

GARUA



ARCHAEOLOGY

FIELD GUIDE

Uluwan Decade Volcano Workshop

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Australian Museum
1998

ARCHAEOLOGY AND GEOLOGY IN WEST NEW BRITAIN

The reconstruction of prehistoric lifeways in West New Britain has involved much collaboration between archaeologists and geologists. The Holocene tephras have enabled correlation between cultural layers excavated in sites located across much of the province. For example stratigraphic profiles at sites in the interior near Yombon can be directly compared with those on the north coast at sites such as FRL (Bitokara Mission) and FAO on Garua Island (Figures 1, 2). In a region with poor preservation of organic remains, the use of tephra stratigraphy for relative dating of archaeological materials has been invaluable.

A combination of stratigraphic position with macroscopic and chemical properties is used to identify the tephra layers in archaeological excavations. Figure 4 shows the results of SEM analyses of glass shards from a type sequence studied by Hiroshi Machida in 1990. Matching these results with tephras from archaeological sites, as in the case of FRL shown in Figure 5, confirms the identification based on visual inspection of the tephras during excavation.

In turn, archaeology has assisted geology by considerably expanding the range of known locations for the tephras. Also the majority of radiocarbon dates relating to the tephras have come from archaeological contexts.

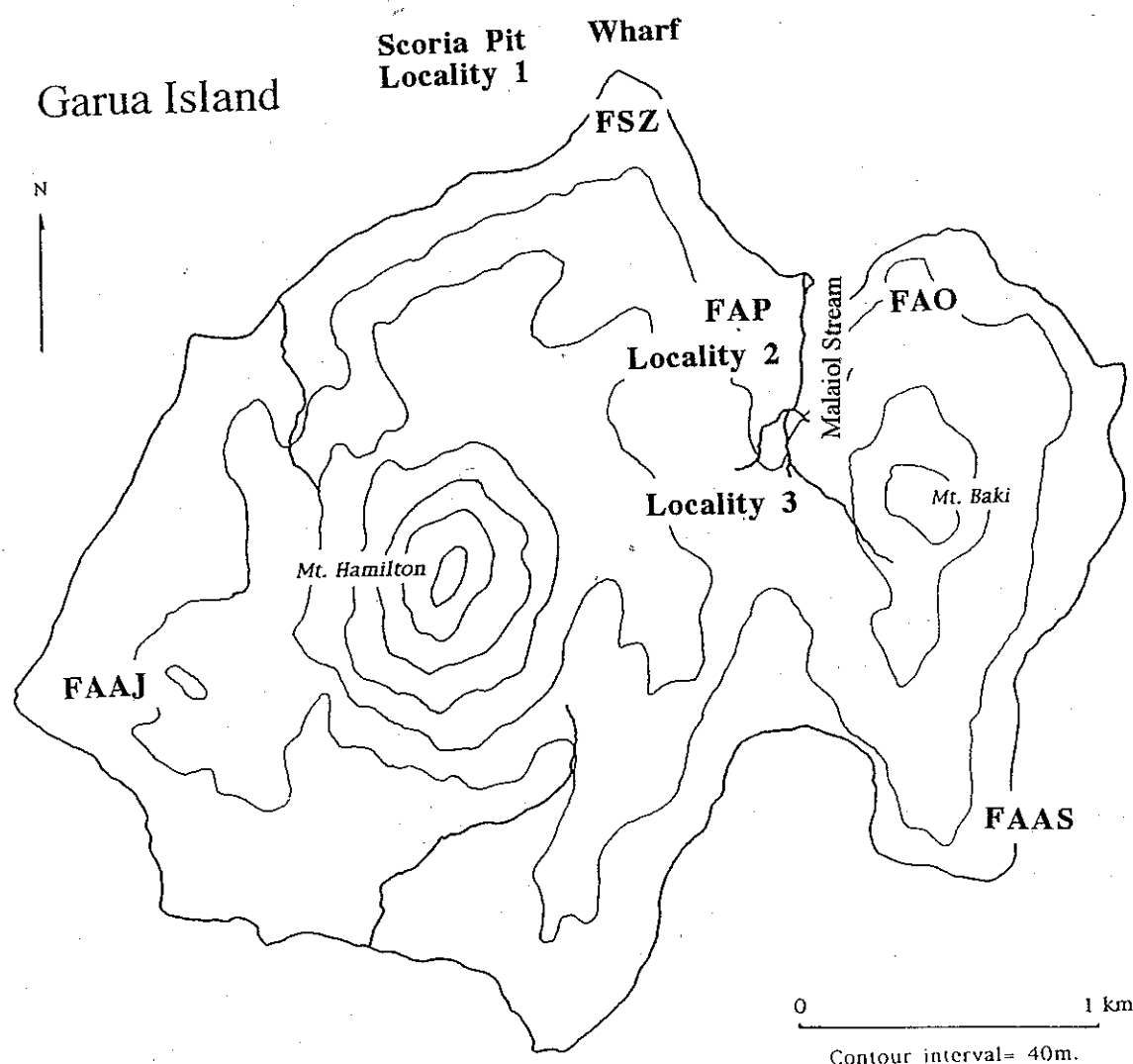
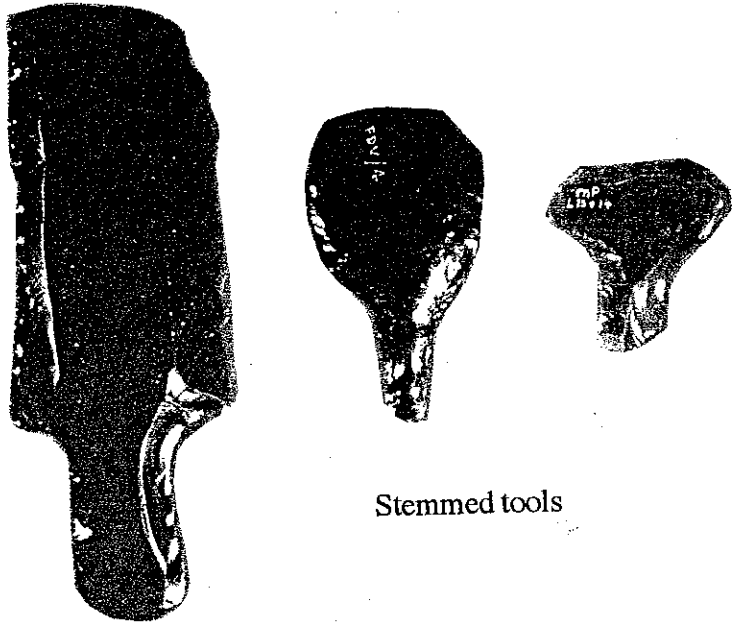


Figure 1 Garua Island: Field trip localities and archaeological sites

PREHISTORIC LIFEWAYS IN WEST NEW BRITAIN

c. 35,000 bp First evidence for human settlement but archaeological data is extremely scarce until the Holocene.

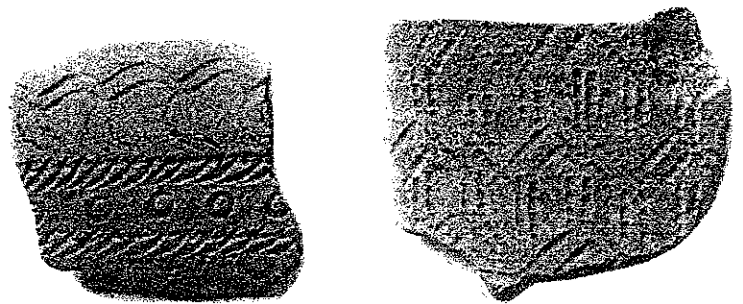
c. 20,000 bp Obsidian artifacts from WNB appear in New Ireland. This is the oldest evidence in the world for long distance marine transport of materials by humans.



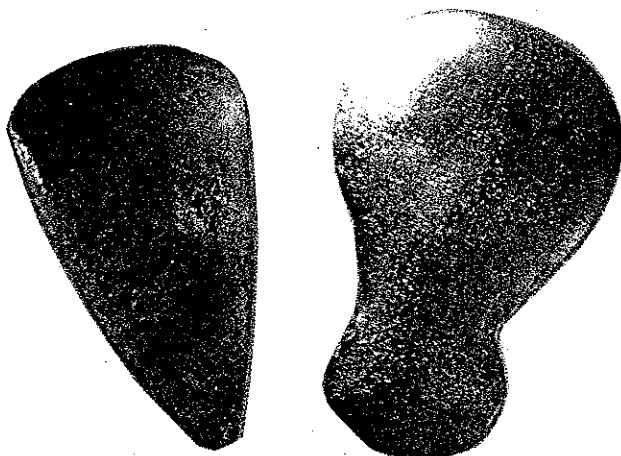
Stemmed tools

c.10,000 to 3,600 bp Groups were highly mobile. They hunted and gathered wild foods, but probably also 'managed' or cultivated stands of nut trees and tubers. Obsidian from Talasea and Mopir (inland from Hoskins) was extensively traded around Papua New Guinea. The most common form of stone artefact are called 'stemmed tools.' These disappear after the W-K2 eruption at c.3,600 bp.

c. 3,000-2,000 Highly decorated Lapita style pottery was made. Stemmed tools are replaced by simple, unretouched stone artifacts. Obsidian was traded as far away as Sabah to the west and Tonga and Samoa to the east. This represents the most extensive prehistoric trading network known anywhere in the world. By this time people were depending heavily on cultivated plants and were living in small hamlets or villages most of the year.



Fragments of Lapita pottery



Ground stone axes

c.2,000 bp-present The major archaeological finds are simple flaked stone artifacts; ground stone axes appear slightly later. Dependence on cultivation and village life appear to have intensified. Obsidian continued to be traded until recent times, but the trade network was restricted to the region of present day Papua New Guinea.

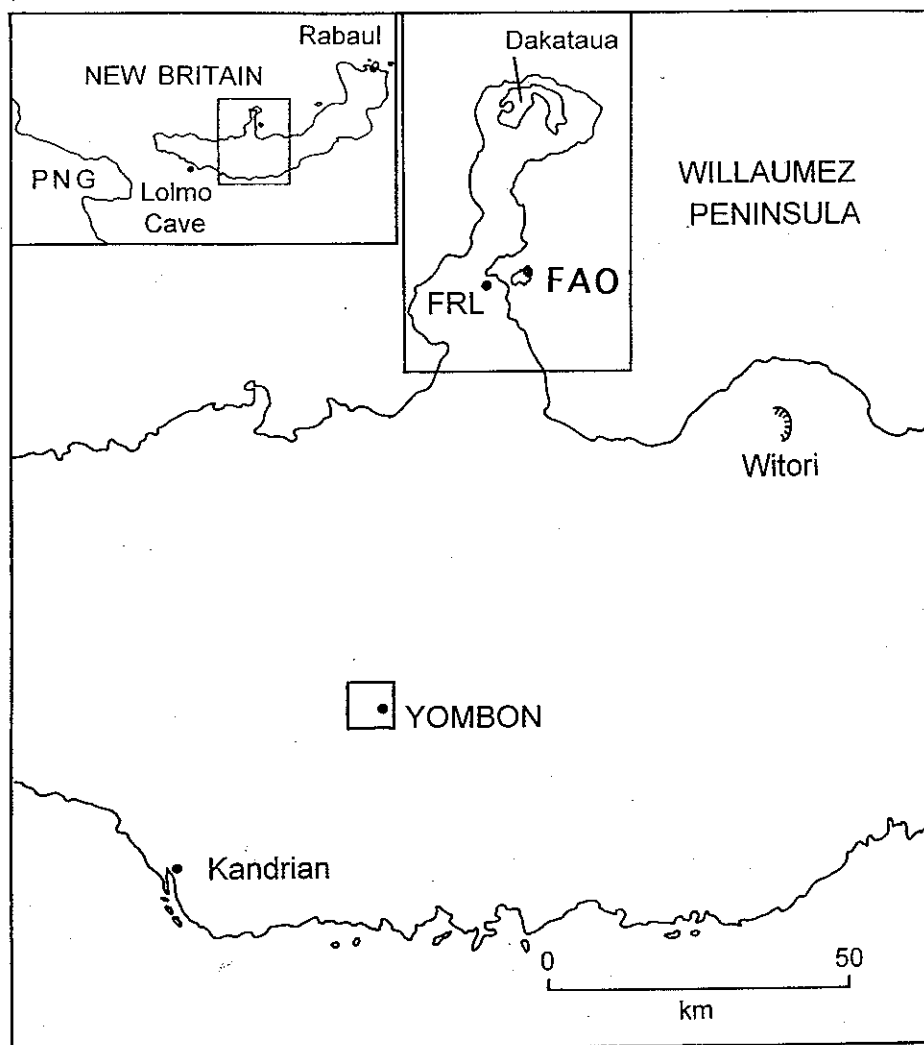


Figure 2

Locations of Sections in Figure 3.

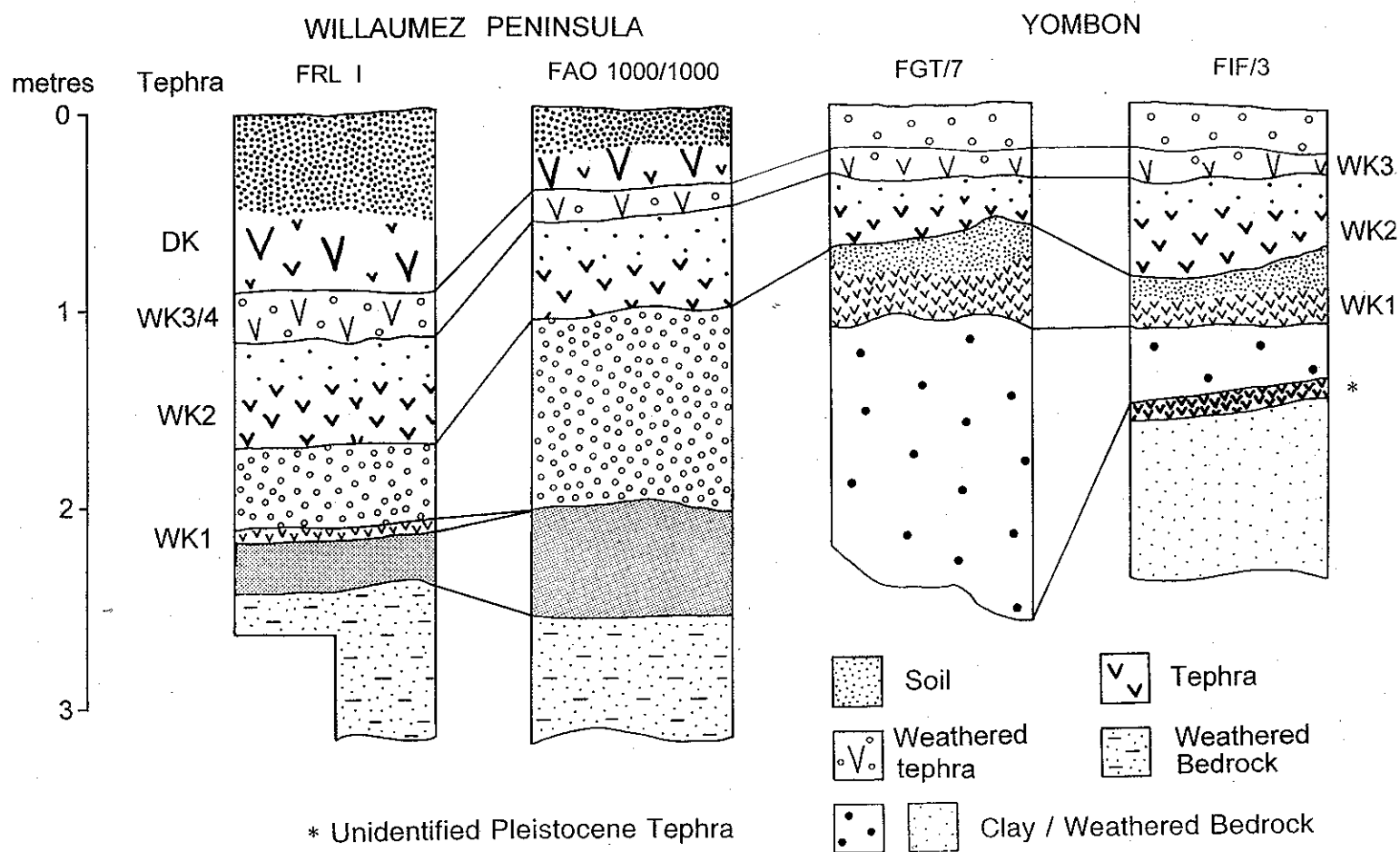


Figure 3 Chronostratigraphy of selected archaeological sites

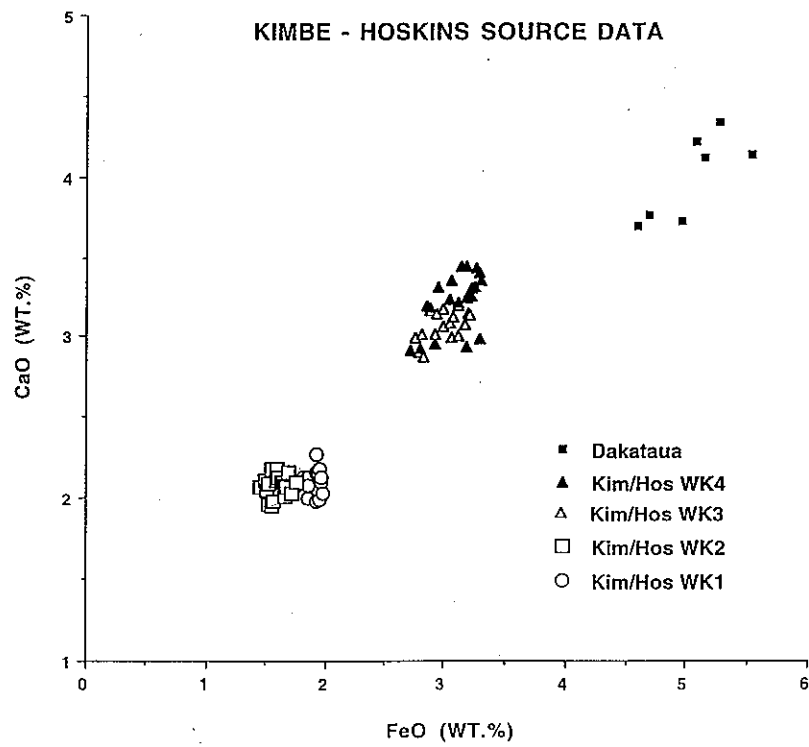


Figure 4 Results of SEM analyses of glass shards from type localities.

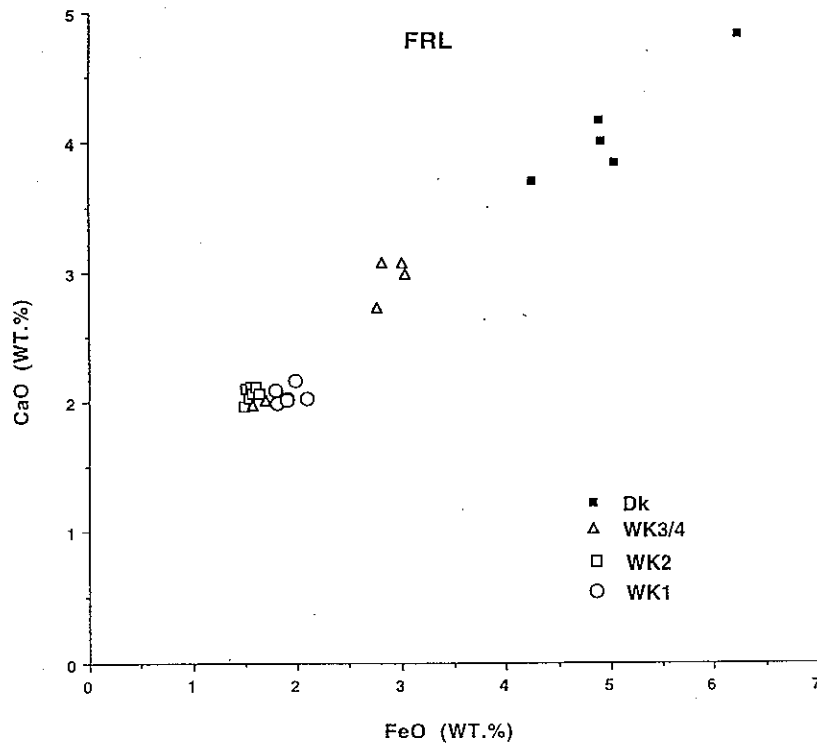


Figure 5 Results of SEM analyses of tephra layers from archaeological site FRL in the Willaumez Peninsula region.

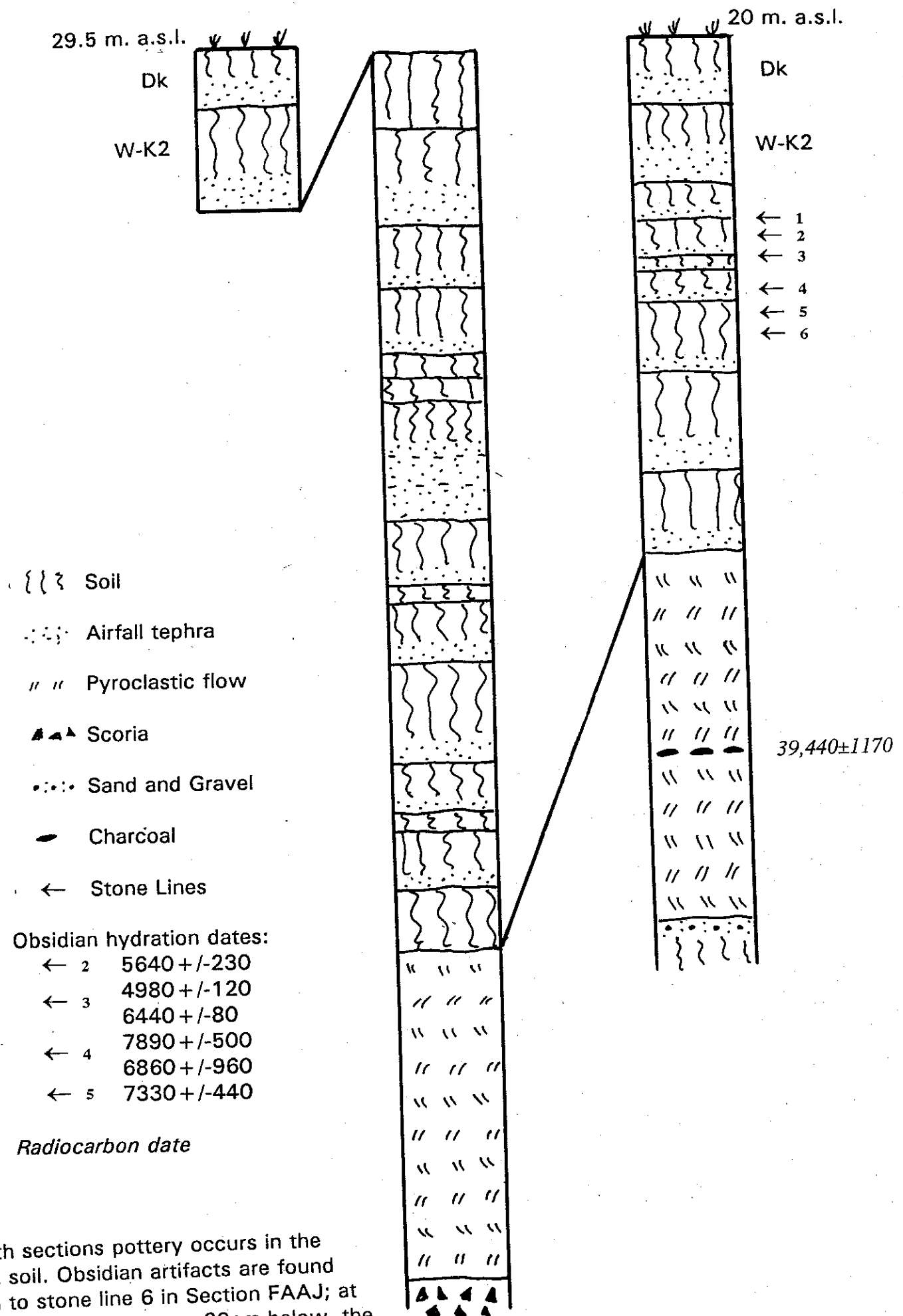


GARUA ISLAND

Locality 1 Scoria Pit FSZ

LOCALITY 1: SCORIA PIT, FSZ

SECTION FAAJ





Locality 3

Locality 2

Malaiol Stream

MALAIOL STREAM

Malaiol Stream divides the two volcanic cones of Mt. Baki and Mt. Hamilton. Stream sections have been useful for reconstructing the history of the island. At Locality 2 archaeological deposits composed of waste by-products from the quarrying and working of the Baki obsidian source (a welded tuff with obsidian dated to $30,198 \pm 8906$ by fission track) can be observed stratified under the W-K1 airfall tephra. A radiocarbon date of 5204 ± 85 was also obtained in association with two stemmed tools in the same horizon.

Further up the stream at Locality 3 a sequence of airfall tephras in association with raised coral was also studied.

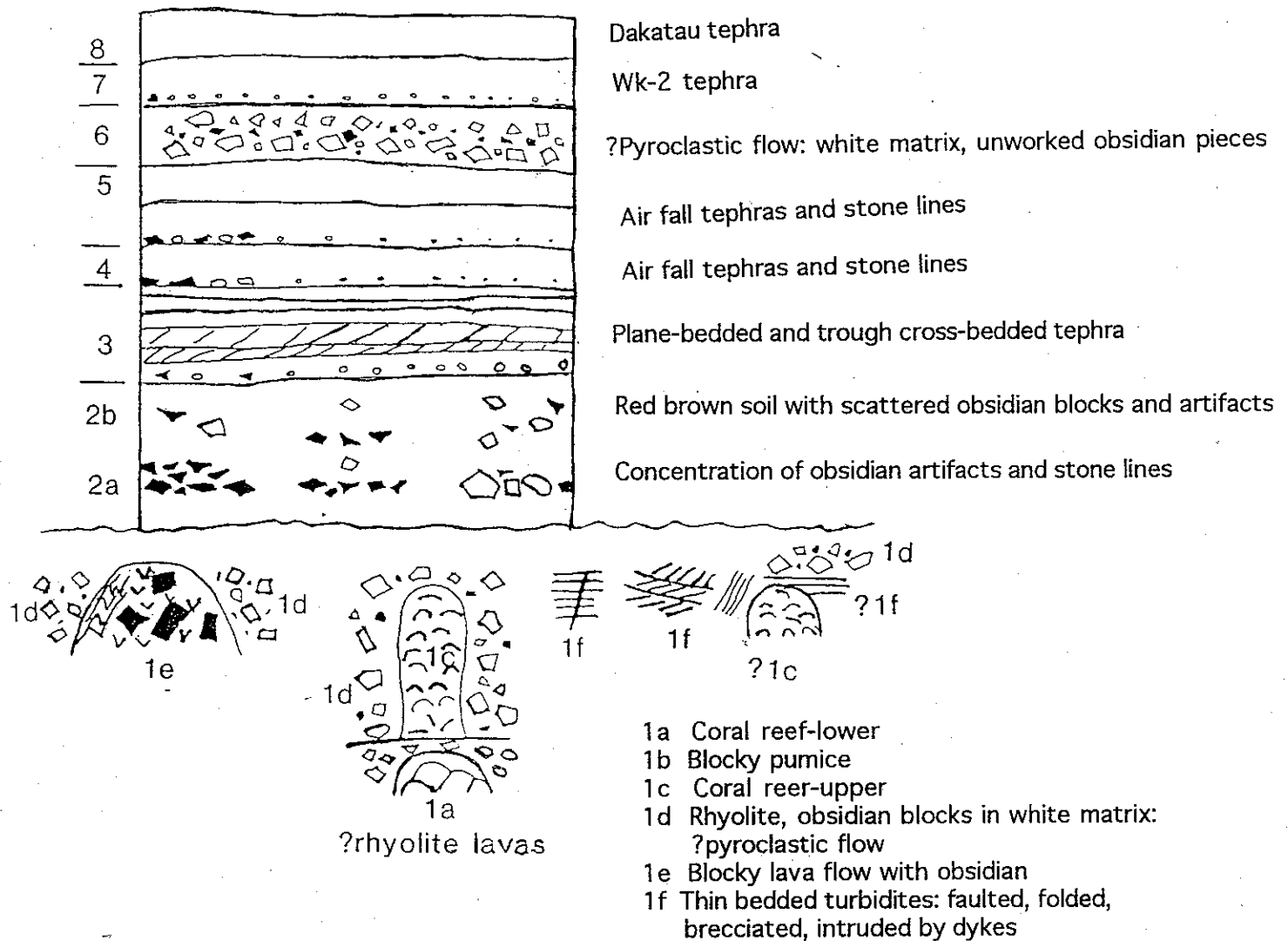
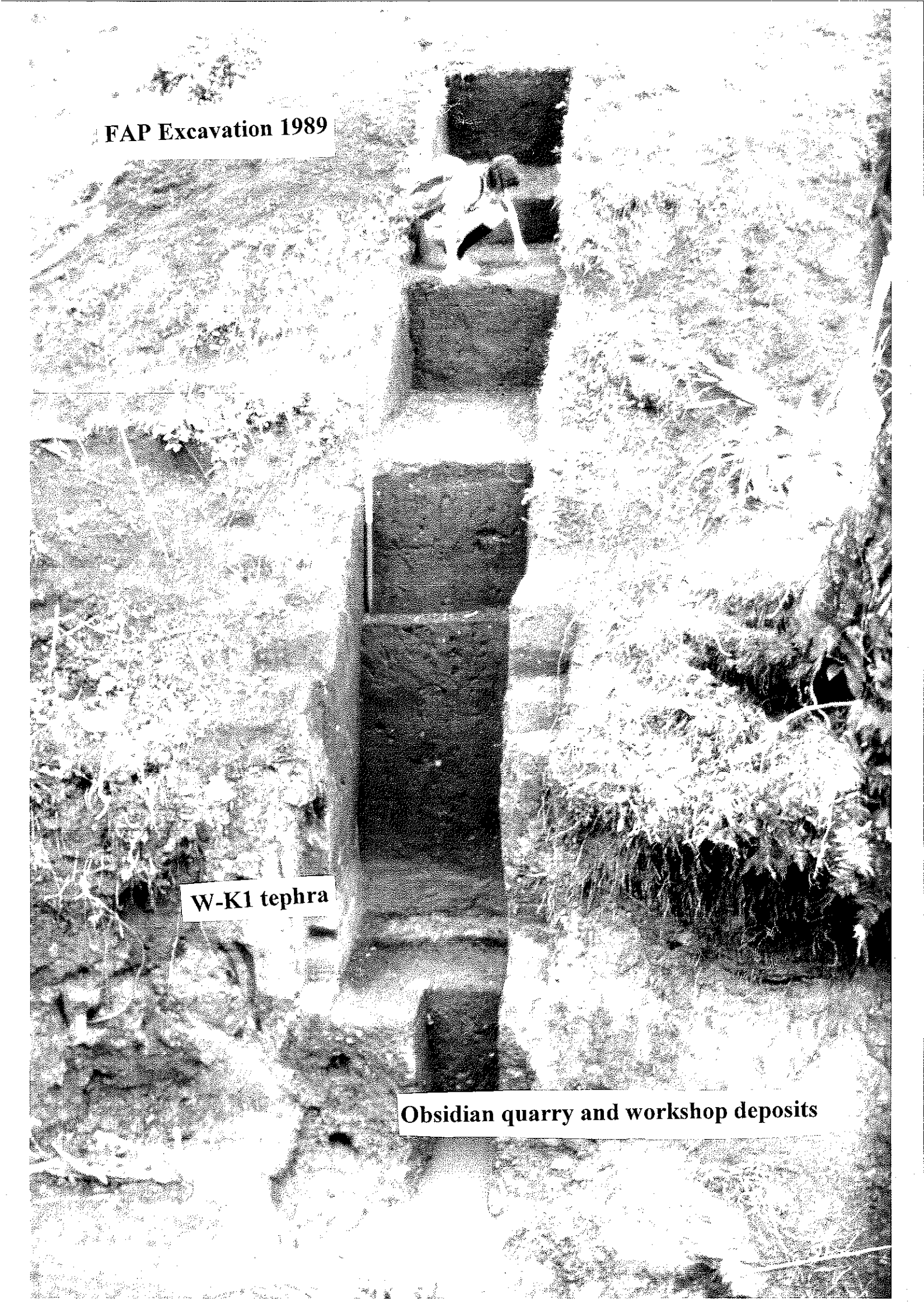


Figure 6 Composite Section of Malaiol Stream (Torrence and Webb 1992)

A black and white photograph of an archaeological excavation. A deep, narrow trench has been dug into the ground. At the top of the trench, a person is visible, possibly working or observing. The trench walls are composed of several distinct horizontal layers or strata. The ground around the trench is covered with sparse vegetation and some debris.

FAP Excavation 1989

W-K1 tephra

Obsidian quarry and workshop deposits



FAP Excavation 1989

W-K1 tephra

LOCALITY 3: MALAIOL STREAM

metres
a.s.l.

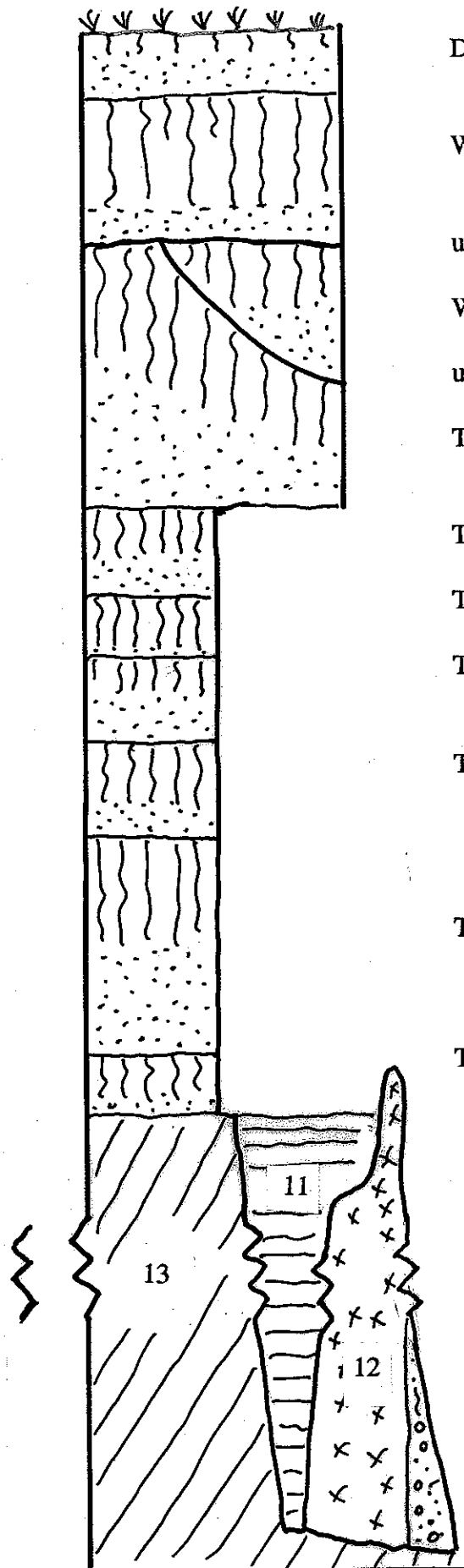
44

41

38

35

32



DK tephra

WK-2 tephra

unconformity

WK-1 tephra

unconformity

Tephra 4

Tephra 5

Tephra 6

Tephra 7

Tephra 8

Tephra 9

Tephra 10

unconformity

11. ?Pumaceous tephra /
pyroclastic flow

unconformity

12. Coral reef, coral sand
and gravel

unconformity

13. Bedrock

Figure 7 Sequence of airfall tephra (Torrence and Boyd 1997)

GARUA ISLAND : FAO

Layer 1

Layer 2

Layer 3

Layer 4

Layer 5

Dk tephra

W-K2 tephra

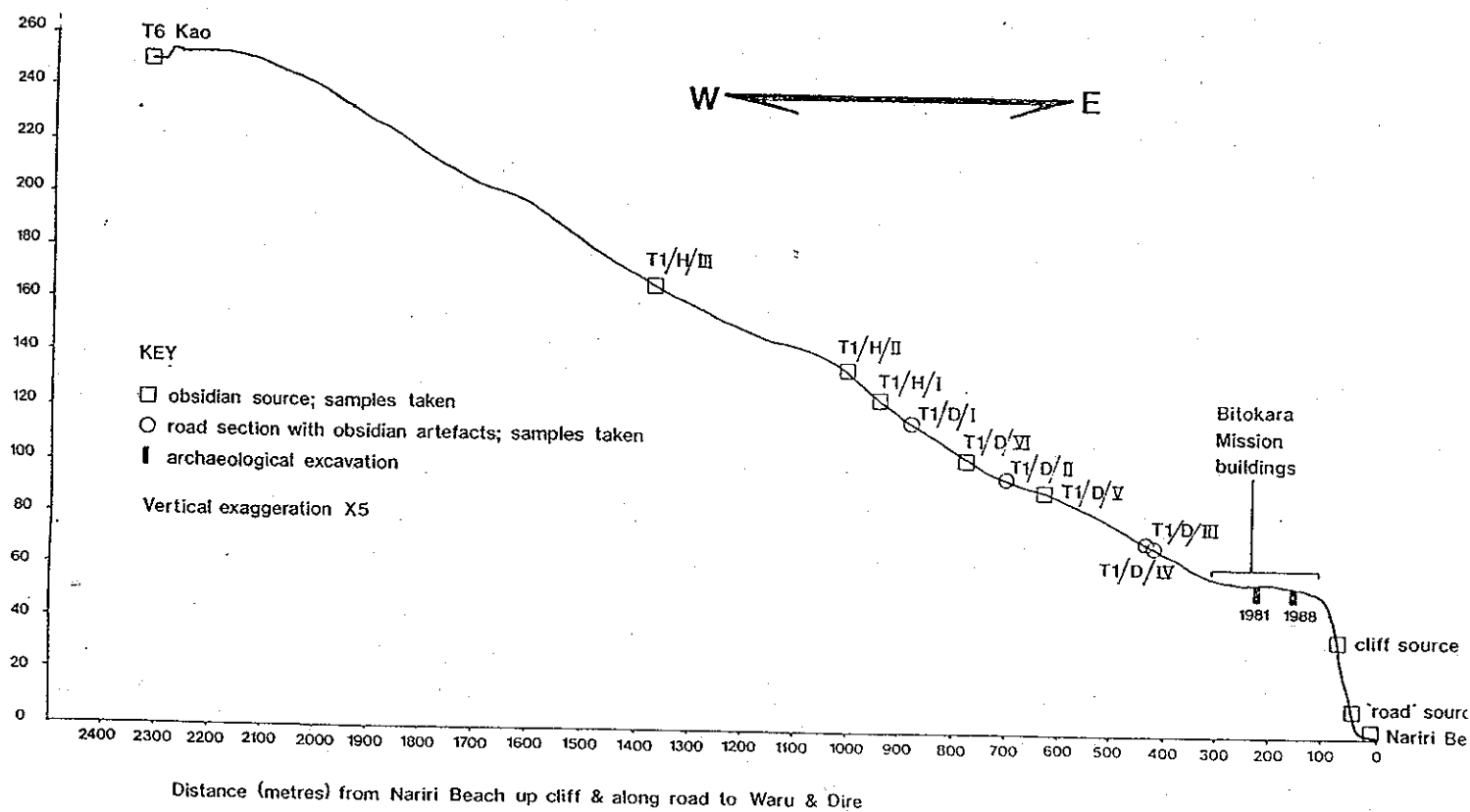
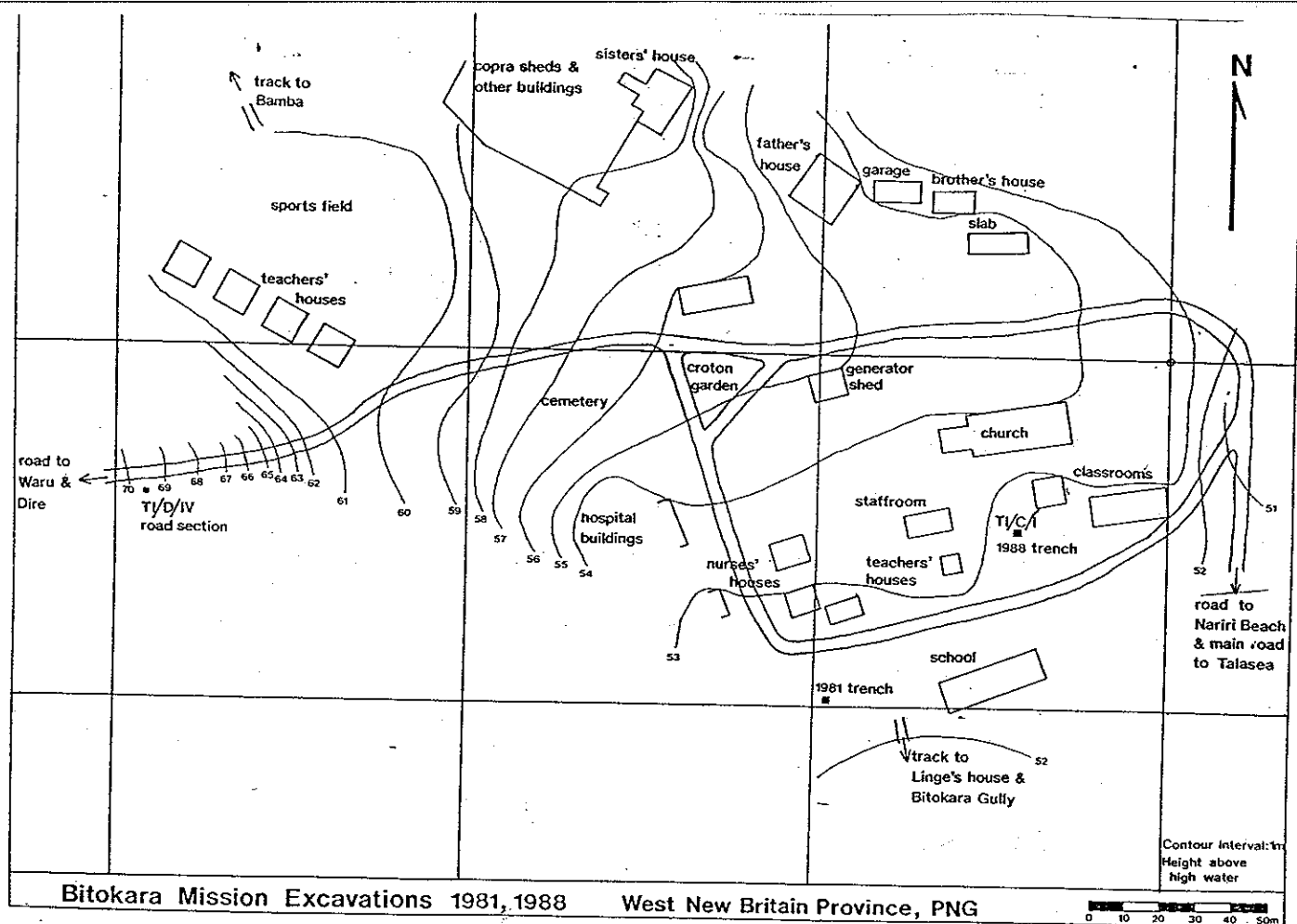


Road Sections

FRL

BITOKARA MISSION





Profile - Nariri Beach to Kao, Talasea, W.N.B., P.N.G. 1988

BITOKARA ROAD SECTION: FDQ
T1/D/IIB



BITOKARA ROAD SECTION: FDQ
T1/D/III

2

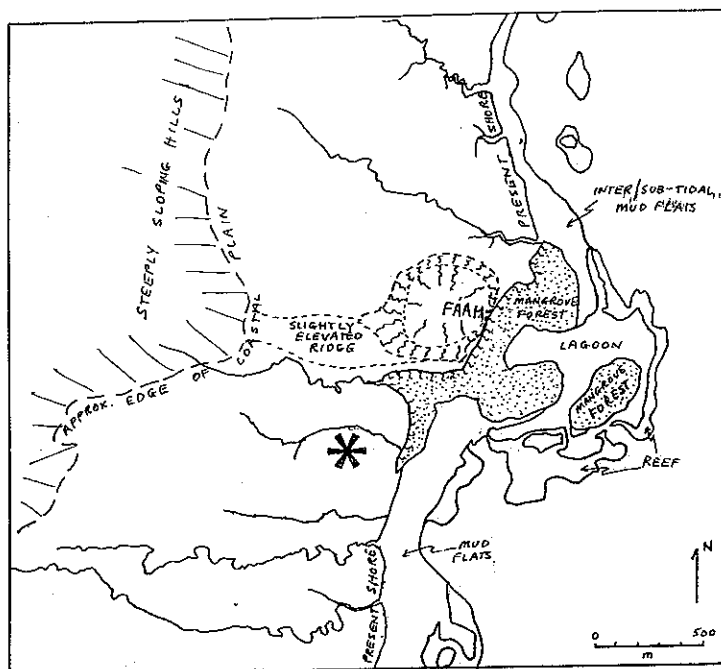


Figure 8
Numundo Plantation,
Section FAAH. *Waterlogged
wood sealed under airfall tephra
dated to 1550 ± 50 bp.

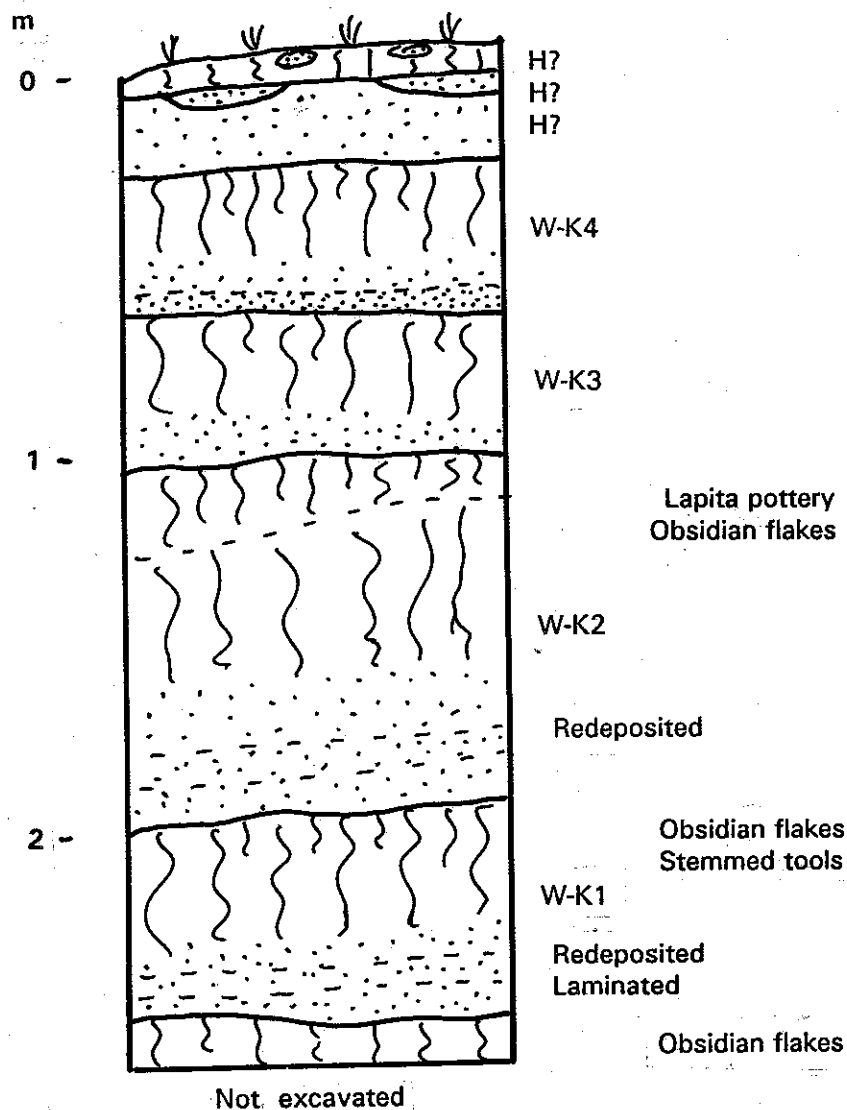
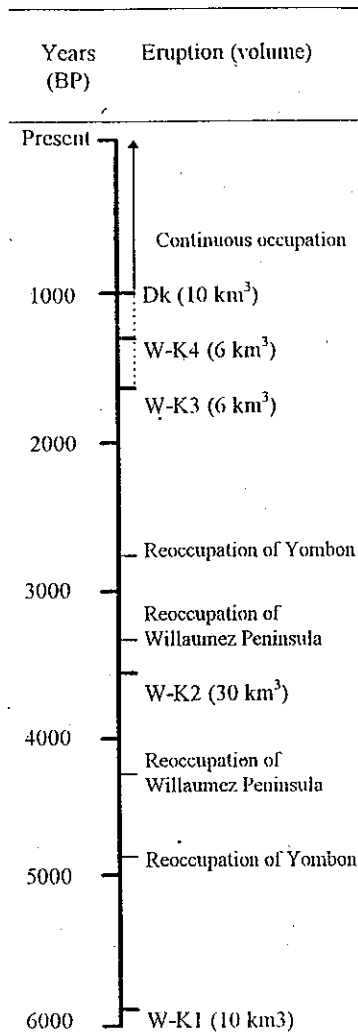


Figure 9 FAAH section of Holocene airfall tephras, Numundo Plantation

Numundo Plantation FAAH





VOLCANIC DISASTERS AND HUMAN SETTLEMENT

The time it took for populations to reoccupy West New Britain after the major Holocene explosions is not directly correlated with the scale of the eruption. The massive W-K2 event had less impact on resettlement than did the smaller W-K1 event; the DK eruption which deposited about a metre of airfall tephra on Garua Island appears to have had negligible impact on human settlement.

The Garua archaeological project has shown that through time human groups adopted increasingly intensive forms of cultivation which enabled more rapid recolonisation. We also propose that the development of trade networks created social ties with widespread communities which provided places of refuge and assistance after the most recent catastrophes.

FURTHER READING

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