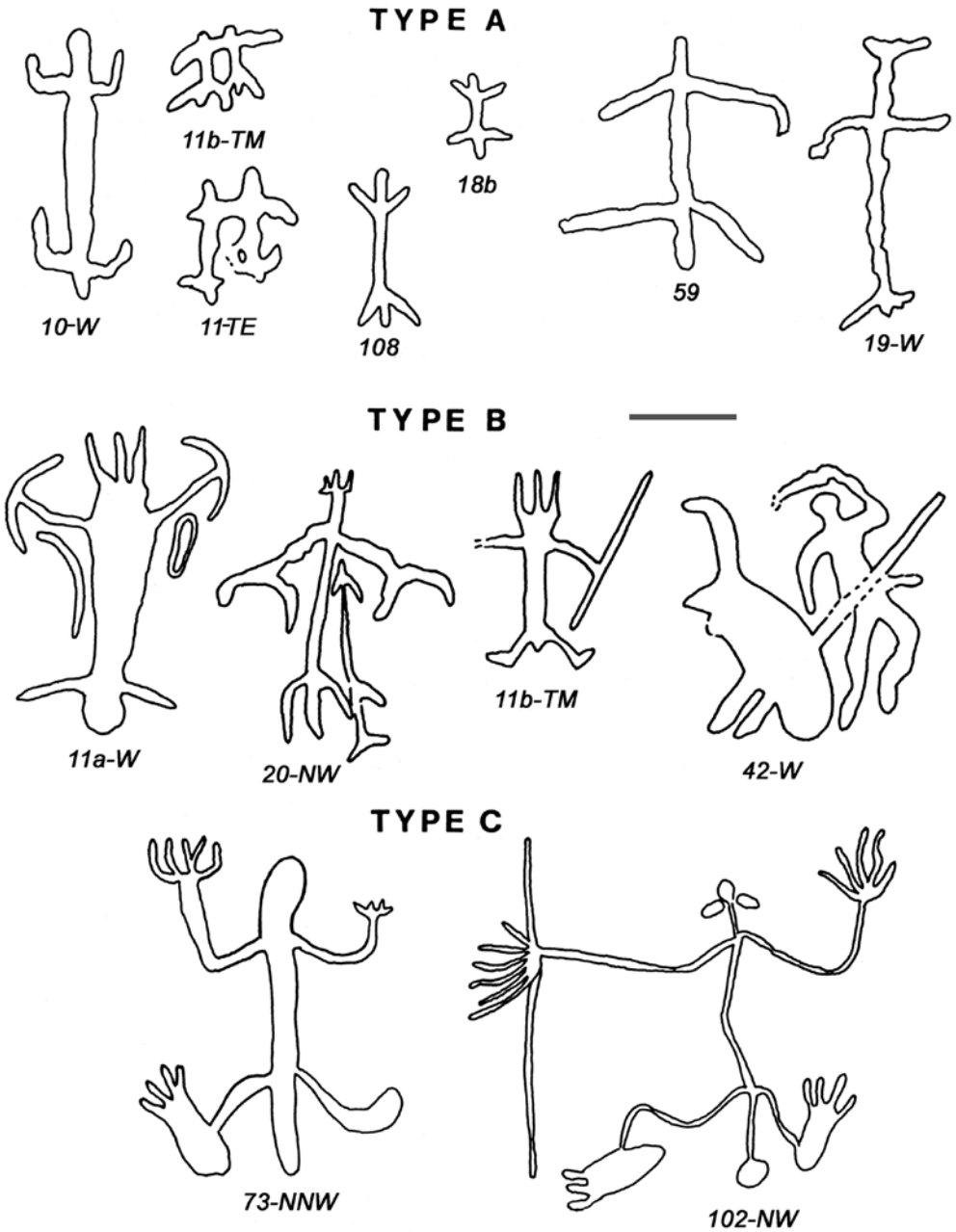


Figure 2.21. Skew Valley. Three types of human motifs. Scale 100 mm.

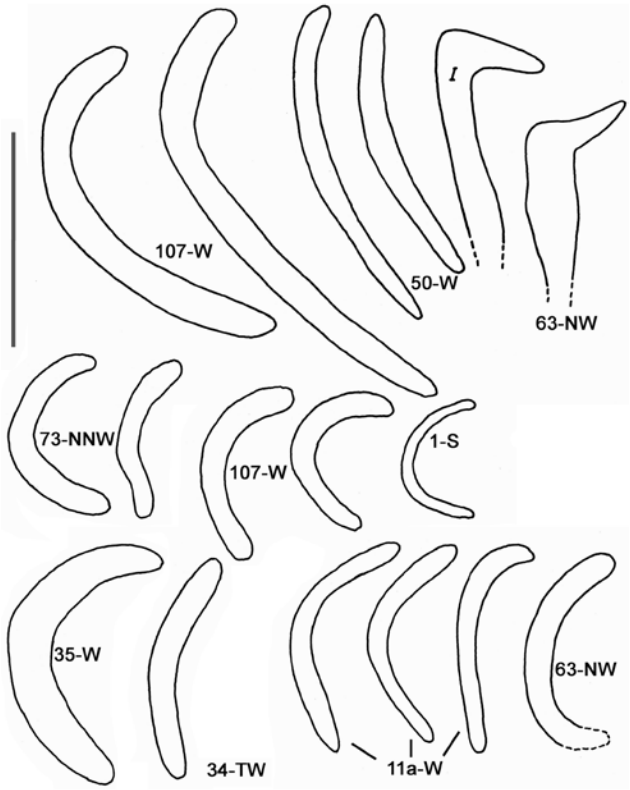


Figure 2.22. Skew Valley. Depictions of boomerangs. Scale 100 mm.

'Human' motifs depicted in profile

Eight motifs from the sample area (SKV-38b-S {p. 126}, -63-NW {p. 138}) and two others (SKV-102-NW {p. 156}, -108-W {p. 160}) identified outside its boundary are represented in profile. On Panel SKV-38b-S {p. 126}, four profile stick figures are grouped—two on the left are facing two others on the right. Their two 'legs' and 'arms' are on the same side of the 'body'; the 'sitting' position of the 'human' motif on the left is noteworthy. A large motif (SKV-73-NNW {p. 142} (left)) seems to protect under its 'arms' three smaller stick figures, lacking depiction of gender, which are represented simply by a vertical line completed by four horizontal lines to represent the 'limbs' (Fig. 2.13).

A panel (SKV-108-W {p. 160}), from outside the sample area and located at about 100 m south of the shell midden, holds one of the most visible petroglyphs of the valley (Fig. 2.27). It is situated in a dominant position and is conspicuous to every visitor. It is often called 'The Sitting Man' by the employees of the Dampier salt works who visit this region regularly. The main 'human' motif, of a height of 580 mm, is the largest 'human' motif in the area. A 'male' with obvious 'genitalia', it wears a conical 'headdress'. The motif is represented in profile in a seemingly 'seated' position, with raised 'arms'. The protruding 'elbows' and 'knees' are not

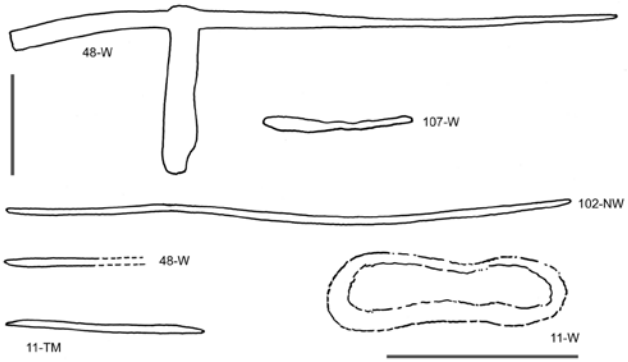


Figure 2.23. Skew Valley. Depictions of certain weapons held by 'human' motifs: SKV-11-TM, -48-W and -102-NW: 'spears'; SKV-107-W: 'club'; SKV-48-W: possible 'pick'. Scale 100 mm. SKV-11-W: probable 'shield'. Scale 300 mm.

Figure 2.24. SKV-42-W. Depiction of anthropomorph, spear, Emu. Scale 100 mm.

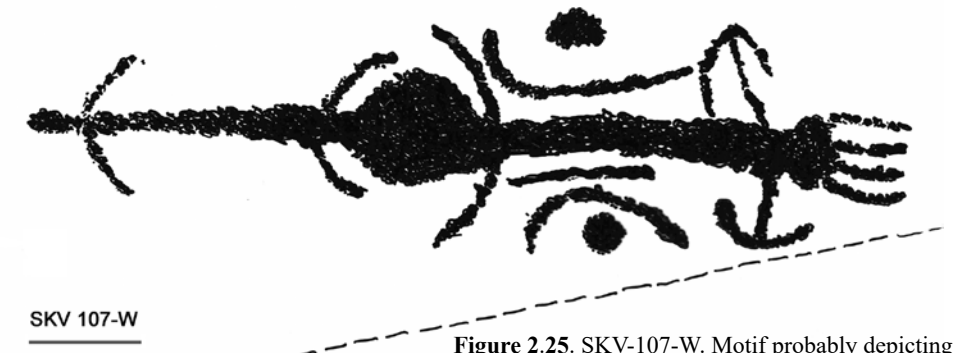


Figure 2.25. SKV-107-W. Motif probably depicting coitus (recording). Scale 100 mm.

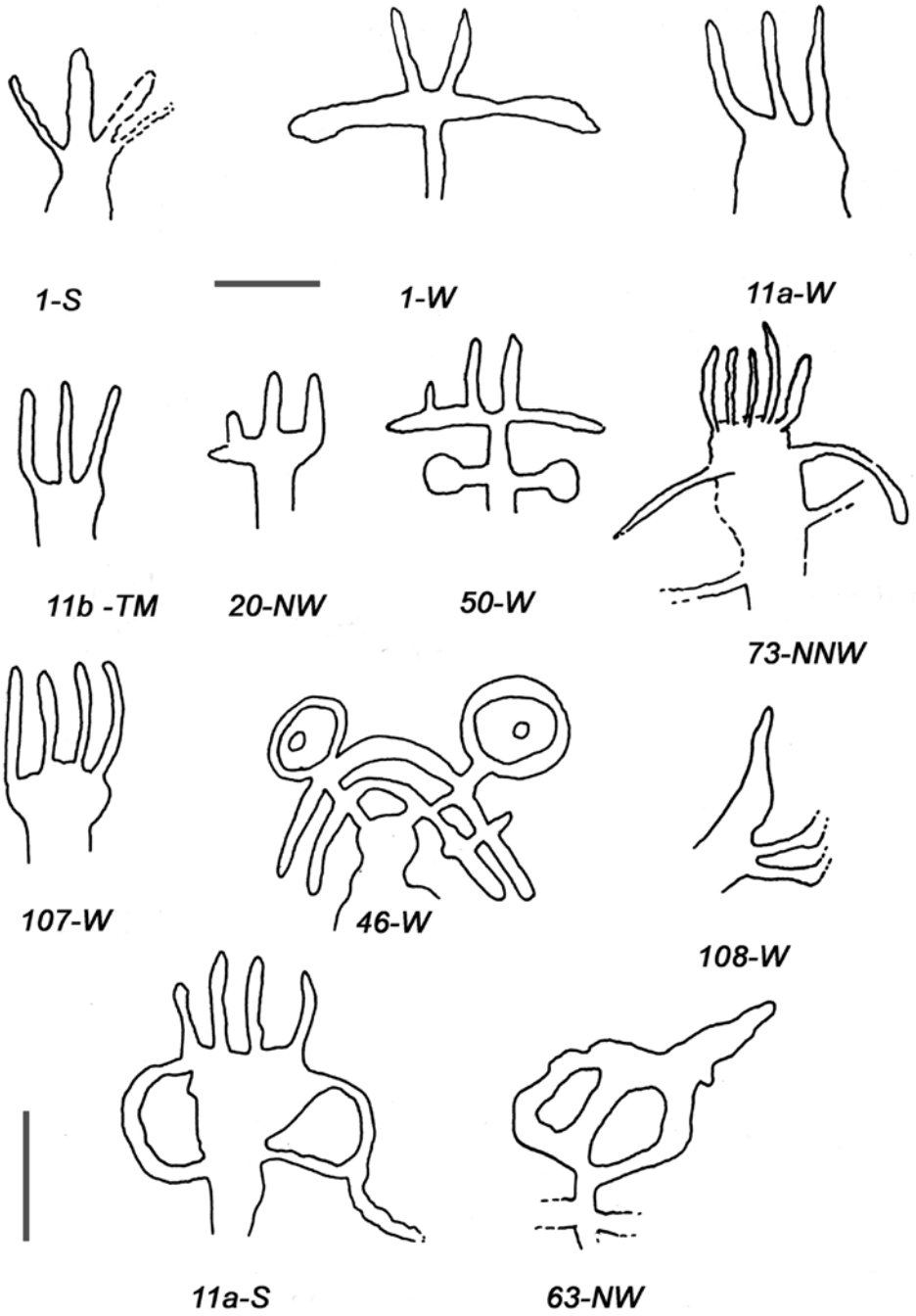


Figure 2.26. Skew Valley. Depictions of human motifs with headdresses. Scale 100 mm.

Figure 2.27. SKV-108-W, 'The Sitting Man'. Scale 100 mm.

usually depicted in this way in the Dampier region. Behind his 'back', several lines, which are fainter than the rest of the motif, might be interpreted as a kind of chair. However, such an interpretation is doubtful for the following reasons:

1 Everywhere in Australia, and on Dampier in particular, petroglyphs abound that show 'human' stick figures in profile in a 'seated' position with 'arms' raised and 'legs' bent;
2 The same motif has been recorded from a slab recovered (Block I) during the excavation. More than a realistic design, it seems to be a graphic convention to represent a motif in profile. This convention has, in fact, a wide distribution in time and space, because it is also found, for example, in southeastern Australia in the Grampians (Victoria) and in Cobar (New South Wales) (Coutts & Lorblanchet, 1982; Coutts & Gunn, 1984; McCarthy, 1979), and outside Australia in Palaeolithic European art; and
3 It has been suggested by many that the individual is seated on a 'chair' but this supposed 'chair' has only two 'feet', which would be in direct contradiction to the portrayal of two 'legs' and two 'arms' of the 'seated' motif. The design of this 'seat' is itself very complex and ambiguous. No other design in the region exists to confirm such an interpretation.

This petroglyph is almost unique due to its relatively fresh appearance, its unusual style of 'headdress' and its protuberant joints. (I have seen the same 'human' figures with protuberant 'elbows' and 'knees' in paintings at Laura, Cape York Peninsula; they were explained as *puri puri* ['black magic'] by Percy Trezise 1971: 9-10.) It is associated on the same block with a very classical stick-like design and a small schematic 'bird' (SKV-108-W {p. 160}).

Depiction of 'coital scenes'

Depictions of humans involved in coitus are relatively common in this area of the Dampier Archipelago. Sometimes they are 'human' stick figures drawn laterally and linked by their 'genitalia'; we found three such stick figures on the slab (Block I) recovered during the excavation. This could also be the case for other motifs (SKV-38c-S {p. 126}). The 'human' stick figure at the right of this panel is linked to the 'human' motif in front of him by a horizontal line that can only be his 'penis'. Two other panels show 'coitus' by using a graphic convention that is well known to Western Australia research (Wright, 1968).

In the sample area, a slab (SKV-18a-NE {p. 120}) bears many stick figures. Two of them depict coitus: the 'male' individual has an oval 'penis' entirely made by pecking and grooving. It is patinated, whereas the individual below him, which may be interpreted as 'female', is pecked with discrete punctations and has a fresher appearance. It seems then that an older 'male human' stick figure has been completed later and transformed into a depiction of a coital act by simply adding to it another stick figure appropriately placed. Such reuse of old motifs is a common practice in the whole region (Lorblanchet, 1979).

Outside the boundaries of the sample area, at about 50 m to the east of the shellfish mound, the wall (Fig. 2.3; Fig. 2.25: SKV-107-W {p. 159}) overlooking the first basin with potable water and visible to all who enter the gorge, has a typical representation of coitus: two 'human' stick figures are linked at the base and conventionally drawn along a vertical line. There is a strong contrast between the two 'partners'. The 'male' is in a dominant position; he is on top and is adorned with all the ceremonial attire: a radiating 'headdress' and a whole array of 'weapons' and 'boomerangs' that he either holds in his 'hands' or carries at the 'waist'. The second, on the other hand, is a simple linear stick figure.

Such an image is surprising because of the lack of detail of the smaller motif, which in fact is not identified by its gender because no 'breasts' are represented. In some cases, the absence of 'penis' and 'breasts' seems to be enough to characterize a female stick figure.

Schematization also tends to remove all sexual attributes. By the end of this process, a depiction of coitus is made up only of a long vertical line that represents the bodies of the two partners and is cut across by a series of horizontal lines depicting their arms and their legs.

In his book, *Rock Art of the Pilbara Region*, Bruce Wright (1968) has pictured many representations of coitus at different stages of schematization just as he observed them in many areas of the region. Wright provided examples at Sherlock Station, Gregory Gorge, Pirina, Chiratta, Coya Poya, in the basins of the Fortescue and Sherlock rivers (Wright, 1968: figs 700–800). McCarthy (1961, 1979) recorded the same designs on Depuch Island. These motifs invoke the depictions of coitus at Skew Valley; others are also to be found 1 km to the south in the lower part of Gum Tree Valley.

Depictions of human feet and hands

One 'foot' and seven 'hands' are represented on three stone slabs inside the sampled area.[7] The 'foot' (SKV-23-T {p. 117}) has a length of 250 mm. It is entirely made with punctations. The 'toes' have been partly obliterated by erosion. On another slab (SKV-36-T {p. 125}), two small 'right hands' measuring 100 and 110 mm in length have been carved. Slab (SKV-92-T {p. 152}) has five punctate 'hands' of 90–100 mm of length, and the number of 'fingers' is sometimes five and sometimes six.

Discussion

The depictions of 'humans' at Skew Valley are characterized by their schematization. Nevertheless, despite their extremely conventional style and their evident lack of realism, they provide quite useful information on the types of tools, weapons and adornment used in the past at this place on the Indian Ocean coast.

They are not very narrative or dynamic. A motif (Fig. 2.21: 42-W) that perhaps depicts an Emu-hunting scene is unusual in the assemblage. The groups of individuals (SKV-38-S {p. 126} and -41-NNE {p. 126}) may be symbolic representations of ritual actions (involving several related individuals) as much as, for example, representation of dancers.

Depictions of Animals

Many Skew Valley petroglyphs may be depictions of animals found in the area; most appear to represent fishes, but there are also motifs that may be interpreted as representing macropods, birds and terrestrial and marine reptiles.

Depictions of kangaroo

Two representations of kangaroo are among the assemblage from the sample area, and a third (SKV-100 {p. 155}) was recorded outside the sample area.

The first (SKV-48-W {p. 133}), 600 mm long, is an entirely pecked representation of kangaroo or a male wallaby, with raised tail, which is unusual among Dampier petroglyphs. A long curve, perhaps representing vital functions, seems to leave the 'anus'.

The second (SKV-88-S {p. 151}), 740 mm long, has a squatter appearance; its 'legs' are short and thick. A 'spear' (360 mm long) has been driven into its 'back' and extends onto the other face of the slab (SKV-88-S {p. 151}). The pecking of the motif is much more irregular than that of SKV-48-W {p. 133}. It is formed by elongated punctations. The 'tail', the 'legs' and the end of the 'snout' are covered with pecking that continues onto the interior of the 'body' as scattered punctations.

A 'kangaroo' (SKV-100-NW {p. 155}) from outside the sample area (700 mm long) is difficult to make out; it is patinated and very lightly pecked. As with another 'kangaroo' (SKV-88-S {p. 151}) the pecking was made by elongated punctations that are almost small incisions and only the 'nose' and the 'tail' are covered with continuous pecking.

Depictions of birds

Seven depictions of birds were recorded in the sample area (Fig. 2.28). Two categories were defined:

Category A. Probable depictions of Emu. Motifs SKV-42-W {p. 130} and -87-W {p. 150} are probably representations of the Emu as indicated by their oval, elongated 'bodies', their long 'necks' and, above all, the 'wing stumps' at the base of the 'neck'.[8] The second image (SKV-87-W {p. 150}), 1080 mm long, is the largest of the Skew Valley motifs. The 'body' punctations are sparsely scattered, whereas those of the 'head' are very dense and the punctations are elongated. A straight bar of linear incisions seems to cut across the 'neck'; it could have been made later than the carving of the whole 'body' of the 'bird' because its technique is identical to a 'human' stick figure superimposed on the 'body' of the 'Emu'.

Category B. Smaller 'birds'. Three motifs (SKV-66-W {p. 138}, -74-W {p. 143} and -81-W {p. 148}) are smaller, of an average length of 210 mm, and more schematic. Two motifs (SKV-66-W {p. 138}, -81-W {p. 148}) have an outline that is dumpier than that of the 'Emus'; their 'necks' are shorter. The species thus represented is most likely not an Emu. It is either a representation of the Australian Bustard that is also common in this region and was often depicted in the petroglyphs of the Pilbara (Wright, 1968: 60), or that of an aquatic bird. The other motifs (SKV-74-W {p. 143}), with their semi-oval 'bodies', their long 'legs' and their long 'necks' perhaps depict a wading bird, an ibis, whose slightly curved 'beak' is in the extension of its 'neck'. The schematic form of representation of the motifs of this second category makes it more difficult to identify them.[9]

'Birds' from outside the sample area. The two groups of bird representations on the border of the shell midden are distinct: The first group is situated just outside the upper central part of the sampled area and the second is on the eastern border of the same zone. One 'bird' motif (SKV-104-N {p. 157}) from outside the sample area, is situated on a crest overlooking, on one side, the shell midden and, on the other side, the little gorge with its rivulet of potable water. This fresh-looking petroglyph represents the face of a bird (which is unusual), whose 'body' seems to have been pierced by a 'spear' (represented by a simple lateral line). Its identification remains uncertain. Another representation of a bird (Fig. 2.29: SKV-106-SW {p. 158}) is very large, 800 mm in length, and made up of in-fill dots. Its prolonged silhouette, the length of the 'neck' and its curved form indicates it must depict a water-bird, probably an ibis. It is depicted holding a 'snake' in its 'beak', and with a 'crab' and 'eggs' below its 'breast'. Another schematic bird representation (SKV-108-W {p. 160}), also probably representing a water-bird, was recorded near the motif commonly called 'The Sitting Man'.

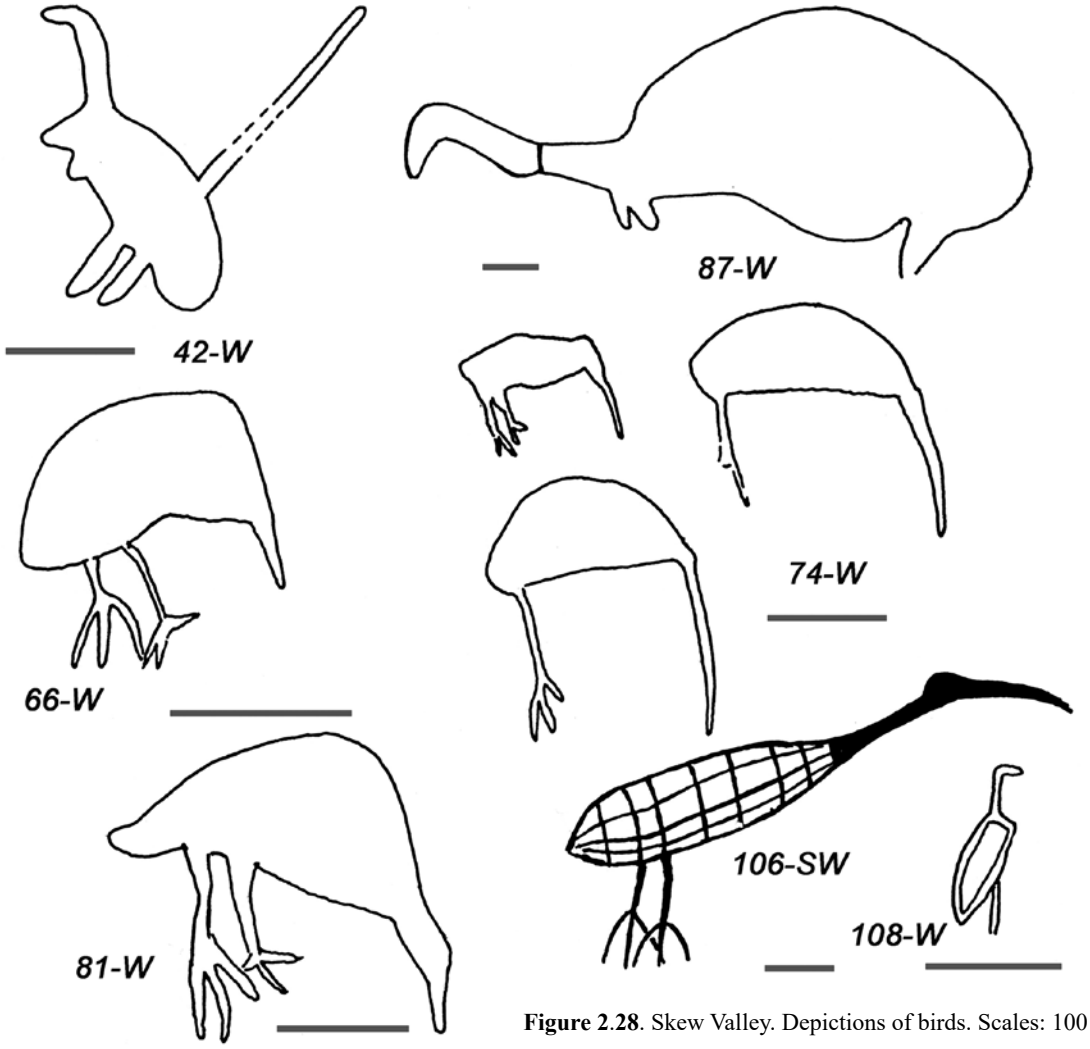


Figure 2.28. Skew Valley. Depictions of birds. Scales: 100 mm.

Figure 2.29. SKV-106-SW. Depiction of bird with snake. Scale 100 mm.

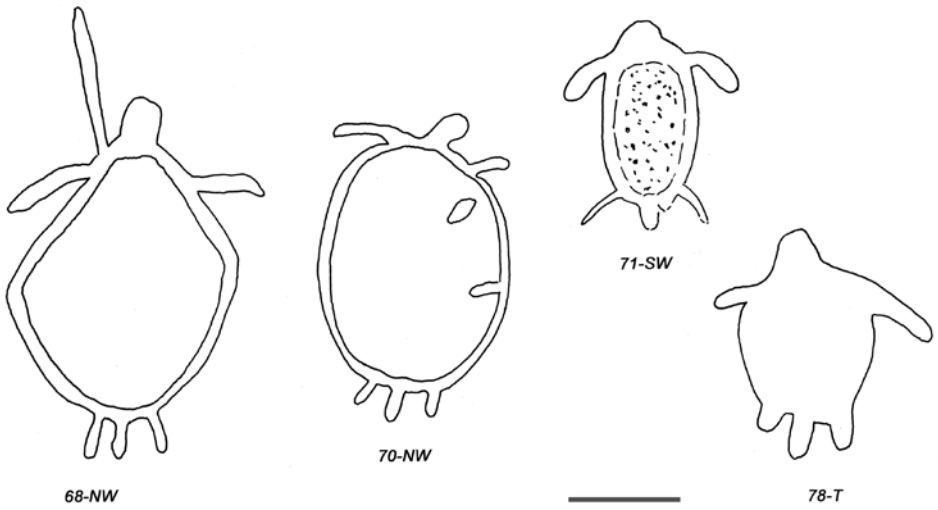


Figure 2.30. Skew Valley. Depictions of marine turtles, SKV-68-NW with a 'spear'. Scale 100 mm.

Depictions of snakes

A representation of a snake, 780 mm in length, accompanies a 'human' stick figure, a circle and other designs on a slab (SKV-10-W {p. 117}). Another 'snake', coiled, was recorded during the uncovering of the slab designated Block IV (Figs 2.18, 2.19). A 'snake' is in the 'beak' of a 'bird' (Fig. 2.29).

Depictions of turtles

Four small depictions of turtles exist on the border of the midden (Fig. 2.30). Their average length is 225 mm, and their form is usually stocky; the absence of a 'neck', and the enlarged 'fins' clearly indicate that they represent marine turtles.[10]

The execution of these motifs is schematic because they reduce to an oval the representation of the turtle's carapace. The image is completed with three lines at the top for the 'head' and 'fins' and three other lines at the bottom to represent the 'rear fins' and the 'tail'. The oval of the 'carapace' is often outlined by a simple line and sometimes entirely infilled with a thinly scattered pecking.

One motif (SKV-68-NW {p. 136}) shows a vertical line at the level of the shoulder, which is probably a representation of a spear. This suggests that marine turtle hunting was carried out in the same way as it was historically and still is today (Stow, 1865; pers. obs., 1984).

Depictions of fishes

The assemblage from the sampled area includes 12 different representations of fishes (Fig. 2.31), which all resemble various marine species. Their length varies from 150–1150 mm. The graphic technique is linear pecking. Many species appear to be represented, but their identification is limited by the simplification of the drawing.

One motif (Fig. 2.31: SKV-2-SW {p. 116}), could be identified as a small ray. It has an oval 'body', two small 'fins' on the sides of the 'body', and its straight 'tail' has a 'lateral sting'. A large triangular motif (SKV-35-Wd {p. 124}), associated with three other 'fishes', could be a representation of a Manta Ray (*Manta birostris*) rather than a purely geometrical design.

Among the depictions of fishes with an elongated 'body', the Sea Mullet (*Mugil cephalus*), very common in these coastal waters, is easily recognized because of its large round 'head' and large 'caudal fin' (SKV-38a-T {p. 127} and -43-T {p. 131}). In each example, their two 'eyes'

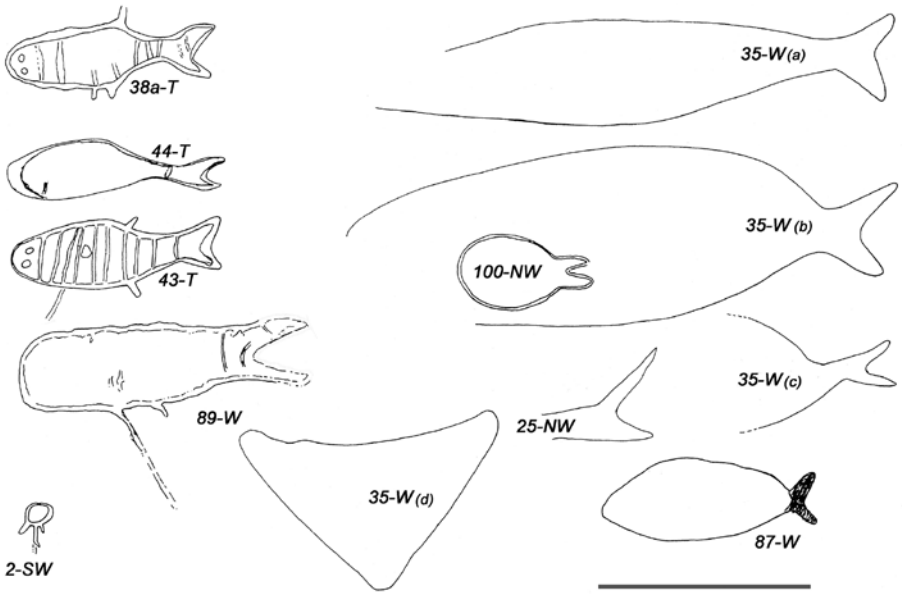


Figure 2.31. Skew Valley. Depictions of fishes; SKV-89-W with a 'spear'. Scale 500 mm.

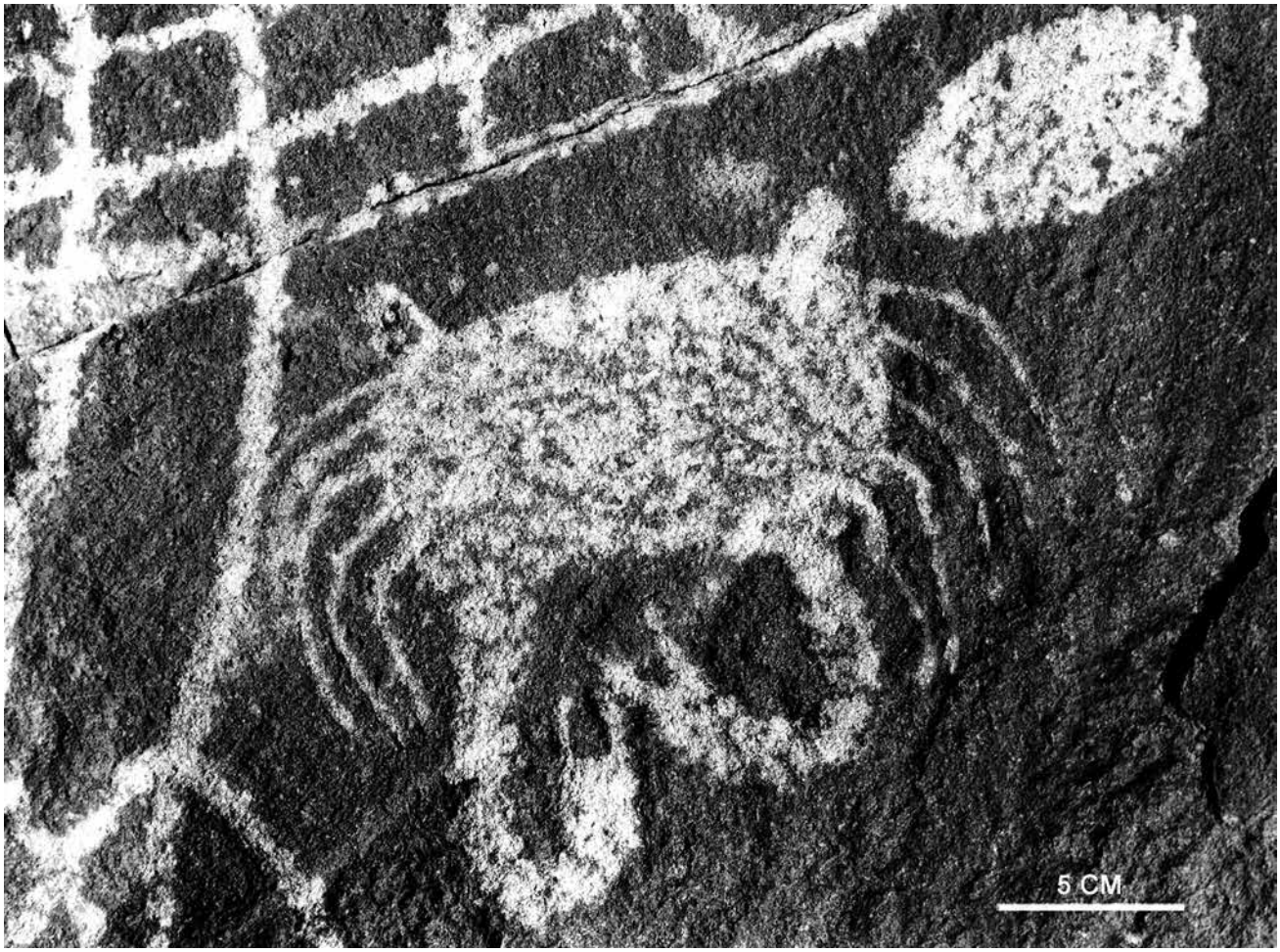


Figure 2.32. SKV-106-SW. Detail of depictions of crab and an egg. Scale 50 mm.

appear to have been drawn next to each other while the overall representation is in profile. The internal striations could depict the large 'scales' of these fish.

Another motif (SKV-44-T {p. 131}) might be included in the same category. On the other hand, a further image (SKV-89-W {p. 152}), with its deeply cut 'side fin' and even more its big square 'head', could be a schematic representation of a freshwater catfish (*Neoarius australis*) of which many varieties abound in the estuaries and shallow mangroves waters. On the western slope of the valley, just opposite the shellfish mound, we identified another large representation of the catfish (but note that this slope of the valley was not studied in detail, and no recordings were made.) It appears to be a representation of a marine catfish with an eel-like 'tail' (*Plotosus anguillaris* Bloch).[11]

The isolated 'tail' motif (SKV-25-NW {p. 121}) with its elongated upper lobe can be classified as a 'shark' (super-order Selachimorpha).

Three large motifs (SKV-35-Wa, b and c {p. 124}), and SKV-87-W {p. 150}, offer no precise detail. Their common shape corresponds to a great number of fishes of tropical waters. The depiction of certain 'tails', as well as enlargement of the 'body' (SKV-35-Wb, c {p. 124}, and -87-W {p. 150}) suggest the Trevally (family Carangidae). Outside the sampled area, a panel (SKV-100-NW {p. 155}) depicts an eleventh 'fish' whose simplified form precludes precise identification.

Another two motifs (SKV-43-T {p. 131}, -89-W {p. 152}) have a long external line at the back of the 'head' that must represent a spear. On one (SKV-89-W {p. 152}), the trace of this line is prolonged on the side of the supporting slab as is the case for the motifs of 'spears' stuck into the 'body' of some 'kangaroo', for example SKV-88-S {p. 151}.

Depictions of other animals

A representation of a large lizard (560 mm in length) is identifiable (SKV-2-SW {p. 116}). Its general form and size seem to indicate a goanna (*Varanus* spp.).

At about 20 m north of the sampled area, another slab (SKV-106-SW {p. 158}) depicts a crab associated with a 'bird', a 'snake' and 'eggs' (Figs 2.29, 2.32). No other representation of a crab was recorded at either Skew Valley or Gum Tree Valley. However, Wright (1968: fig. 812) has illustrated one at Coya Poya at about 50 km inland.

Depictions of eggs

Concise groupings of large round or oval pits, whose surface is completely pecked, are common in the region of Port Hedland, Depuch Island and the Dampier archipelago. These might represent either birds' nests or turtles' eggs. When a grouping of about 30 such shapes is associated with 'turtle tracks' (next section), as is the case on one panel (SKV-11b-TM {p. 118}), it is most likely a representation of a cluster of turtle eggs. In their studies of coastal sites known for their petroglyphs, other authors have given the same interpretation for identical designs (McCarthy, 1961; Ride, 1964).

In another case (SKV-106-W {p. 158}), outside the sampled area, two 'eggs' of a perfect oval shape can be seen, placed near the 'feet' of a 'water-bird'. The relationship between the 'bird' and its 'eggs' is obvious (Fig. 2.29).

Animals Hunted and Depicted

The following table and histograms (Table 2.10; Fig. 2.33) compare animal species represented in the petroglyphs to those that have been identified by palaeoecologist Dr David Horton among the bone remains that were recovered during excavation of the shell midden.

In both cases, most of the same species are present. Hunted species and depicted species are thus essentially identical. Both are also largely dominated by fishes and depictions of fishes. However, some differences are seen in the percentage of individuals of each species. Birds, which are hardly represented among the bone remains and where their specific identifications have been impossible, are, on the other hand, quite clearly seen among the petroglyphs, which show at least two varieties.

Similarly, the terrestrial reptiles (lizards and snakes) and the marine turtles, which are hardly present among the evidence of meals revealed in the shell midden, are obvious among the petroglyphs. On the other hand, the crabs—a common food of the inhabitants of Skew Valley—rarely have been pictured on the rocks. In fact, the crab is a rare item in the overall assemblage of the Pilbara, including the coastal sites.

Comparisons of 'fish' motifs have been made difficult by simplification or 'schematization' of the images, so that precise identification is difficult. It seems, however, that the fish that are represented are not necessarily those that have been consumed on the site. The catfish seems to be present in both cases, but, while no bone of the ray has been discovered in the excavations, that fish undoubtedly was depicted at Skew Valley and at Gum Tree Valley. Mullet and Trevally, also identified among the petroglyphs, were absent from the faunal assemblage.

The explanation of these differences is not easy. Many factors could have been responsible: The conservation of the bone remains, the consumption of some animals away from the location of the shell midden (for example at the sea shore), difficulty in identifying the schematic drawings, the taboos surrounding the consumption or the graphic representation of some species.

It is possible that the inhabitants of Skew Valley have both consumed turtle and depicted images of turtle but that cleaning of the inhabited area could have eliminated a large

Table 2.10. Skew Valley. Excavation and recorded petroglyphs. Number and percentage of 'Hunted animals' and 'Depicted animals'. These data obtained from the chapter contributed by Dr David Horton, then Palaeoecologist at AIAS, to the unpublished report of Skew Valley excavation, a copy of which is held by AIATSIS Library (Horton n.d.). [Other fauna, including marine mammals and echidna, are depicted in petroglyphs elsewhere in the region—Editors].

	Hunted animals. MNI bones in the shell midden as identified by Horton (n.d.)						
SKV	fish	crab	turtle	macropod	reptile	bird	totals
number	144	24	0	21	2	1	192
percentage	75	12.5	0	11	1	0.5	100
	Depicted animals. (Number and percentages of individual motifs) among the petroglyphs recorded						
SKV	'fish'	'crab'	'turtle'	'macropod'	'reptile'	'bird'	totals
number	12	1	4	3	4	10	34
percentage	35.3	2.9	11.8	8.8	11.8	29.4	100

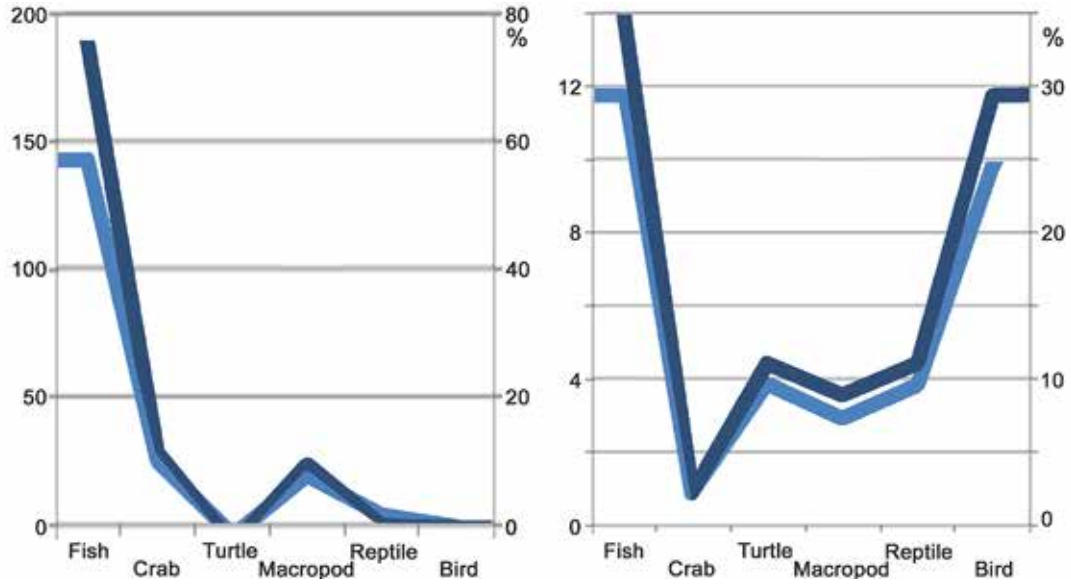


Figure 2.33. Skew Valley. Comparison graphs of 'Hunted fauna' (left), and 'Depicted fauna' (right). Light blue line (left vertical axes) = numbers; darker blue line (right vertical axes) = proportions. 'Hunted' values based on identifications made by Horton (n.d.).

part of their bone remains. (During excavation of the Skew Valley shell midden I discovered evidence of sweeping out of the living area by the prehistoric inhabitants of the midden, as discussed in the excavation report—Lorblanchet, n.d.)

On the other hand, the problem expressed by Horton in his unpublished report of the faunal analysis about the birds remains unsolved. The rarity of their bone remains and their multiple appearances among the petroglyphs seem to reveal a cultural factor.

At any rate, hunted and depicted fauna both stress the maritime influence on the everyday life of people in Skew Valley and on their art, which provides a true reflection of that life. In general, data of the fauna depicted equate with those of the fauna hunted and reveal, notably, the existence in ancient times of the technique of spear-fishing. Other fishing techniques probably existed but we have only depictions of speared fish; there are no depictions, for example, of fish-traps or netting.[12]

Depictions of Animal Prints and Tracks

Depictions of turtle tracks

There are 11 sets of elongated bands (of 60–350 mm long) each made of three parallel lines that, at their extremity, seem to converge and sometimes even touch each other (Fig. 2.34). These can be interpreted as representing the tracks left by the sea turtle, mainly the female of the Green Turtle, when she crawls up the beach to lay her eggs in the sand upon which her heavy body and fins make deep furrows (Fig. 2.35).[13]

These easily recognized motifs are sometimes isolated but more often than not they are associated with graphic representations of turtles, for example, Motif SKV-78-N {p. 146}. They are sometimes in their true position: they extend from the rears of the images of turtle, and this assists the identification of isolated motifs.

Similar striped belts, in natural positions behind a turtle motif, were observed among the petroglyphs at the entrance to Gum Tree Valley, not far from Skew Valley, and a few kilometres to the north of Dampier along the archipelago at King Bay (Fig. 2.35). On Depuch Island, which is about 100 km to the east of Skew Valley, these motifs are particularly numerous, sometimes associated with the image of a turtle (Ride and Neumann 1964: 26 Panel 7), sometimes isolated, for example in Ngalula (Anchor Hill) where they are consistently interpreted as being tracks of the turtle by the authors (1964: 26, 61).

Depictions of bird prints

The most frequent animal prints in Australian rock-art are representations of macropods (kangaroo and wallaby), and of birds (mostly Emu) (e.g., Clegg, 1992). Twenty depictions of prints of birds inside the sampled area and five outside this zone have been identified (Fig. 2.36).

Their length varies from 80–200 mm. It is conceivable that the size differences of these petroglyphs reflect specific differences: The biggest motifs probably show prints of the Emu, whereas the smallest ones might represent prints of bustards or water birds. The actual length of the foot of the Emu does not reach 200 mm in real life. Another interpretation may be suggested by consideration of a slab

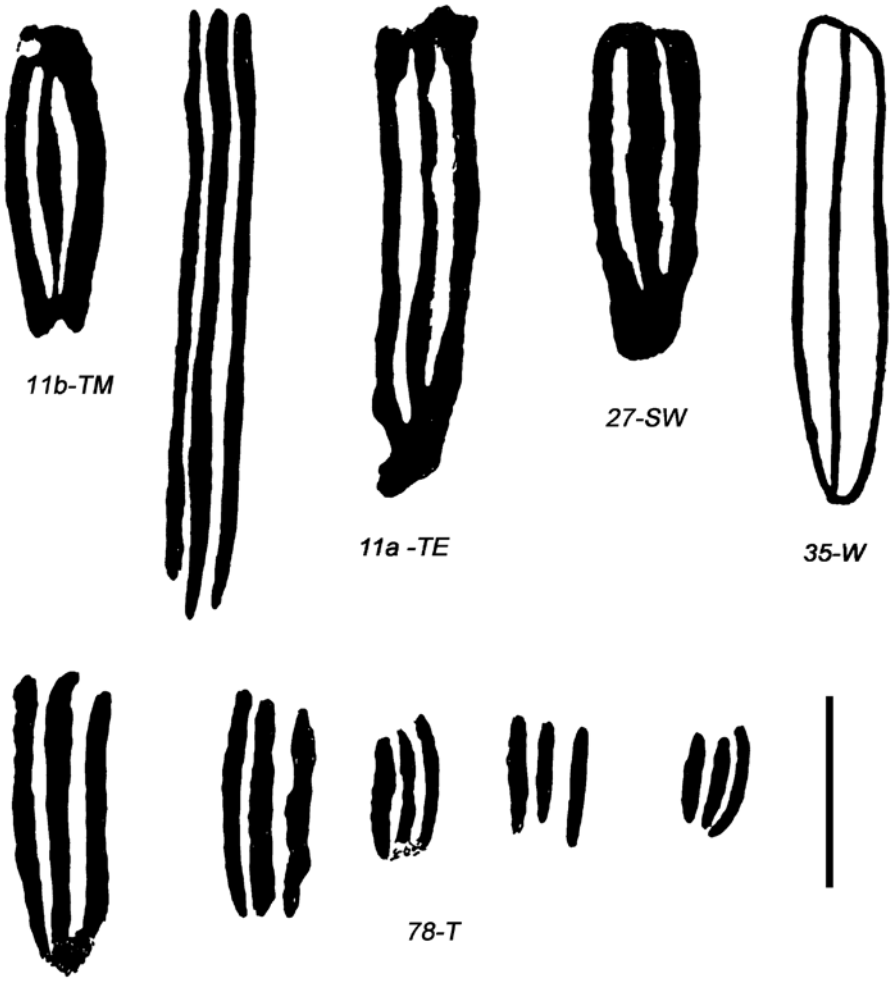


Figure 2.34. Skew Valley. Depictions of the tracks of turtles. Scale 100 mm.

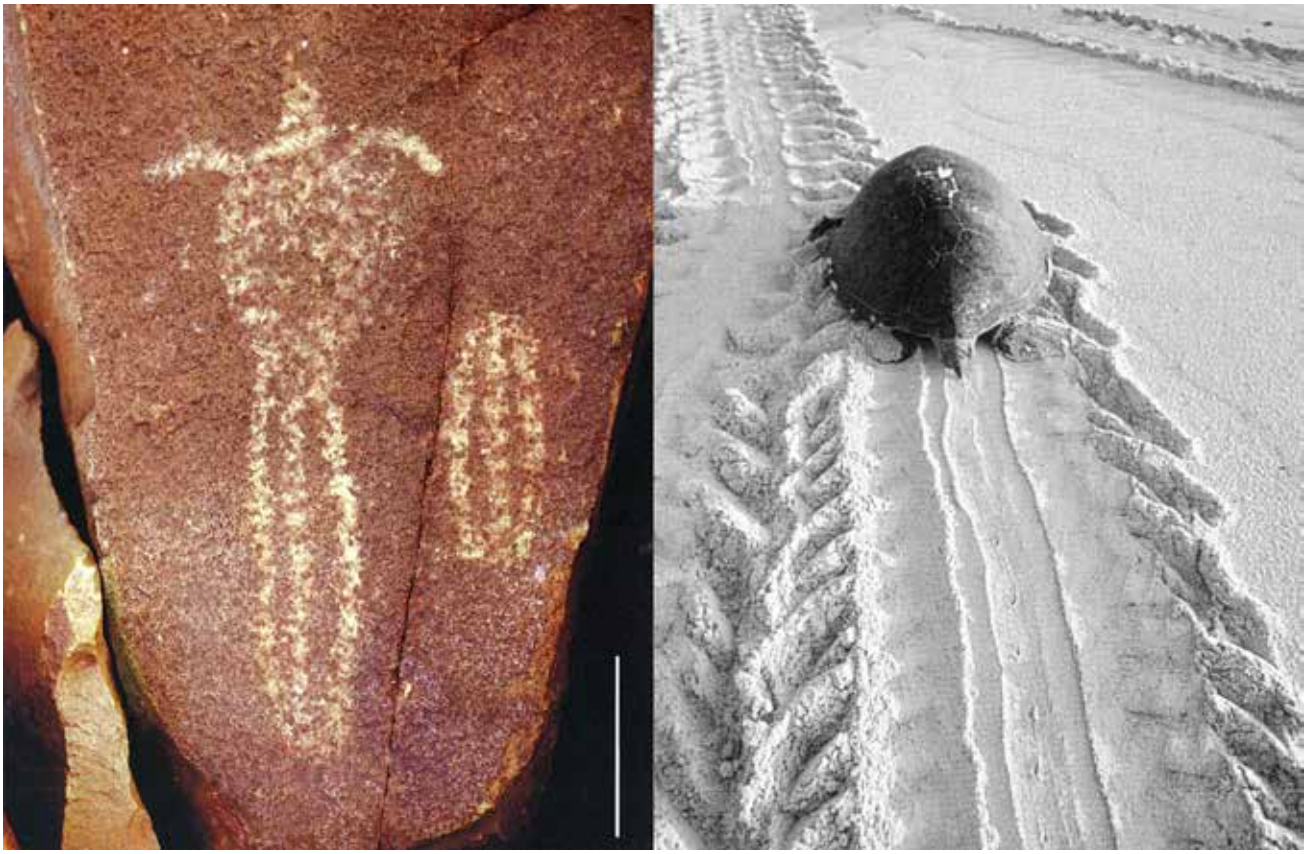


Figure 2.35. Left: King Bay. Depictions of 'turtle and tracks' Scale 100 mm. Right: photograph of turtle and its tracks in beach sand.

(SKV-105-T {p. 157}) on which a big 'print' is seen next to four small ones presenting a shape that is identical in all its details including a 'balled heel'. It seems that this slab depicts one adult Emu and four chicks (Fig. 2.36). These petroglyphs tend to confirm therefore that the representations of the prints are not, properly speaking, realistic designs because the 'bird' is not represented by its two prints but only by one.

On other panels, the 'prints' are unique motifs. All this shows that the 'print' is only a symbol. On its own it symbolises the whole 'animal'. In three other instances, the 'prints' are grouped together into a cluster without any apparent order. This group probably represents flocks of birds. Notably, alignments of 'bird prints', quite common in Gum Tree Valley, have not been noticed at Skew Valley.

Depictions of kangaroo prints

Kangaroo and wallaby are marsupials whose back feet have only four, completely asymmetrical, toes. They lack the first digit of other land vertebrates. Digits 2 and 3 are conjoined ('syndactyly'). The fourth toe is the biggest one, and on it rests most of the weight of the animal. Digit 5 is placed laterally to ensure the animal's equilibrium. Thus, the footprint of the back foot of the kangaroo seems simply to be formed by a big central toe flanked with a lateral shorter one; toes 2 and 3 usually leave no prints of their own (Morrison, 1981).

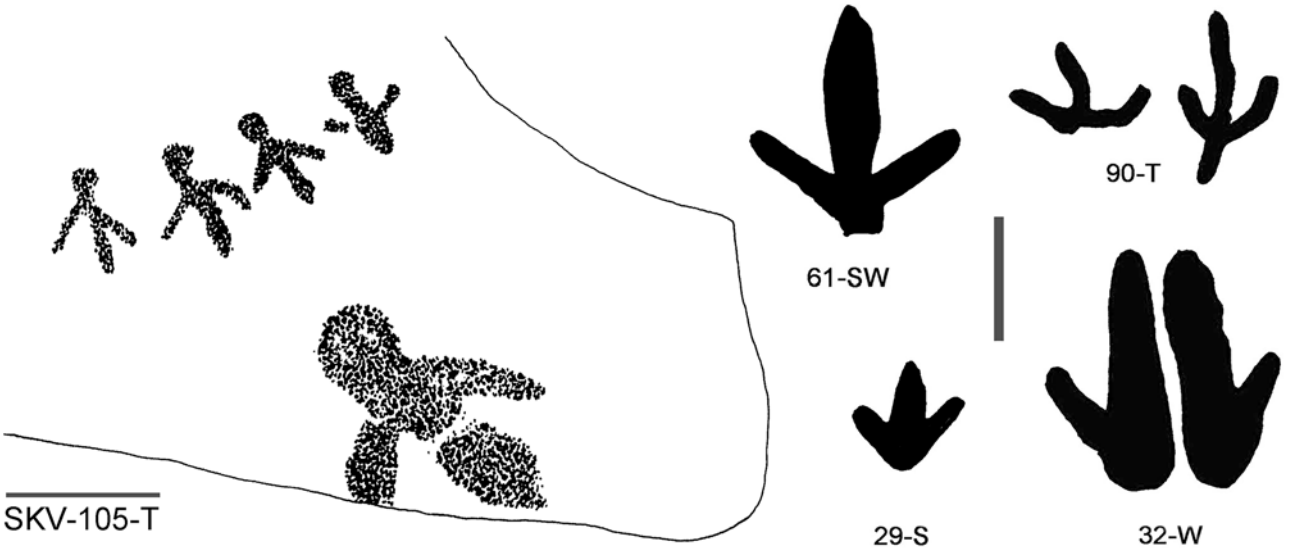


Figure 2.36. Skew Valley. Left: Prints of adult and juvenile 'Emu' (SKV-105-T). Scale 100 mm. Right: Tracks of 'birds' (SKV 29-S, -61-SW, -90-T), and of 'kangaroo' (32-W). Scale 100 mm.

Images of ‘kangaroo prints’ are not numerous at Skew Valley; only eight were recorded inside the sample area (Fig. 2.36: 32-W). Unlike the ‘prints’ of ‘birds’, they are expressed by pairs and thus reproduce the prints of the back feet of the kangaroo while it is jumping. No graphic expression of their front feet was noted. Many of smaller size (100–120 mm long; examples SKV-24-NW, -32-W {p. 122}, -53-E) represent probable tracks of wallaby or young kangaroo, whereas a pair, 180 mm long (SKV-32-W {p. 122}), probably represents an adult kangaroo. Most of these petroglyphs have lengths that are greater than the real prints.

We verified from actual prints that the total length of the back foot impressed into the ground during a ‘walk’ or a jump varies from 50–100 mm depending on the species. The front foot has five separate digits that all leave a print in the soil during slow movement. These do not press on the ground while the macropod is jumping (Lorblanchet, 1985: 63–76).

Geometric Patterns

I call ‘geometric’ those simple and schematized motifs that do not allow immediate identification as particular figures, and whose shape is close to basic geometric forms. There are two categories: (1) the basic forms—points or dots and lines, and (2) more complex forms that make closed patterns, such as circles, triangles or quadrilaterals.

Circular forms

Only one circular design, of about 100 mm in diameter, was recorded in Skew Valley. It was found on the slab numbered SKV-10-W {p. 117}. In its upper part, it has two small punctations, which makes it look like a schematic human face with two eyes. Thus, it is not clear if this motif is comparable to the simple circles or concentric, non-figurative motifs of the nearby Gum Tree Valley group.

Arc-like forms

At least two different types of motifs in the form of an arc were identified in Skew Valley, ‘simple arcs’ and ‘multiple arcs’.

There are seven isolated examples of simple arcs in the sampled area. The length of their chord (a line drawn between the tips of each arc—Fig. 2.37: lower right) varies from 100–300 mm, and the height from 100–150 mm. Some simple arc motifs (Fig. 2.37: upper), whose width is only 30–50 mm, are identical to the arcs often seen at the ‘hands’ of the ‘human’ stick figures pictured among the SKV Group. They are thus also probable representations of boomerangs.

Multiple arcs are rather common in Gum Tree Valley but not present in the sampled area of Skew Valley apart from on one slab (SKV-70-NW {p. 140}): here there are three multiple arcs of 200–250 mm in length, nesting one into the other (Fig. 2.37: upper at right).

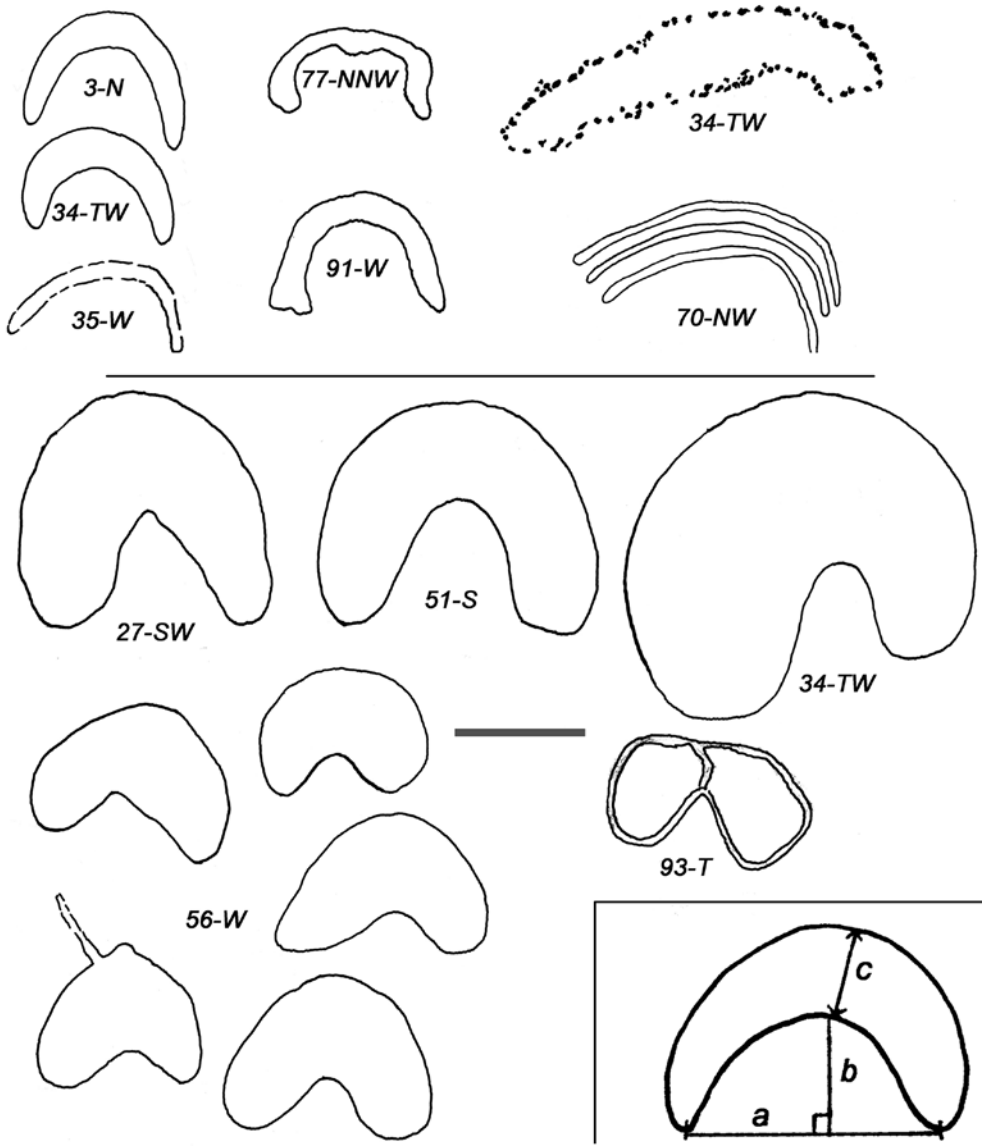


Figure 2.37. Skew Valley. Arc-like motifs: *upper:* simple arcs; *lower:* bi-lobate forms. Scale 100 mm. *Lower right:* definition of elements of the arc: *a* = chord; *b* = height; *c* = thickness of the arc.

Bi-lobate forms

There are nine examples of these bi-lobate forms (*bilobés*). While their sizes are close to those of the arcs, they are larger than the arcs described above (Fig. 2.37: lower), and their form is more massive. There is one example of five grouped bi-lobes (Slab 56), while the others are isolated. In one case, an appendage seems attached at the top of the arc (Fig. 2.37: lower left: SKV-56-W {p. 134})

Bi-lobate motifs are relatively common in the petroglyphs regions on the tropical coasts of Australia, at least from Dampier to Arnhem Land. Several authors, notably those of the monograph of the petroglyphs of Depuch Island (Ride & Neumann, 1964: 61, fig. 50) interpret them as representing 'sting-ray livers'. Bi-lobate forms are also found in the bark paintings of Arnhem Land (e.g., Berndt, 1964). Sometimes they are used as individual motifs, which are repeated and form the border of some panels as a decorative design; sometimes they are placed inside the 'X-ray figures' depicting marine fishes in a position that is anatomically correct (cf. Berndt, 1964 Panel 65: a painted bark from Yirrkala).

Drawings of fish with this sort of organ sometimes represent rays and sometimes other fish species including sharks. The livers of certain fish, especially of some rays, are considered today to be delicacies by the Aboriginal peoples of the tropical coasts. On the coral reef of the coasts of Queensland, I saw traditional owners of the Flinders Archipelago fishing for Mangrove Rays using a spear.[14]They opened the back of the fish to inspect the shape and the state of the liver to judge whether they were suitable for eating, for not all species of rays are edible. In Arnhem Land, Betty Meehan (1982) has described the way in which the Aboriginal residents of Maningrida cook ray livers in Bailer shells (*Melo amphora*).[15]

A graphic representation (Fig. 2.38) allows comparison of the morphology of the arc-like motifs (upper) and the bi-lobate forms (lower) recorded at Skew Valley. It also allows comparison with the arc-like motifs held in the hands of the 'human' stick figures at this site (Figs 2.21, 2.25), and with two of the boomerangs used until recently by the Aboriginal peoples of the region (Fig. 2.39).

The various arciform motifs are shown in different locations on this graph (Fig. 2.38): The bi-lobate forms are grouped at the bottom left because they are massive. The simple isolated arcs are in the middle, and the 'boomerangs' held by 'human figures' have a wide spread. The distribution of the last ('boomerangs') covers a part of the distribution of the arc motif because their shapes are varied. At the right of the figure are the two wooden boomerangs from the Fortescue River shelter (as an example of actual boomerangs—Fig. 2.39). Because of schematization, the carved images of boomerangs are thinner and more curved than in reality and therefore they occupy an area of the graph slightly different to that of the real boomerangs.

I draw the following conclusions:

- The simple arcs and the bi-lobate forms constitute two morphologically distinct groups. Their ranges are clearly separate one from the other;
- On the other hand, the ranges of simple arcs and arc-like shapes held in the 'hands' of 'human' stick figures partially overlap. This strengthens the idea that isolated simple arcs also symbolize boomerangs; and
- To conclude, we can say that arc-like shapes either held in the 'hand' or directly associated with 'human' stick figures also present a varied category. These 'boomerangs' are sometimes in the form of simple bent shapes (like the isolated arcs), sometimes largely open and little curved, in the shape of a crescent or even a hook (Fig. 2.22). On a Sunday outing during our stay at Dampier my son discovered these three implements in a small shelter; we photographed them and replaced them exactly where they had been (Fig. 2.39).

The petroglyphs of Skew Valley appear to reveal that the typological variety of boomerangs was once greater than the ethnological data would lead one to think (cf. Clement, 1903).

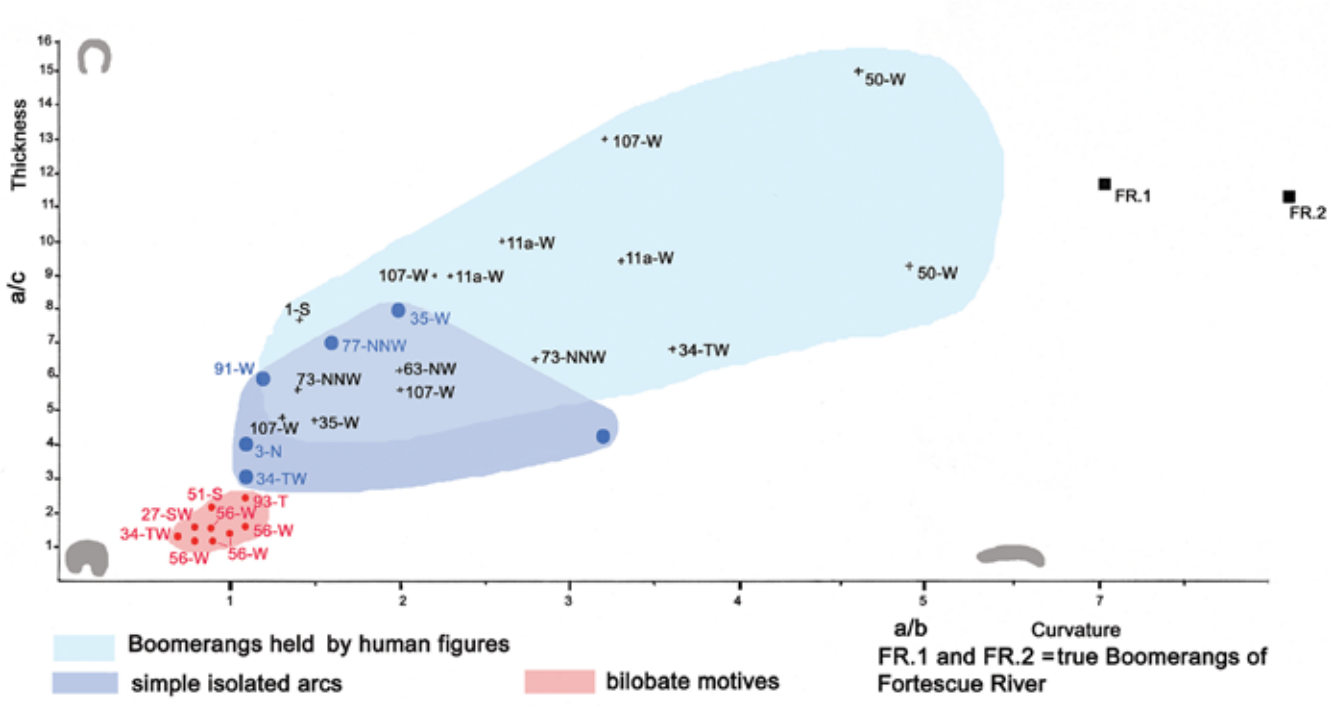


Figure 2.38. Skew Valley. Comparison of boomerang-shaped, bi-lobate and arciform motifs.

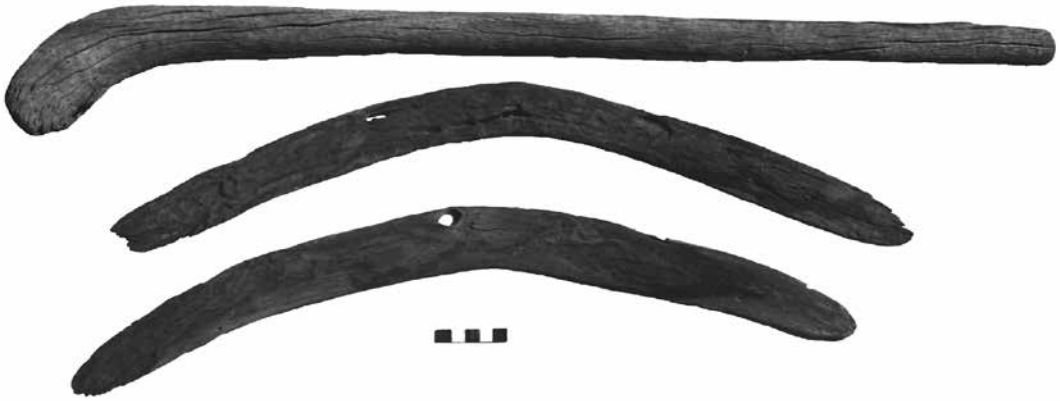


Figure 2.39. Fortescue River. Boomerangs and club observed cached in a shelter adjacent to the Fortescue River Valley about 100 km SW of Skew Valley. Scale 50 mm.

Oval forms

Five oval motifs have been identified from within the sample area (Fig. 2.40). Under this heading I have grouped motifs of various forms: SKV-34-TW {p. 123} is a simple linear oval of 100 mm in length and 70 mm in width. Motif SKV-42-Wb {p. 129} (330 mm long by 170 mm wide) bears three longitudinal bars. SKV-76-N {p. 145} (200 × 130 mm) is entirely pecked on the left half, and formed of simple lines on the right. It has a small 'stalk' or extension to its upper edge. SKV-67-NW {p. 138} and -68-NW {p. 136} could be incomplete representations of turtle carapaces. Moreover, Motif SKV-67-NW {p. 138} shows a curved lateral appendage, which could be interpreted as being an initial drawing of a fin.

The diversity and the rarity of ovals prevent us from considering them as being standardized motifs and exclusively abstract.

Triangular forms

A triangular design (SKV-35-W {p. 124}) with rounded apices is 680 mm wide. It is perhaps not a geometrical design since, as I have said, it could very well represent a Manta Ray. This design is also found in many sites of the Burrup Peninsula, including at the neighbouring Gum Tree Valley.

Linear forms

Six linear motifs have been identified from inside the sample area (Fig. 2.41). They are either slightly curved motifs, close to straight lines (SKV-34-TW {p. 123}, -35-W {p. 124}, and -70-NW {p. 140}), or very sharp curves as the feature apparently held by a 'human' stick figure (SKV-74-T+W {p. 143}), or linear motifs that close almost completely over themselves. The linear motif SKV-74-T+W {p. 143} could depict a true line—perhaps a fishing line—but I classify it as a simple 'linear motif' because it not identifiable objectively.

These mostly unstandardized motifs might not be complete; in some cases, they could be unfinished, or partially destroyed by erosion.

Other geometric forms

The lateral face of one slab (SKV-68-NW {p. 136}) shows a small pecked cross (80 mm long), which is unique. It seems very likely to be a geometrical drawing and not a footprint of a bird with wide apart toes (Fig. 2.42).

Another slab (SKV-50-W {p. 134}) shows 14 oval-shaped motifs forming a vertical axis; these do not fit within the category of ovals, given their particular morphology. They look identical to painted motifs from Cape York, near Laura that Trezise (1971: 14, 49) has interpreted as representing bark coffins in which were kept the bones of the dead, as, for example, at Quinkan Gallery site B(3).[16]

Motif (SKV-90-T {p. 153}), situated near the southern edge of the sample area, differs from the other petroglyphs of Skew Valley in its technique, its patination and its subject. It is a deep carving made of regular pecked furrows (ten mm long, and seven to eight mm deep) whose execution probably has been the result of long work, given the hardness of granophyre (Fig. 2.43). There are two 'bird prints' at right top, and, in the centre, a group of long curved horizontal lines associated with small vertical lines. Other lines come to join with the central drawing in its lower part. This petroglyph, which is so patinated that there is today no contrast between the motif and its supporting rock, is probably the most ancient representation in Skew Valley; all the carved lines, deeply patinated, are of the same brown colour as the surrounding rocks.

We have noted exactly the same type of carving on one of the rocks of Happy Valley, about 3 km to the east of Skew Valley. It also seems to be a motif made up of deep horizontal furrows and small vertical lines all deeply patinated (Fig. 2.44). These two original petroglyphs certainly belong to a very ancient period. It is possible that the same carver made both.

Outside the sample area, on the hillcrest separating the shell midden and the gorge that contains large pools of potable water, we noted a representation of round fruits hanging from a horizontal branch (Fig. 2.42: SKV-103-T {p. 157}). Representations of fruits also exist at the entrance of Gum Tree Valley. They have been reported also from many Pilbara sites by Wright (1968, e.g., figs 311, 680, 815).

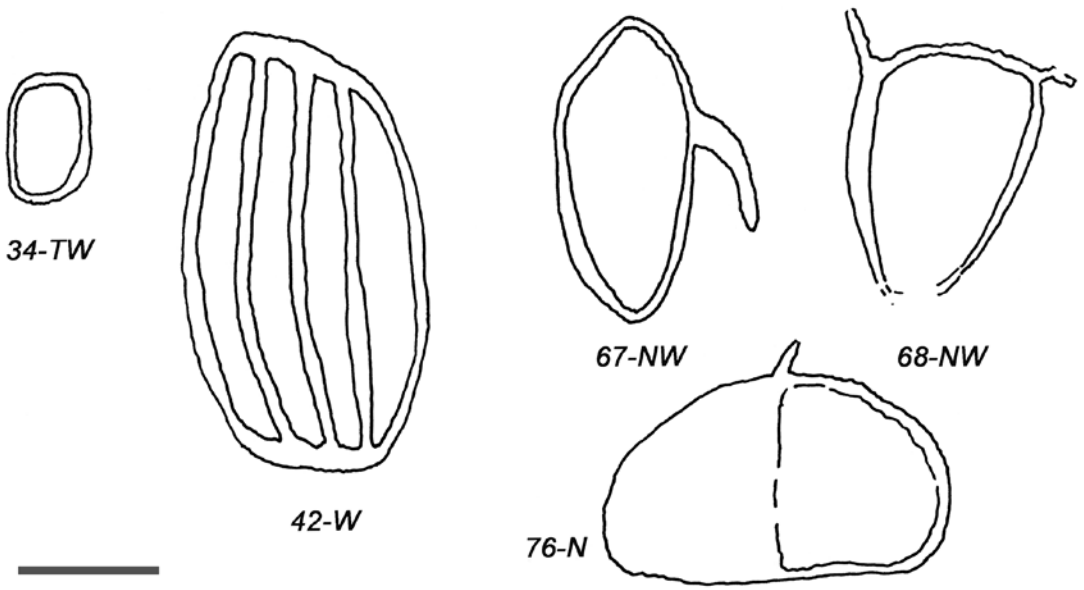


Figure 2.40. Skew Valley. Oval geometric motifs. Scale 100 mm.

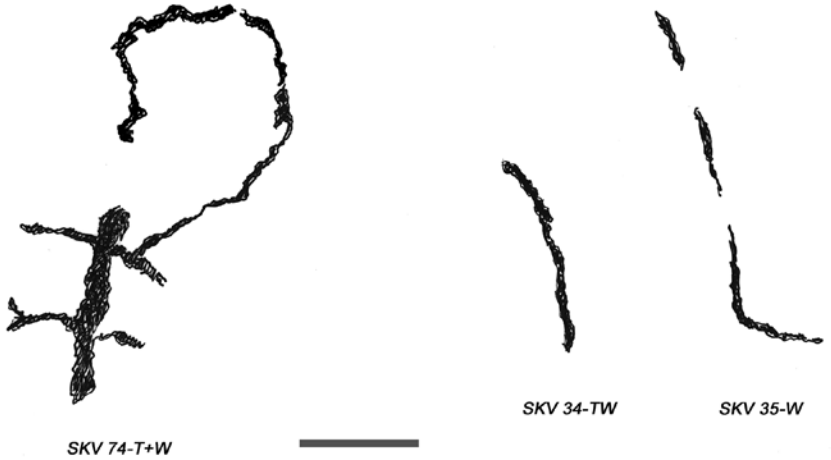


Figure 2.41. Skew Valley. Linear geometric motifs. Scale 100 mm.

Figure 2.42. Skew Valley. Other geometric motifs. Scale 100 mm.

Figure 2.43. SKV-90-T. Deeply patinated motif. Scale 50 mm.

Figure 2.44. Happy Valley. Deeply patinated motif of same style and technique as SKV-90-T located in a valley 3 km E of Skew Valley. Scale 250 mm.

Skew Valley Motifs: General Conclusions

Ratios of Various Motifs: Predominance of 'Human' Figures

A total of 328 motifs has been identified in the approximately 7 × 21 m sample area that we studied and in the shell midden that we excavated in Skew Valley (Table 2.7 [B-1], Fig. 2.45). Despite the fact that almost a quarter of them we categorized as 'indeterminable' because of their poor preservation, it is notable that almost 30% of them (and even almost 40% if we exclude the 'indeterminable' category from the total) are 'human' figures. (This is a strong contrast with the European Palaeolithic rock art where the 'human' depictions are always fewer than 5%—Lorblanchet, 1995, 2010.) Moreover, the Skew Valley human representations are usually images of complete individuals frequently bearing weapons and tools, providing some indication of their way of life.

Depictions of animals are three or four times less numerous than humans; they are mainly images of birds and kangaroo. There is also a difference in representation of the animals depicted in the Skew Valley rock art and the animals hunted by the shell-fish gatherers of Skew Valley (above). 'Animal tracks' (turtle, kangaroo and bird) are very common (about 12–15%), whereas 'human prints' are few. Geometric motifs (10–12%) are almost as numerous as the 'animal prints'; the most remarkable ones are the arcs (perhaps representing boomerangs) and the bi-lobate motifs. These data are summarized in Fig. 2.45.

Distributions and Associations of the Various Motifs

Some simple observations can be made on the associations among similar motifs:

1 'Human' stick figures of Type A (Fig. 2.21) are sometimes seen grouped together, mainly in rows as if they were dancers (for example, SKV-41-NNE {p. 126}). More complex 'human' motifs of Type B are never seen in groups; they are isolated or in association with other drawings;
2 'Bird prints' are in pairs or by groups of up to eight, whereas 'kangaroo prints' are found only as pairs (Fig. 2.36); and
3 'Turtle tracks' appear isolated or in groups of two to five units that are sometimes associated with representations of 'turtle' or 'turtle eggs' (Fig. 2.34).

The areal distribution charts (Fig. 2.46) of various motifs inside the sampled area allow only a few observations because they are based upon a small number of motifs:

1 'Human' stick figures (Fig. 2.46) are concentrated in the centre, which corresponds to the concentration of petroglyphs in the central part of the sample area;
2 The arc-like and bi-lobate motifs (Fig. 2.46-2 and -3) sit in the centre and the northern part of the sampled area;
3 The 'kangaroo' motifs Fig. 2.46-4) occupy the centre and the southern part. 'Animal footprints' (small dots) are grouped in the centre and are separated from the two representations of the whole animal (bigger dots), which occupy a marginal position to the south;
4 'Bird' motifs (Fig. 2.46-5) are scattered over the whole surface, while representations of the whole turtle or of their tracks are assembled in the centre (Fig. 2.46-6). Unlike the 'kangaroo', the 'turtle' and their 'tracks' are close together; and
5 'Fish' motifs (Fig. 2.46-7) are distributed over the centre and the south.

All the motifs meet in the centre except the 'kangaroo', which appear in the south. On the other hand, some subjects such as the 'turtle' (whole or 'tracks') have an exclusively central distribution.

The association of certain 'human' representations and those of the 'turtle' could thus be significant but we do not have sample sizes sufficient to be certain. Nonetheless, this study method may be more conclusive in its application at other Groups in the area where the sample sizes are larger.

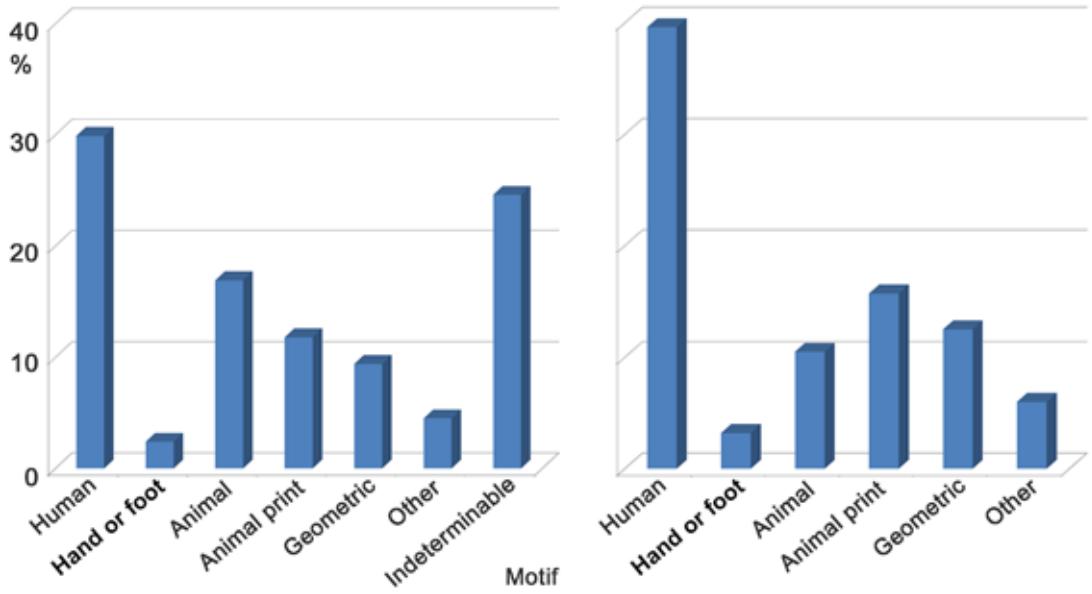


Figure 2.45. Skew Valley. Proportions of carved motifs according to interpretation of depiction or category (both in percentages).

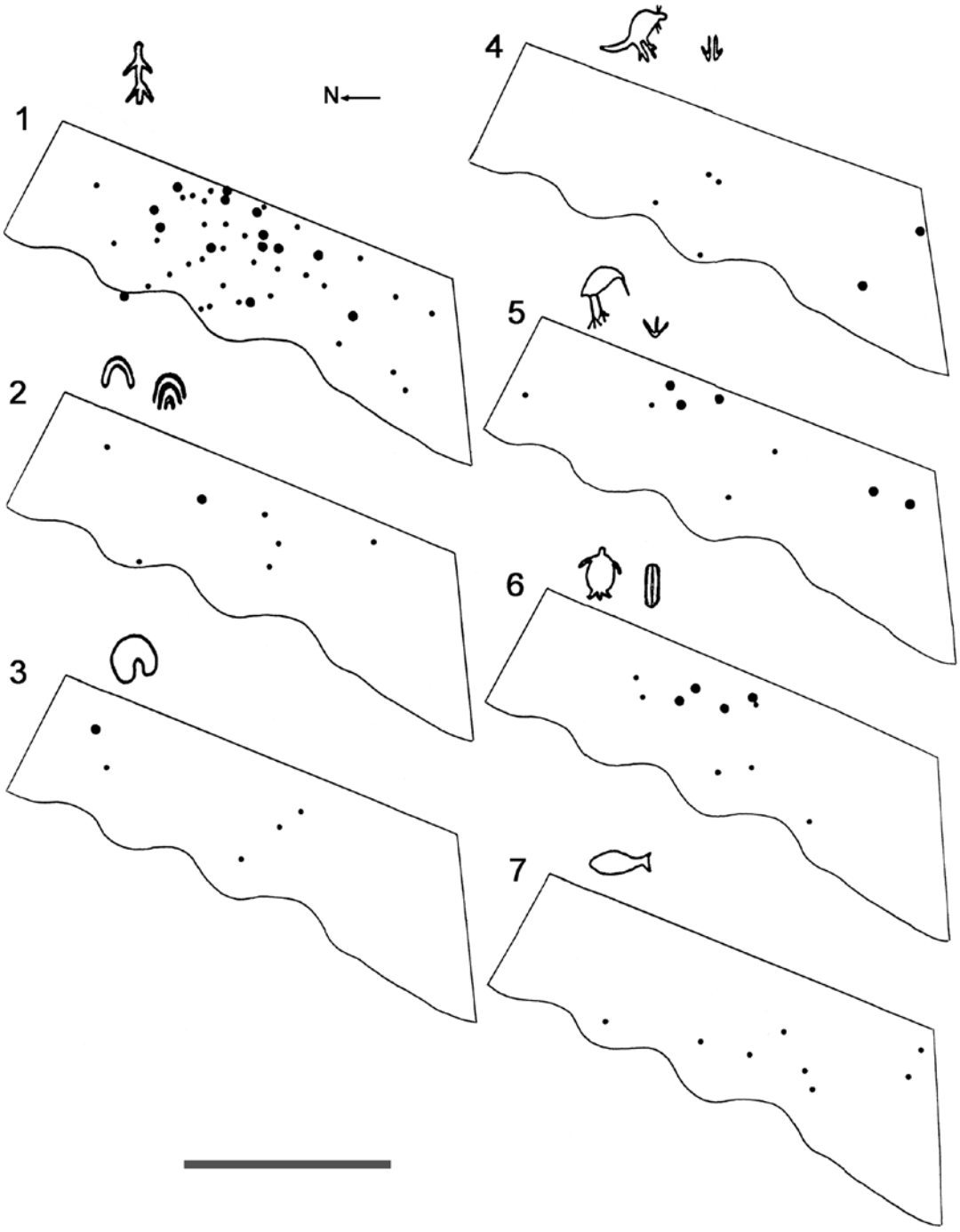


Figure 2.46. Skew Valley. Distributional charts of (1) 'human' stick figures, (2) arcs, (3) bi-lobate motifs, (4) 'kangaroo', (5) 'bird', (6) 'turtle', (7) 'fish'. Scale 5 m.

Blocks Supporting the Skew Valley Petroglyphs

The Rock Support

'Rock support' is a convenient term for the block surface on which a petroglyph has been carved; equivalent to the geological 'host rock'. The geology determines the qualities of this rock support. The rock support for the Skew Valley petroglyphs is formed from granophyre blocks (in Gum Tree Valley it is gabbro). Both are magmatic rocks with different features; the former is harder and finer-grained. Each offers different and distinct qualities for carving and for tool manufacture (Chapter 1: *The Dampier Archipelago*, and Chapter 2, Part II).

Dimensions

The granophyre blocks forming the rock support of Skew Valley petroglyphs have sharper, angular forms, and are smaller in size than the gabbro slabs of Gum Tree Valley. Moreover, they are more resistant to weathering, and fracture conchoidally. These characteristics have had an influence on the petroglyphs. Consequently, the dimensions of the support blocks have directly affected those of the motifs, as is shown in Table 2.11.

For the two sampled areas of Skew Valley (granophyre) and the summit of Gum Tree Valley (gabbro), we have calculated both the mean maximum length of all the blocks (carved or not), then those of the carved blocks. The mean lengths of the motifs have also been calculated in the two regions. This simple table allows us to draw two important conclusions:

1 At both sites, the petroglyph makers have made a choice of blocks for carving. They chose to carve on larger slabs because, at both sites and for both rock types, the mean length of the carved slabs is greater than the mean length of all the slabs available (that is, whether or not they are carved); and
2 The motifs of Skew Valley are smaller (mean length 287 mm) than those of the Top of Gum Tree Valley (490 mm), and it is likely that the size of the slabs on the slopes of the two valleys determined, at least in part, the size of the motifs in each. It is interesting to note that, in both cases, the motifs occupy, on average (mean), only one third of the length of their support. On the other hand, some of the larger motifs tend to occupy the entire available surface. Examples of those 'framing a total surface' in Skew Valley are, for instance, the 'fishes' of slab (SKV-35 {p. 124}), which, with lengths of 1300 and 1250 mm, are the biggest motifs of the area, as well as the 'Emu' (SKV-87-W {p. 150}) that measures 1200 mm on a slab of 1350 mm long.

The smaller 'human' stick figures often appear on surfaces that seem much too big for them. Motif SKV-46-W {p. 132} is an exception; it is one of the biggest 'human' stick figures (480 mm) and one of the most complex, extending from one end to the other of the available surface.

Shapes

In most cases, motifs do not occupy the entire surface of the rock, apparently regardless of the shape of the support. This is why, for example, 'spears' planted in the 'bodies' of a 'kangaroo' (SKV-88-S {p. 151}) and of a 'fish' (SKV-89-W {p. 152}) extend across the horizontal faces that bear the petroglyphs, then touch each other at a right angle to continue on the lateral face of the slab. This is common in the rock-art of Dampier.

In other cases, I have observed a perfect match between the support and the motif: some carvings of elongated motifs were placed on long, narrow slabs. Examples are those of the large 'Emu' (SKV-87-W {p. 150}) and a 'human' stick figure (SKV-62-SW {p. 132}). The position of a 'bird' (SKV-81-W {p. 148}) and the curves of its 'back' have been determined by the shape of the small slab on which it was carved. This is the same for an image of a 'kangaroo' (SKV-48-W {p. 133}).

Sometimes, on a large panel, cracks in the slab have forced the division of the petroglyphs into many parts. Motifs SKV-42-W {p. 130} and -74-W {p. 143} are examples.

Orientation

Inside the sample area, the orientations of the carved surfaces have been mapped (Fig. 2.47). Twenty-seven percent of carved panels are located on the upper parts of more-or-less horizontal slabs. All the others are vertical or inclined panels. The orientation of 55% of the petroglyphs ranges from the north to the west (that is facing down or into the valley); 8% are turned towards the south (facing up the valley) and only 10% of the total are facing east (away from the valley and the midden).

The great majority of petroglyphs are placed on the most visible surfaces, and they are oriented along the direction of the slope towards the shellfish mound, and towards the bottom of the valley; that is, toward the areas most often visited by humans.

The petroglyphs are not hidden in the cracks or on the backs of slabs; on the contrary, they are open to all those who want to see, and the carvers have chosen the block surfaces with this intention. *The chosen orientation confirms the association between the images and the habitat that has already been suggested by the increase in the density of motifs near the shellfish mound*.

Given the limited samples, it is difficult to know if the motifs have a preferential status. Of the ten 'fish' images identified, three are placed on tops of slabs and the others on sloping surfaces in such a way that in all cases the motif can be admired from the top. Conversely, only 17% of the 'human' stick figures are on horizontal surfaces while 83% are on vertical slopes or those strongly inclined. One can ask if the carvers deliberately have chosen those sub-horizontal

Table 2.11. Dimensions of carved slabs: Comparison of SKV and GTVT.

	extent of samples	mean maximum length of rocks	mean length of carved rocks	mean length of motifs	L motif × 100 / L support (%)
SKV (granophyre)	110 blocks	670	875	287	33
GTVT (gabbro)	370 blocks	1030	1440	490	34
SKV = Skew Valley, GTVT = Gum Tree Valley Top					

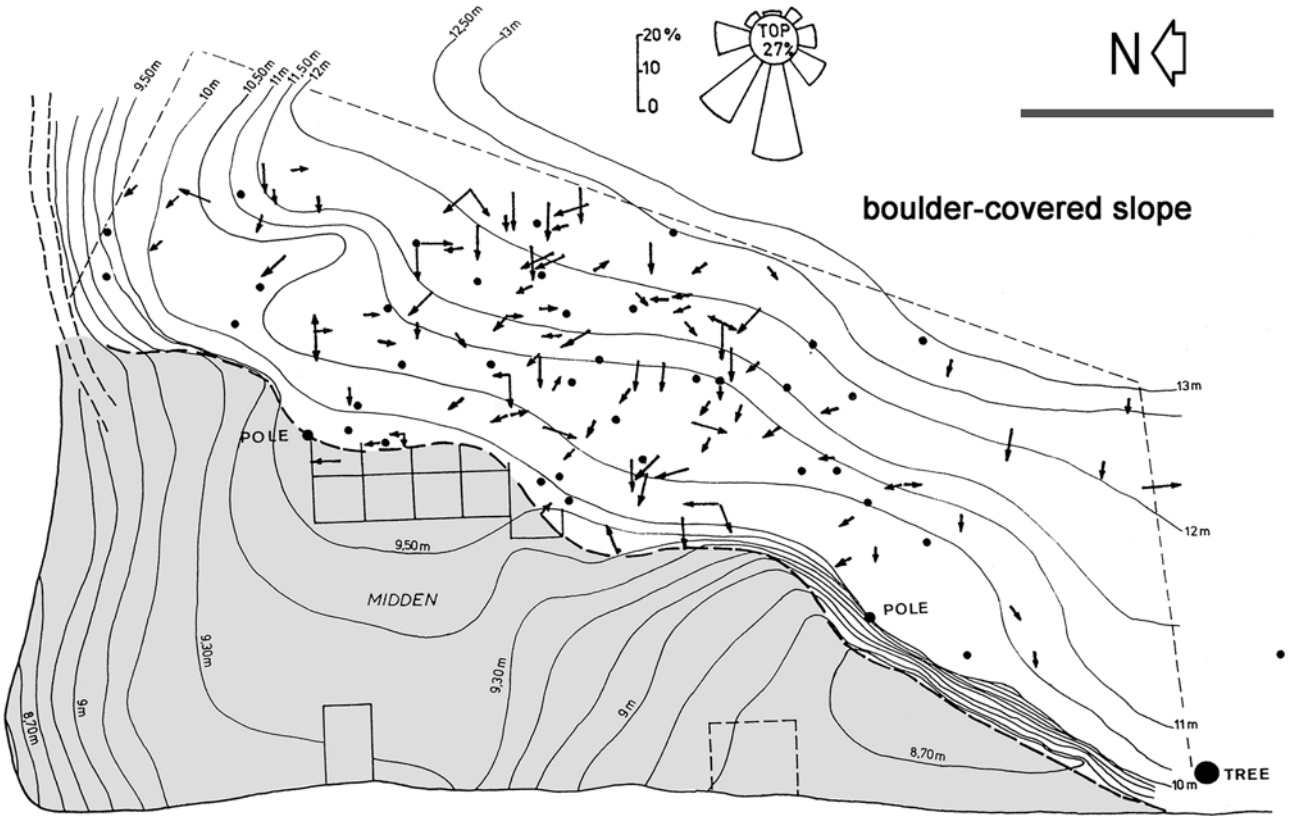


Figure 2.47. Skew Valley. Orientation of petroglyphs, with directional chart of orientations. Scale 5 m.

surfaces for the motifs of which we usually have a vertical view (as with 'fish'), and sub-vertical surfaces for designs that usually appear on lateral view.[17]

It is the same with 'prints'. The percentage of motifs on sub-horizontal surfaces seems to be higher than the mean; it is between 40 and 50%. In one case only, I found 'kangaroo prints' on one of the sub-vertical sides.

Skew Valley Carving Techniques

Description of the Techniques Used

The Aboriginal peoples of Dampier used a range of very different techniques of carving: pecking, hammering, scraping, fine incision and grooving, which they adapted to the petrographic characteristics of the available rocks. The choice of the carving process is more of a technical nature than a cultural choice.[18]

Processes of erosion have resulted in selective long-term preservation of specific carving techniques. Some shallow carving techniques did not allow motifs to be conserved for long. Some simple natural conservation phenomena thus can make one think, erroneously, that carving techniques have become diversified over time.

The rocks of Skew Valley that bear petroglyphs are slabs of fine-grained granophyre, very resistant and thus difficult to carve, and covered with a thin alteration (weathered) crust. By destroying this crust, even superficially, we immediately obtain a contrasting colour. On such a surface, deep carving was difficult and required long hours of work: it is therefore not surprising that deep carving is unusual in Skew Valley. Most of the motifs are carved very superficially.

It is not surprising also that many of the motifs appear to be relatively 'fresh', because the most ancient ones, being superficial were probably rapidly patinated and disappeared from view. Nonetheless, the motifs that survived and can be studied today show techniques that, for the most part, are simple variations of a basically single process: a light pecking, sometimes linear, sometimes filling the whole surface of the design.

Table 2.12 provides the percentage of different types of carvings at Skew Valley after an analysis of all the motifs in the sample area.

Table 2.12. Skew Valley. Proportions of carving techniques used.

	technique	number	%
1	linear pecking	181	55.0
	infill or areal pecking (intaglio)	114	35.0
	pecking in elongated 'points' (close to incision)	31	9.5
2	deep grooving	2	0.5
totals		328	100.0

Deep Pecking—Linear

Linear pecking is formed by bands of small dots joined together (and often still visible). The average width of these bands varies between 5 and 20 mm, and the punctations of which they are formed are of a diameter of about 2–4 mm. These punctations are irregular. They are made by destroying small crust surfaces by percussion with a pick with a rounded head rather than with a sharp point, which would have left deeper and more definite traces.

Since these marks are small, often individual, punctations, it is clear the technique used is pecking, not hammering. The pecking technique—made with a pick-like tool—produces deep, discrete punctures; the hammering technique results in destruction of the superficial crust from repeated use of a larger, rounded hammer-stone.

Different kinds of tools were used by the carvers: small blocks, cores, picks and mortars, such as those found during the excavation of the shellfish mound or between the carved blocks; these tools bear blunted edges or small use-wear surfaces.

Linear pecking has been used for tracing the outlines of the motifs, for example, certain 'turtle', or for schematic designs composed solely of lines, as with the 'human' stick figures. I observed only one case where linear pecking was done by a series of big separate punctations (to form an arc-like shape on Block SKV-34-TW {p. 123}). This gross pecking, common in Gum Tree Valley where it is certainly very ancient, is thus very unusual in Skew Valley.

Deep Pecking—Infill (Intaglio)

Areal or infill pecking (*le piquetage en nappe*; also 'full pecking', 'fully-pecked' and 'pecked intaglio'—McCarthy, 1967) was used for filling-in some motifs such as the bodies of 'birds' or 'turtle' or some arc-like shapes. The hardness of the rock influenced the technique and probably explains the preponderance of linear pecking. But motif dimension has also played a part. At Skew Valley, the motifs are small and on smaller motifs, infill pecking is more possible despite the hardness of the rock.

For larger motifs, linear pecking, quicker and easier, was preferred; an example is the big 'fish' (SKV-35-W {p. 124}). Other large motifs, such as the 'Emu' (SKV-87-W {p. 150}) and the 'kangaroo' (SKV-88-S {p. 151} and -100-NW {p. 155}) are in fact completely pecked, but in these instances only some parts, especially 'head', 'neck' and 'tail' were covered with a dense and close-knit pecking while the rest of the motif was made by a less dense pecking with separate punctations.

It is evident that linear pecking and infill pecking are contemporaneous procedures, and that both were used by the one carver. On the same motif, the extremities were made using linear pecking, while the 'body' of the subject was completely pecked; for example, the 'hands' (SKV-36-T {p. 125}) have 'palms' that are completely pecked but 'fingers' that are formed from linear pecking. The 'body' of a 'human' figure (SKV-46-W {p. 132}) shows infill pecking while its 'headdress' is shown in linear pecking.

Two 'kangaroo' motifs (SKV-48-W {p. 133} and -100-NW {p. 155}) were first outlined in linear pecking then the silhouettes were completely in-filled. These two processes were thus sometimes only stages in the execution of some motifs.

Deep Pecking—Elongated

Elongated pecking (*le piquetage en points allonges*) is much rarer than the preceding processes. It was probably obtained by *oblique* percussion. The change from normal pecking (forming approximately round punctations—vertical percussion) to elongated pecking and incision has been progressive: It is primarily due to the angle of percussion.

The punctations are sometimes simple elongated points stretching a few mm in length. Sometimes they are more than 10 or 20 mm in length and, since they might be repeated many times, they might form nearly continuous incisions (Figs 2.48, 2.49). This technique—intermediate between pecking and

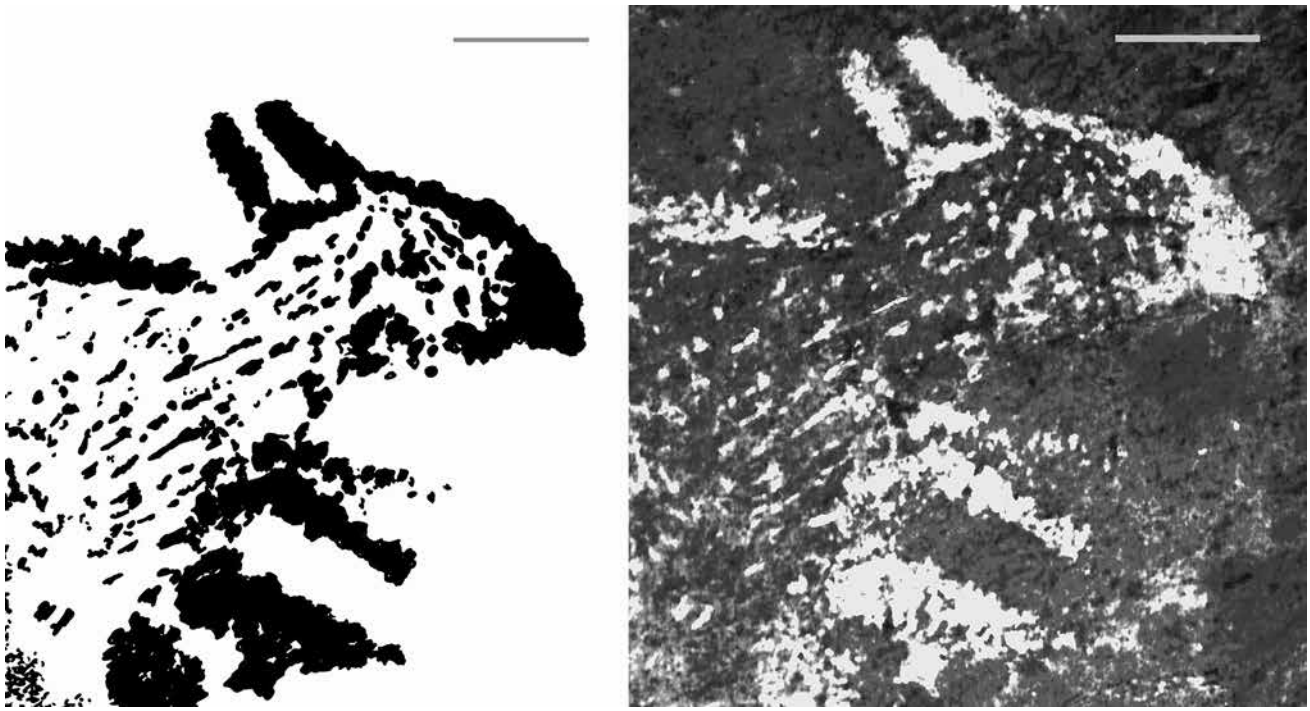


Figure 2.48. SKV-88-S Example of elongated pecking. Detail of 'kangaroo' head with elongated pecking (oblique percussion) of the infilling of the 'head', 'neck' and 'chest' of the 'kangaroo'. Scales: 50 mm. Left: detail of the recording of the panel. Right: photograph.

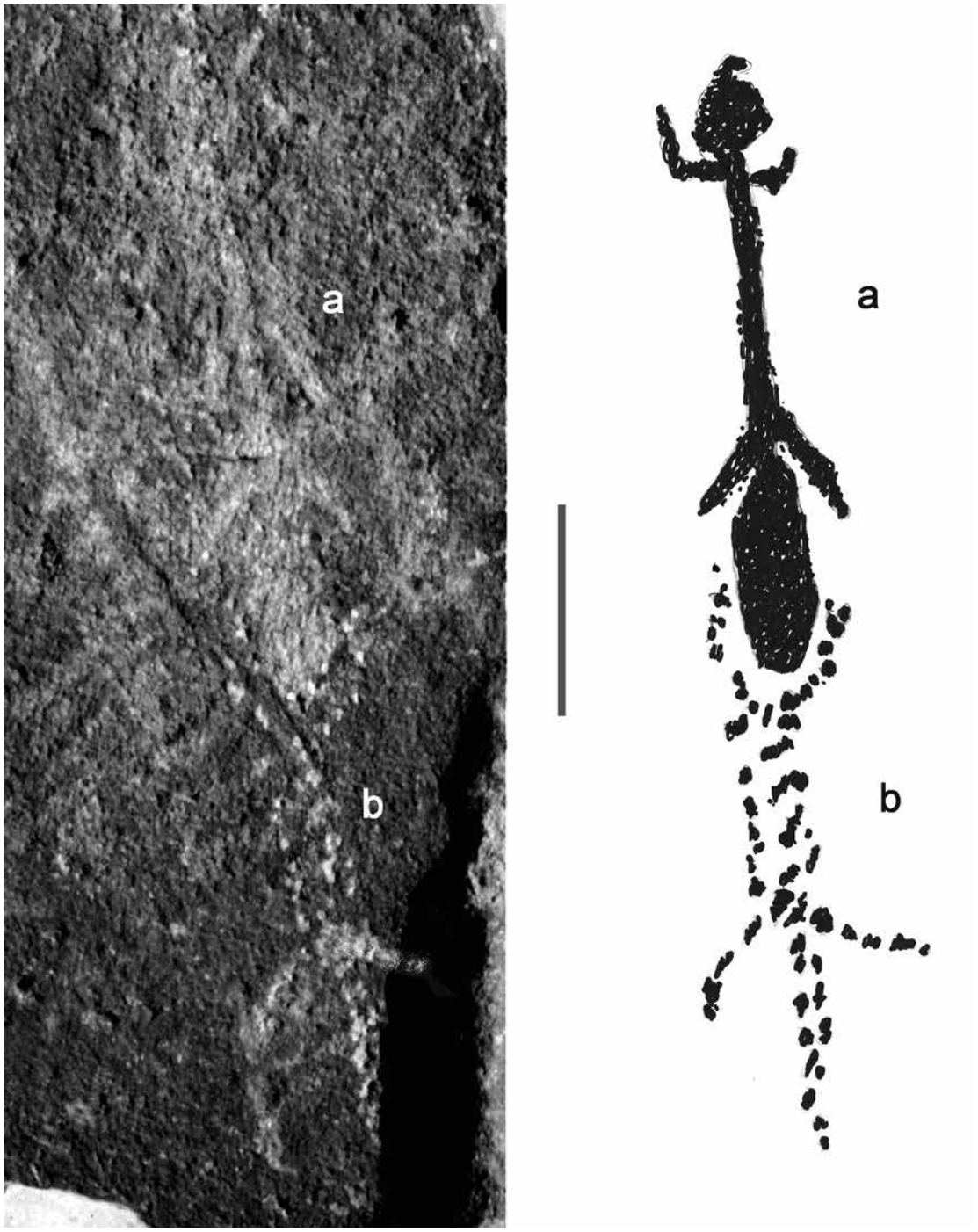


Figure 2.49. SKV-18a-NE (detail). A patinated old hammered 'human' stick figure with oval large 'penis' (a) has been completed and transformed into a possible depiction of sexual intercourse by adding a new stick figure freshly pecked (b). It is similar to several figures in the area, for example, SKV-107-W (Fig. 2.23 and Appendix). Scale 100 mm. Left: photograph. Right: detail of the recording of the panel.

incision—is so different from the traditional pecking that it may be considered as the signature of a unique craftsman. The uniform state of the patination reinforces this impression.

In the whole of the sampled area (about 150 m^2), about ten blocks show this type of carving (SKV-1-W {p. 115}, -11b-TM {p. 118}, -41-NNE {p. 126}, -43-T {p. 131}, -44-T {p. 131}, -61-SW {p. 136}, -65-T {p. 137}, -87-W {p. 150}, -88-S {p. 151}, and -100-NW {p. 155}). They are grouped in the southern part and, in a second instance, in the central part of the sample area. They are often close to one another; two groups of three slabs in the southern part of the sample show that the carver using this technique did not try to spread his works over a vast space but that he simply used neighbouring rocks. The subjects dealt with by this carver are

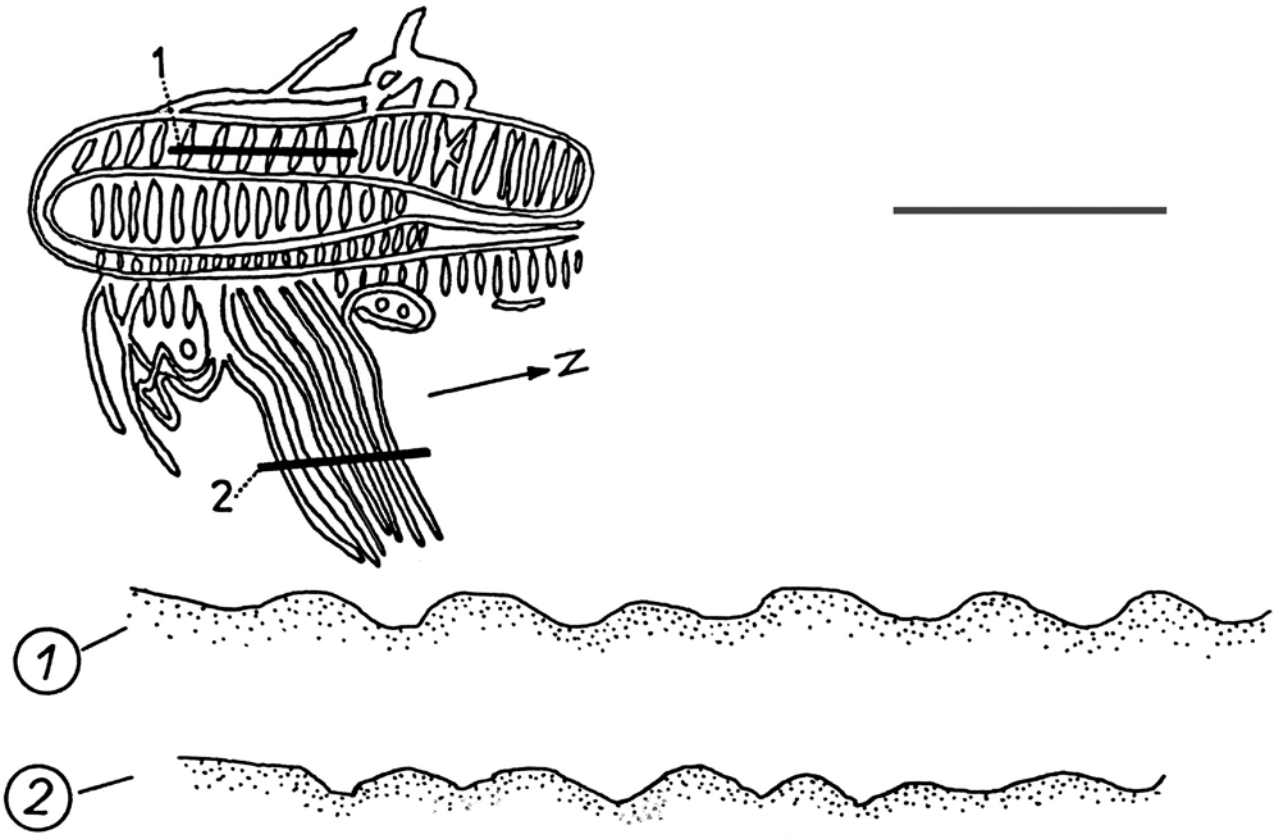


Figure 2.50. Skew Valley. Motif SKV-90-T (upper): cross-sections (1, 2) of the carved lines delineated (lower) with the aid of a contour gauge. Scale 30 mm.

varied; 'human' stick figures (SKV-1-W {p. 115}, -41-NNE {p. 126}, -65-T {p. 137} and -87-W {p. 150}) 'kangaroo' (SKV-88-S {p. 151}, -100-NW {p. 155}), an outline of a 'turtle' (SKV-68 {p. 136}), examples of 'fishes' (SKV-43-T {p. 131}, -44-T {p. 131}, -100-NW {p. 155}), 'turtle tracks' (SKV-11b-TM {p. 118}), and an 'Emu print' (SKV-61-SW {p. 136})—a total of about 20 designs.

Other Techniques—Grooving

Grooving (*rainurage*) is deep carving obtained by intensive linear pecking followed by a to-and-fro sawing to make the hollow regular. The result is large grooves averaging 10–15 mm with a depth of three to six mm. I used a contour gauge to study the cross-sections of several carved lines on one motif (SKV-90-T {p. 153}) (Fig. 2.50).[19]

There is a rare example of this technique in Skew Valley (SKV-90-T {p. 153}). As described earlier, it has been compared to a Happy Valley motif (Fig. 2.44). Its state of preservation seems to indicate that it is probably one of the oldest motifs in Skew Valley. SKV-79-SE {p. 147} shows another very unusual grooving and re-grooving.

Techniques and Themes

The 'fish' motifs have all been made using linear pecking. By comparison, techniques used for other designs are very varied: they are, equally, linear or infill-pecking techniques.

Superimposition

Thirty-eight percent of the Skew Valley carved surfaces bear only one isolated motif. Most of the remainder (47.5%) had several juxtaposed motifs. Cases of superimposition represent 14.5% of the carved surfaces. The instances recorded are:

1 On one slab (SKV-10-W {p. 117}), a linear 'snake' is superimposed onto a faded, entirely pecked motif that seems to represent a bird;

2 One group of motifs (SKV-11b-TM {p. 118}) shows 'human' stick figures and 'turtle prints' in elongated pecking superimposed onto diffused pecked surfaces;

3 On one slab (SKV-25-NW {p. 121}), linear motifs cover a completely pecked and patinated 'human' stick figure;

4 On panel SK-27-W {p. 122}, a fully pecked arc is superimposed upon a 'human' stick figure; whereas on another slab (SKV-34-TW {p. 123}) the reverse is observed: the human stick figure is superimposed upon a fully pecked and faint arc;

5 An unidentified, completely pecked motif has been partly destroyed by superimposition of a row of 'dancers' (SKV-41-NNE {p. 126});

6 A big 'kangaroo' has been superimposed upon a 'man' holding a big 'instrument' (Slab SKV-48-W {p. 133});

7 On another panel (SKV-50-W {p. 134}), a 'man' holding 'boomerangs' covers a series of darker, less visible (and thus older) vertical oval motifs. This series of oval motifs is in fact not homogenous because four ovals of a fresher appearance cover other ovals that look more faded;

8 A small 'human' stick figure and a 'fish' have been drawn within the 'body' of an older 'Emu' (SKV-87-W {p. 150}); and

9 A small 'man' with a 'spear' partially covers a 'hand' motif (SKV-92-T {p. 152}).

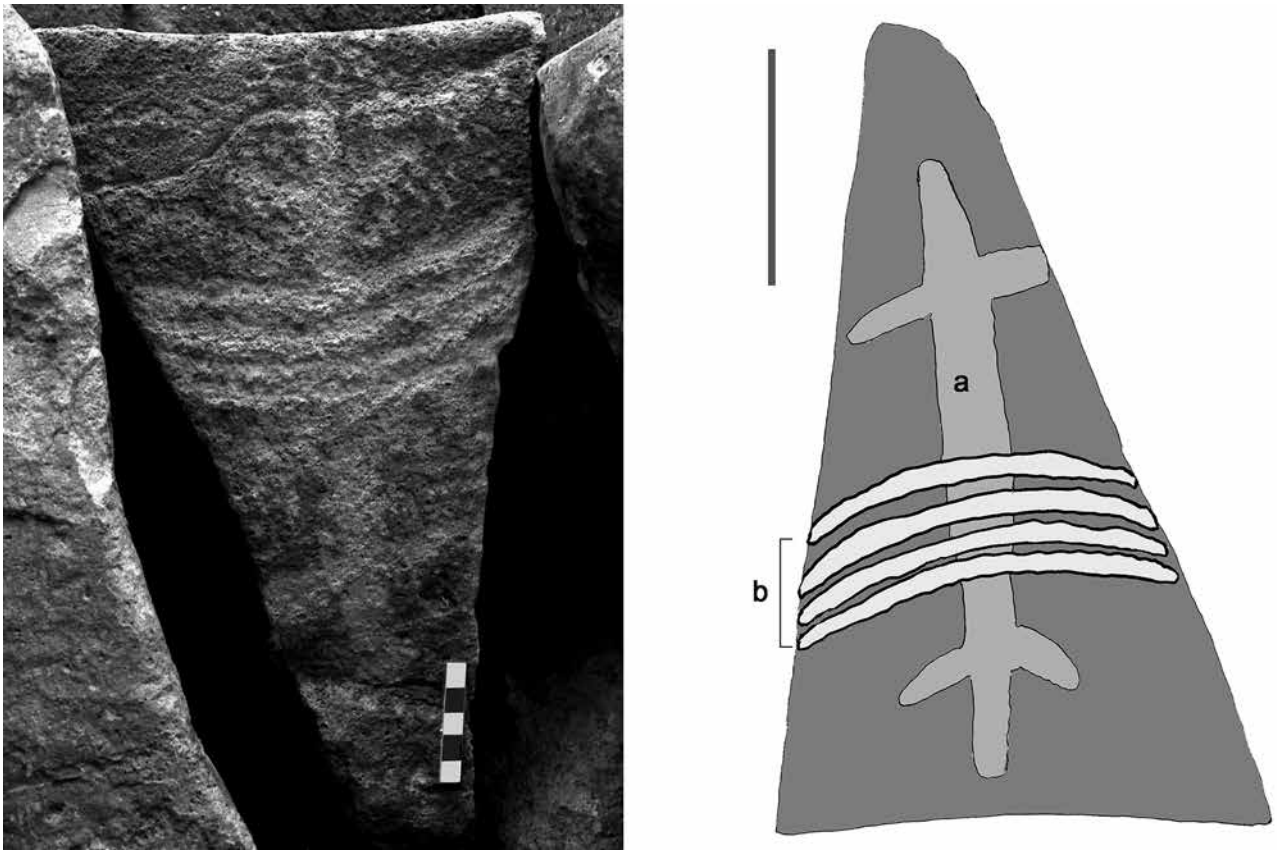


Figure 2.51. SKV-79-SE. 'Human' stick figure with arcs at the 'waist', a common type in the Dampier area. This figure has been re-marked: two different carving techniques and two different states of patination are visible. a: Hammering of the stick figure (patinated); b: grooving of the arcs (fresh) probably has been done several times. Left: photograph of block in actual position. Scale 50 mm. Right: Illustration of motif in corrected orientation. Scale 100 mm.

The sequence of these superimpositions can be identified because the techniques and the patinations are different. On the other hand, when the superimpositions involve motifs of identical techniques and patinations, the order of succession of the motifs cannot be determined. One panel (SKV-35-W {p. 124}) presents an inextricable mixture of linear motifs. In the end, the superimpositions of Skew Valley reveal, above all, continuing use over time of the same motifs and the same techniques.

Re-marking (renovation)

Re-marking (e.g., Watchman, 1992; Sale, 1995) or 'retouch' (*les rénovations*), the re-use (*le réemploi*) of pre-existing motifs is extraordinarily rare in Skew Valley. Motif (SKV-18a-NE {p. 120}) provides one case of re-marking.[20] I have shown earlier (Fig. 2.50) how, on this panel, an older central 'male' stick figure with an oval 'penis' has been transformed subsequently into a 'mating scene'—reflecting a traditional theme of Pilbara petroglyphs. SKV-79-SE {p. 147} is another example of retouch of a pre-existing motif. This example of re-marking—a practice more common in Gum Tree Valley—reveals that the older designs retained an importance in the eyes of successive generations of carvers over the long periods that allowed development of carving techniques and patinae (Fig. 2.51).

Patination observed at Skew Valley

Study methods

During the Skew Valley field study, different states of patination were noted on the cards describing the petroglyphs. Three categories of states were established: 'heavily patinated', 'patinated' and 'fresh'. Subsequently, I elaborated a more objective method to measure the contrast between the motif and the rock surface with the help of a Mastersix cell built by Gossen.[21]

Gossen Mastersix cell

This universal photometric measuring instrument was used to measure surface contrasts in the following way:

1 All petroglyphs were photographed at the same time of the day, in the same lighting conditions, vertically above the slab, and with the same slide (transparency) film. At each shot, a grey Kodak chart was placed alongside the motif so that its image occupied the bottom part of each slide. Films were developed by the same laboratory. The slides were then projected onto a frosted-glass screen;
2 Use of the Mastersix meter, equipped with its accessory Profi-flex, allowed readings of the density of the colour of the projected image at any point on the image. Each measurement was made on precise points of the image (punctual measure). The aim of such measurement was to obtain numerical values, then to compare these to obtain an objective measure of the contrast between the

rock surface and the carving. The Kodak chart was used as a reference, allowing comparisons between the readings made from all of the slides. Densities were read for about ten points on each motif and for another ten points on the rock support in the immediate proximity of those measurements taken for the motif; and

3 The contrast, that is the degree of sharpness with which the motif stands out from its support, is expressed by the difference between the density of the motif and the density of its adjacent rock surface.

While this new method could be improved, it has already given an interesting series of contrast values that allowed comparison the different states of preservation, not only of the Skew Valley petroglyphs, but also of the great majority of the petroglyphs of Dampier that we studied. It also allowed study of the re-marking of petroglyphs since the gap in the contrasts between two successive states of a carving can be expressed by a number.

Before discussing the results, it is worth reporting some difficulties encountered during these operations so as to indicate in which direction improvements may be made.

Illumination

The pecked carvings were more visible under oblique lighting—that is, the early morning and the late afternoon light—because the shadows then emphasize the depression of the carved surface. Because density measurements can be biased by shadows, we made measurements only on well-illuminated surfaces. The complete elimination of the shadows can be achieved by photographing motifs at midday when the sun is in its zenith (and when, unfortunately, the motifs tend to disappear) or with a flash orientated perpendicular to the rock, or by photographing them in complete shade.

The impediment of partial shadow is mostly important for motifs made with the linear pecking technique because each point of the pecking is partly invaded by the shadow, which reduces the proportion of illuminated surface that can be used in the measurement. Total shade is better for surfaces that are hammered or pecked superficially. At any rate, uniform lighting conditions are desirable if not completely necessary; the use of the Kodak chart permits corrections to be made.

Heterogeneous character of the rock

The rock substrate rarely shows homogeneous coloration. The colour of the gabbro, which is a very rough-grained rock, is much more variable than that of the granophyre. The superficial patina of the gabbro is uneven with all sorts of stains due to differential oxidation and even sometimes to the presence of algae. The density readings obtained were variable. It was thus necessary to increase the number of measurements and use average values. In some cases, the point measurements could be replaced by a measure of a larger surface. Use of macro-photography was not suitable for reading density measurements. Photographs were usually taken from a distance of one to several metres to neutralise, where possible, micro-variations of the natural colours of the rock.

Results of the patination study

Histograms of density measurements carried out on the petroglyphs of Skew Valley reveal a heterogeneous population because they show two principal central peaks and two small lateral spikes (Fig. 2.52: right).

The Skew Valley histogram (Fig. 2.52: right) can be explained (from left to right) thus:

1 On the left is a low peak indicating that 3% of the motifs were deeply patinated. The contrast with the rock here is very weak since the reading is lower than or equal to 0.05. In fact, only one surface (Panel 90-T) has petroglyphs of this class;

2 After a break, there is a peak for the petroglyphs patinated with contrasts ranging between 0.05 and 0.19 (43.5%);

3 After a marked hollow, a second important peak represents the fresh carvings (41%) whose contrasts vary between 0.25 and 0.34; and

4 Then, after another hollow, a final low peak on the right points to strong contrasts higher than or equal to 0.40 that characterises a class of petroglyphs that can be described as being very fresh (12.5%).

To highlight the characteristics of the petroglyphs of Skew Valley, it is interesting to compare the histograms of their density contrasts with those obtained at the summit of Gum Tree Valley (Fig. 2.52: left).

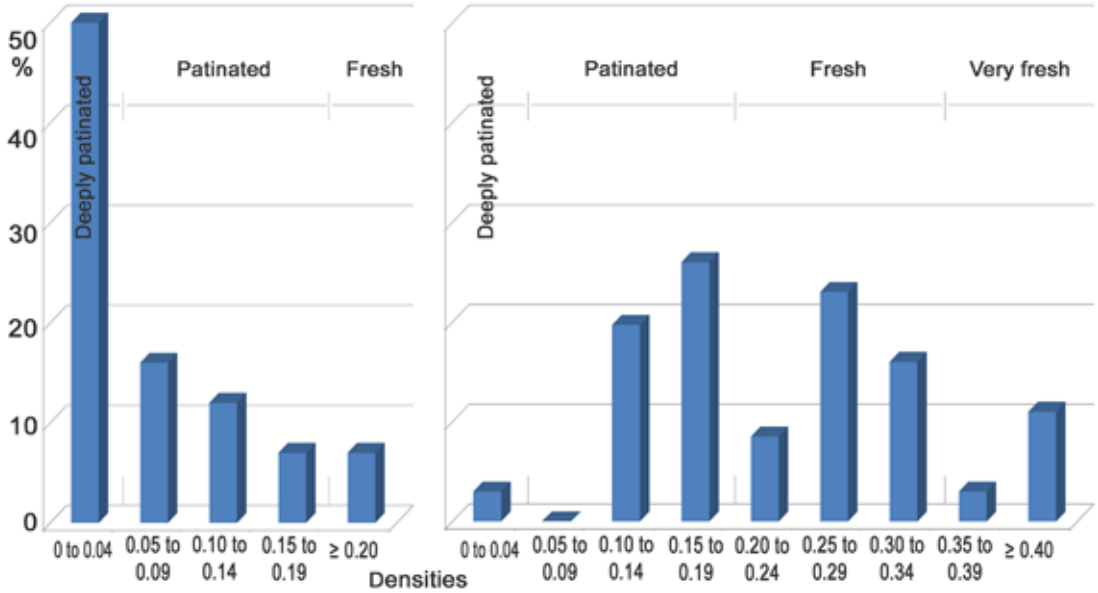


Figure 2.52. Patination states of the petroglyphs: comparison between GTVT (left) and Skew Valley Group carvings (right). Vertical axes = proportions. Horizontal axes = densities. At GTVT, the three Patinated values = 35%. At Skew Valley, Patinated (three values) = 45.5%, Fresh (three values) = 41%, Very Fresh (two values) = 12.5%.

It is clear that the Skew Valley petroglyphs (Fig. 2.52: right) offer a greater variety of patination than those of the GTVT Group; the range of contrasts of the former extend from 0.04–0.46 (lower histogram) compared to a range of 0–0.33 for the Gum Tree Valley site (upper). Some of the Skew Valley motifs show a degree of freshness (in three cases, SKV-68 {p. 136}, -88 {p. 151} and -106 {p. 158}, the contrast is greater than 0.40)—which is not found in the data for the summit of Gum Tree Valley. On the other hand, most of the petroglyphs of Skew Valley (53.5%) exhibit a 'fresh' or even 'very fresh' appearance and thus they are relatively recent in time. Most of the petroglyphs at the summit of Gum Tree Valley (58%) are extremely patinated, thus relatively ancient.

The histograms of Skew Valley patinations also show that the deeply patinated carvings of one slab (SKV-90-T {p. 153}) are discrete from the rest of the petroglyphs of the Group, which present a much stronger density contrast. Slab 90-T {p. 153} is distinctive, as noted, for its technique of execution (grooving) and for its theme (linear geometrics).

Patinations, orientations and techniques

No relationship between the orientations of carved surfaces and the degrees of patination was detected at Skew Valley. It appears simply that patinated motifs and fresh or very fresh ones exist on panels oriented unsystematically across all of the western sector; that is, towards the valley or, more rarely, on the tops of horizontal slabs. In the same way, comparison of patination and techniques show nothing special, except that one deeply and uniquely patinated petroglyph has been made by deep grooving—seen here on only one panel (SKV-90-T {p. 153}).

Patinations and themes

I observe that, apart from the unusual case of panel SKV-90-T {p. 153}, which is the most ancient one among the Group, 'kangaroo', 'human' stick-figures, one 'fish' and a motif in the form of an arc are among the old, 'patinated' motifs. These themes continue among the 'fresh' designs.

We have noted the presence of a 'fish' motif (Fig. 2.31: 100-NW), of archaic style, among the 'patinated' motifs. Does this indicate a long-standing relationship with the sea? Only one Skew Valley 'fish' motif is 'deeply patinated'. It is so schematic that we cannot confirm that it depicts a marine fish rather than a fresh-water fish. Also, the carving technique used is very unusual. So, this lonely 'fish' does not, by itself, demonstrate proximity of the sea coast at an ancient time.

Among the fresher, and thus more recent, motifs there are many 'human' stick figures, 'fishes', 'marine turtles' and 'birds' as well as 'prints' of these two last animals. With these, the presence of the sea is undebatable.

Conclusions of the Patination Study

In conclusion, the study of the patinae seems to indicate that the site was very rarely frequented in the ancient past. Then, after having been abandoned for a short time, the site experienced two successive periods of intense habitation, in conjunction with maritime activities, and thus with the shell midden. The last period of occupation continued until a relatively recent date.

Skew Valley. Cultural remains discovered among the petroglyphs on the edge of the shell midden

On the border of the shell midden and within the limits of the sampled area, we recovered several categories of cultural remains: Stone implements; rocky slabs whose edges had been prepared to produce flakes; marine shells; and at least one slab with a polished surface that was used as a millstone, probably to crush wild grains. These remains can be described as being part of 'the external occupation ring' ('*l'aureole d'occupation externe*'), the curved area on the edge of the midden where its inhabitants left many artefacts and other traces of their occupation among the carved rocks.

I described this phenomenon in my account of the excavation concerning 'structure and distribution of the remains', of the shell midden (Lorblanchet, n.d.), and in a summary paper written with Rhys Jones (Lorblanchet & Jones, 1979).[22] Here we provide new observations that add to those provided earlier, and again emphasize the intricate link between the petroglyphs and evidence of occupation at the site.

Distribution of archaeological remains

Some 222 artefacts and about 400 shells were recorded inside the sampled area, on the border of the shell midden, and in the cracks between carved slabs. The distribution of these remains, particularly as shown by the chart of equi-density curves (Jekhowsky method—Figs 2.53, 2.54), reveals two zones of strong concentration: one in the centre, exactly above the top of the shell midden bordered by the 9.50-metre contour, and the other one in the north, overlooking the path that leads to the pools of water. (This is a seasonal water source; during dry periods it is likely to be less potable because it is more mineralized as a consequence of high evaporation.)

Table 2.13. Skew Valley. List of stone tools recovered (numbers relate to distribution map Fig. 2.53).

1	Scraper on large flake
2	Denticulated scraper
3	Concave scraper
4	Core with single striking platform
5	Scraper on large flake
6	Large flake with blunt *(émoussé)* edges
7	Core with single striking platform
8	Scraper on flake
9	Large core with single striking platform
10	Globular core with blunt edges
11	Core with single striking platform (made on a large flake)
12	Two small cores with single striking platforms
13	Globular core
14	Core with single striking platform with blunt edges
15	Globular nucleus
16	Core with single striking platform
17	Large flake with blunted point (pick for carving?)
18	Denticulated scraper
19	Slab with blunt edges
20	Two platformed cores
21	Globular core
22	Globular core
23	Scraper on flake
24	Large flake used as core

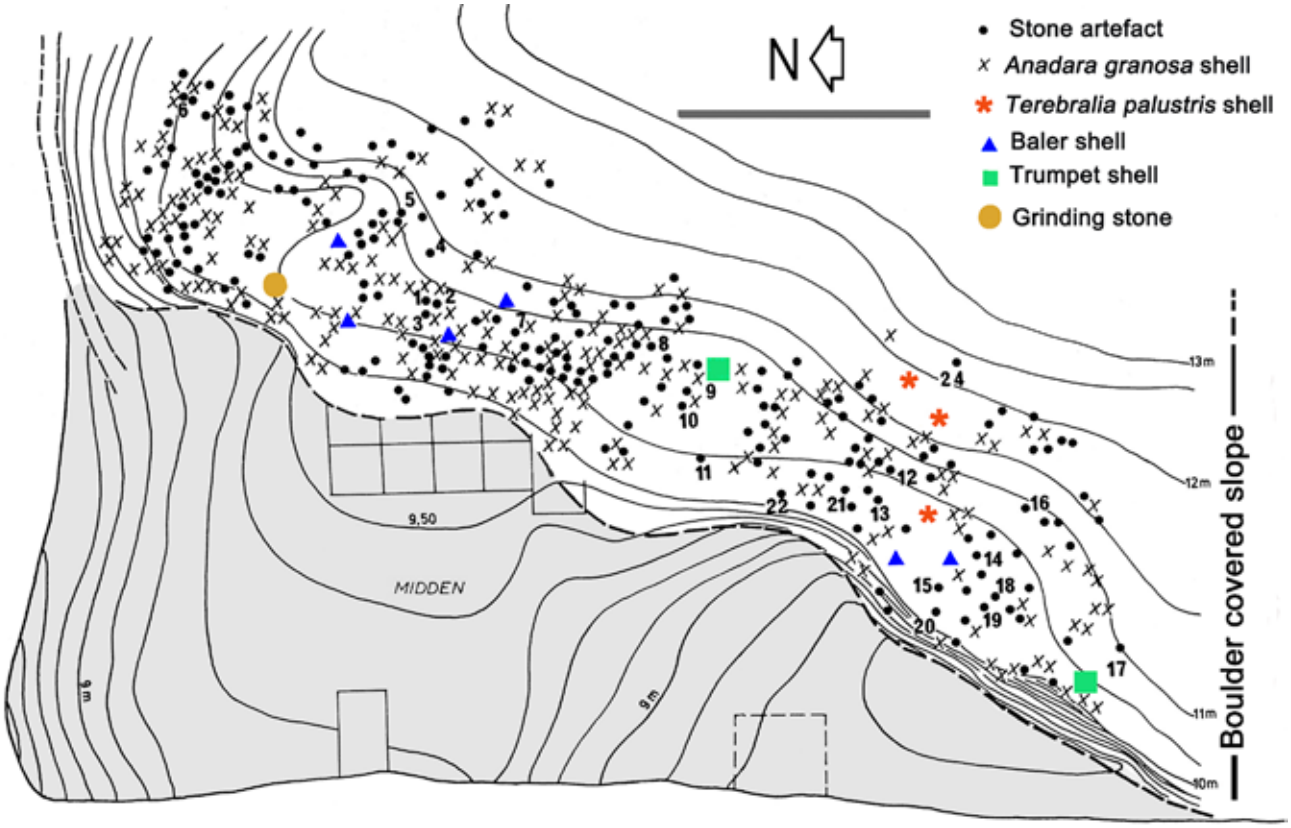


Figure 2.53. Skew Valley. Distribution of artefacts and shells on the edge of the midden. The numbers relate to the list of artefacts in Table 2.13. Scale: 5 m..

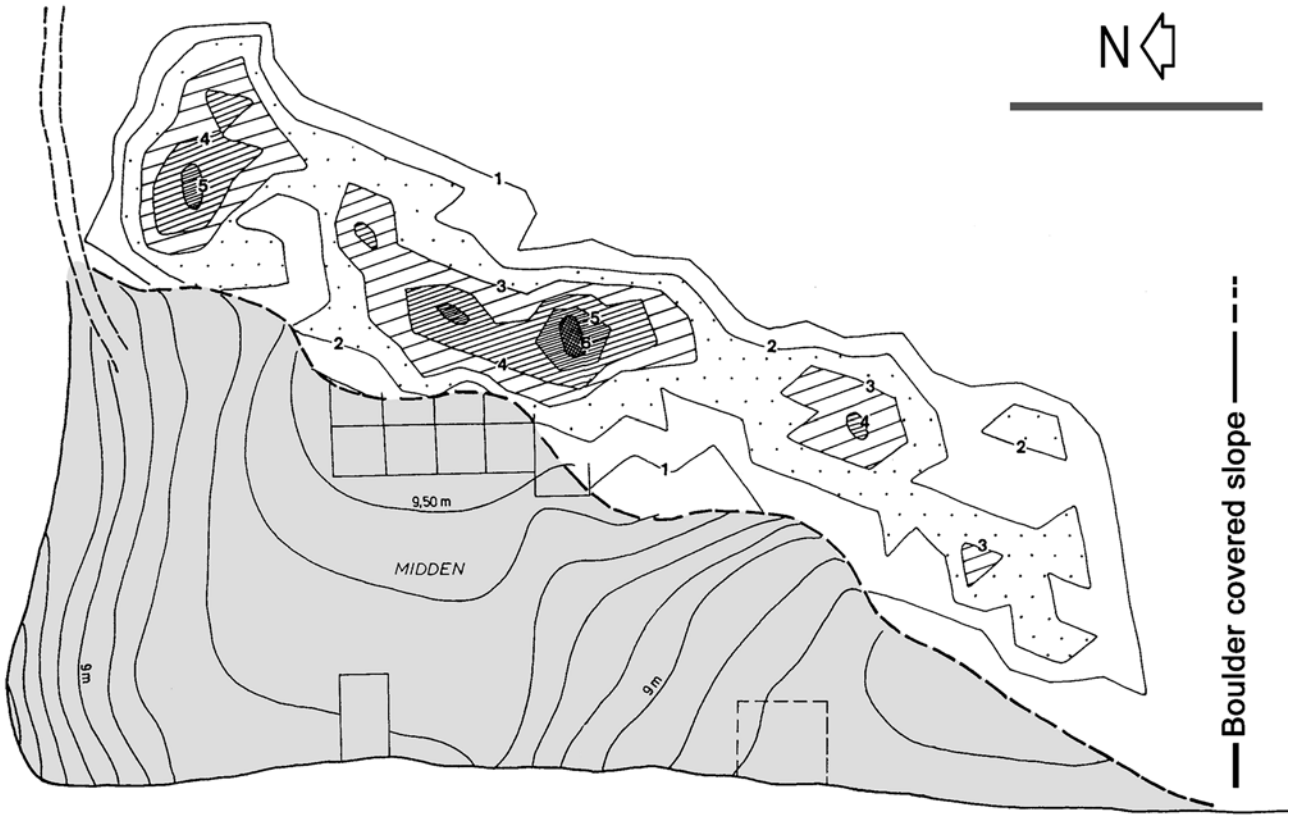


Figure 2.54. Skew Valley. Artefacts and shells on the edge of the midden: density (synthesis of data in Fig. 2.53). Scale 5 m.

These maps can be superimposed onto those of the distribution of the petroglyphs, which also show two zones of maximum density at the same places (Fig. 2.7). The correlation between the distribution of petroglyphs and of archaeological remains (stone tools and shells), and their close proximity to places with strongest evidence of occupation (the summit of the mound and path to the water sources) tends to confirm the relationships that exist between the petroglyphs and the occupation areas.

Not only were most of the petroglyphs made by the shell gatherers, but most of the carvings were done in places where the habitants most frequently stayed. At Skew Valley, there is, in fact, no separation between petroglyph area and habitation site. On the contrary, everything shows the close conformity of the two areas. Furthermore, the cultural remains originate in part from the shell midden itself. I have shown how many of the larger artefacts have been abandoned on the border of the mound, and even sometimes *thrown* to the foot of the slope (Lorblanchet, n.d.). But another part of these archaeological remains is certainly made up of abandoned pieces left *in situ* by individuals who ate the shellfish and made the stone tools while they were among the petroglyphs (Figs 2.6 and 2.7). This was the case in the northern concentration of archaeological remains (and petroglyphs), which does not correspond to any particular point of the shell midden, but which was simply an observation post and a crossing place, facing both towards the water sources and towards the ocean shore. It is clear that the petroglyphs formed part of the everyday environs of the shell collectors.

Stone Tools

Some 198 flakes and 24 tools, all in local granophyre, were recorded in the sample area (examples are shown in Fig. 2.55). They were found in the cracks between the carved slabs and were often associated with shells. Table 2.4 lists the items that can be added to the flakes (the numbers relate to the distribution map).

These artefacts can be divided into three categories:

1 **Scrapers** (*les racloirs*): these are big tools on large flakes; they are sometimes denticulated;
2 **Cores** (*les nucléus*): platformed or globular; they are sometimes made from thick flakes. This demonstrates continuous use of these pieces and their adaptation to new needs. These are the indications of a 'DIY civilization', that is, one in which the same tool is transformed to be adapted to new needs—they are not only adaptive tools but also are made with local materials (Lorblanchet, n.d.; Lorblanchet & Jones, 1979 [Chapter 2, Part II]); and
3 **Picks** (*les percuteurs*): These are either big flakes or cores where the edges and points have been used in repeated percussion. Some are probably hammer-stones used for stone knapping, to make artefacts and to strike flakes from the edges of the granophyre slabs. Others with a sharper point probably were used to carve motifs onto the blocks.

The large stone tools in this assemblage are comparable to the large tools uncovered during the excavation of the shell midden. Unlike the upper layer of the midden, no small tools and, in particular, no microliths were recovered here. However, the smallest remains could lie hidden at the bottom of the fissures.

Slabs with chipped edges

About one tenth of the granophyre slabs of Skew Valley that bear petroglyphs show traces of reduction of their edges (for example, slabs numbered SKV-2 {p. 116}, -26 {p. 121}, -41 {p. 126}, -43 {p. 131}, -44 {p. 131}, -87 {p. 150}, -88 {p. 151}, -93 {p. 154}, -100 {p. 155} and -101 {p. 154}; cf. SKV-100-NW {p. 155}). It was in fact very easy to obtain flakes from these angular edges. The scars of their removal have a degree of patination that is identical to that of the petroglyphs, which demonstrates that the debris from the slabs and the carving of the petroglyphs are more-or-less contemporary (Figs 2.56–2.58).

Was there a connection between the removal of pieces of the rock and the petroglyphs? Was there a particular value given to the flakes coming from a carved surface?

No such flaking has affected the petroglyphs. Certainly, flakes often were taken from carved faces, while the blank surfaces of the slabs were used to strike from, but the proportion of carved slabs that has been 'reduced' by flaking in this way is small, and we found near them many other uncarved slabs with flaked edges. Around the water sources to the east of the shell midden, are similar natural outcrops of granophyre that bear many scars from many removals.

It seems that the carved slabs were not seen as sacrosanct by the Skew Valley inhabitants. These blocks were used almost indiscriminately: both as a 'canvas' for the petroglyphs, and as a source of raw material for making stone tools. However, another interpretation would be that the carved granophyre slabs of SKV were, in contrast, particularly suitable for making stone implements, not only because of their accessibility on the edge of the living place (the midden) and their geological attributes, but also especially because they were *carved rocks*. Carving and knapping stones may be linked, by mythological association. Perhaps the rock 'sanctified' by the carving was treated as if it was able to produce more powerful and more efficient stone implements.

A grindstone

One metre to the north of the large carved slab (SKV-1 {p. 114}), a small block exhibits a polished oval surface (about 200 × 100 mm). It is a grinding stone or mortar—the lower piece of a pair of grindstones used to mill grains and possibly other foodstuffs such as yams.[23] This type of artefact is more common at Gum Tree Valley than at Skew Valley. The grindstone is situated at the foot of the slope, near a rivulet that comes from the gorge. Another was recorded from the same creek bed, and I have already mentioned many others on the border of this grassy plateau, to the west of the shell midden, on the other side of the valley (Fig. 2.2).

The presence of this grindstone among the carved slabs shows once more that the petroglyphs and the remains of daily activities of the inhabitants of Skew Valley were closely linked.

Shells

The excavated midden consists of two layers: The lower contained shells of the gastropod, *Terebralia palustris*, and the upper was comprised primarily of the bivalve, *Anadara granosa*. Within the assemblage of about 400 shells recovered from among the petroglyphs, there are only three shells of the gastropod *Terebralia palustris*, two remains of the large Trumpet Shell, *Syrinx aruanus*, and five fragments of the Bailer shell, *Melo amphora*.[24] The remainder is made up of shells of the bivalve, *Anadara granosa*. This specific composition and the percentage of different species are identical to those of the upper layer of the shell midden.

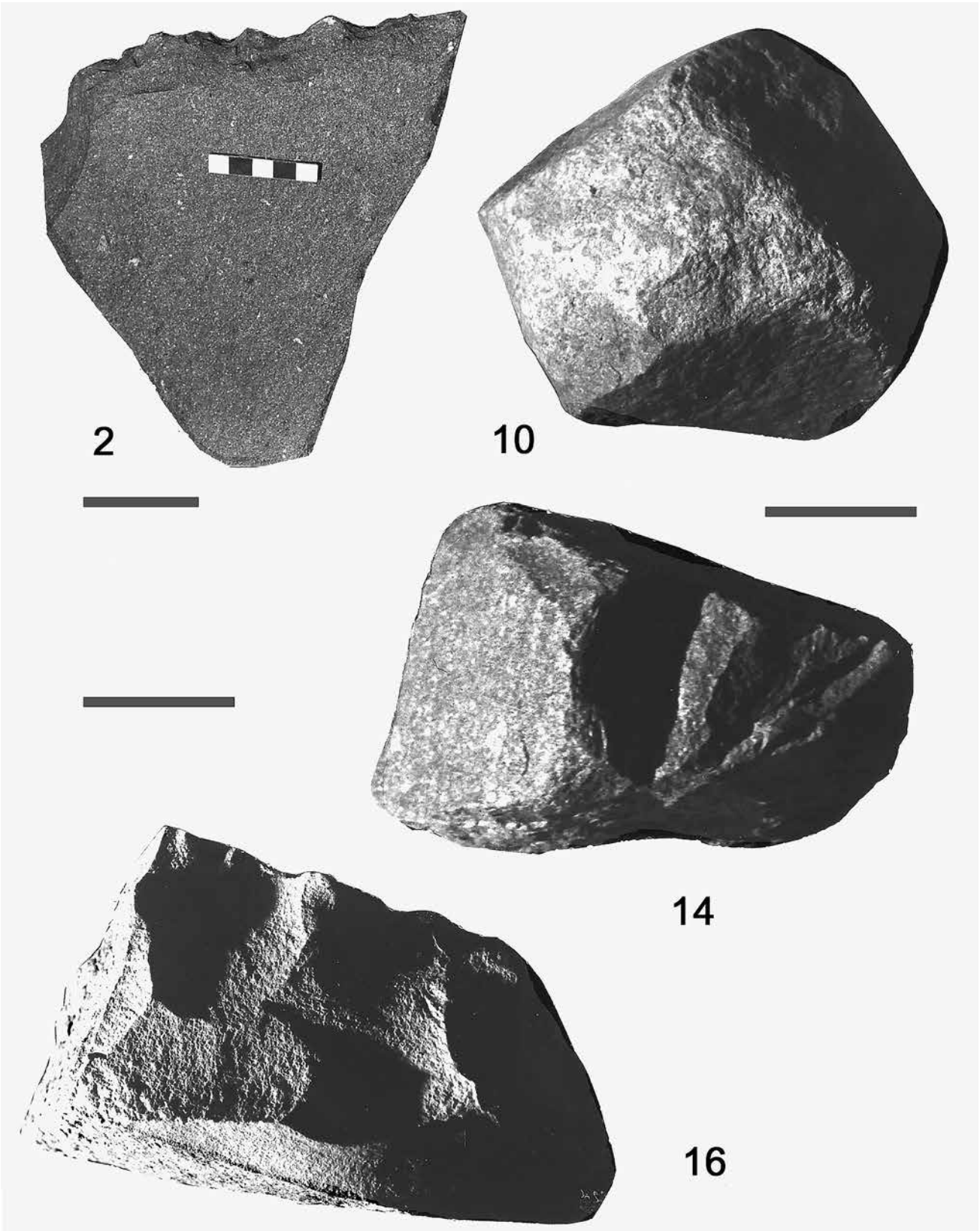


Figure 2.55. Skew Valley. Examples of stone tools recovered from among the petroglyphs on the edge of the shell midden. Scales: 30 mm except for SKV 2. SKV 2: large denticulated scrapper. Scale 5 mm; SKV 10: globular core with blunted edges (probable carving tool); SKV 14: core with single platform and with smoothed edge (carving tool); SKV 16: core with single striking platform.

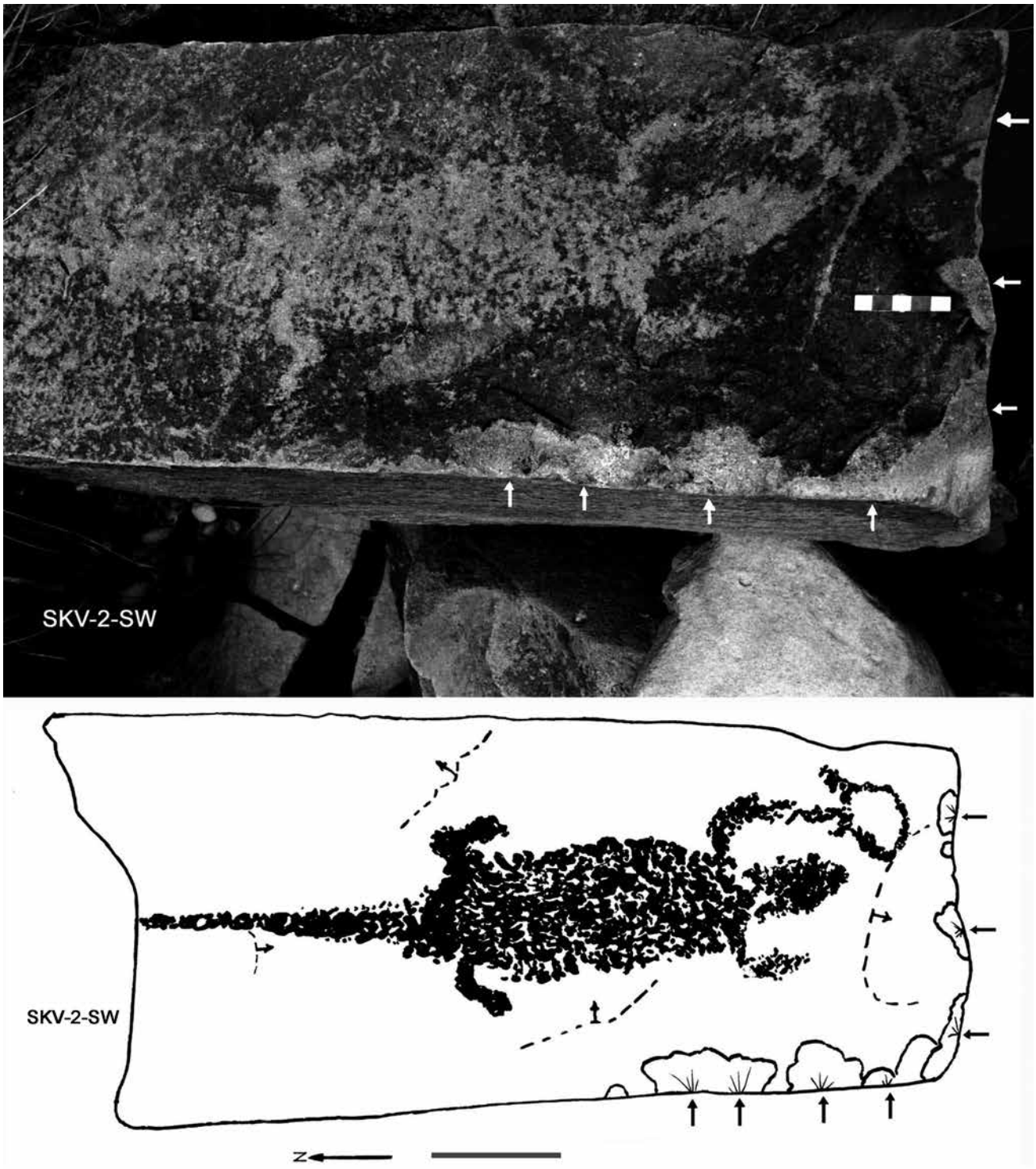
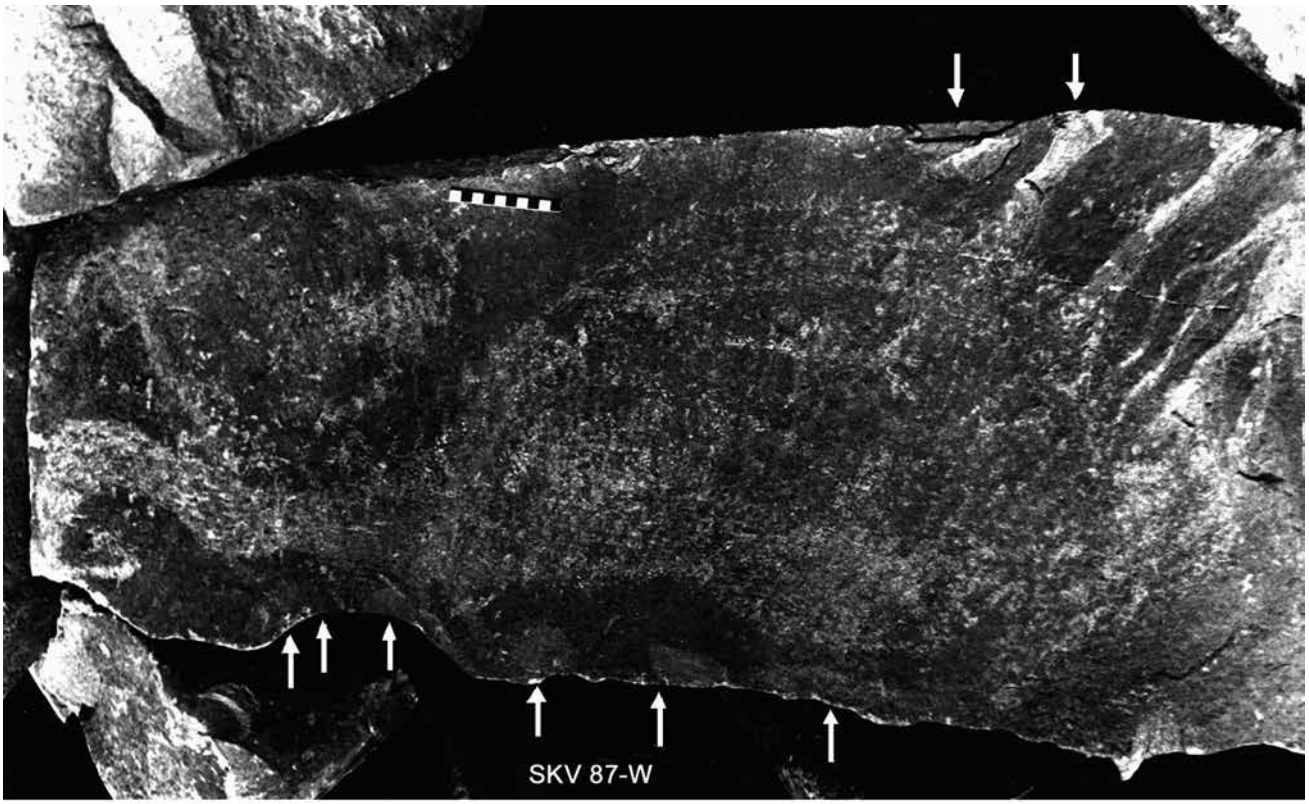


Figure 2.56. SKV-2-SW. Carved granophyre slab the sharp edges of which have been trimmed to make artefacts (arrows). *Upper:* photograph. Scale 50 mm; *lower:* tracing of the panel. Scale 100 mm.



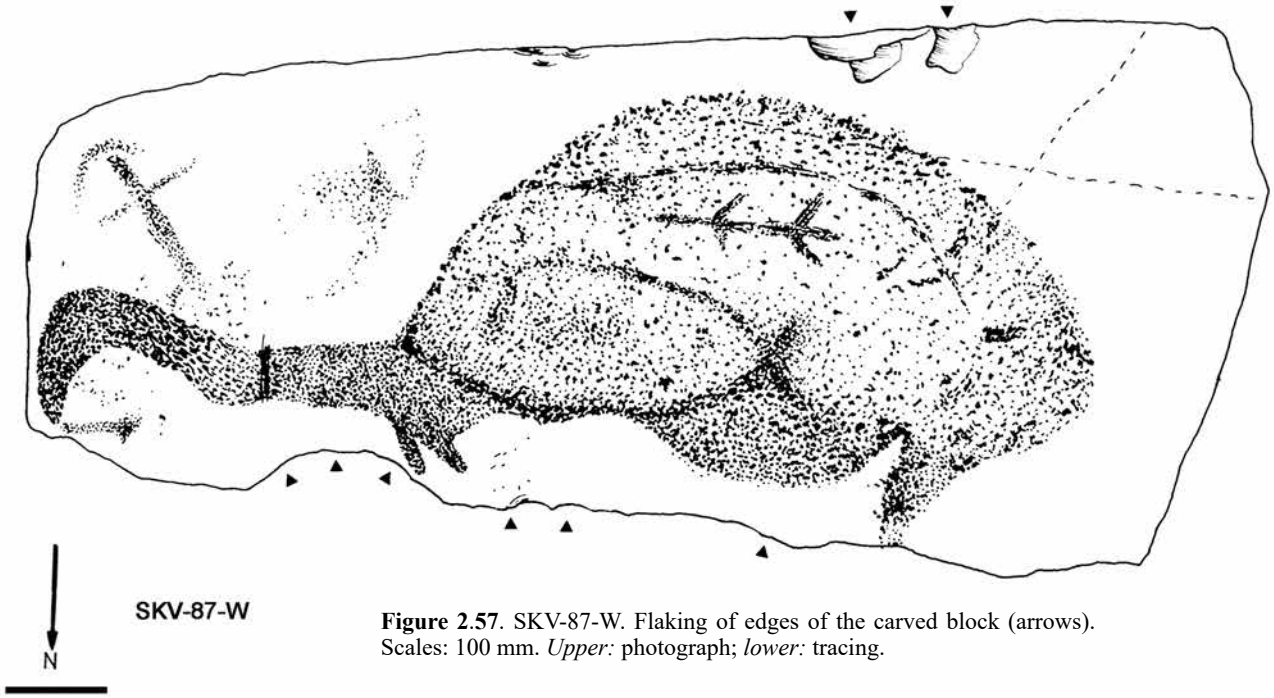


Figure 2.57. SKV-87-W. Flaking of edges of the carved block (arrows). Scales: 100 mm. *Upper:* photograph; *lower:* tracing.

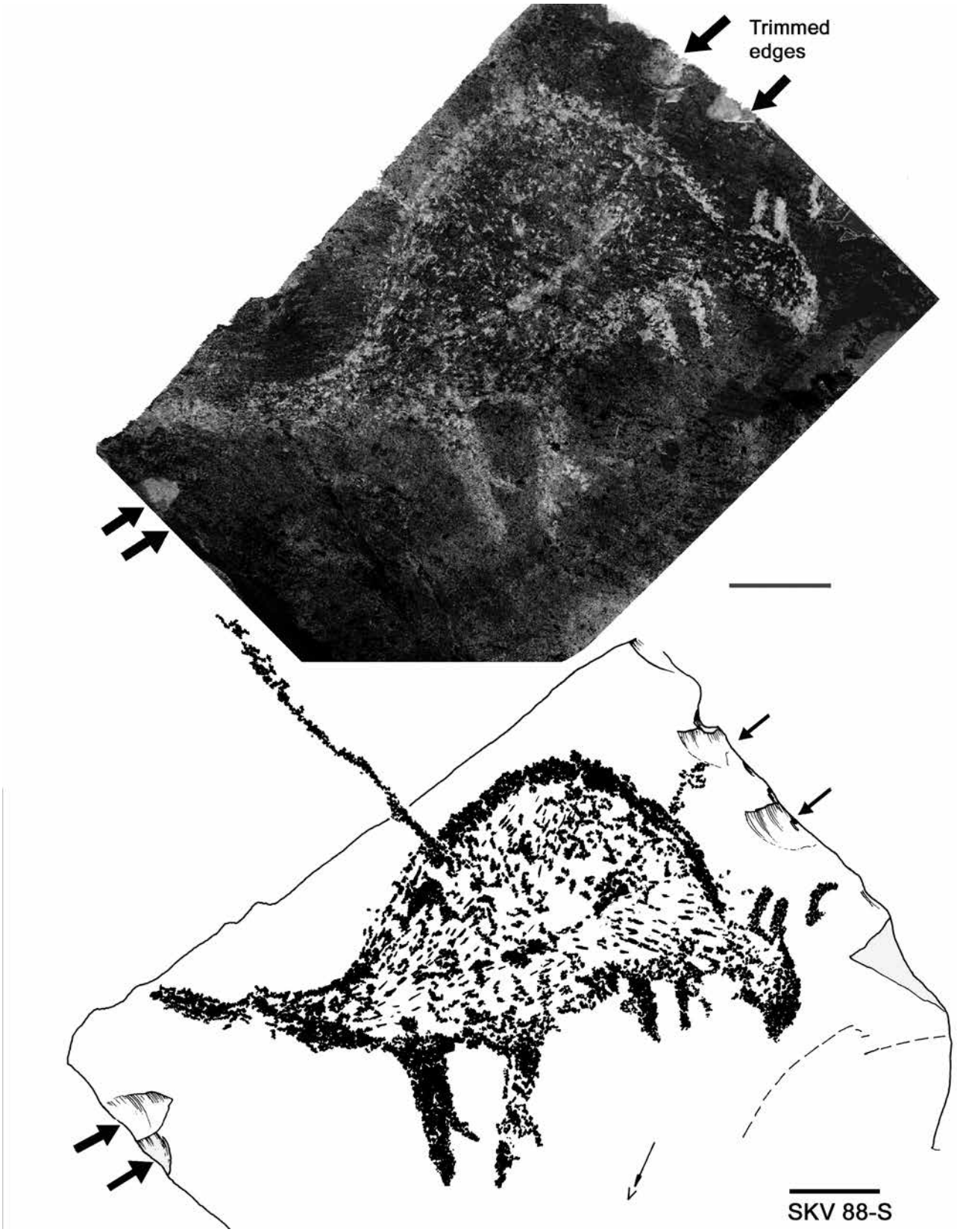


Figure 2.58. SKV-88-S. Flaking of edges of the carved block (arrows). Scales: 100 mm. *Upper:* photograph; *lower:* tracing.

An important observation must be made here. The first inhabitants of the Skew Valley midden, who specialized in the gathering of the gastropod *Terebralia palustris* (which formed the lower layer of the shell midden), have left few traces of their stay among the petroglyphs. It is not even certain that the three *Terebralia* shells that were found among the carved blocks derived from the initial inhabitants, since some of the shells of this species were found among the abundant *Anadara granosa* of the upper layer of the mound.

The composition of the 'outer living ring' emphasises in this respect the contrast between the two layers of the shell midden; that is, between the gastropod-gatherers and the bivalve-collectors. The presence of the former is rarer and more inconspicuous than that of the second, as was already indicated by the respective volumes of the two levels of the mound. It is probable that the first inhabitants of the site were very few or were only intermittently present, while the principal occupation of the site corresponds to that of the bivalve collectors, between about 4500 and 2200 years ago. It is more likely that many of the petroglyphs of Skew Valley date from this period, since, as demonstrated from the mapping, the distribution of the archaeological remains (mainly those of *Anadara granosa*), coincides with that of the petroglyphs (Figs 2.4 and 2.5).

Skew Valley. Conclusions

Our study of the Skew Valley petroglyphs leads to the following important findings.

- The distribution of the petroglyphs (the number of which dramatically increases near the shellfish mound), the distribution of the 'external remains' (that is, the stone tools and shells forming the diffuse 'aura' of the mound), and the preferential orientations of the carved surfaces toward the shell midden, all reveal the existence of a direct link between the petroglyphs and the habitat.

- This finding opens perspectives on the role and dating of the carvings. The petroglyphs were indeed part of the daily framework of the shellfish gatherers; the Skew Valley site was something of a 'decorated habitat' (*habitat orné*); the petroglyphs could be seen and approached by any members of the contemporary population.

- The congruence of the petroglyphs and traces of occupation at the site provide other chronological data. Most carving was executed by the shell collectors whose discarded waste formed the mound between about 7500 and 2500 years ago.[25]

- The excavation of the midden objectively showed through stratified deposition of shells on carved slabs, and through radiocarbon analyses of those shells, that certain motifs made by linear-pecking, including 'human' stick-figures, pre-dated a period of about 3600 years ago (3420–3870 cal BP: ANU-1837) to about 2500 years ago (2240–2700 cal BP: ANU-1838).

- Unlike that observed at the Top of Gum Tree Valley, the study of patination shows that the majority of Skew Valley petroglyphs with a fresh appearance cannot be very old. The chronological range suggested by the radiocarbon analyses of the shell midden supports this conclusion.

- Distributions analysis of the various elements forming the Group reveals that many Skew Valley petroglyphs are the work of collectors of the *Anadara granosa* and not of *Terebralia palustris*. They were therefore executed between about 4500 and 2500 years ago. Moreover, the representations of certain subjects such as fishes, turtle, waterfowl, stress the proximity of the sea.

- Some petroglyphs of fresh appearance may have been made more recently and intermittently after cessation of midden formation at the site.

- In addition, at least one slab, one bearing an unusual linear geometric pattern of rare technique (grooving) and showing a deep patina, was carved at a very ancient period, certainly well before the site was inhabited by the consumers of the shellfish.

- Within the sample area arbitrarily delimited on the margin of the excavated shell midden, 328 shallow, linearly-pecked or fully-pecked petroglyphs were identified and studied in detail. These motifs formed a sample of 112 panels and were supplemented by other examples from outside the sample area. They provided a clear record of the density and the iconographic content of the Skew Valley petroglyphs.

- Skew Valley motifs—whose total number may be as high as 20 000 throughout the whole valley—are generally small (mean = 280 mm) because the granophyre blocks supporting them are themselves of limited dimensions.

- The range of motifs within the study sample is dominated by figurative representations of humans (30% of all motifs and 40% of identifiable motifs). 'Human hand' and 'foot' motifs account for 2.4% of the petroglyphs, about 12% are 'animal prints'. Representations of animals themselves are 13% of the motifs. Geometric motifs (less than 12% of the total) are very heterogeneous and little standardised. On the other hand, indeterminate representations amount to a quarter of the total.

- Despite their schematization and their conventional style, these petroglyphs provide useful indications of the culture of the inhabitants of Skew Valley—of the form of their weapons, their boomerangs, their ceremonial headdresses and the existence of a hunting and fishing economy with use of a spear for catching game (macropods, Emu, various birds), large fish and turtle as well as shellfish collecting.

- The petroglyphs therefore reflect a mixed economy based on exploitation of both marine and terrestrial resources, as had been indicated by the results of the excavation of the shell midden. They even stress the role of the marine environment in the human activities taking place on the site.

- The Skew Valley petroglyphs provide a true reflection of daily life of the recent coastal inhabitants during the last seven or eight millennia. This existence clearly had a relatively homogeneous 'marine facies' that identifies and differentiates it from older aspects of the art of the Dampier area such as those we shall see in Gum Tree Valley.

References

ABRS. 2009. *Australian Faunal Directory*. Canberra: Australian Biological Resources Study. [Accessed 11 April 2011].

Bates, Daisy. 1985. *The Native Tribes of Western Australia*, ed. I. M. White. Canberra: National Library of Australia.

Berndt, Ronald M. 1964. *Australian Aboriginal Art*. Sydney: Ure Smith.

Brandl, Eric J. 1978. Human stick figures in rock art. In *Form in Indigenous Art: Schematisation in the art of Aboriginal Australia and prehistoric Europe*, ed. P. J. Ucko, pp. 220–242. Canberra: Australian Institute of Aboriginal Studies.

Clegg, John. 1992. Rules of similarity in Panaramitee engraving sites. In *State of the Art*, ed. J. J. McDonald and I. P. Haskovec, pp. 32–38. Melbourne: Archaeological Publications (Occasional AURA Publication 6).

Clement, E. 1903. Ethnographical notes on the Western Australian Aborigines: with a descriptive catalogue of a collection of ethnographical objects from Western Australia by J. D. E. Schmeltz. *Internationales Archiv fur Ethnographie* 16(1/2): 1–29.

Coutts, Peter J. F., and Robert George Gunn. 1984. Rock art in Victoria. *Rock Art Research* 1(2): 132–133.

Coutts, Peter J. F., and Michel Lorblanchet. 1982. *Aboriginals and Rock art in the Grampians, Victoria, Australia*. Melbourne: Victorian Archaeological Survey (Records 12).

Harper, C. 1886. The mouth of the De Grey River: the Ngurla tribe. In *The Australian Race: Its Origins, Languages, Customs, Place of Landing in Australia, and the Routes by Which it Spread Itself Over that Continent*, ed. E. M. Curr, pp. 287–293, Melbourne: Government Printer.

Horton, David. n.d. Faunal Analysis of the Skew Valley Midden Excavated by M. Lorblanchet. Vertebrate Remains and Crab. TS held by AIATSIS Library, Canberra.

Jekhowsky, B. de. 1964. Diagrammes de dispersion des courbes de densité en biométrie [Scatterplots density curves in biometrics]. *Revue de l'Institut Français du Pétrole* 19(7–8): 841–844.

Jones, Philip. 1996. *Boomerang: Behind an Australian Icon*. Kent Town, SA: Wakefield Press.

Lorblanchet, Michel. 1977. Summary report of field work, Dampier, W.A. *Australian Institute of Aboriginal Studies Newsletter* 7: 36–40.

Lorblanchet, Michel. 1979. A propos de l'art rupestre australien [About Australian rock art]. *Bulletin de la Société préhistorique française* 76(8): 226–227.

Lorblanchet, Michel. 1985. Le symbolisme des empreintes en Australie [Symbolism of tracks in Australia]. *Les Dossiers d'Archéologie* 90: 63–77 (Histoire et Archéologie. *Traces et messages de la Préhistoire* 90: 63–76).

Lorblanchet, Michel. 1992. The rock engravings of Gum Tree Valley and Skew Valley, Dampier, Western Australia: chronology and functions of the sites. In *State of the Art. Regional Rock Art Studies in Australia and Melanesia*, ed J. J. McDonald and I. P. Haskovec, pp. 39–59. Melbourne: Archaeological Publications.

Lorblanchet, Michel. 1995. *Les Grottes Ornées de la Préhistoire* [Decorated caves in prehistory]. Paris: Editions Errance.

Lorblanchet, Michel. 2010. *L'art Pariétal. Grottes Ornées du Quercy* [Painted Walls. Decorated caves of the Quercy]. Arles: Éditions du Rouergue.

Lorblanchet, Michel. n.d. Skew Valley (Dampier, W.A.): Shell midden and rock engravings by Michel Lorblanchet in collaboration with Karl Barz, John Clarke, Geoff Hope, David Horton, Phil Hughes, Rhys Jones, George Kendrick, Maguy Lorblanchet, Vince Roberts, Enzo Virili. Unpublished manuscript (TS, 443 l. 1978), copy held by AIATSIS Library (MS 1585).

Lorblanchet, Michel, and Rhys Jones. 1979. Les premières fouilles à Dampier (Australie Occidentale), et leur place dans l'ensemble australien [The first excavations at Dampier (Western Australia), and their place in Australian archaeology]. *Bulletin de la Société préhistorique française* 76(10–12): 463–487. [Accessed 31 October 2011]
https://www.persee.fr/doc/bspf_0249-7638_1979_hos_76_10_5169

McCarthy, Frederick D. 1961. The rock engravings of Depuch Island, north-west Australia. *Records of the Australian Museum* 25(8): 121–148.
https://doi.org/10.3853/j.0067-1975.25.1961.660

McCarthy, Frederick D. 1967. *Australian Aboriginal Stone Implements: Including Bone, Shell and Teeth Implements*. Sydney: The Australian Museum.

McCarthy, Frederick D. 1976. *Australian Aboriginal Stone Implements: Including Bone, Shell and Tooth Implements.* Second edition. Sydney: The Australian Museum.

McCarthy, Frederick D. 1979. *Australian Aboriginal Rock Art.* Fourth edition. Sydney: The Australian Museum.

Meehan, Betty. 1982. Ten fish for one man: some Anbarra attitudes towards food and health. In *Body, Land and Spirit. Health and Healing in Aboriginal Society*, ed. J. C. Reid, pp. 96–120. St Lucia: University of Queensland Press.

Morrison, Rob G. B. 1981. *A Field Guide to the Tracks and Traces of Australian Animals*. Adelaide: Rigby.

Peter, Hanns. n.d. Boomerang Collections of Australia: a Description. Unpublished manuscript (TS & holograph, nine volumes, 1339 l. 1976.), copy held by AIATSIS Library (MS 831, cf. MS 852).

Ride, W. David L. 1964. Introduction and general narrative. In *Report on the Aboriginal Engravings and Flora and Fauna of Depuch Island, Western Australia*, ed. W. D. L. Ride and A. Neumann, pp. 13–22, special publication 2. Perth: The Western Australian Museum.

Ride, W. David L., and A. Neumann (editors). 1964. *Report on the Aboriginal Engravings and Flora and Fauna of Depuch Island, Western Australia*. Perth: The Western Australian Museum (Special Publication 2).

Sale, Katharine. 1995. Making the old brighter. Aboriginal re-marking of rock pictures. In *Management of Rock Imagery*, ed. G. K. and L. A. Ward, pp.137–140. Melbourne: Australian Rock Art Research Association (Occasional AURA Publication 9).

Stow, J. P. [Jefferson Pickman]. 1865. Voyage of the Forlorn Hope. *The South Australian Advertiser*, 24 August 1865, p. 187. Canberra: National Library of Australia. [Accessed 22 January 2015]
https://nla.gov.au/nla.obj-355402643/view?partId=nla.obj-355402868#page/n0/mode/1up

Trezise, Percy J. 1971. *Rock Art of South-east Cape York*. Canberra: Australian Institute of Aboriginal Studies.

Watchman, Alan L. 1992. Repainting or periodic-painting at Australian Aboriginal sites: evidence from rock surface crusts. In *Retouch. Maintenance and Conservation of Aboriginal rock imagery*, ed. G. K. Ward, pp. 26–30. Melbourne: Archaeological Publications (Occasional AURA Publication 5).

Ward, Graeme K., and Ken Mulvaney, 2018. Archaeology and petroglyphs of Dampier—editors' introduction. In *Archaeology and Petroglyphs of Dampier (Western Australia), an Archaeological Investigation of Skew Valley and Gum Tree Valley*, ed. Graeme K. Ward and Ken Mulvaney, pp. 9–45. *Technical Reports of the Australian Museum, Online* 27: 1–690.
https://doi.org/10.3853/j.1835-4211.27.2018.1687

WoRMS. n.d. *World Register of Marine Species*. [Accessed 21 April 2011].
http://www.marinespecies.org/aphia.php

Wright, Bruce J. 1968. *Rock Art of the Pilbara Region, North-west Australia*. Canberra: Australian Institute of Aboriginal Studies.

Endnotes

1 *Anadara granosa* (Linnaeus, 1758), family Arcidae; a common Indo-Pacific bivalve: 'Granular ark', 'Blood cockle', 'Blood clam', etc. (e.g., WoRMS n.d.)—Editors.

2 This is still the only contribution to this field—Editors.

3 Examples of various motif categories are included in the text figures. Illustrations of many petroglyphs prefixed 'SKV-' may be found among the series of illustrations numbered serially and placed in the Appendix {p. 114}. Some motifs—identified, numbered, studied, traced in detail, photographed, located on maps, and sometimes included in computations reported in Lorblanchet's study—are neither included in text figures nor in the illustrative appendices accompanying each chapter due to the large number of petroglyphs at each site—Editors.

4 Enumeration of illustrations: figures, comprising maps and compilations depicting various examples being discussed in the text, are included among the text and numbered 'Fig. 2.1' to 'Fig. 2.n'. Illustrations of individual images or associated 'scenes' are designated 'SKV-1' to 'SKV-n' and are included in an appendix to this chapter (similarly for subsequent chapters). They are also presented as cross-referenced indexes and lists at the end of each chapter and in the editors' introduction (Ward & Mulvaney, 2018, this volume). A motif might be depicted in both illustration series; not all petroglyphs are illustrated—Editors.

5 In other locations, these lobes are depicted as dots not connected to the body of the figure—Editors.

6 'Right' here is defined as being viewed from the perspective of the image looking out—Editors.

7 Qualification of use of the term 'human prints': *(a)* These are not 'hand prints' comparable to the ubiquitous pictograms found throughout Australia (and widespread throughout the world) that are produce by blowing pigment across a hand (also done with other items such as a boomerang), or made by pressing a hand wet with pigment onto a shelter or cave wall. *(b)* Rather, in the context of this discussion of Dampier petroglyphs, 'human hand print' and 'human foot print' are shorthand terms for representations of the hand/s or foot/feet of a 'human'. *(c)* Since they are most often the depiction of part of the integral anatomy of a being, they are qualitatively different from the 'animal prints' discussed subsequently in each chapter, the 'kangaroo track', 'bird print' and 'turtle track', which represent simply the 'footprint' left in the soft ground by a passing animal—Editors.

8 Emu—*Dromaius novaehollandiae* (family Casuariidae): Australia's largest native bird; the only extant member of the genus (e.g., ABRS, 2009)—Editors.

9 Australian Bustard *Ardeotis australis* (family Otididae). Three species of ibis (family Threskiornithidae) are present today in this area of Western Australia, *Threskiornis* spp., and *Plegadis falcinellus* (e.g., ABRS, 2009)—Editors.

10 Representations of turtles, their tracks and eggs are discussed further in Chapter 6 GTVW—Editors.

11 Freshwater Catfish: *Neoarius australis* synonym *Arius graeffei* (family Ariidae), *Master Index of Freshwater Fishes*. Marine Catfish or Sea Catfish: *Plotosus lineatus* (Thunberg, 1787; family Plotosidae) (ABRS, 2009)—Editors.

12 There are, however, examples of what appear to be depictions of dugong netting elsewhere along the Dampier Archipelago that detail this hunting technique (documented by Richards in Bates, 1985: 256)—Editors.

13 The main species of turtle (family Cheloniidae) seen along the Dampier Archipelago are the Green Turtle, *Chelonia mydas* (Linnaeus, 1758); the Flatback Turtle *Natator depressa* (Garman, 1880); the Hawksbill Turtle, *Eretmochelys imbricata* (Linnaeus, 1766); the Loggerhead Sea Turtle, *Caretta caretta* (Linnaeus, 1758); and the Leatherback Turtle, *Dermochelys coriacea* (Vandellius, 1761) (e.g., ABRS)—Editors.

14 Mangrove Ray: *Himantura granulate* (Macleay, 1883) (e.g., ABRS)—Editors.

15 Early settlers in the Roebourne area reported similar observations—the cooking of food in bailer/conch shell (e.g., Harper, 1886)—Editors.

16 Similar depictions in the Dampier area have been interpreted as string bundles (hair or spinifex fibre)—Editors.

17 The terms 'sub-horizontal' and 'sub-vertical' designate rock surfaces that are approximately horizontal or vertical with respect to their position in the landscape—Editors.

18 The range and specific characteristics of carving techniques are discussed in greater detail in Chapter 4 GTVE and Chapter 7 GTVT—Editors.

19 Contour gauge (*un conformateur*): a tool for recording the section of a groove. Its use in this context is developed in description of the Kangaroo Group (Chapter 5 GTVK 'Use of the contour gauge', Fig. 5.20)—Editors.

20 Re-marking (renovation) is discussed in detail in Chapter 3 GTVS, extensively in Chapter 4 GTVE, and again with use of the 'contour gauge' in Chapter 5 GTVK—Editors.

21 About Gossen 'Mastersix' cell and 'Profi-flex' there is a further note in the 'General Introduction'—Editors.

22 English translation is at Chapter 2, Part II—Editors.

23 McCarthy (1976: 60, 63) used the terms 'muller' or 'hammer-muller' and 'mortar' to refer to the hand-held stone used against a larger grindstone, or millstone; cf. quern (*meules dormantes*)

24 *Terebralia palustris* (Linnaeus, 1767), a mud creeper common along mangrove shores; *Anadara granosa* (Linnaeus, 1758), common and widespread member of family Arcidae, lives shallowly buried in sand and silt; *Syrinx aruanus* (Linnaeus, 1758), the Australian or False Trumpet, a large marine gastropod of sandy substrates to about 30 m; *Melo amphora* (Lightfoot, 1786), the Diadem volute or Giant or Australian Bailer Shell, a large carnivorous member of the volute family, whose habitat is muddy substrates of the shallow littoral or sublittoral (e.g., WoRMS n.d.)—Editors.

25 Dating of the Skew Valley midden is discussed in detail in Chapter 2, Part II, Addendum, p. 189—Editors.

Chapter 2, Part I—Appendix

Recordings of the Petroglyphs of the Skew Valley (SKV)

In order to define the orientation of each figure, on each recording are indicated: *(a)* the north orientation when it is a horizontal panel on top of a slab, and *(b)* the vertical orientation (an arrow with a 'V') when the surface is close to the vertical. Unless otherwise indicated, all scales represent 10 mm.

Figure 2.59

SKV-1-W

Figure 2.60

SKV-2

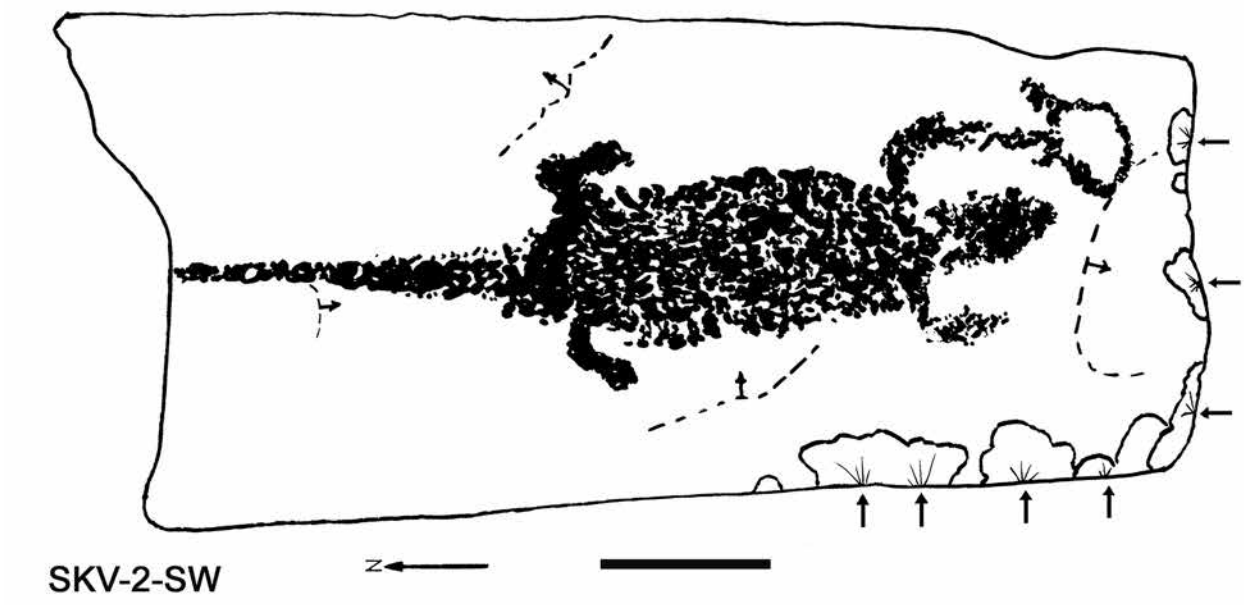


Figure 2.61

SKV-10+23

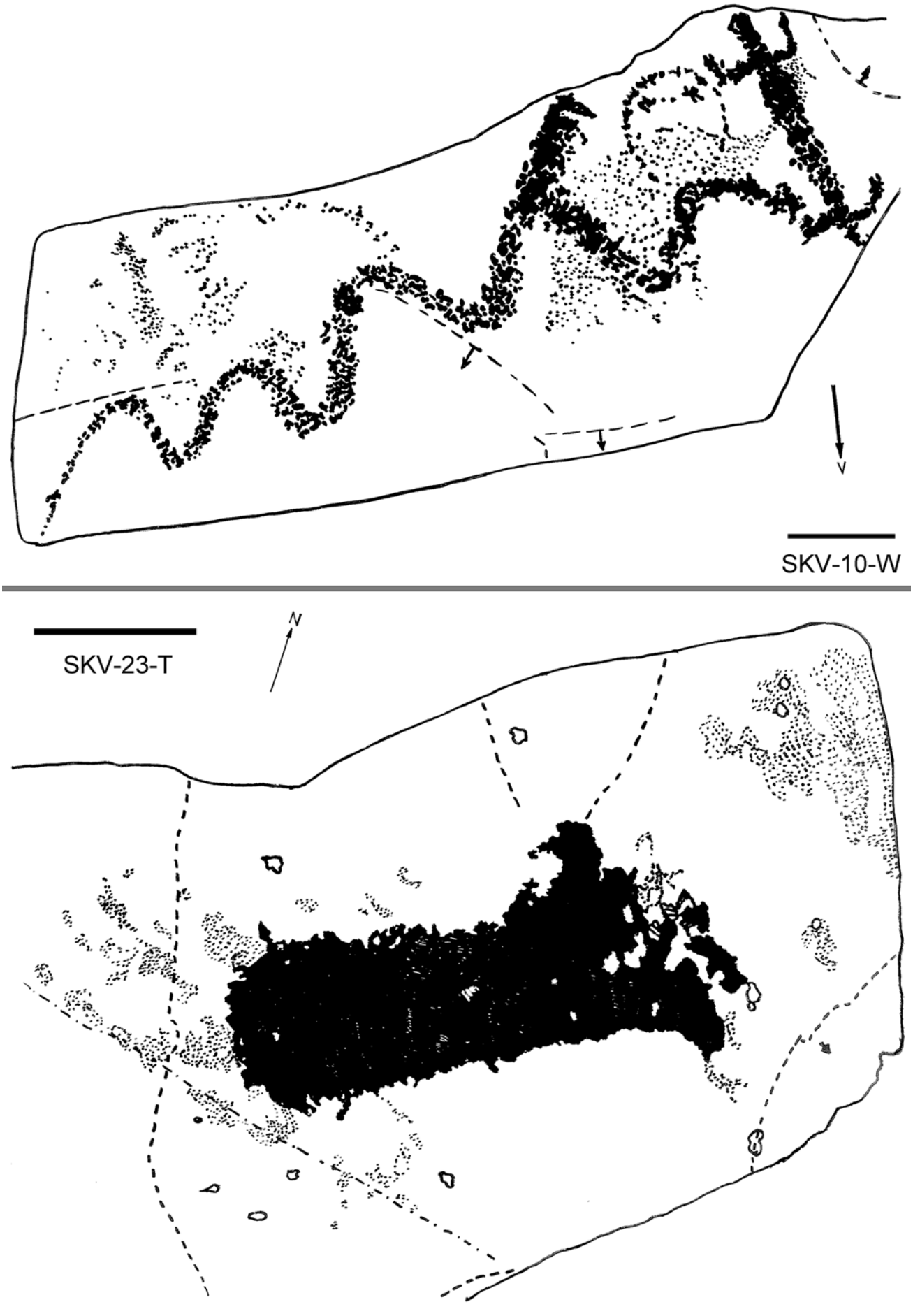
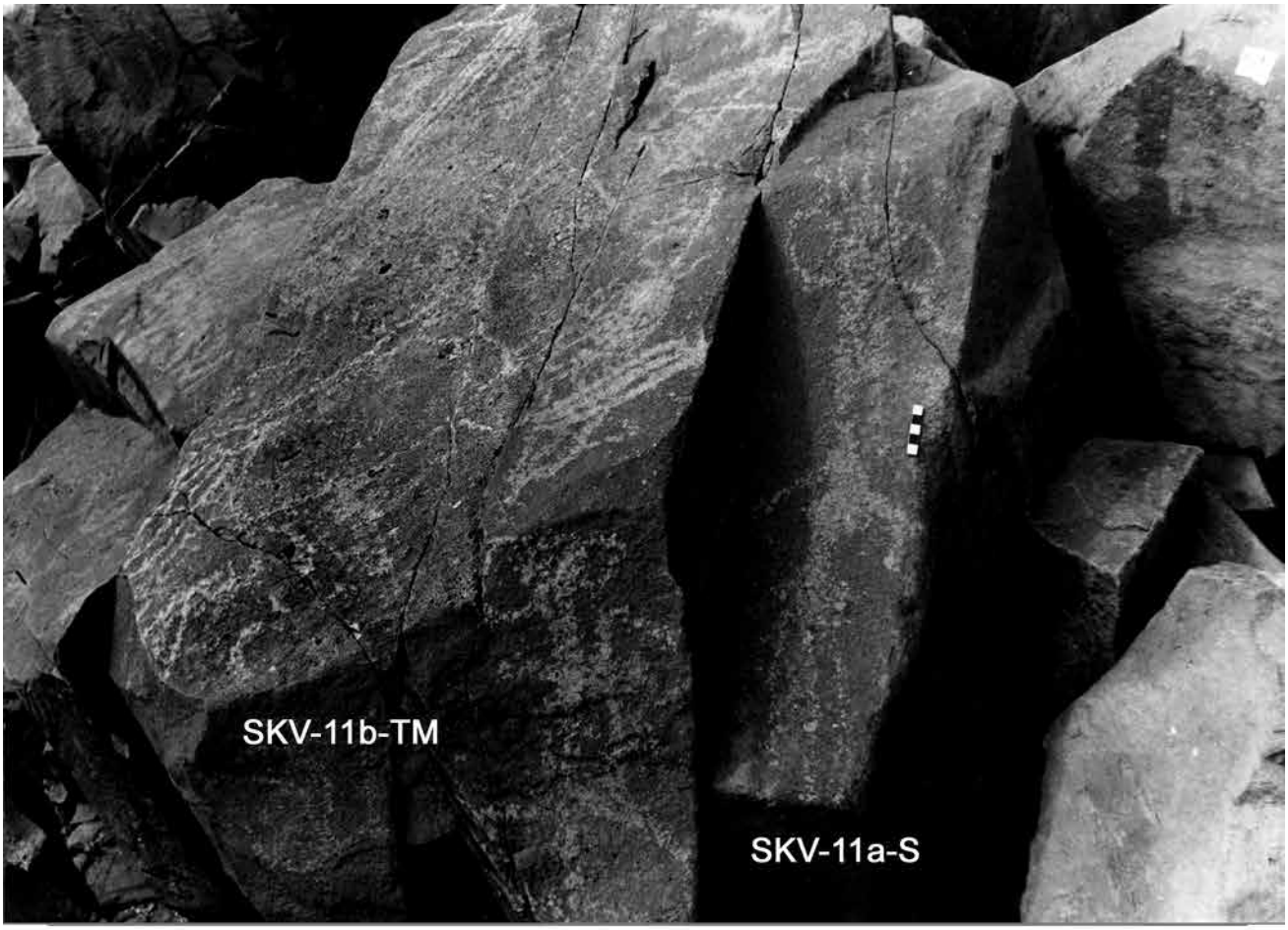


Figure 2.62

SKV-11



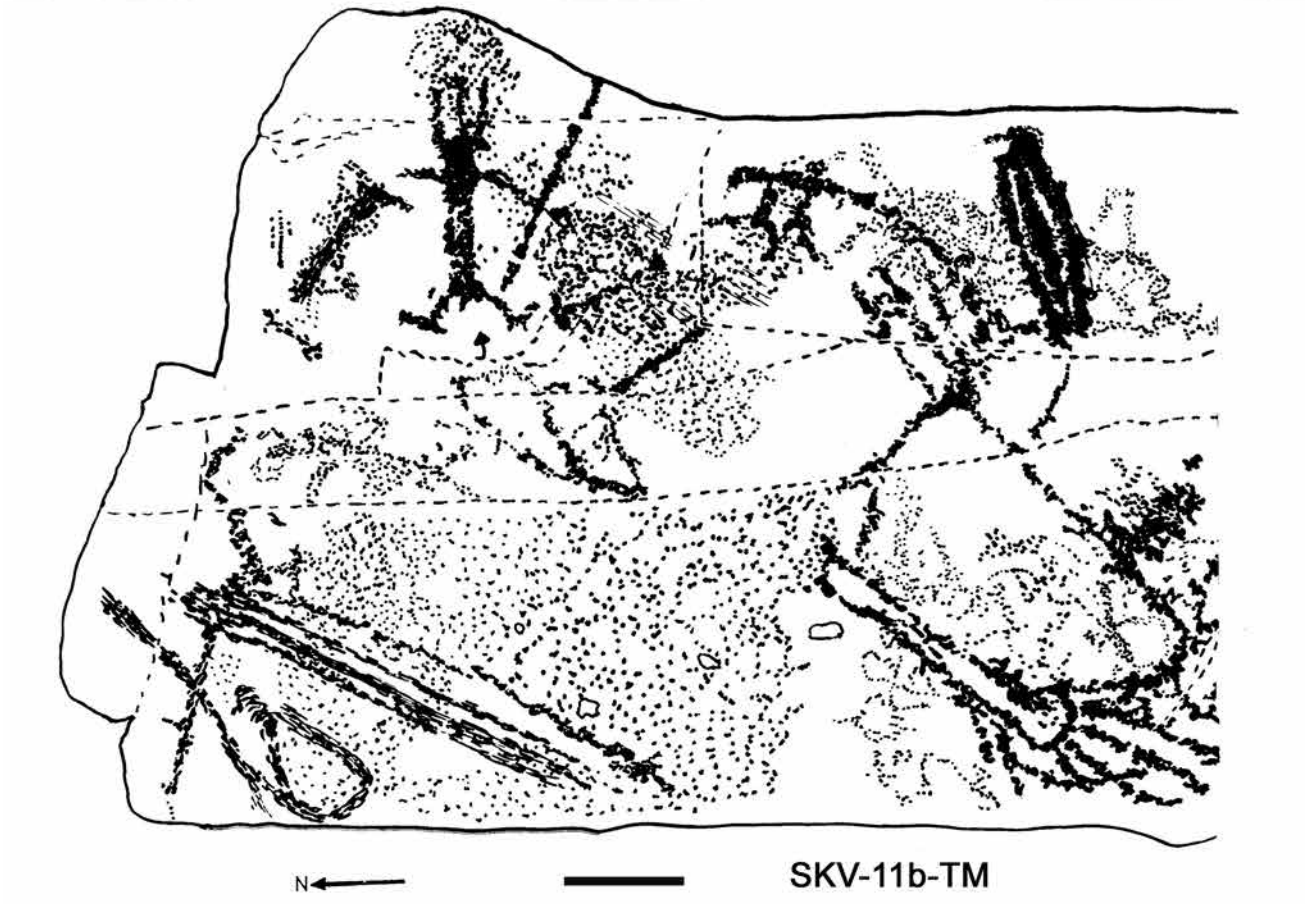


Figure 2.63

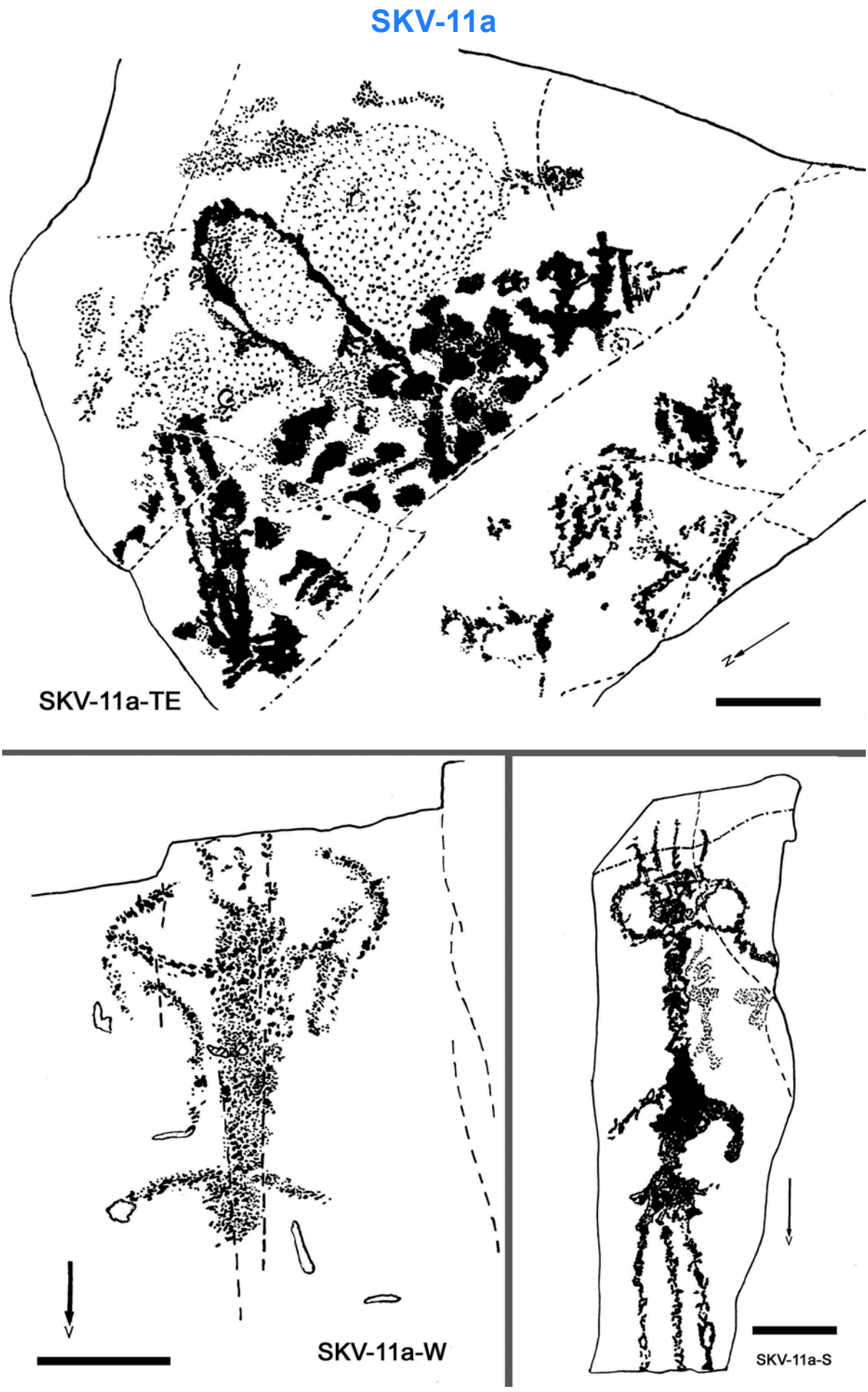


Figure 2.64

SKV-18a+19

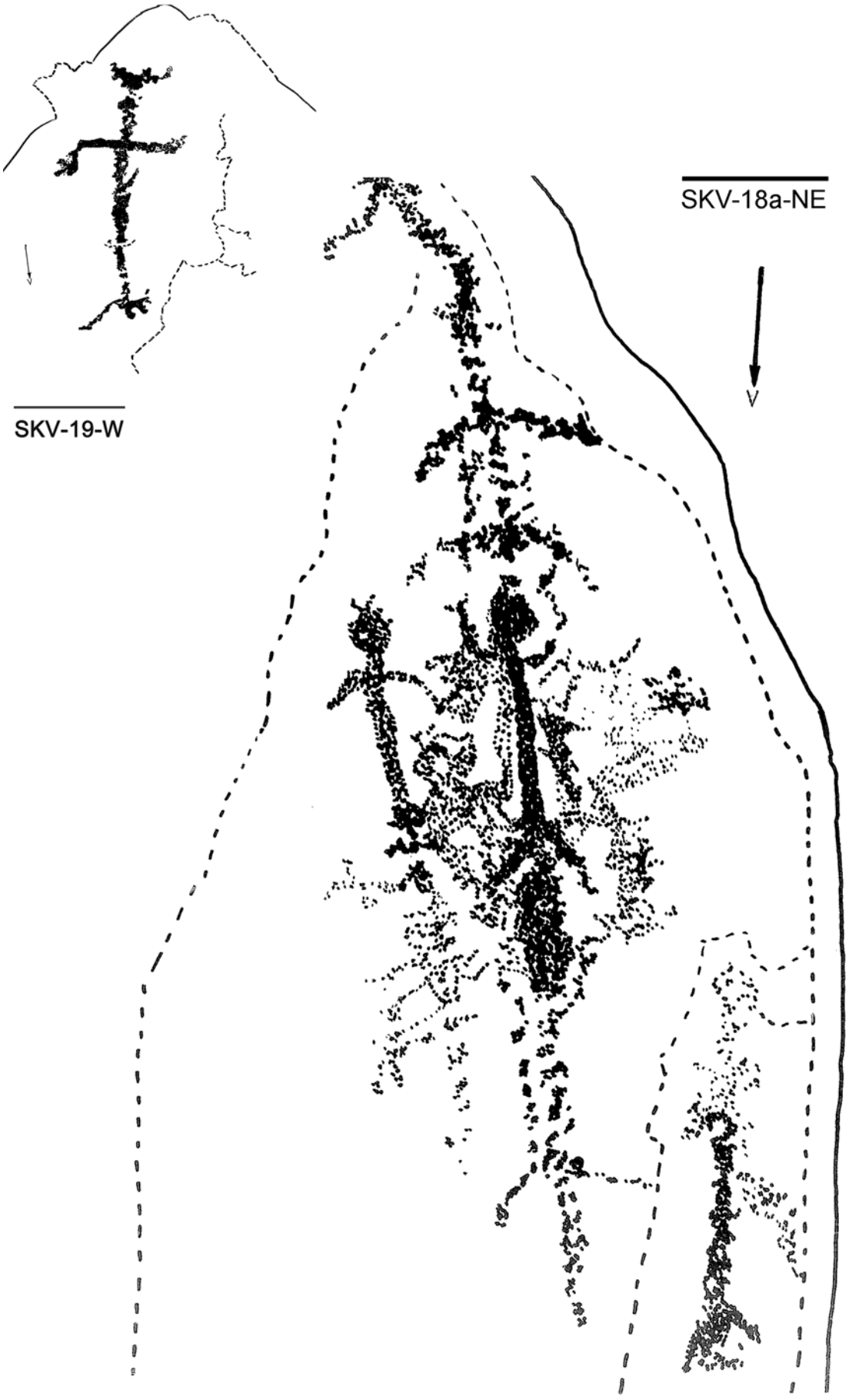


Figure 2.65

SKV-25+26

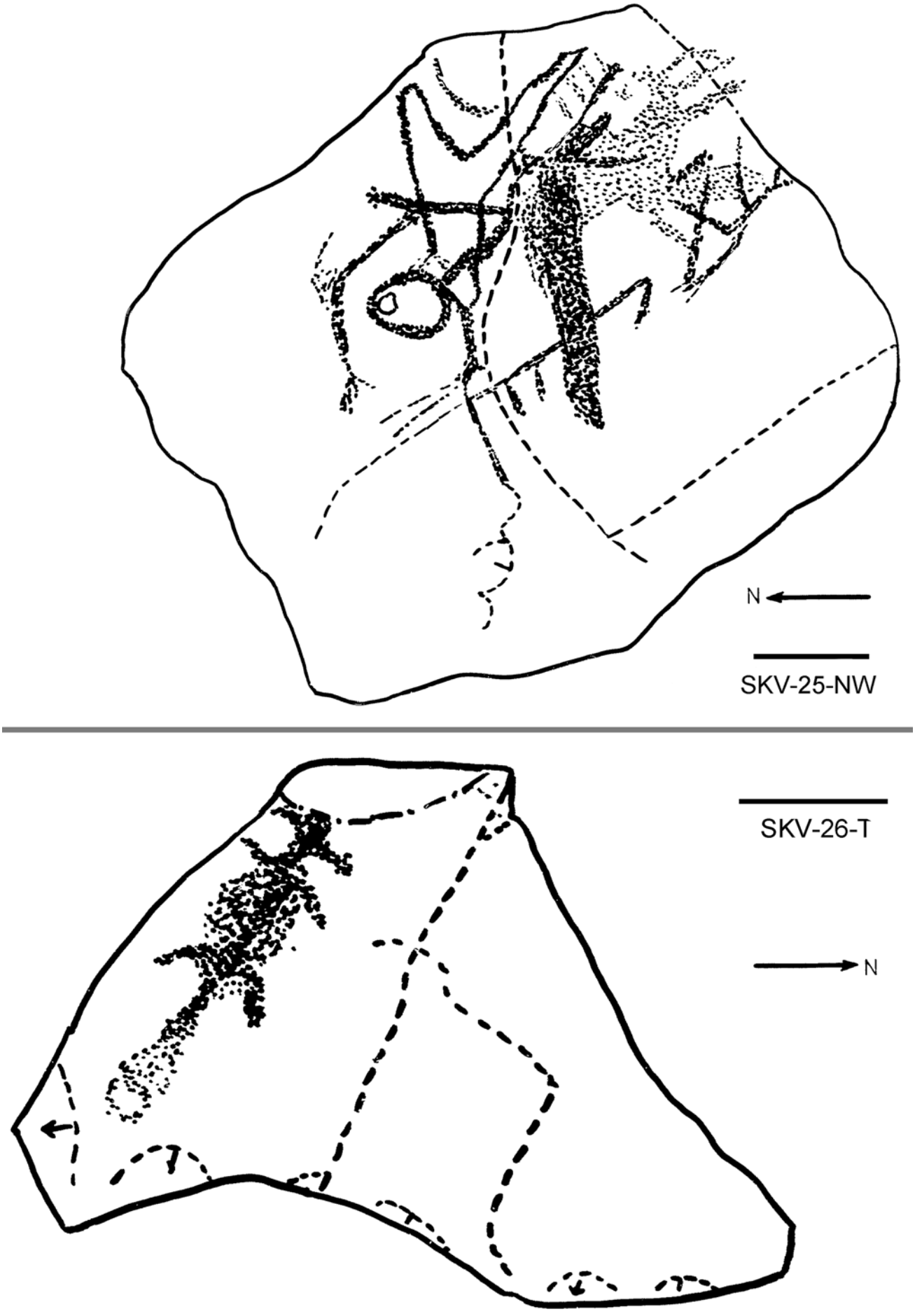


Figure 2.66

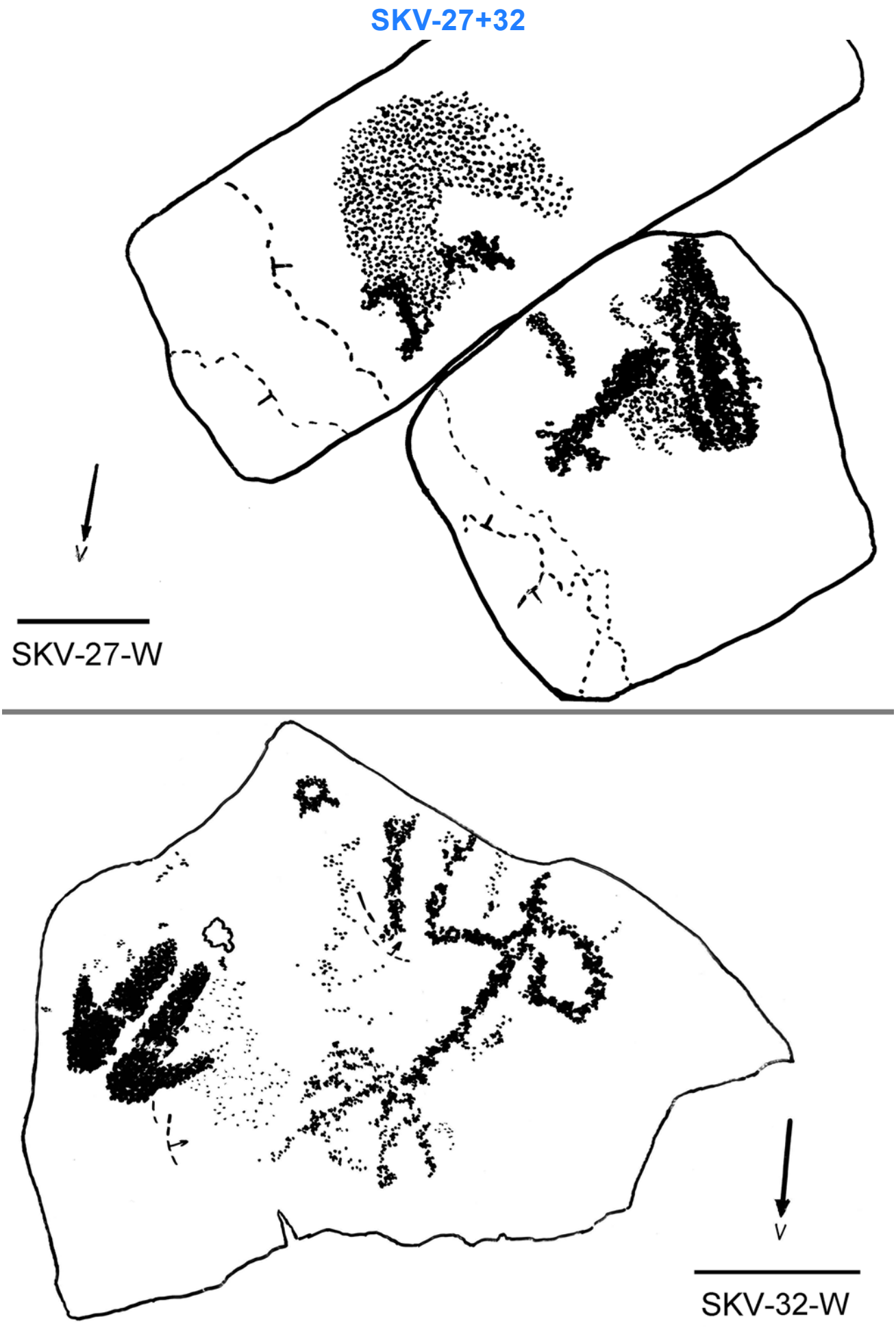


Figure 2.67

SKV-29+34

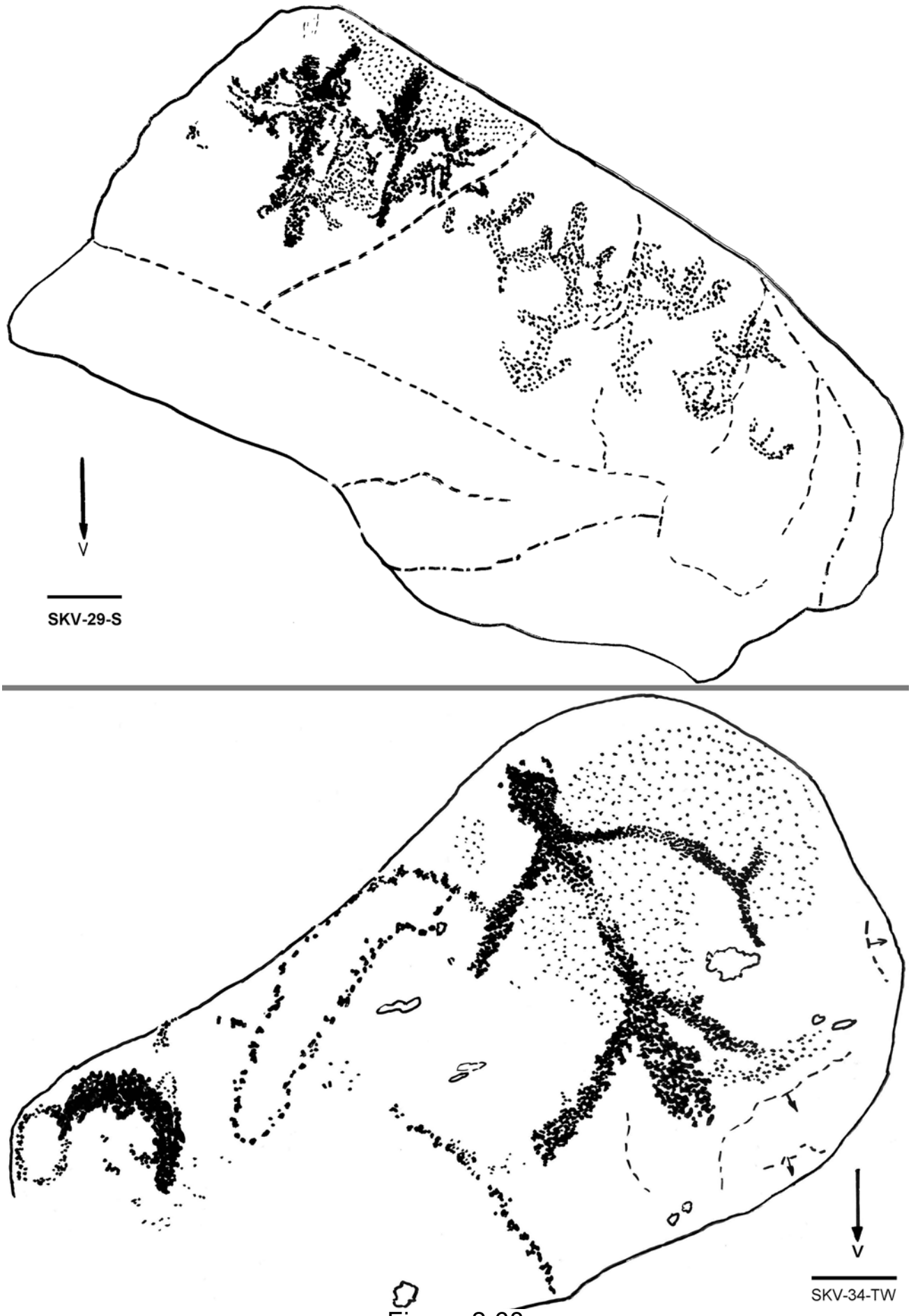


Figure 2.68

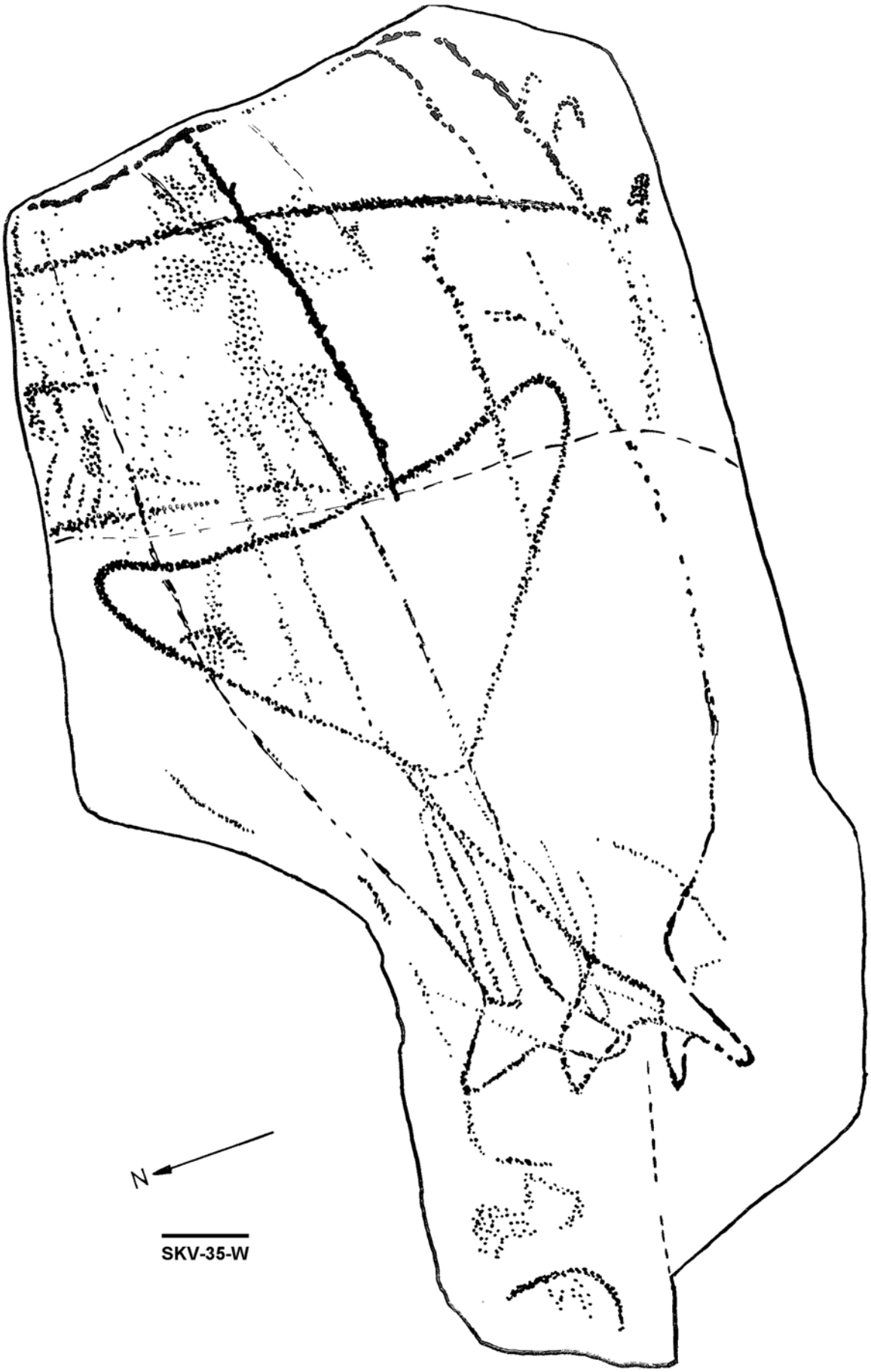


Figure 2.69

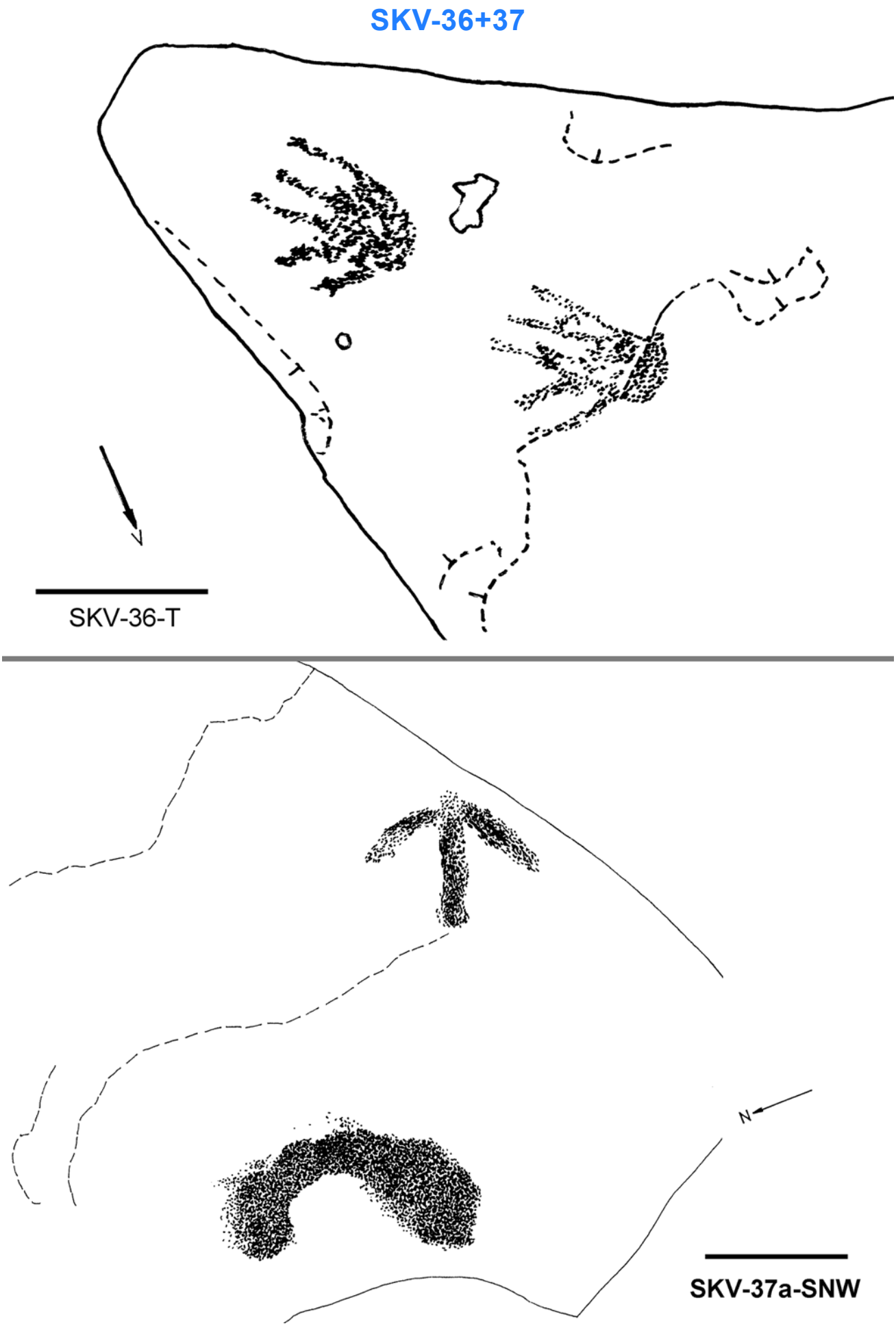


Figure 2.70

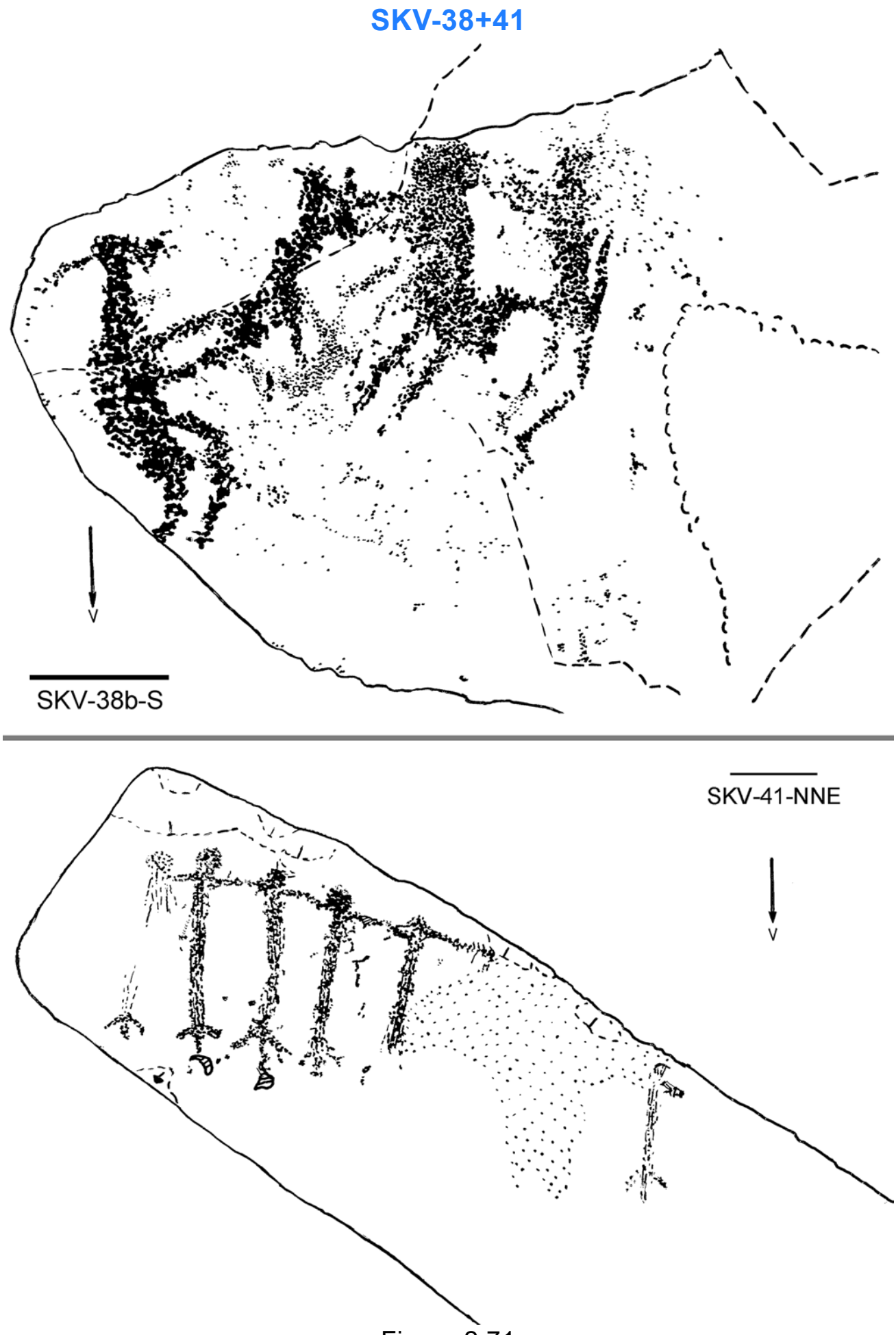


Figure 2.71

SKV-38a

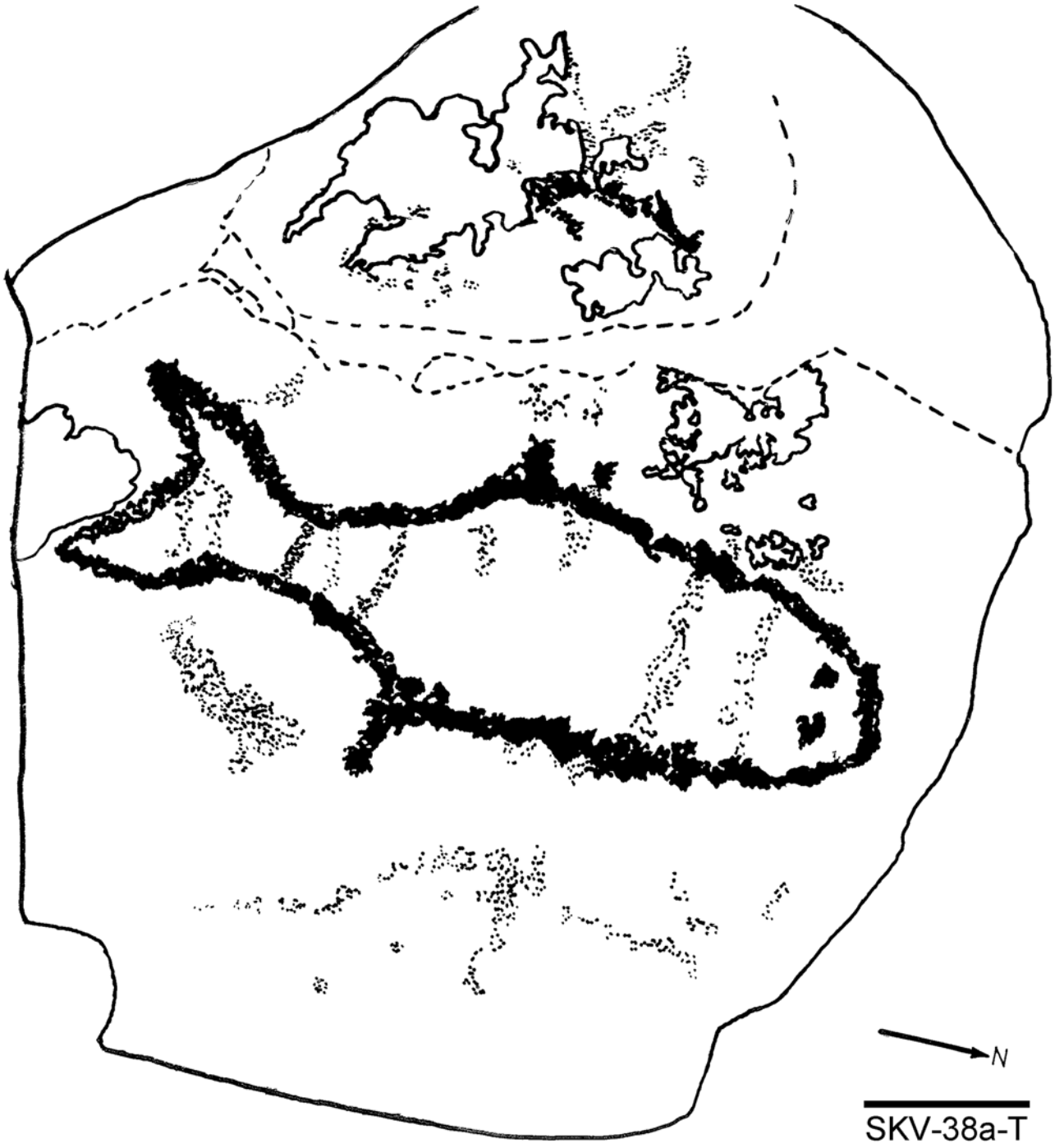


Figure 2.72

SKV-39

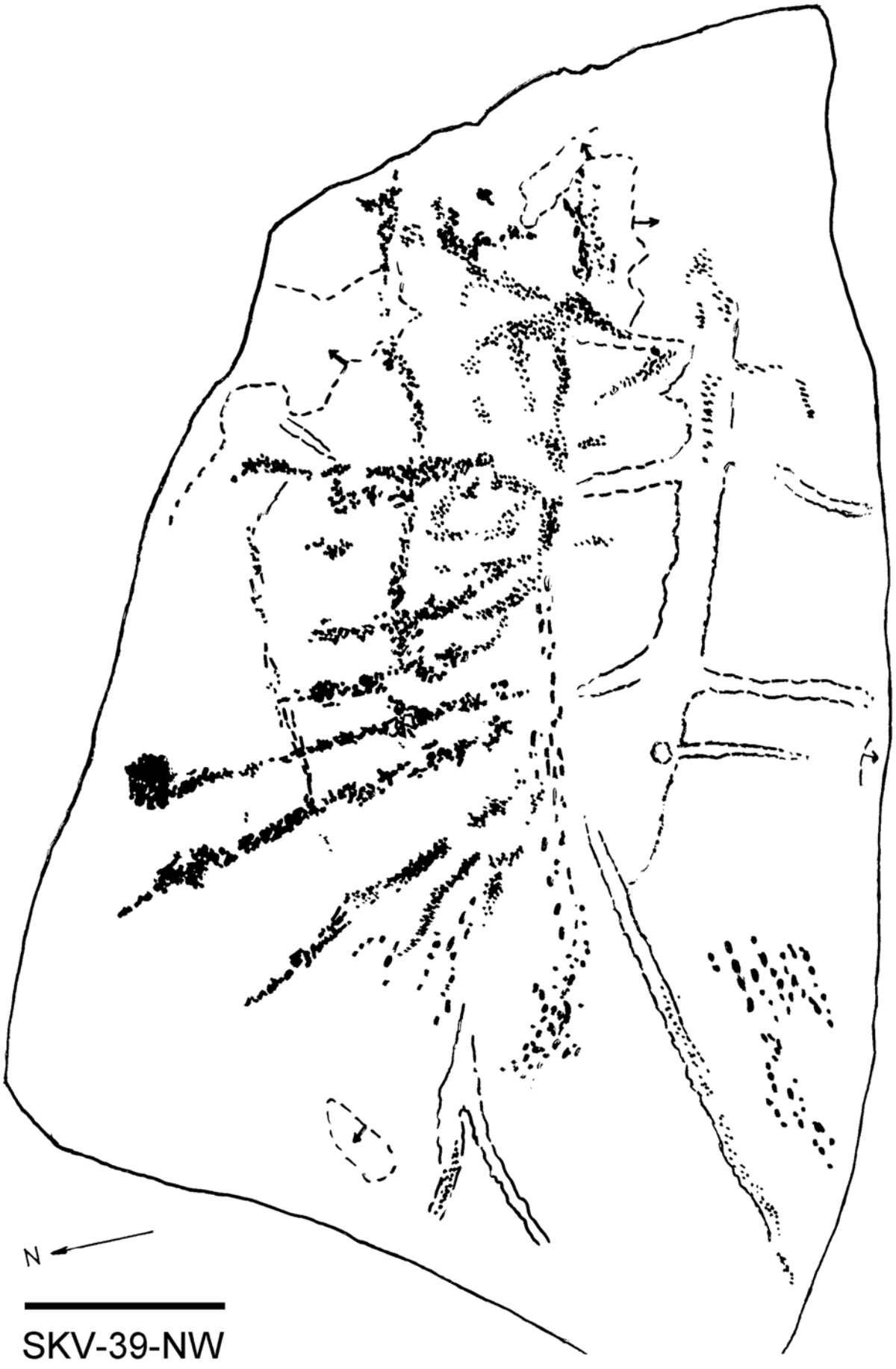


Figure 2.73

SKV-42-Wbottom

Figure 2.74

SKV-42

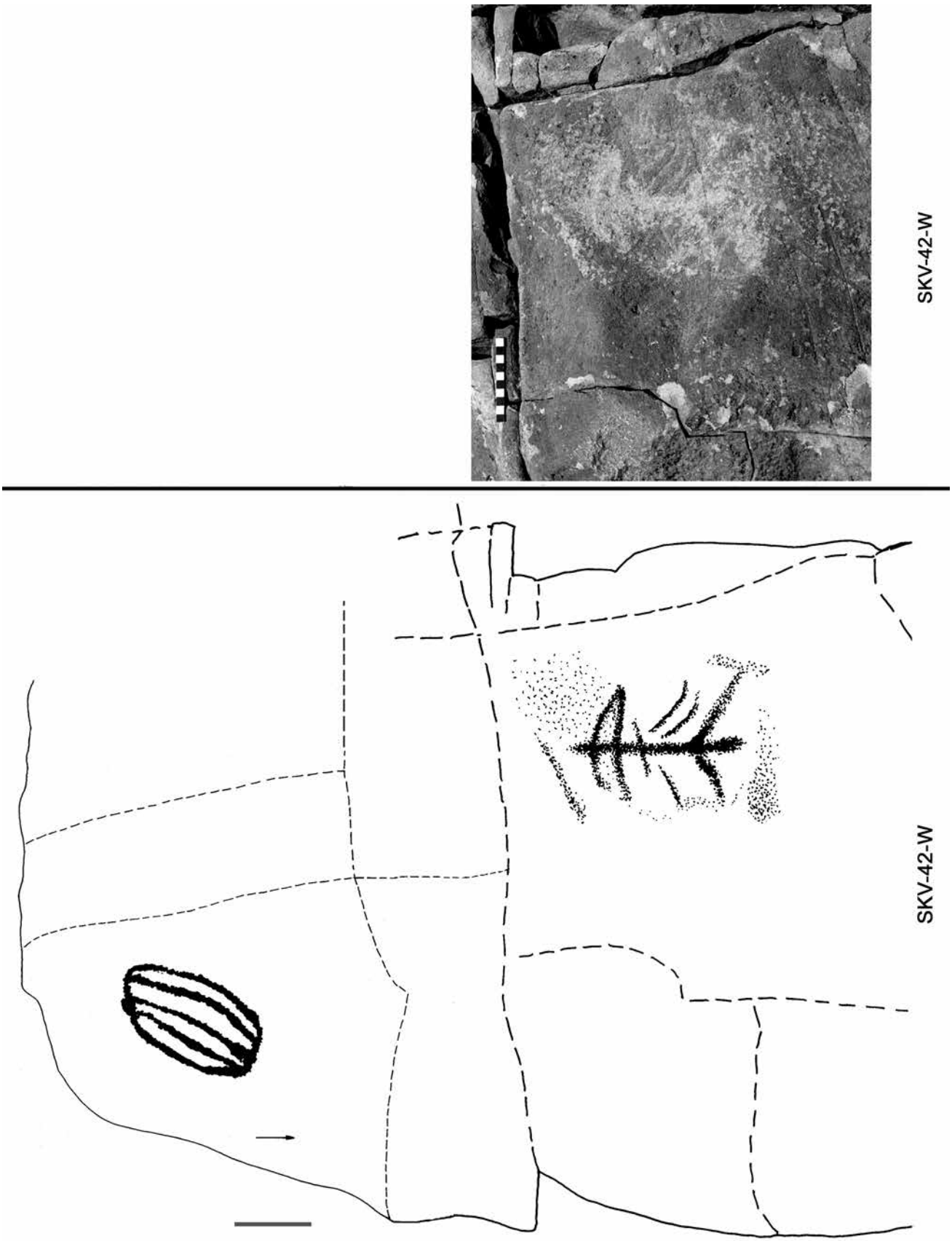


Figure 2.75

SKV-43+44

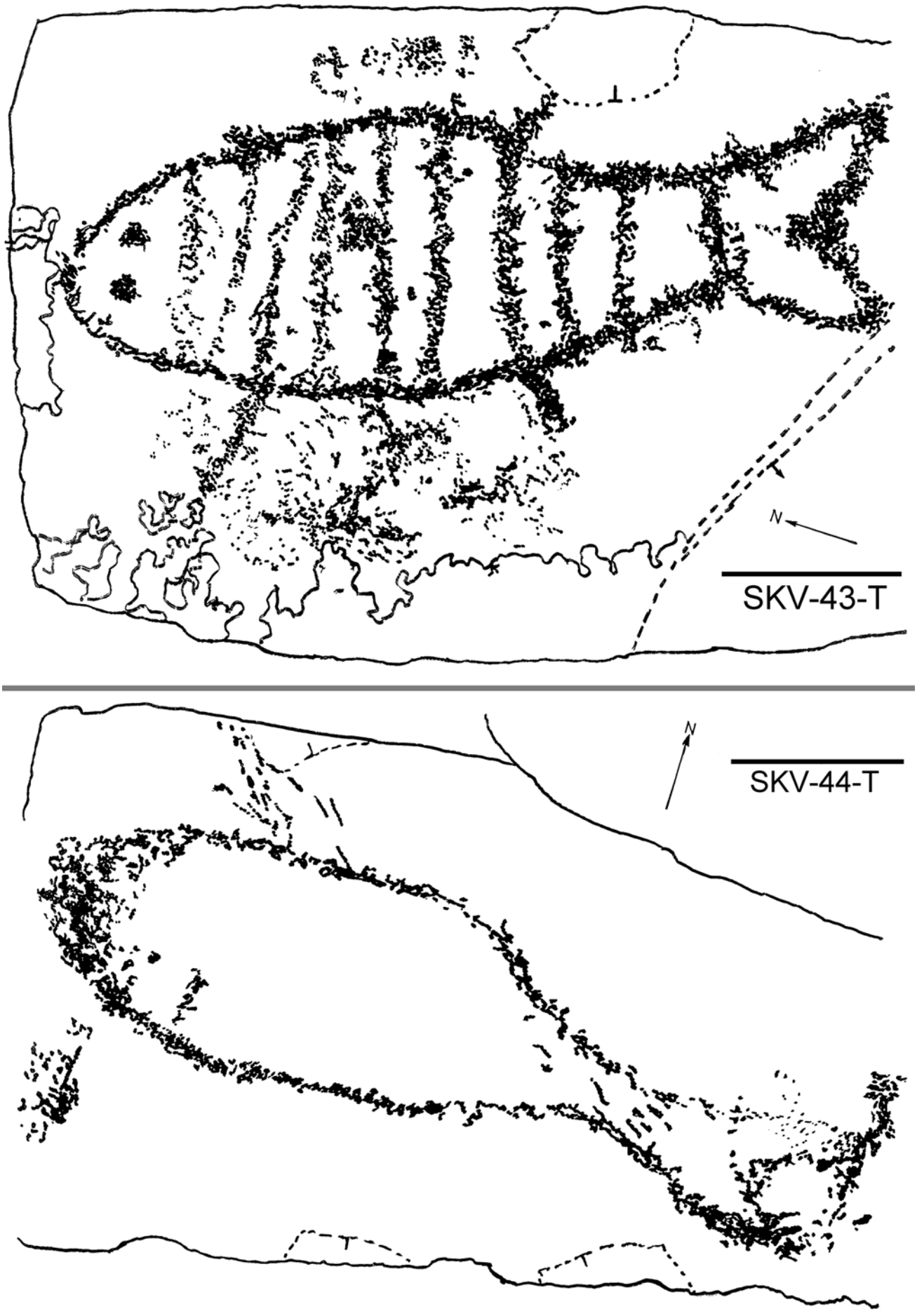


Figure 2.76

SKV-46+61+62

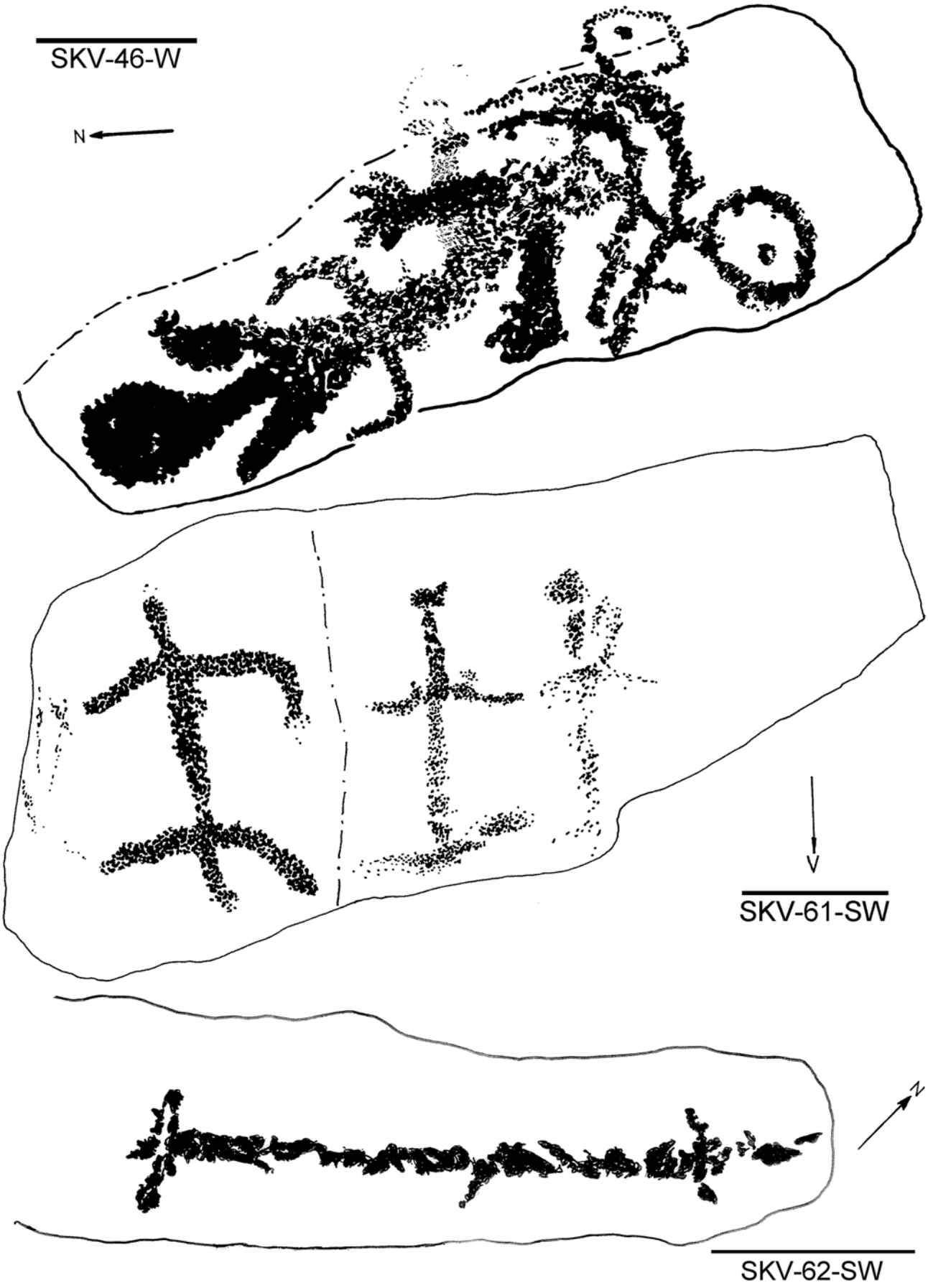


Figure 2.77

SKV-48

Figure 2.78

Figure 2.79

SKV-60

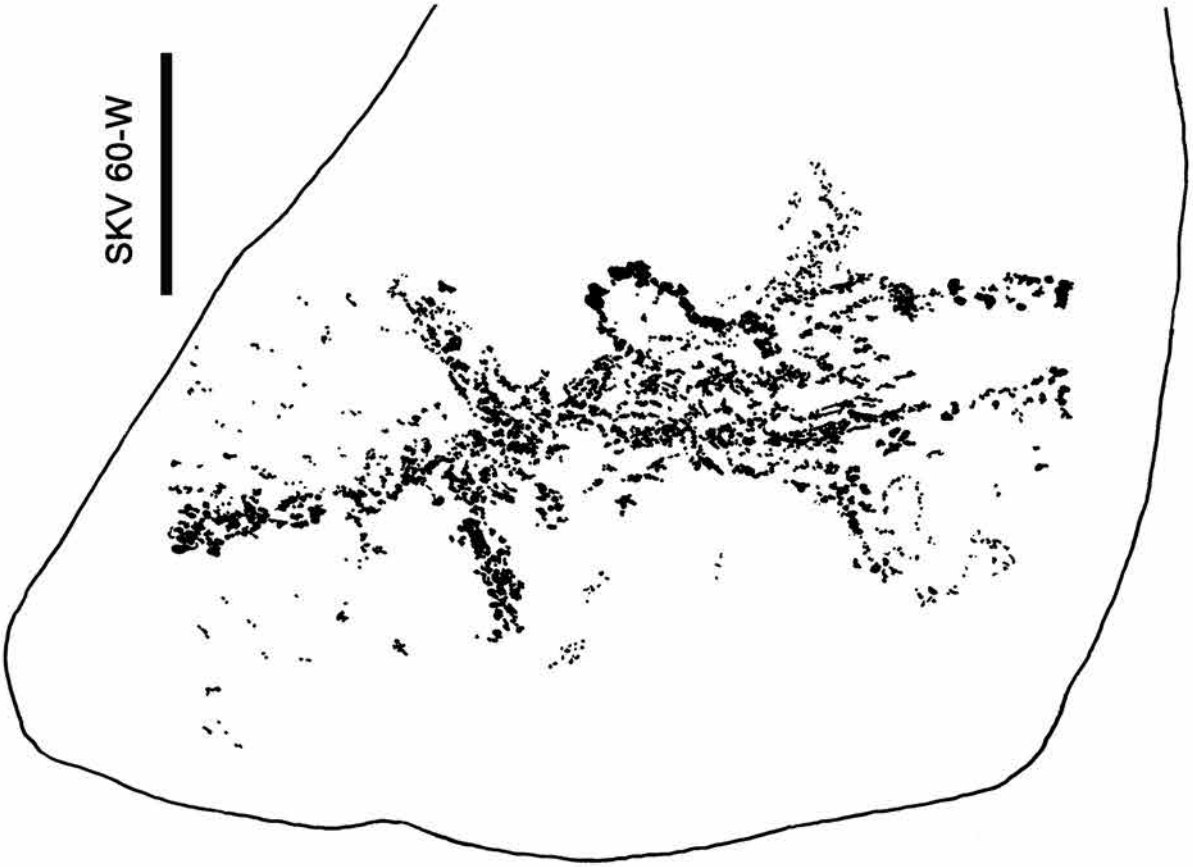


Figure 2.80

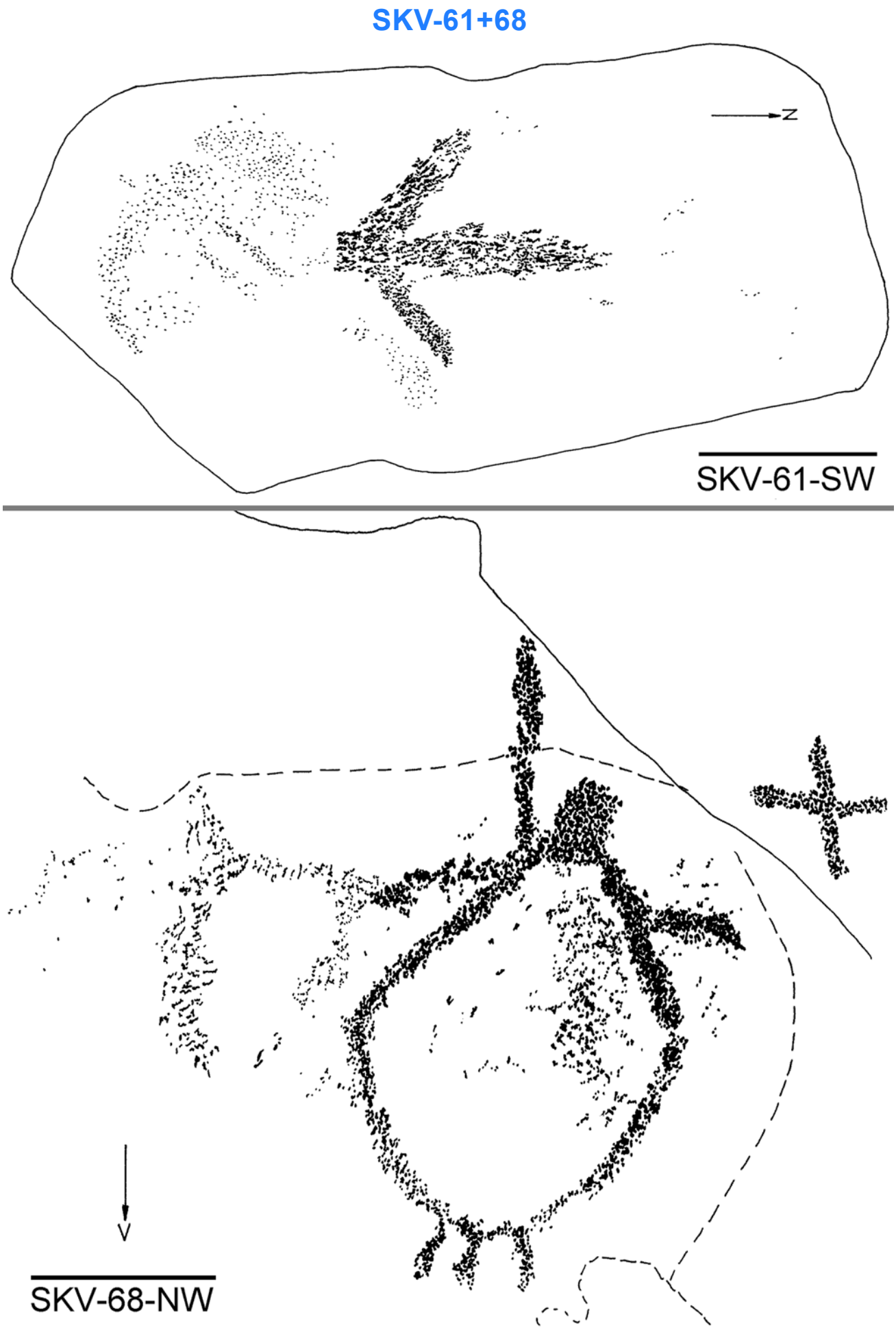


Figure 2.81

SKV-65

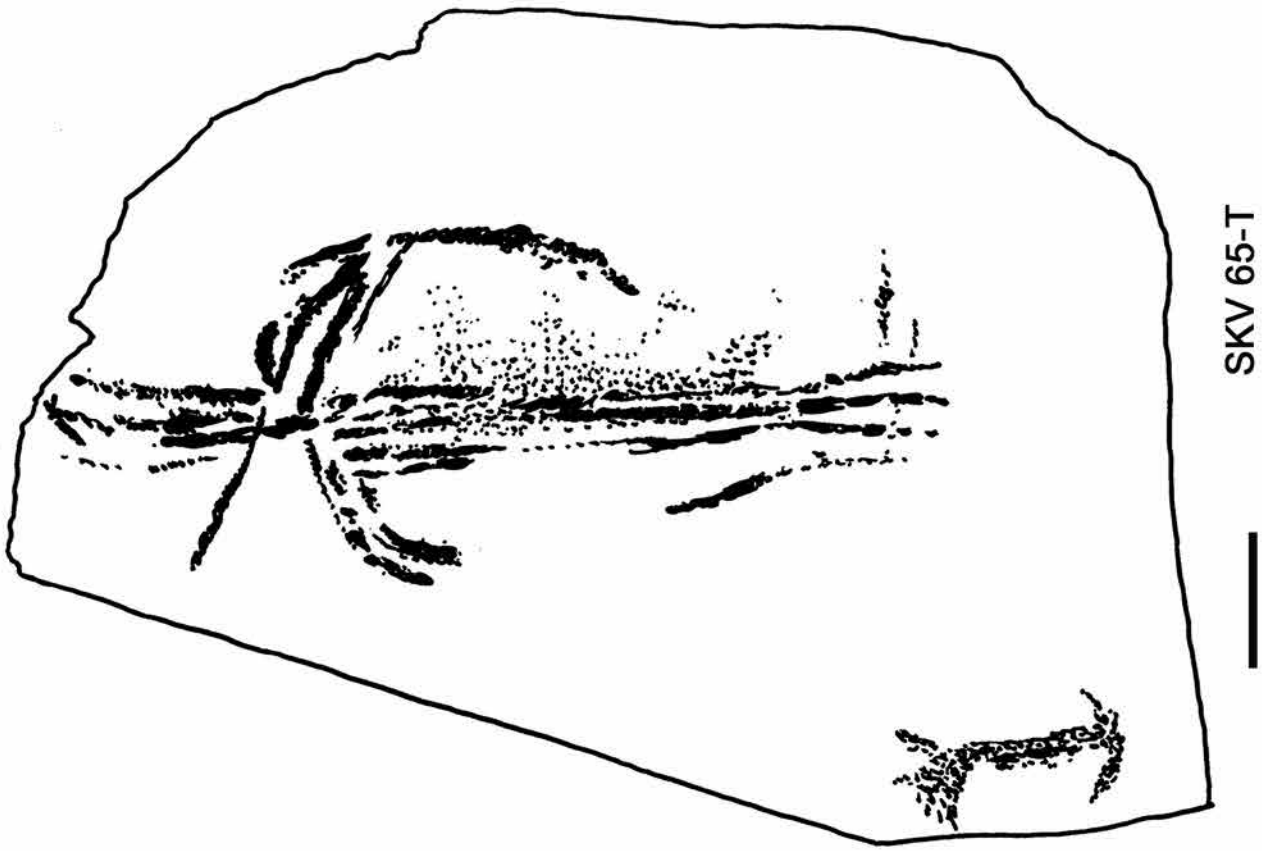


Figure 2.82

SKV-66+67+63

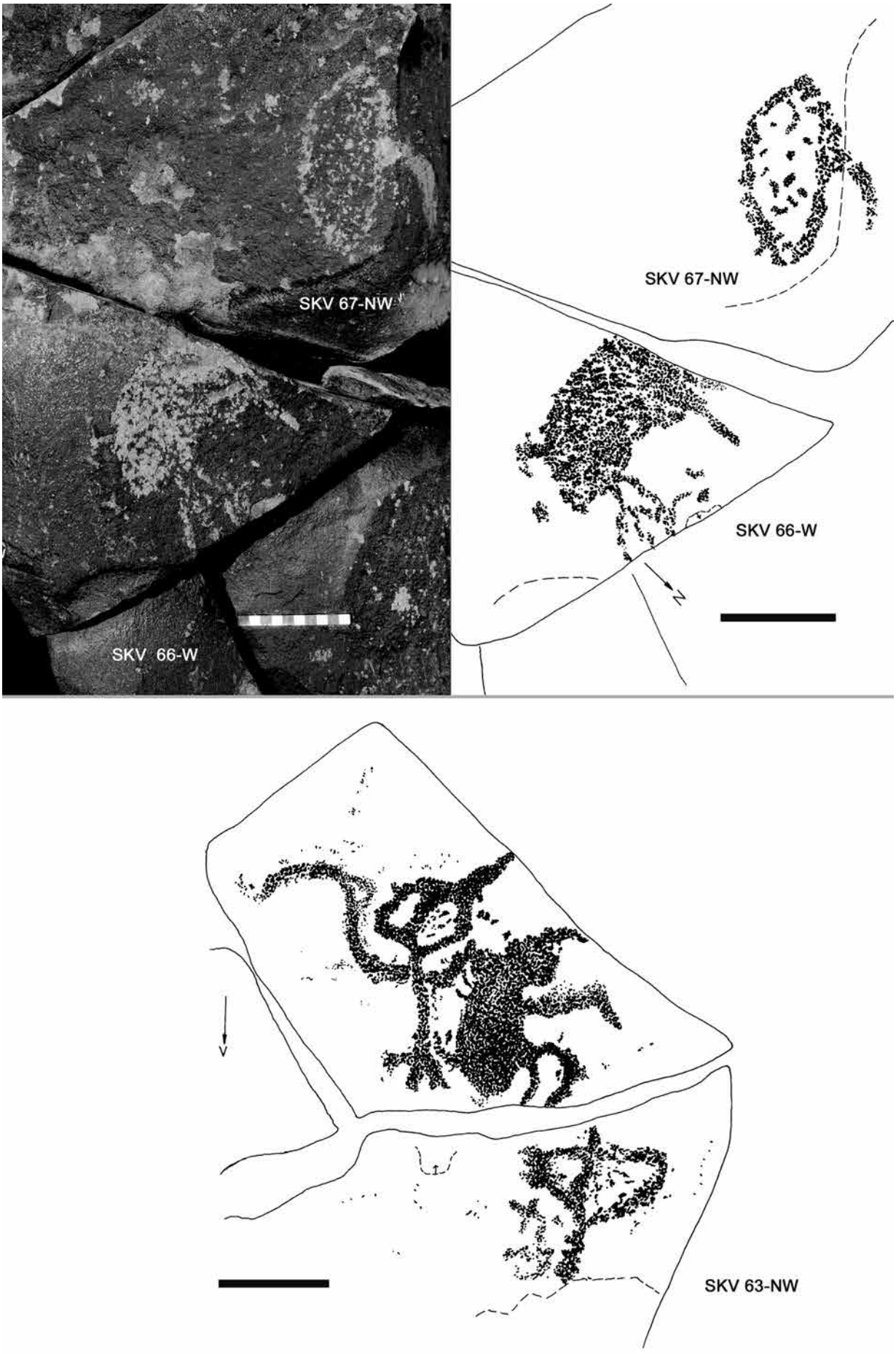


Figure 2.83

SKV-69

Figure 2.84

SKV-70

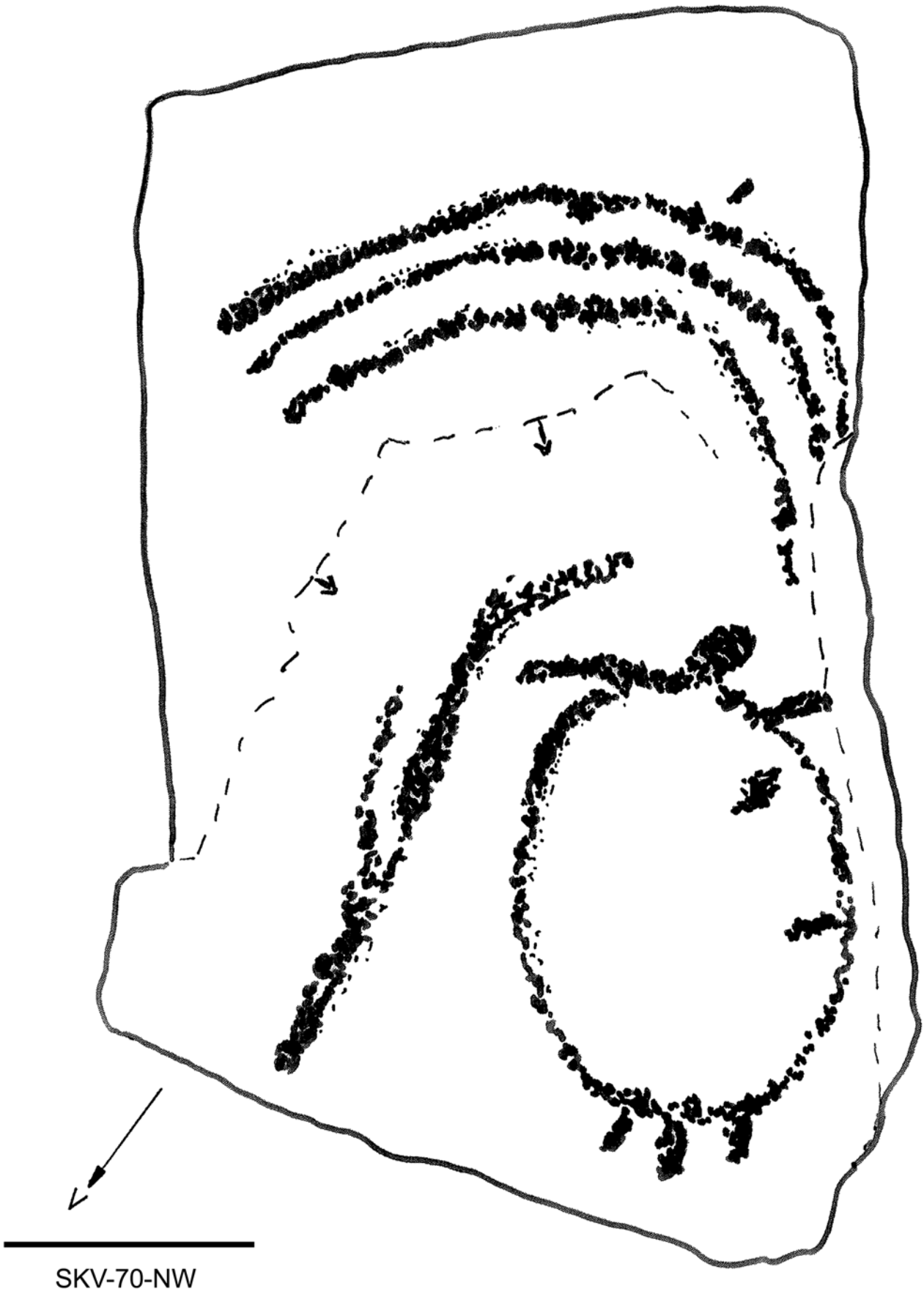


Figure 2.85

SKV-71

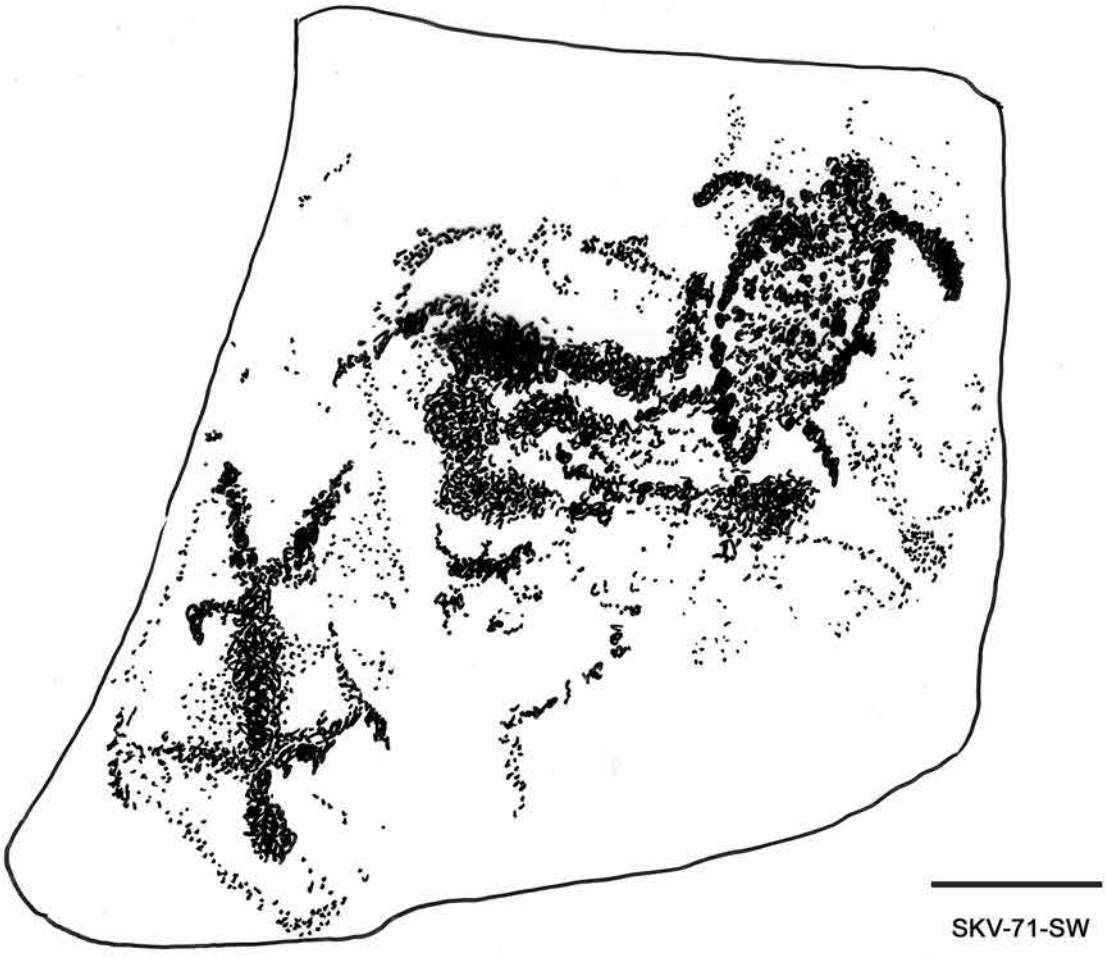


Figure 2.86

SKV-73

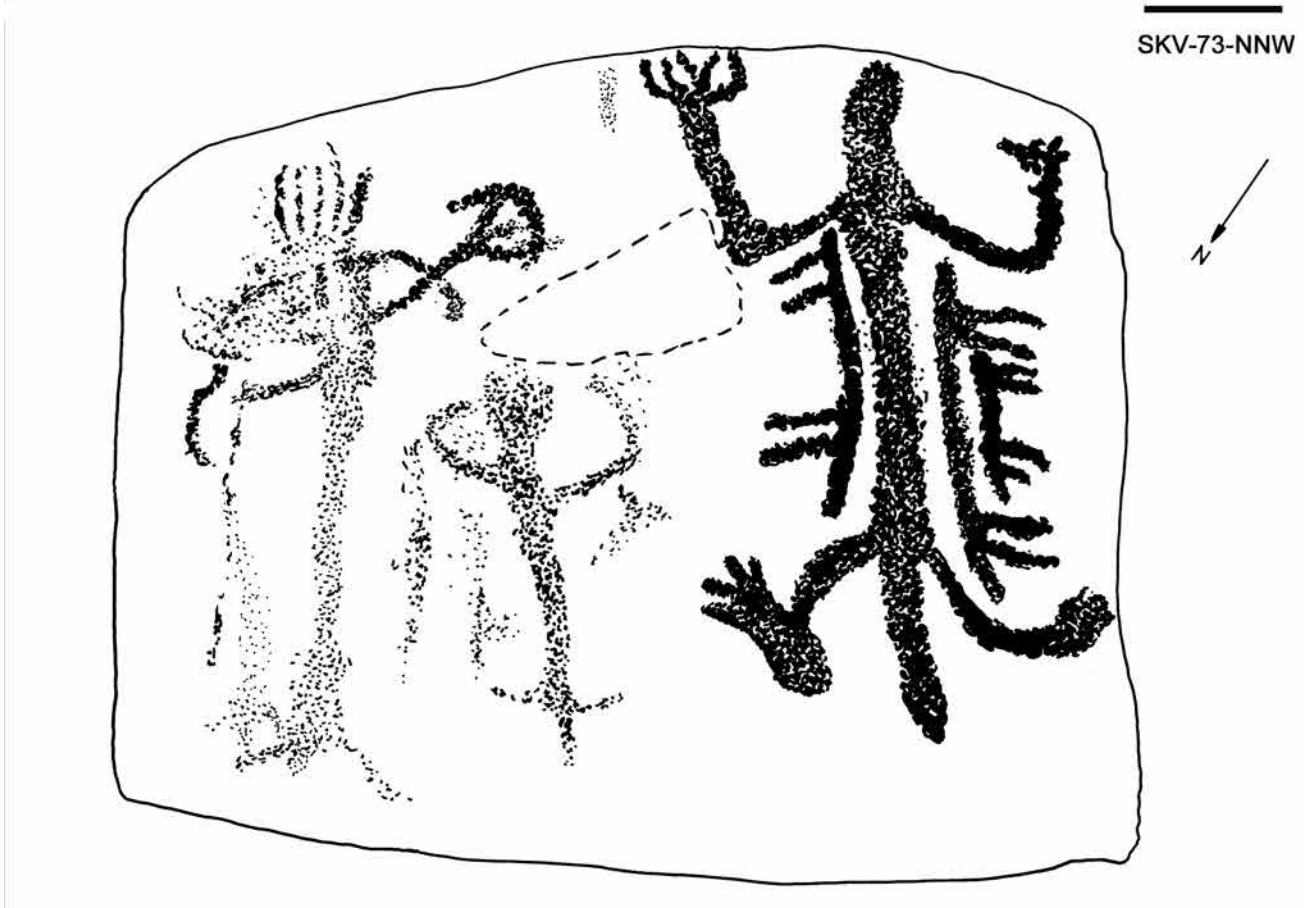
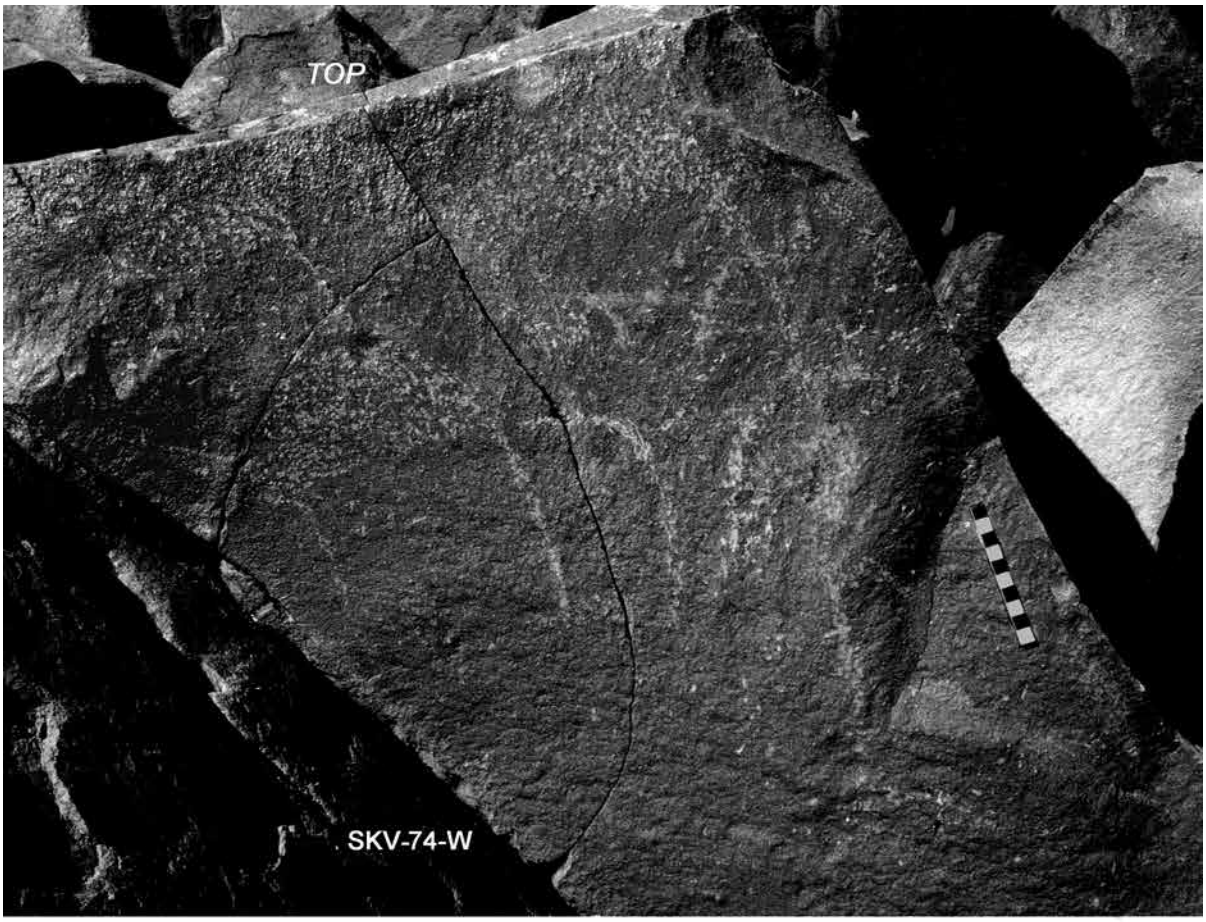


Figure 2.87

SKV-74



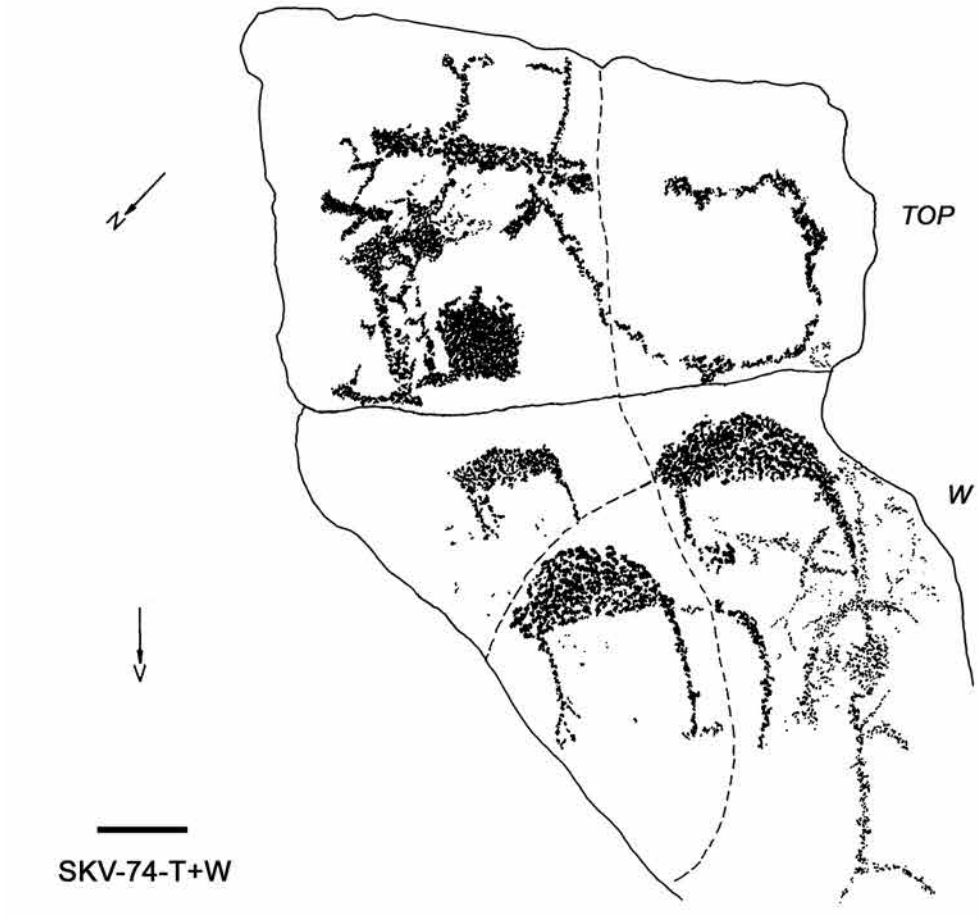


Figure 2.88

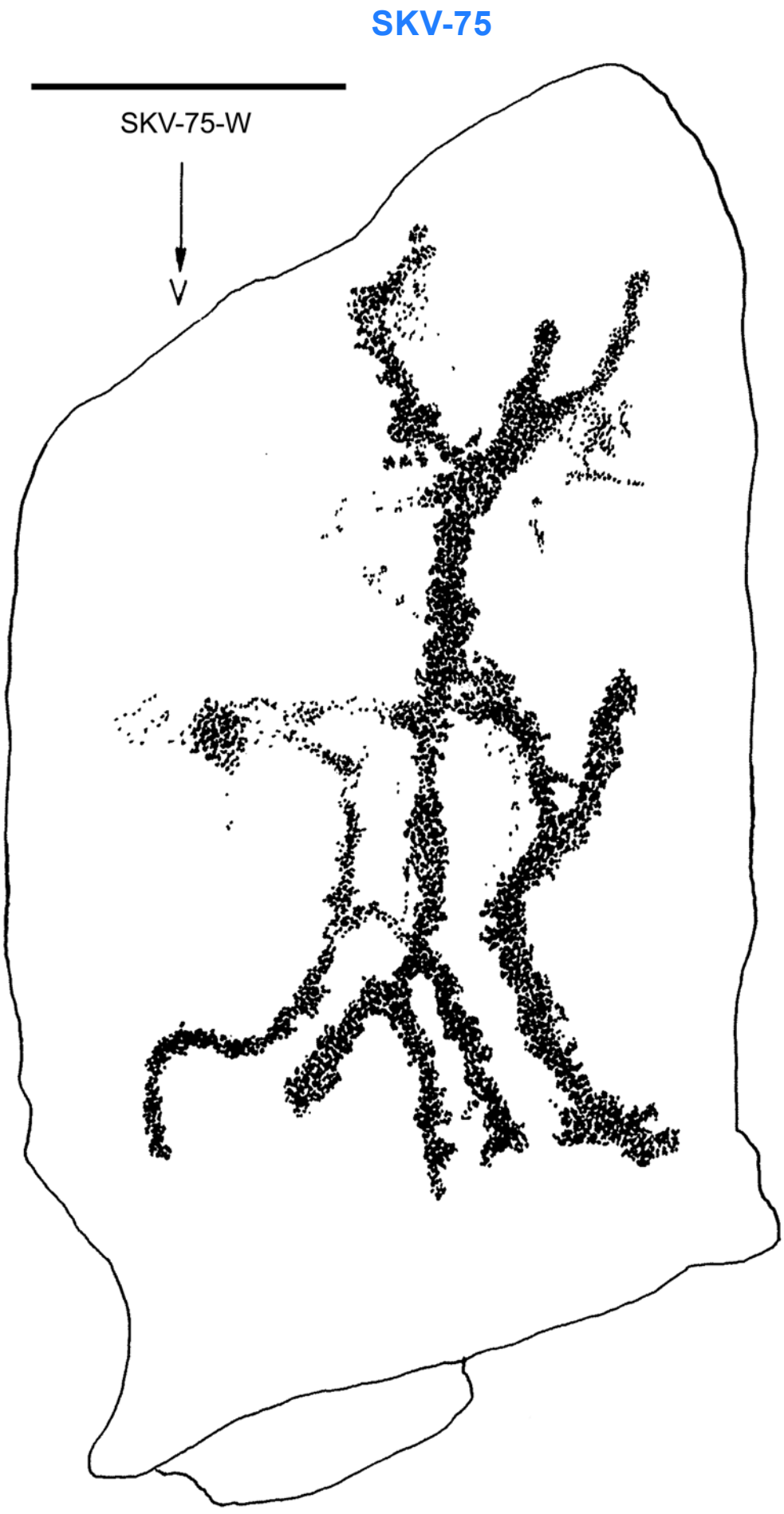


Figure 2.89

SKV-76+77+80

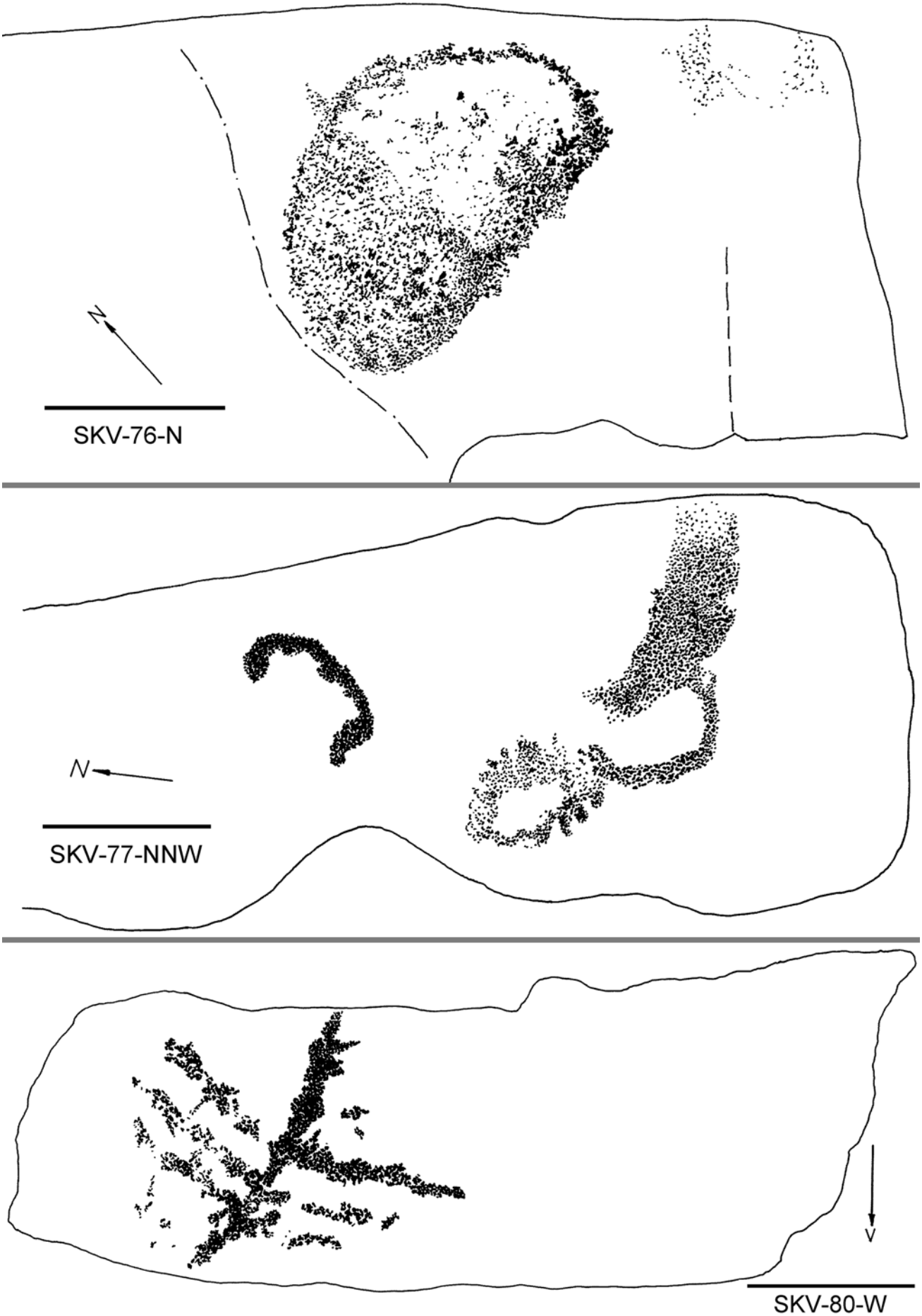
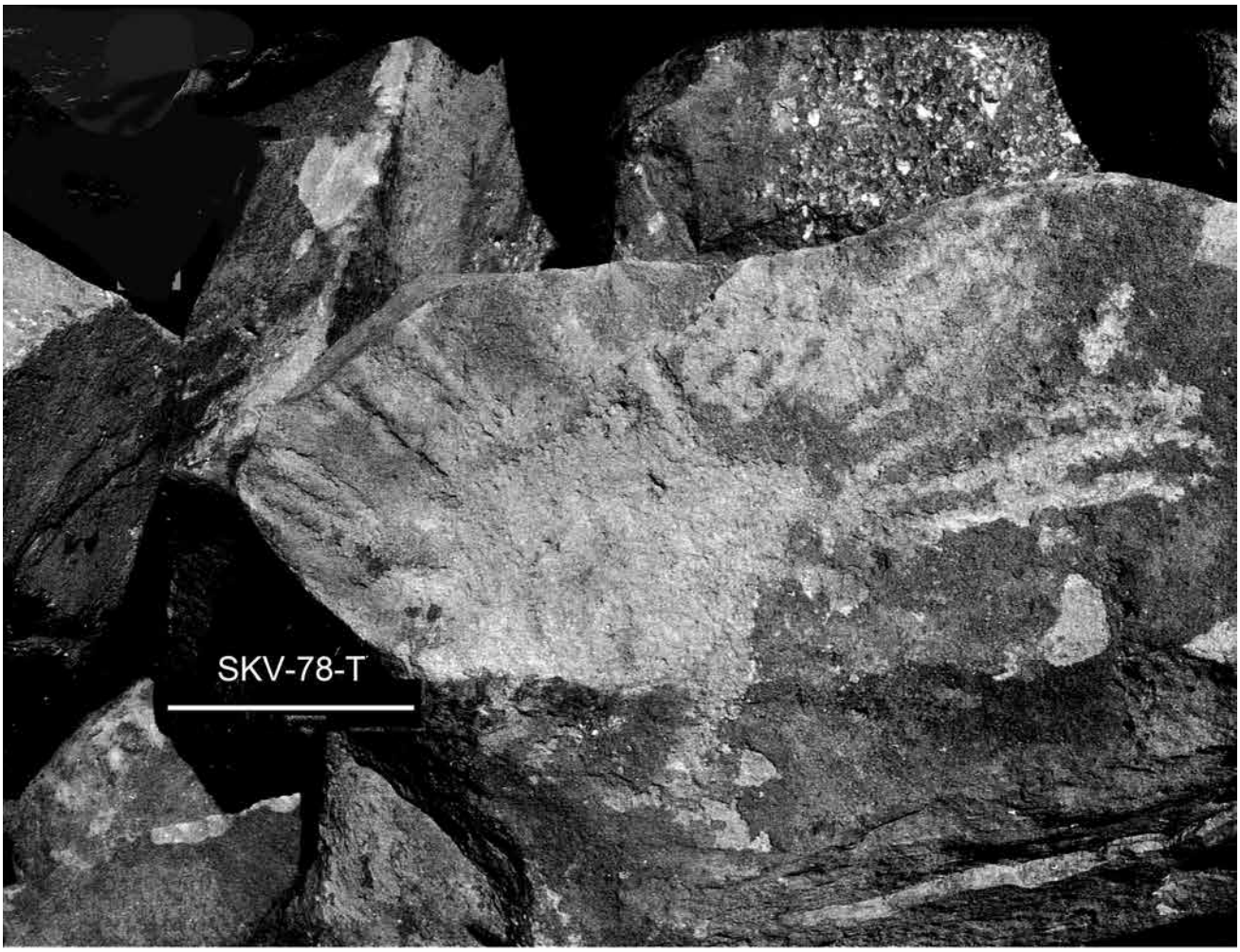


Figure 2.90

SKV-78



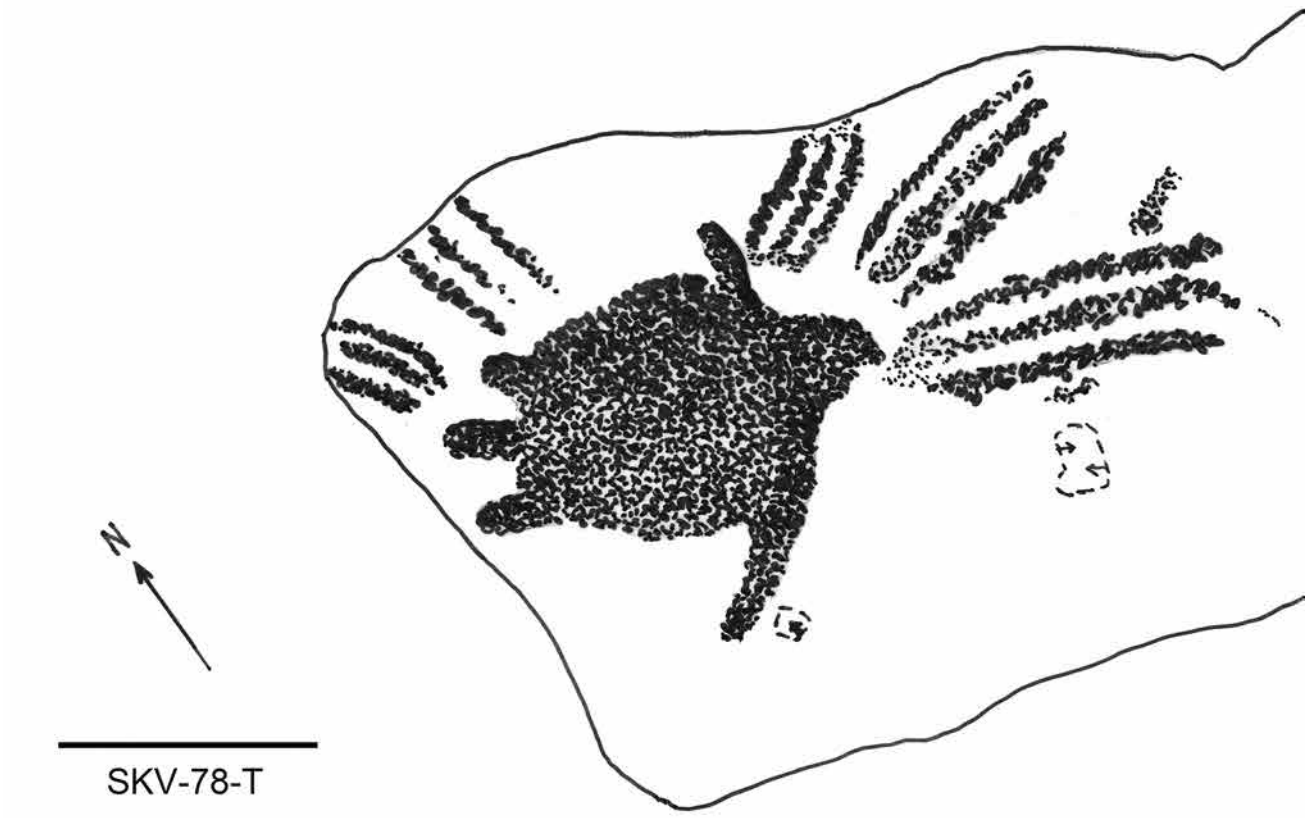


Figure 2.91

SKV-79

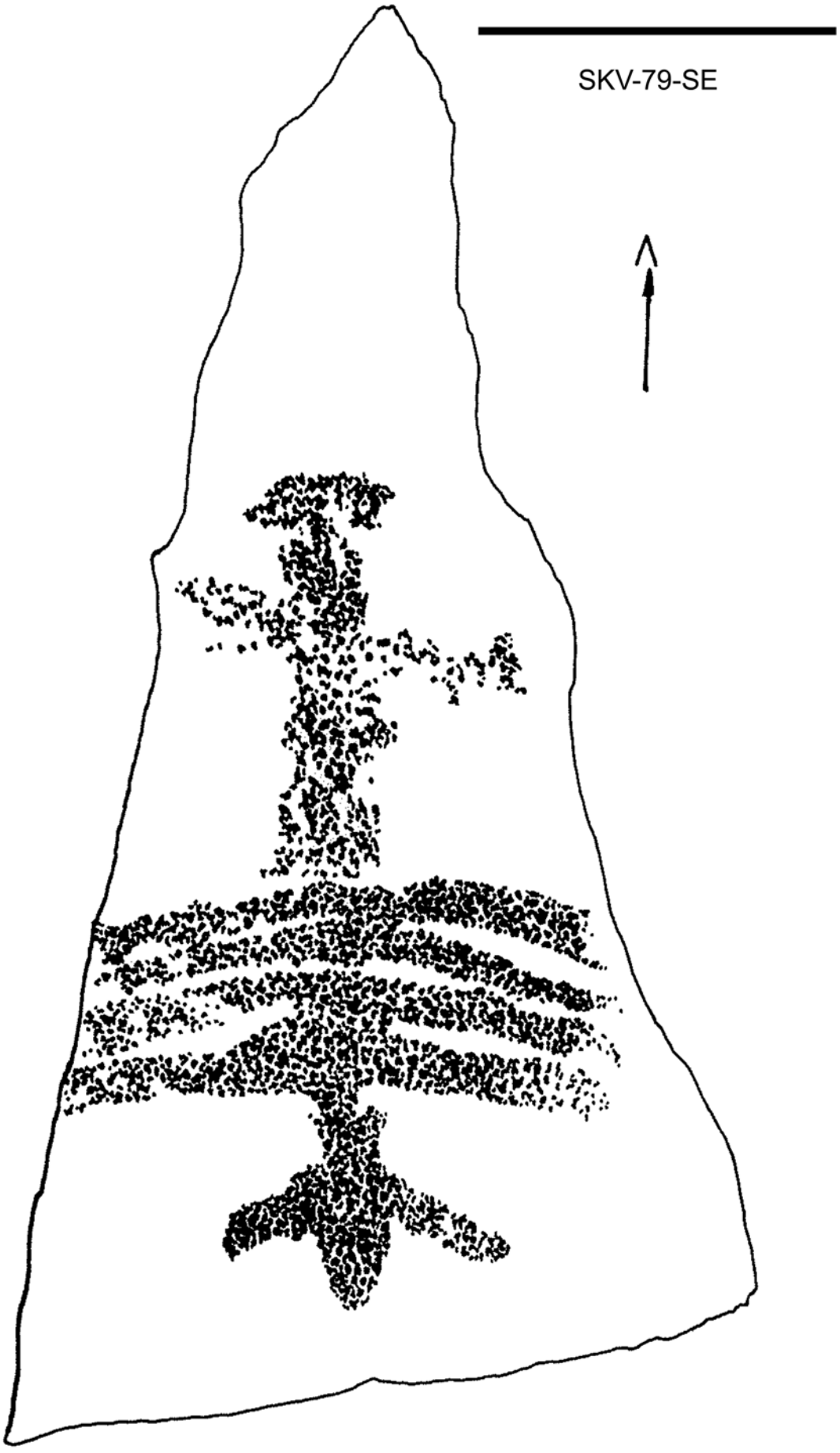


Figure 2.92

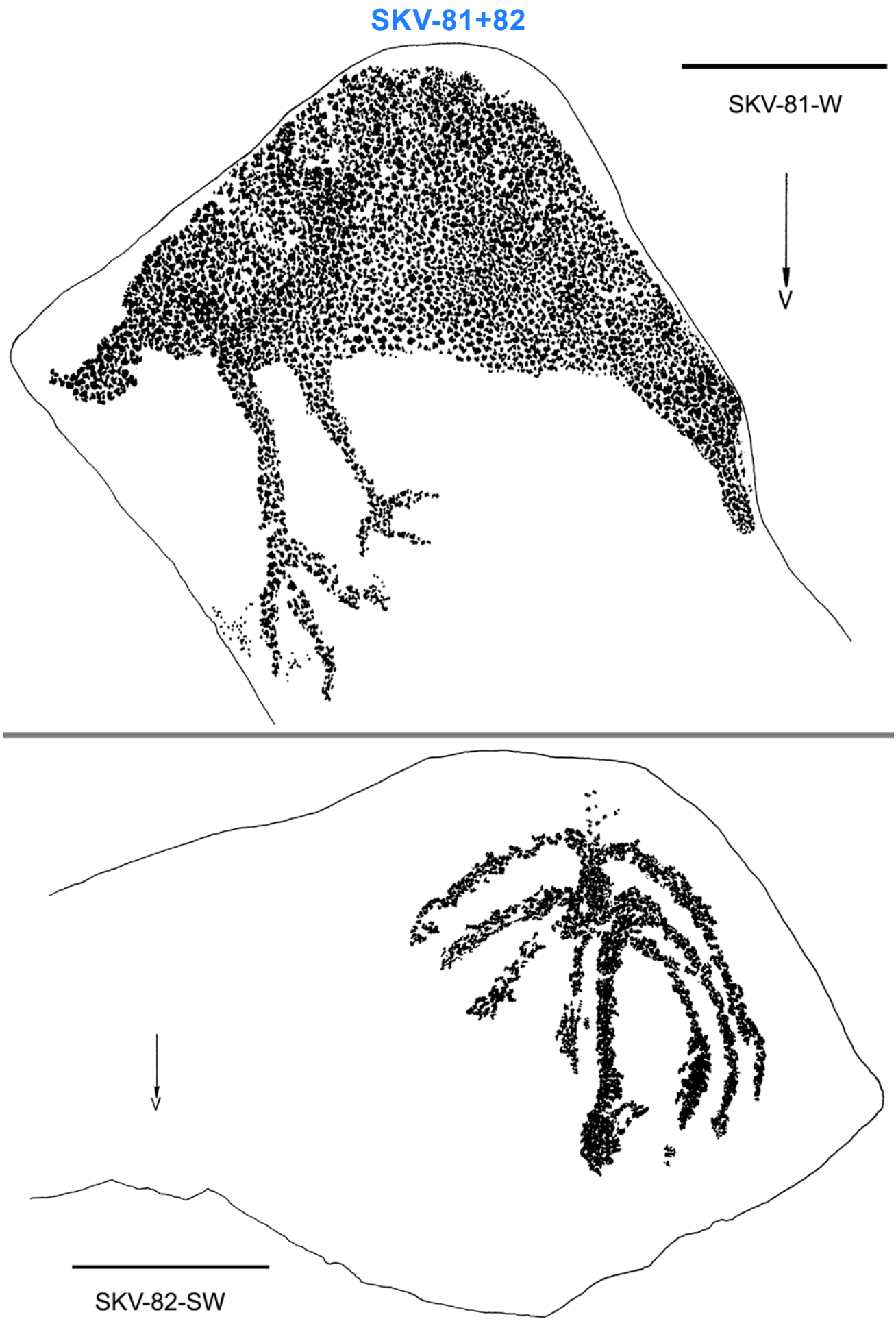
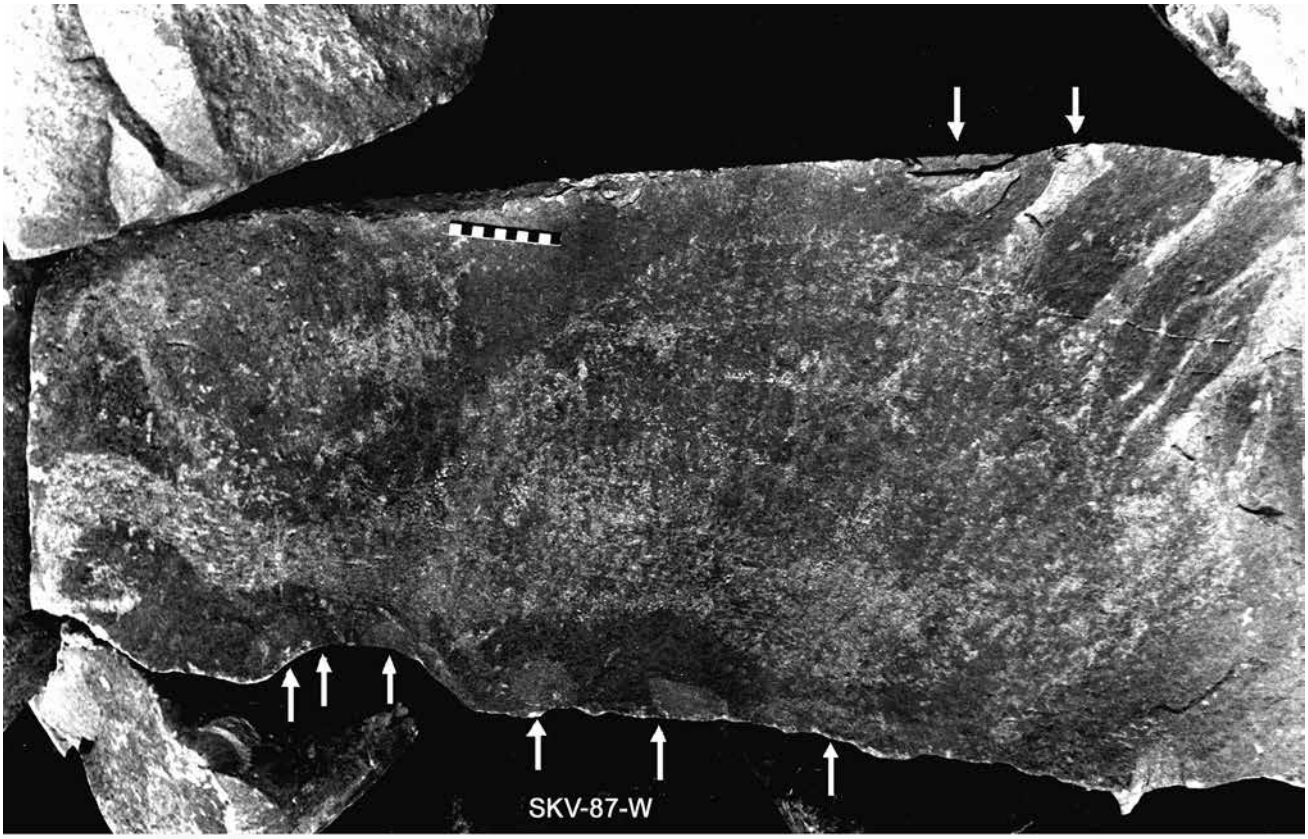


Figure 2.93

SKV-86

Figure 2.94

SKV-87



Arrows indicate flaking of the edges of the carved slab

Figure 2.95

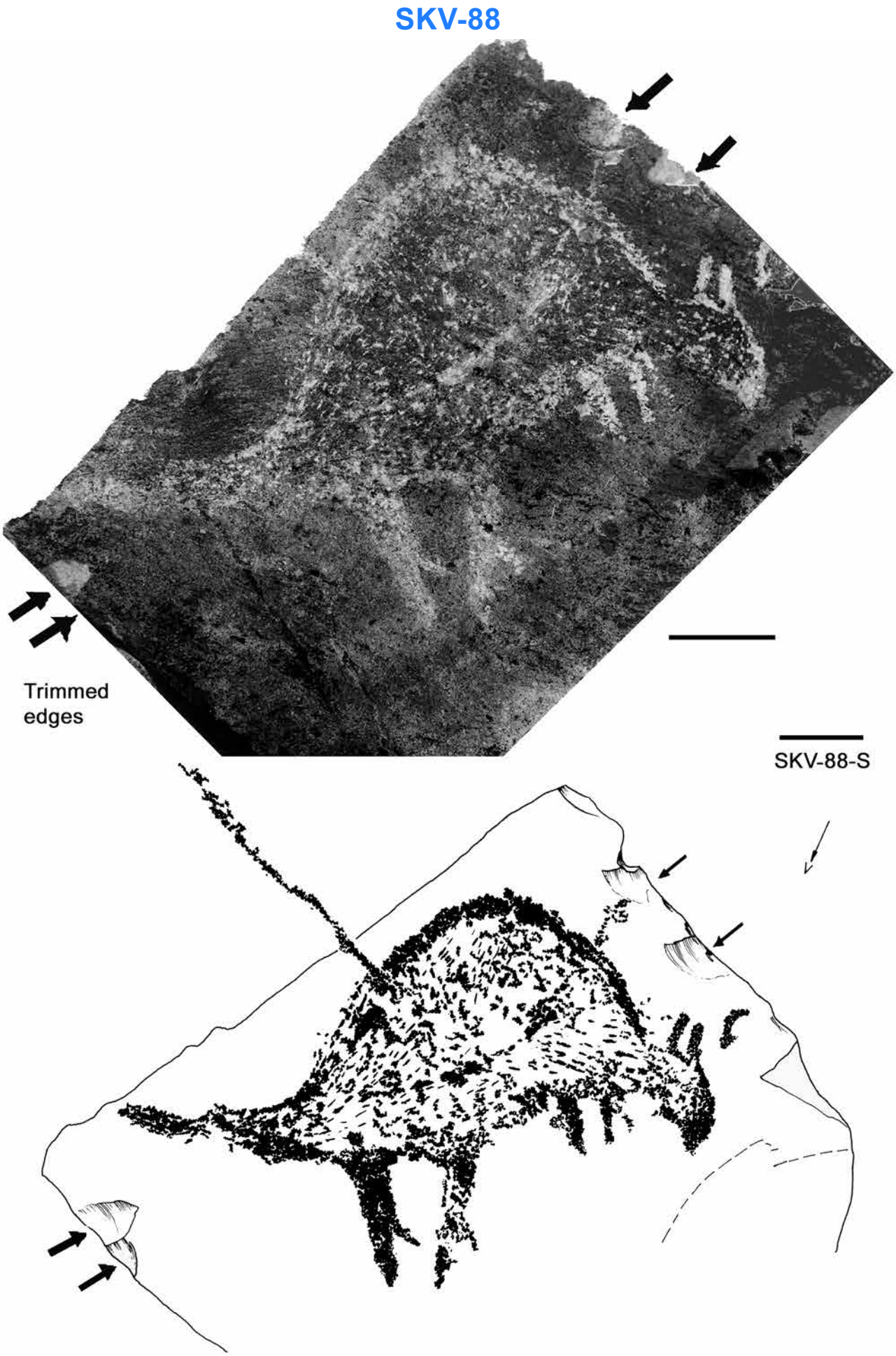


Figure 2.96

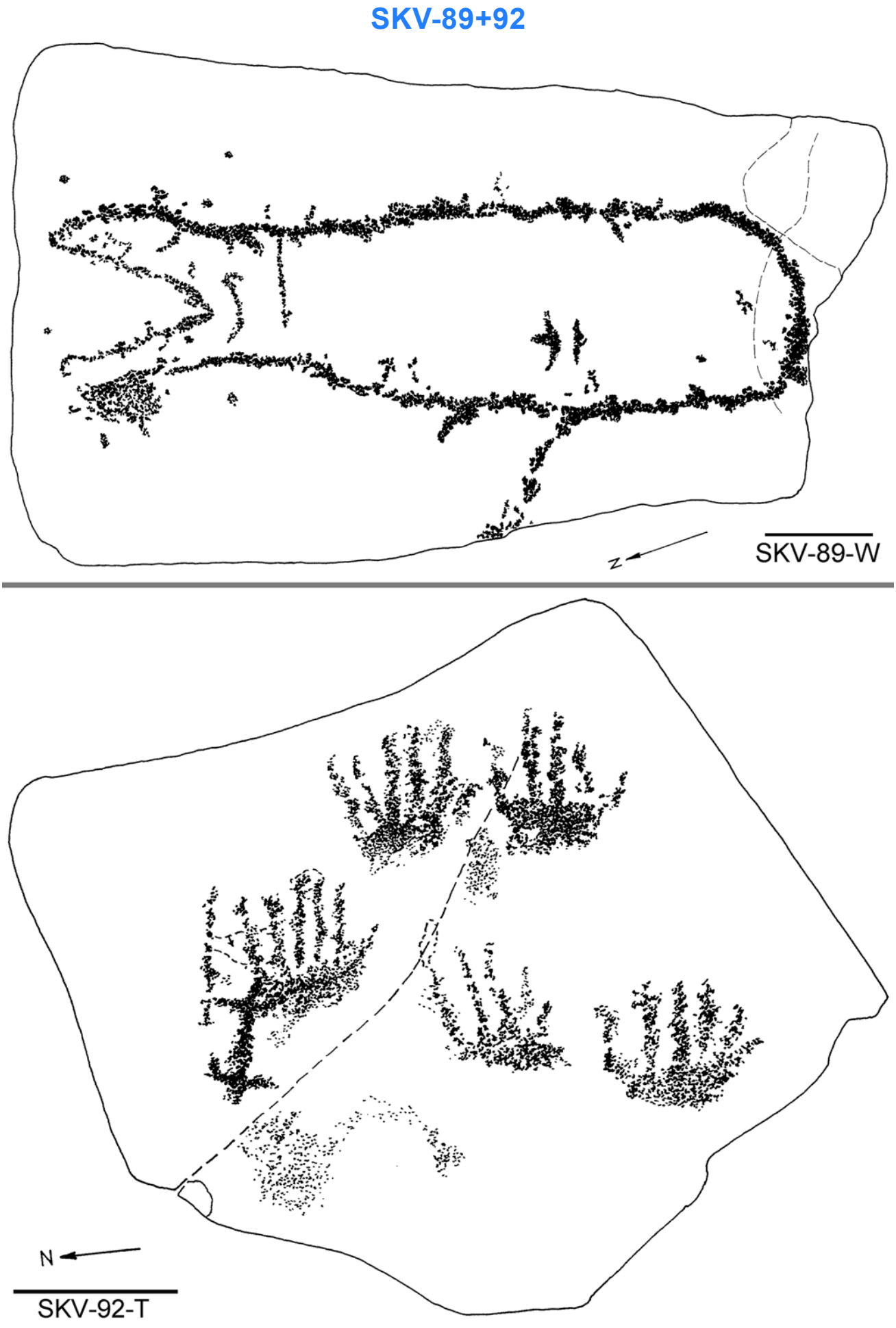


Figure 2.97

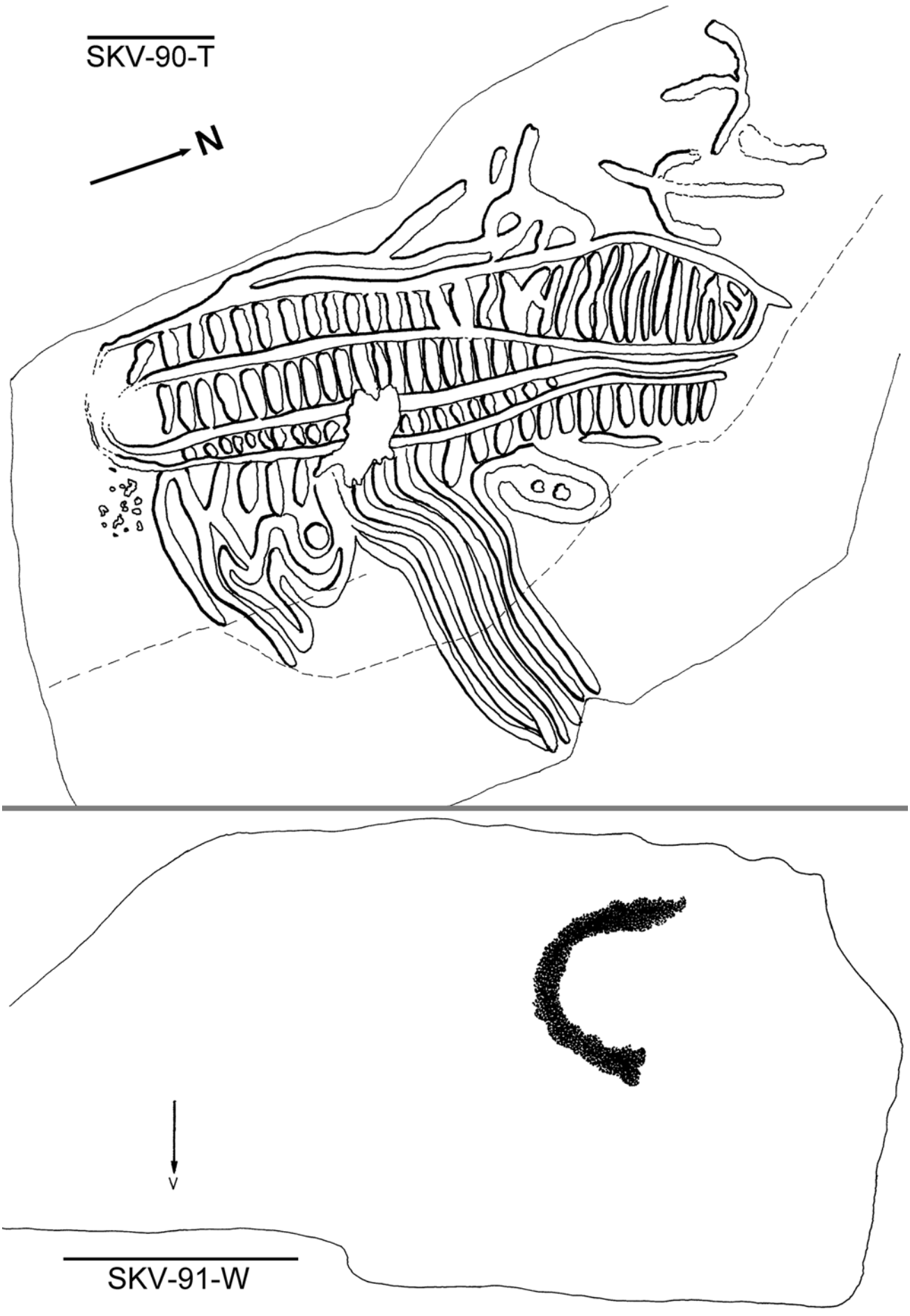


Figure 2.98

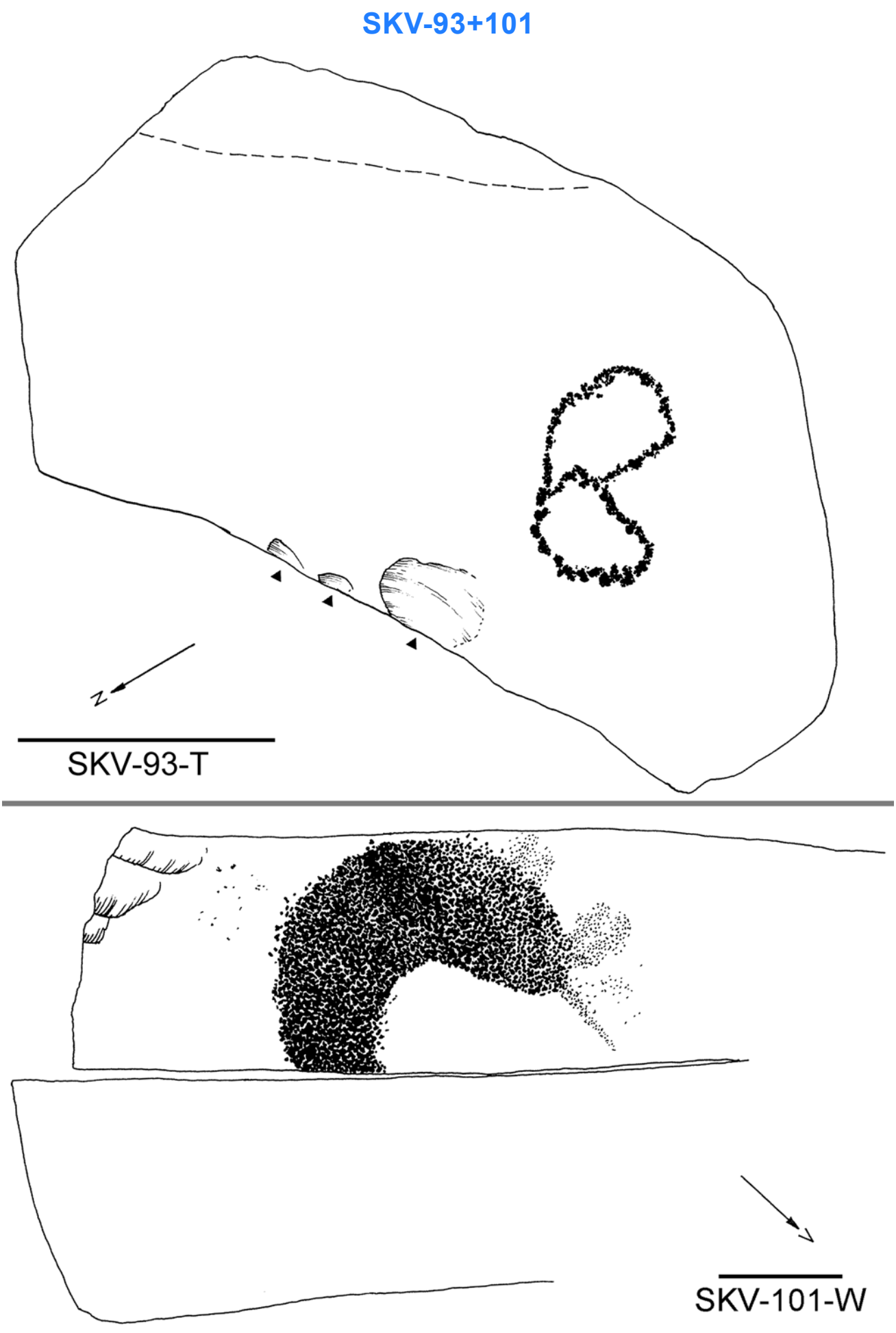
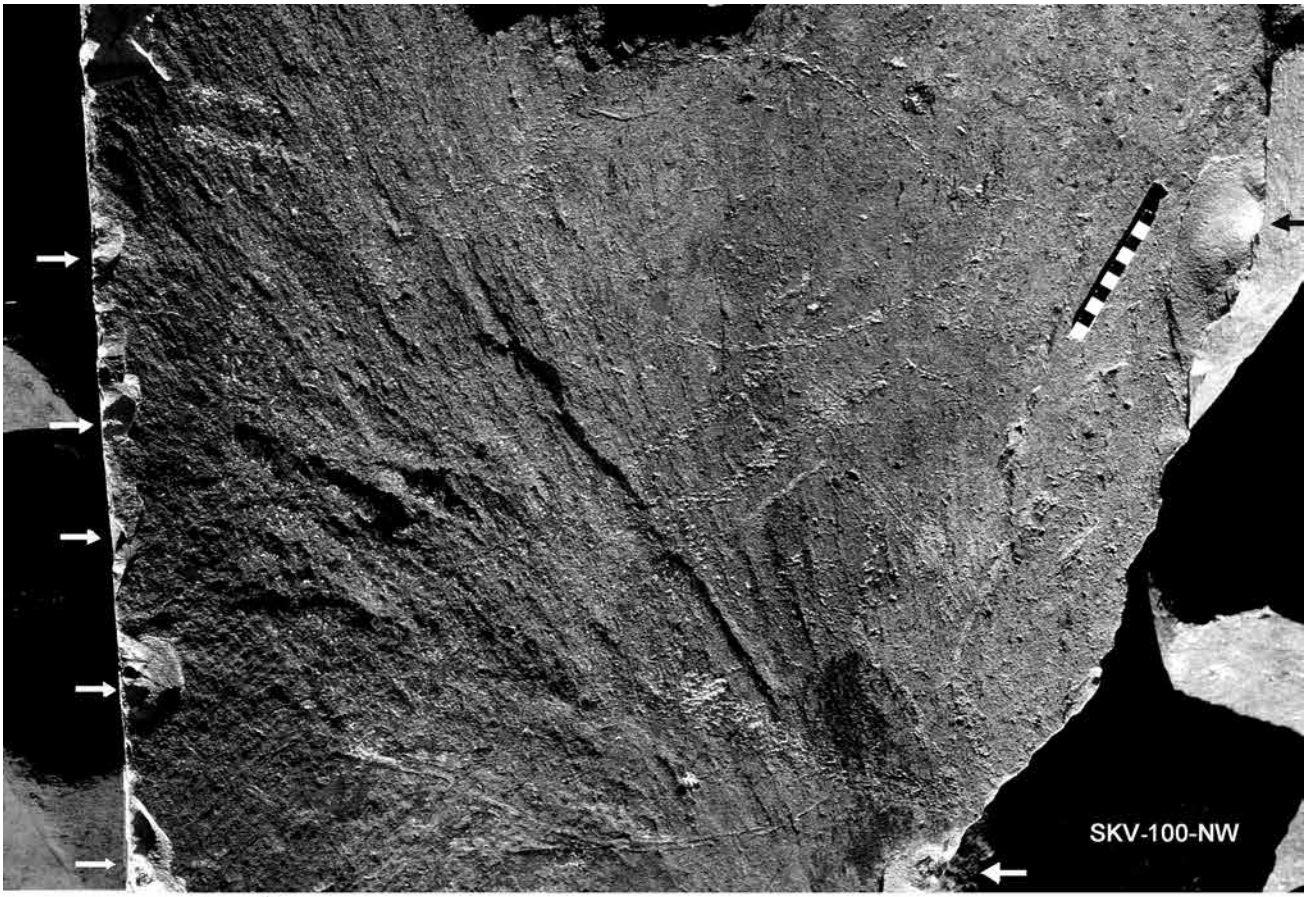


Figure 2.99

SKV-100



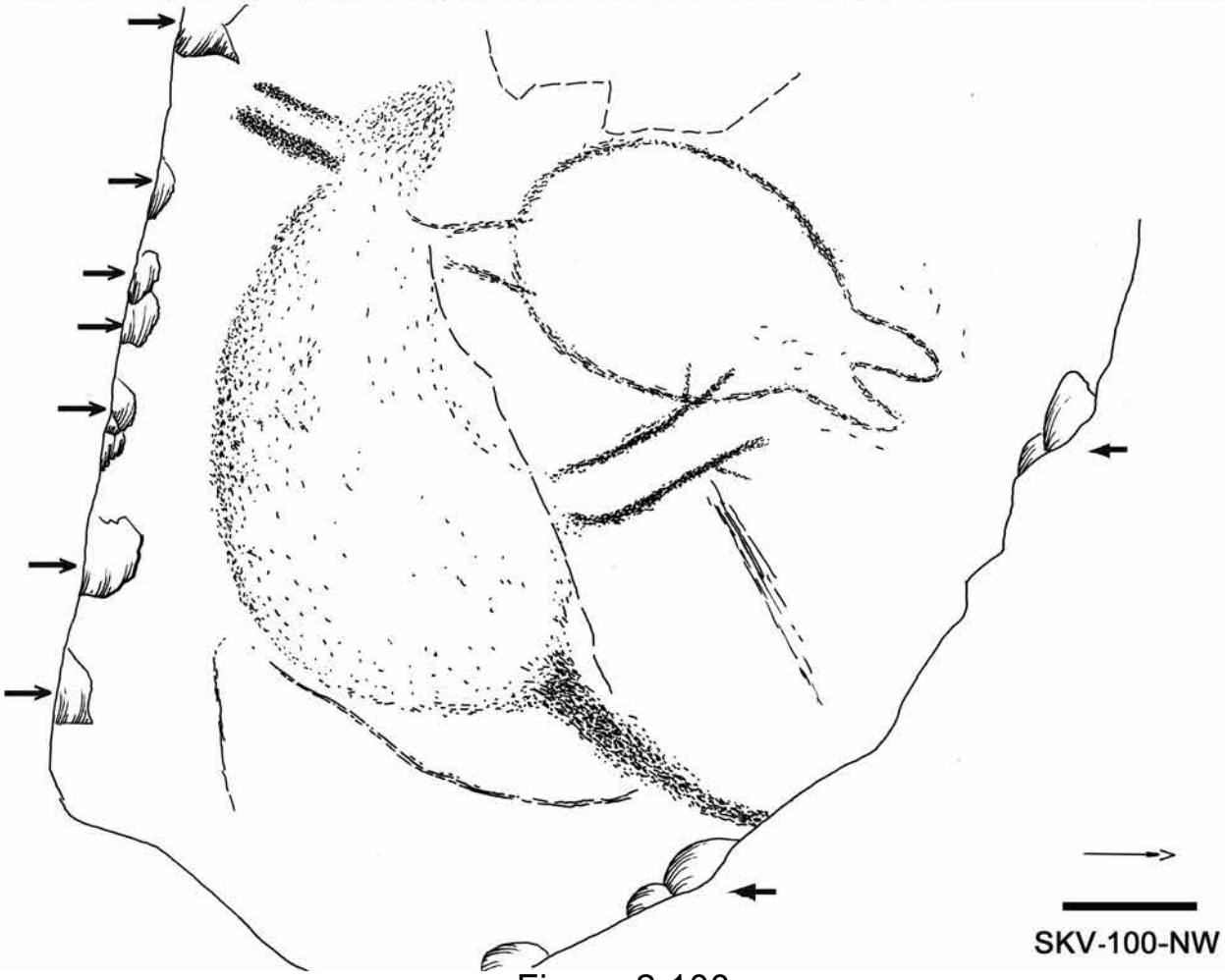


Figure 2.100

SKV-102

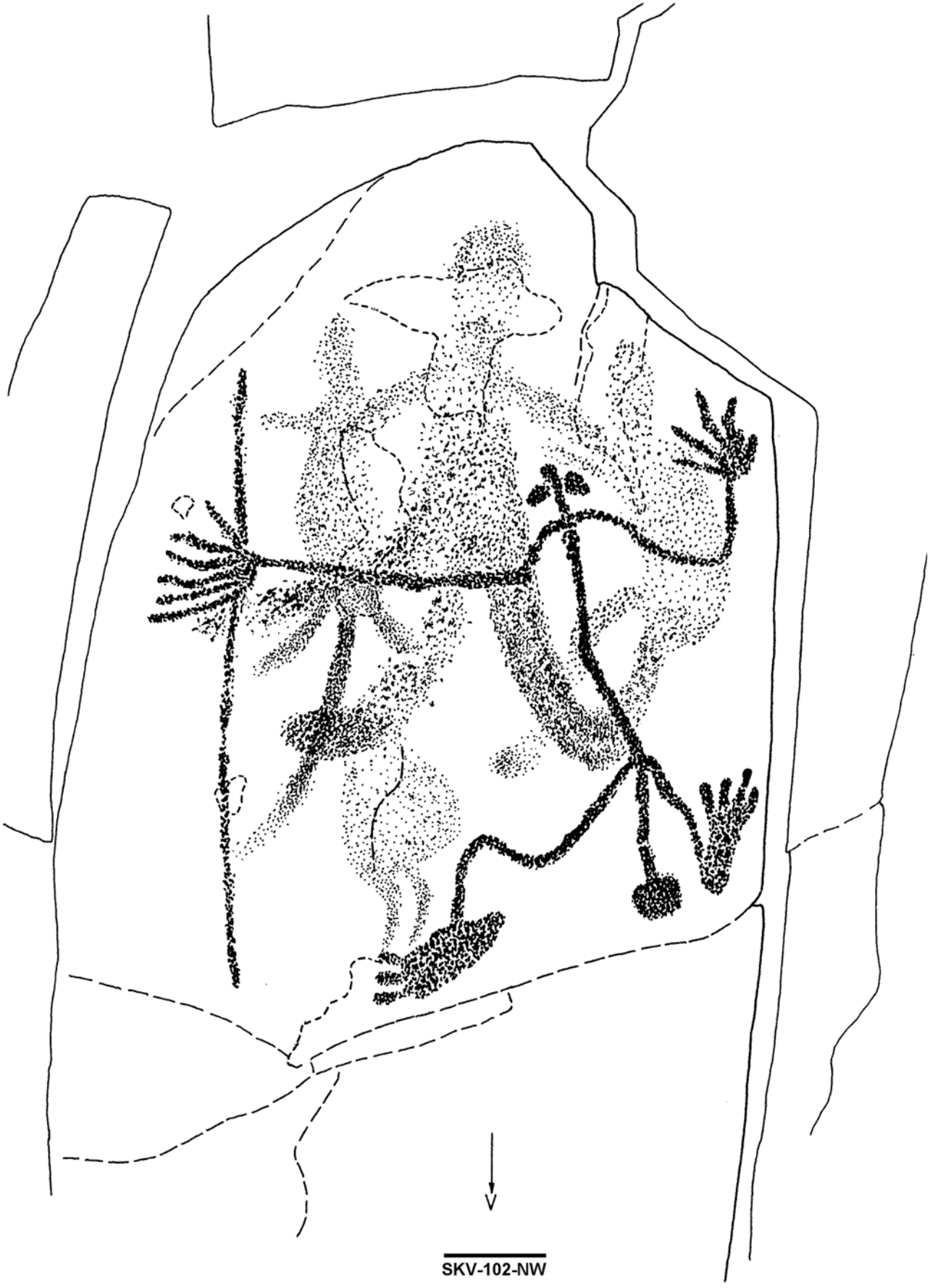


Figure 2.101

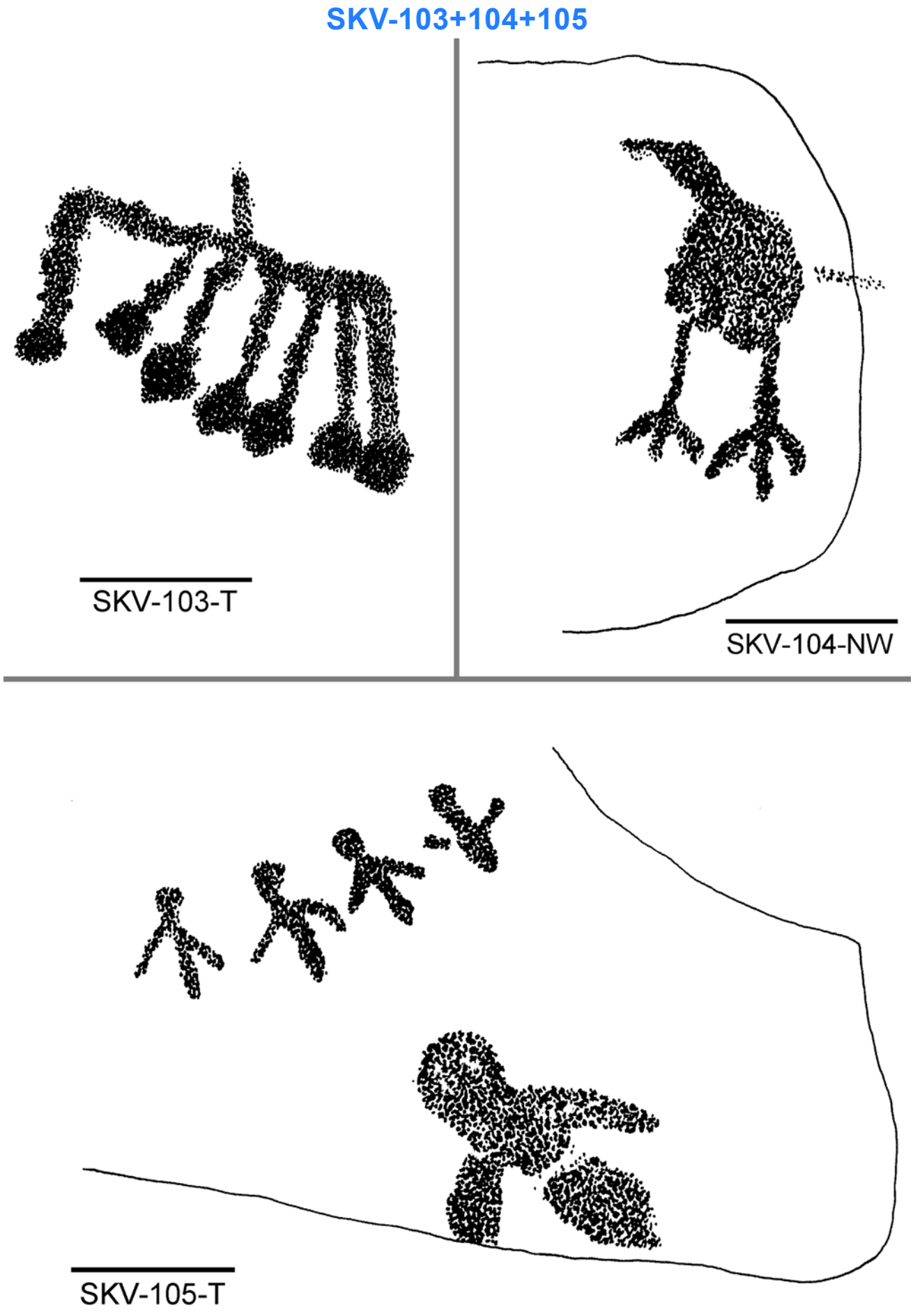


Figure 2.102

SKV-106

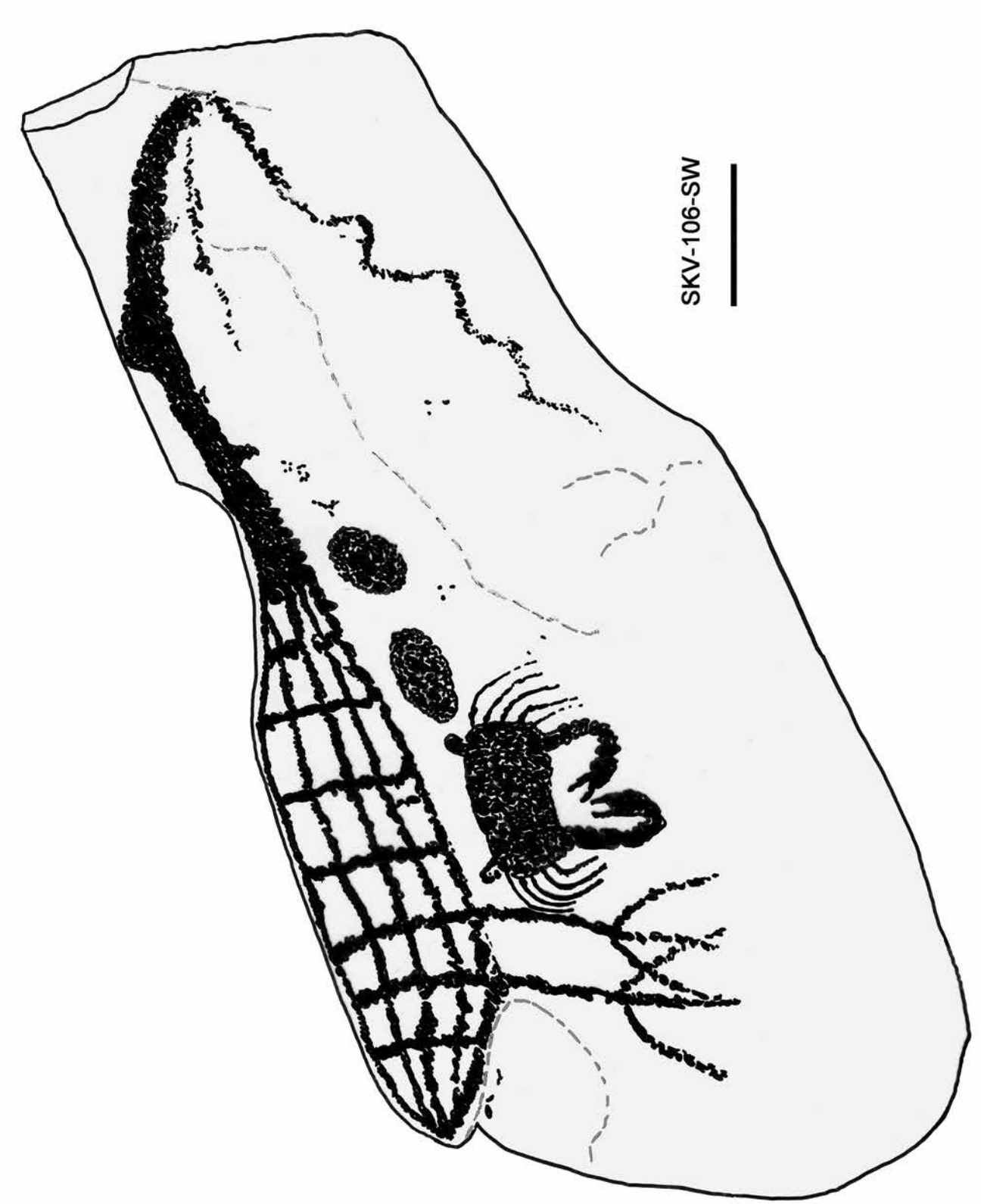


Figure 2.103

SKV-107

Figure 2.104

SKV-108

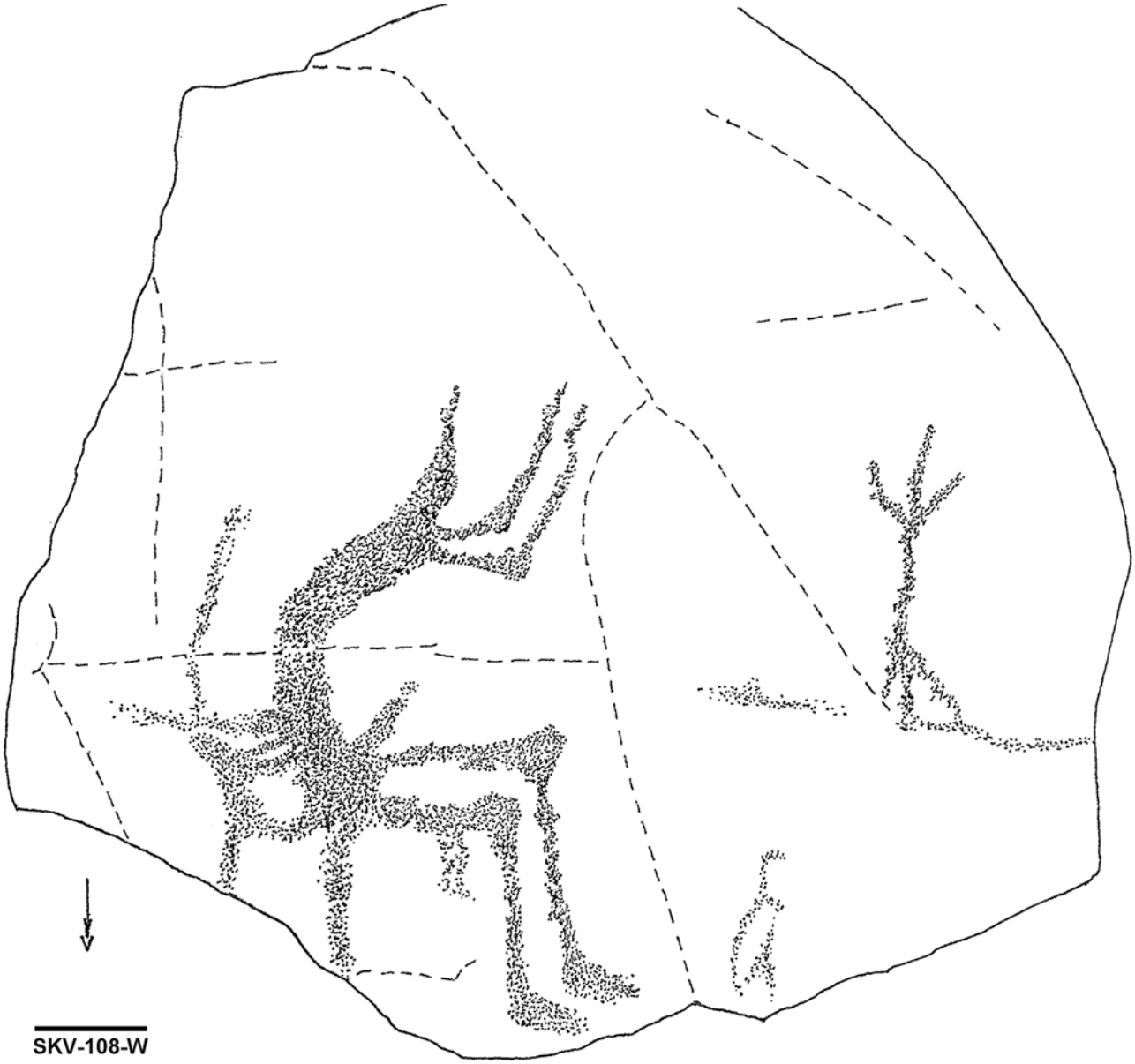


Figure 2.105