

Towards Strategic Behavior on Productive Consumption of Blade Industry at Yakuraisan No.8 Site

公開用 分析データ

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1. Introduction/はじめに

We are going to publish here the R scripts and data for our Archaeological paper, in order to increase reproductivity and transparency of our research. “Towards strategic behavior on productive consumption of the Blade Industry at Yakuraisan No.8 Site.” in Journal of Miyagi archaeology vol.23, pp.43-60.(2021)

本稿は宮城考古学第 23 号（2021 年 5 月刊行）に掲載された「**薬菜山 No.8 遺跡における石刃石器群の行動戦略—石刃・剥片分割の行動論的意義—**」の分析に用いたデータ (csv) と統計解析ソフト R のスクリプトを公開するものです。再現性と透明性を確保し、分析を検証可能なものとする目的としています。

CRAN から各種パッケージをインストールするほか、エクセルファイルを含むデータを Github や日本旧石器学会の Web サイトからダウンロードする工程があります。インターネットに接続した環境で利用してください。また、最新の R 言語をインストールしたうえで利用してください。

Environment

- Windows 10 Home 1909
- R version ‘4.0 Bunny-Wunnies Freak Out
- RStudio Version 1.3.1093

Contact

- Ryosuke KUMAGAI/Email: ryosuke.kumagai28[@]gmail.com
- Github:ryosuke1914/ YY8
- ReserchMap

2.Prepare/事前準備

Install & library packages

解析・描画に必要なパッケージのリストを提示します。下記のスクリプトでは、インストールされていないパッケージを検索・抽出してインストールし、また一括で呼び出し (library) します。

```
targetPackages <- c("kableExtra", "DT", "formatR", "RCurl", "spatstat", "cluster",
  "tidyverse", "xtable", "tidyverse", "ggmap", "ggspatial", "sf", "shadowtext",
  "ggforce", "patchwork", "readxl", "maptools", "spsurvey", "readr",
  "MASS", "ggsn", "rio", "FactoMineR", "factoextra", "rmdformats",
  "stringr", "rmarkdown"
)

newPackages <- targetPackages[!(targetPackages %in%
  installed.packages() [, "Package"])]
if(length(newPackages)) install.packages(newPackages,
  repos = "http://cran.us.r-project.org")
for(package in targetPackages) library(package, character.only = T)
```

Downloading Data

専用のフォルダをワーキングディレクトリ (WD) 内に作成し、各種データをダウンロードします。

```
# データを保存するためのフォルダを WD 内に作成
# 再帰処理回避のため既にある場合は省略
if(charmatch("YY8-dataset",
  list.files(all.files = TRUE),
  nomatch = 0) == 0) {
  dir.create("YY8-dataset")
}

# 日本地図: rds ファイルのダウンロード (既にデータをダウンロード済みの場合は省略)
list <- list.files("YY8-dataset", full.names=T)
if(charmatch("YY8-dataset/jpn.rds",
  list, nomatch = 0) == 0) {
  download.file("https://biogeo.ucdavis.edu/data/gadm3.6/Rsp/gadm36_JPN_1_sp.rds",
```

```
destfile = "YY8-dataset/jpn.rds")
}

# 属性表 CSV のダウンロード (https://github.com/ryosuke1914/YY8)
download.file(
  "https://raw.githubusercontent.com/ryosuke1914/YY8/master/YY8-all.csv",
  destfile = "YY8-dataset/YY8-all.csv",method = "curl"
)
download.file(
  "https://raw.githubusercontent.com/ryosuke1914/YY8/master/YY8-Refitted.csv",
  destfile = "YY8-dataset/YY8-Refitted.csv",method = "curl"
)
# 日本旧石器時代遺跡 DB (東北地方) のダウンロード (日本旧石器学会 HP)
download.file("http://palaeolithic.jp/data/Excel/02_07_Tohoku.xls",
  destfile = "YY8-dataset/Tohoku.xls",method = "curl"
)
```

3. Maps / 遺跡地図の描画

山形県・宮城県における旧石器時代遺跡の分布図を、日本旧石器学会が発行するDBをもとに作成します。
また、薬萊山麓の旧石器時代遺跡群を拡大した図を作成し、レイアウトします。

a. Data processing

Latitude and Longitude coordinate transformation

日本旧石器学会HPからダウンロードしたDBを読み込み、緯度経度（土分秒）を10進法記法に変換。

```
#DBは各列の型が定まっていないので先に設定しておく
t <- c(
  rep("text", 9),
  rep("numeric", 2),
  "text", "numeric",
  rep("text", 25),
  "date",
  rep("text", 3))

#DBの読み込み&列のデータ型の設定
Miyagimap <- read_excel("YY8-dataset/Tohoku.xls", sheet=5, col_types = t)
Yamagatamap <- read_excel("YY8-dataset/Tohoku.xls", sheet=9, col_types = t)

#緯度経度の10進法変換
lat1 <- as.numeric(str_sub(Miyagimap$緯度, start=1, end=2))
lat2 <- as.numeric(str_sub(Miyagimap$緯度, start=3, end=4))
lat3 <- as.numeric(str_sub(Miyagimap$緯度, start=5, end=6))

m_lat <- lat1 + (lat2+lat3/60)/60

lon1 <- as.numeric(str_sub(Miyagimap$経度, start=1, end=3))
lon2 <- as.numeric(str_sub(Miyagimap$経度, start=4, end=5))
lon3 <- as.numeric(str_sub(Miyagimap$経度, start=6, end=7))
m_lon <- lon1 + (lon2+lon3/60)/60

m<-data.frame(m_lat,m_lon)
```

```

lat4 <- as.numeric(str_sub(Yamagatamap$緯度, start=1, end=2))
lat5 <- as.numeric(str_sub(Yamagatamap$緯度, start=3, end=4))
lat6 <- as.numeric(str_sub(Yamagatamap$緯度, start=5, end=6))
y_lat <- lat4+ (lat5+lat6/60)/60

lon4 <- as.numeric(str_sub(Yamagatamap$経度, start=1, end=3))
lon5 <- as.numeric(str_sub(Yamagatamap$経度, start=4, end=5))
lon6 <- as.numeric(str_sub(Yamagatamap$経度, start=6, end=7))
y_lon <- lon4+ (lon5+lon6/60)/60
y<-data.frame(y_lat,y_lon)

```

Drawing base maps(by ggmap)

ggmap(stamenmap) から下図となる地図を読み込み、範囲・縮尺を設定。

```

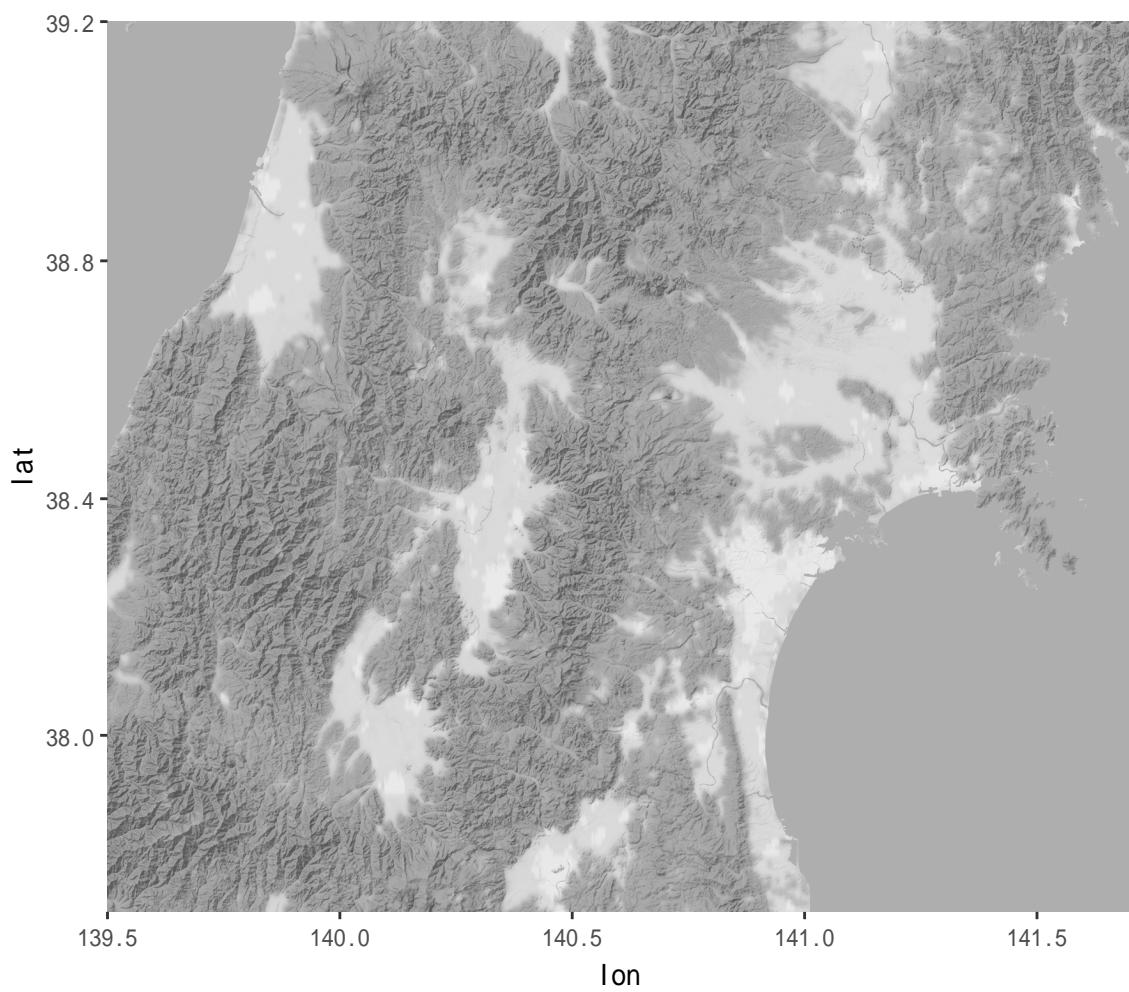
#ggmap package を利用。地図タイプ (maptype) は他に選べる (?ggmap 参照)。
#宮城・山形県域の緯度・経度を指定 (as.numeric)

MY_map <- ggmap(get_stamenmap(maptype="terrain-background",
                                color="bw",
                                rbind(as.numeric(c(139.5, 37.7, 141.7, 39.2))),zoom = 10))

# 遺跡周辺の緯度・経度を指定 (as.numeric)
MY_map2 <- ggmap(get_map(maptype="terrain",
                           color="bw",
                           rbind(as.numeric(c(140.65,38.55,140.75, 38.6))),zoom = 12))

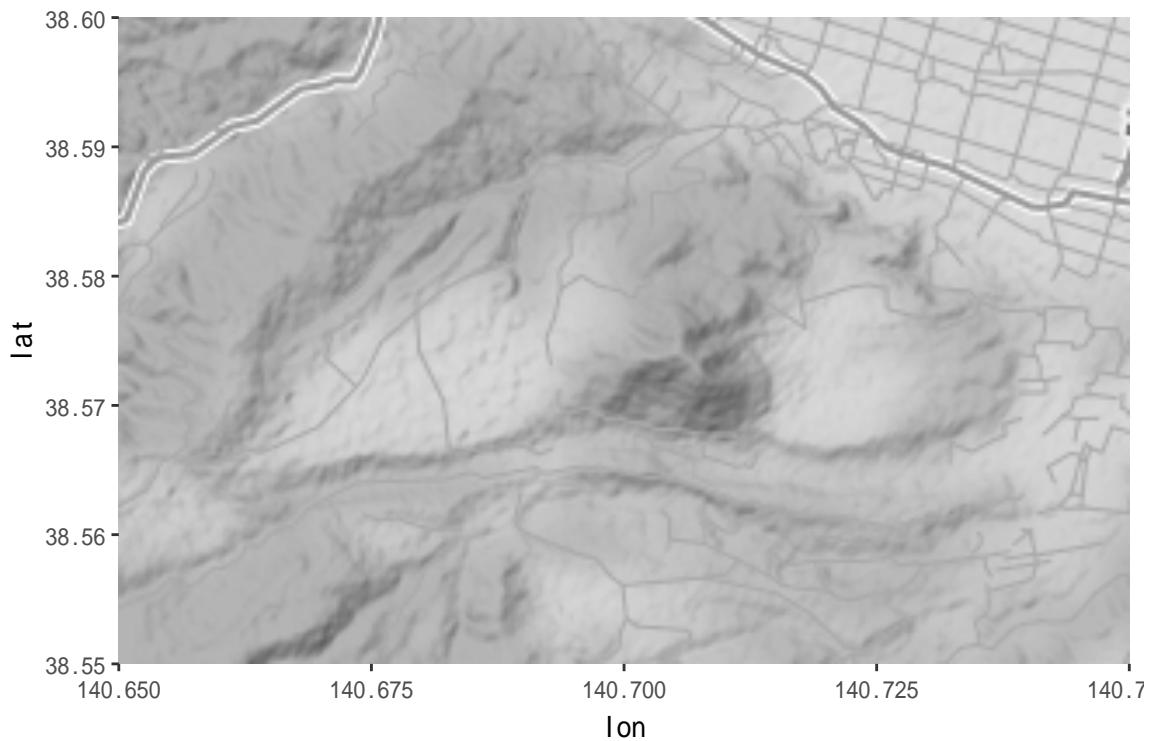
#描画
MY_map

```



#描画

MY_map2



Extracting prefectoral boundary

ダウンロードした rds ファイルから県境のデータを抽出。

```
jpn<-readr::read_rds("YY8-dataset/jpn.rds")

yamagata<-jpn[jpn$NAME_1=="Yamagata",]>%>%fortify()
miyagi<-jpn[jpn$NAME_1=="Miyagi",]>%>%fortify()
```

b.Drawing site maps

A Wide range map of Miyagi and Yamagata prefecture

宮城県・山形県の下図をもとに、県境・遺跡の位置などを描画。

```
# 下準備。変換した緯度経度の表を結合する。
Miyagimap[10:11]<-m
Yamagatamap[10:11]<-y
MY <- rbind(Miyagimap,Yamagatamap)
MY2<- MY[10:11]
```

```

colnames(MY2)<-c("lat","lon")

# 葉菜山 No.8 遺跡のみマークを変えるため抽出
No.8<-MY[MY$遺跡名=="葉菜山 No.8 遺跡",]

MY_sites<-
  MY_map +
  # 下図に重ねて遺跡位置 (point)
  geom_point(data = MY2,
              aes(x = lon, y = lat),
              size = 0.3,
              color = "black") +
  # 葉菜山麓遺跡群の範囲を四角で描画
  geom_rect(aes(xmin=140.65, xmax=140.8, ymin=38.55, ymax=38.6),
            fill=NA,
            color="white",
            lwd=0.1) +
  # 葉菜山 No.8 遺跡の位置を描画 (shape を三角、白色に指定)
  geom_point(data=No.8,
              aes(x=経度,y=緯度),
              size=1,
              shape=17,
              color="white") +
  # 県境を描画 (山形・宮城)
  geom_polygon(aes(x=long,y=lat,group=group),
               fill=NA,
               color="black",
               data=yamagata,
               lwd=0.1) +
  geom_polygon(aes(x=long,y=lat,group=group),
               fill=NA,
               color="black",
               data=miyagi,
               lwd=0.1) +
  # 遺跡名を描画 (position_nudge: ポイントからの距離・位置関係を指定)

```

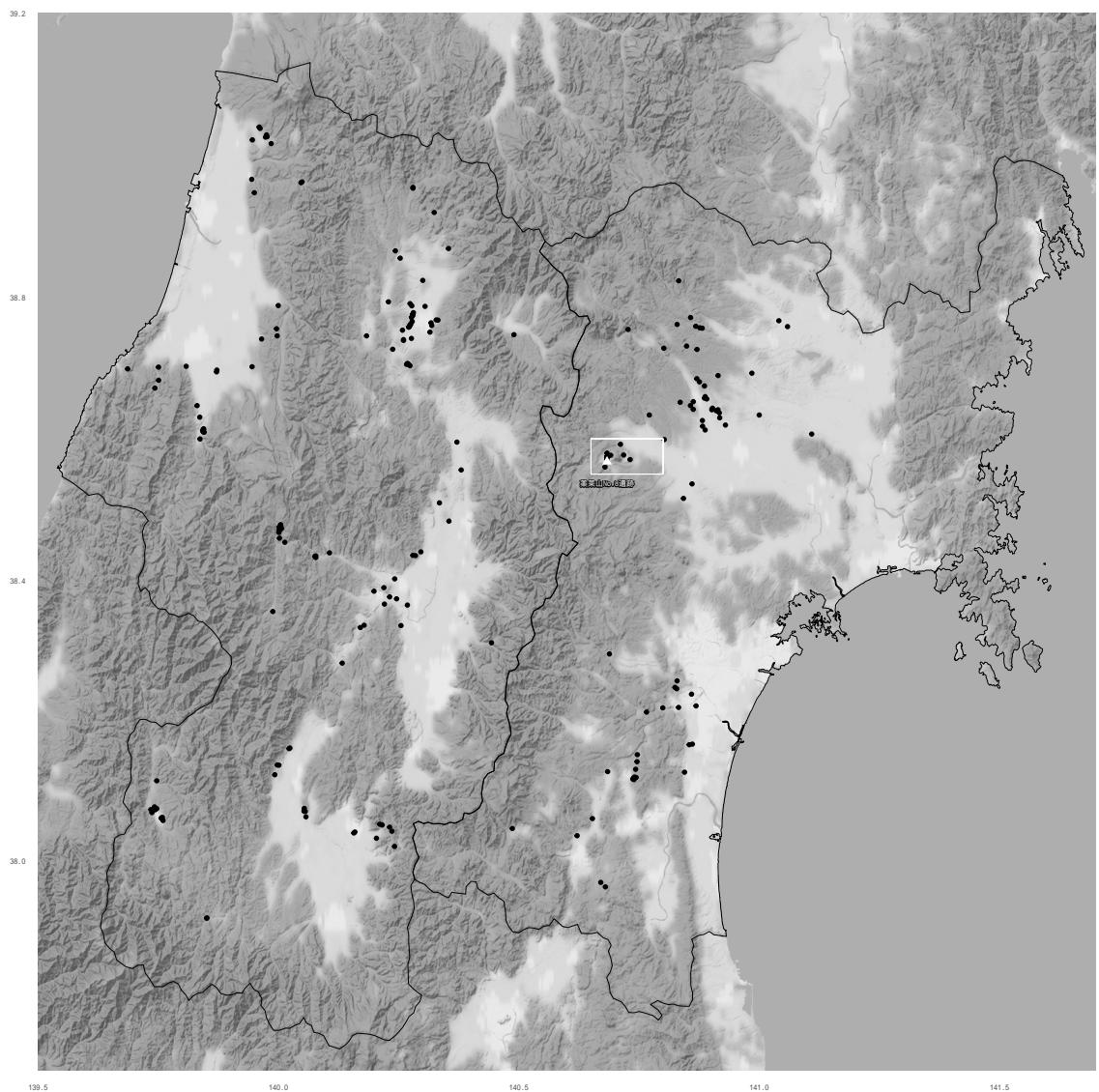
```
geom_shadowtext(data = No.8,
                 aes(x=経度,y=緯度,label = 遺跡名),
                 size = 1,
                 position =position_nudge(y = - 0.03))+

# 体裁等を指定

theme(axis.title.x = element_blank(),
      axis.title.y = element_blank(),
      axis.text = element_text(size=3),
      axis.ticks = element_blank())+

theme(aspect.ratio=1,
      plot.background = element_rect(fill = NA,color=NA),
      panel.background = element_rect(fill = NA,color=NA))

MY_sites
```



An Enlarged site map around Mt.Yakurai

薬萊山麓の拡大図を描画。

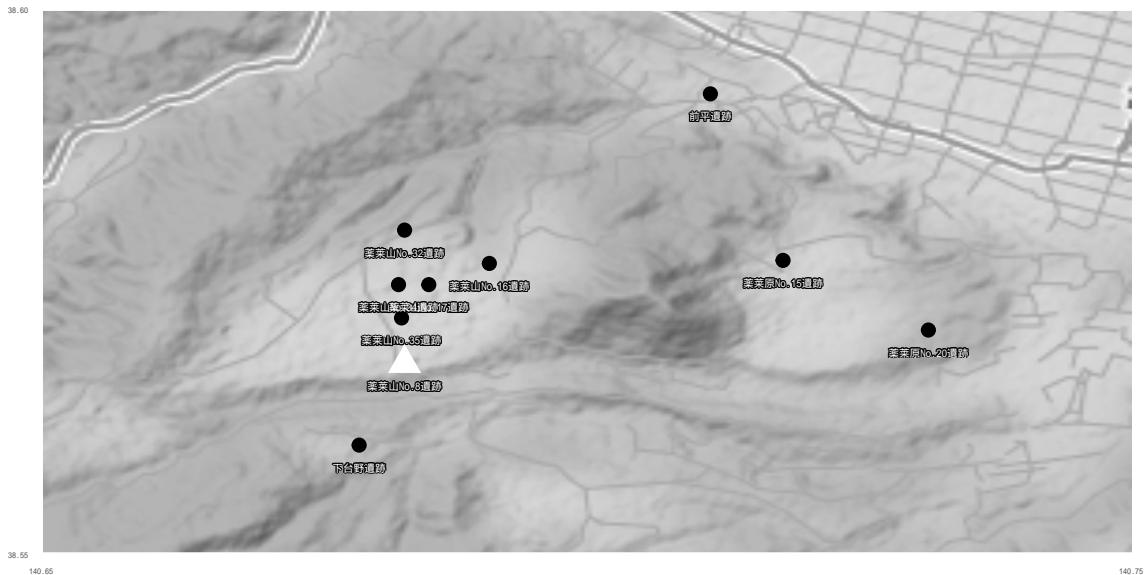
```
MY_sites2<-
  MY_map2+
  geom_point(data = MY,
             aes(x = 経度,
                  y = 紋度),
             size = 2,
             color = "black")+
```

```

geom_rect(aes(xmin=140.65, xmax=140.8, ymin=38.55, ymax=38.6),
          fill=NA,
          color="white")+
  geom_shadowtext(data = MY,aes(x=経度,y=緯度,label = 遺跡名),
                  size = 1.5,
                  position = position_nudge(y = - 0.002))+
  geom_point(data=No.8,aes(x=経度,y=緯度),
             size=4,
             shape=17,
             color="white")+
  geom_polygon(aes(x=long,y=lat,group=group),
               fill=NA,
               color="black",
               data=yamagata)+
  geom_polygon(aes(x=long,y=lat,group=group),
               fill=NA,
               color="black",
               data=miyagi)+
  coord_sf(xlim = c(140.65, 140.75),
            ylim = c(38.55, 38.6),
            expand = F) +
  scale_x_continuous(breaks = seq(140.65, 140.75, by = 0.1)) +
  scale_y_continuous(breaks = seq(38.55, 38.6, by = 0.05)) +
  theme(axis.title.x = element_blank(),
        axis.title.y = element_blank(),
        axis.text = element_text(size=3),
        axis.ticks = element_blank())+
  theme(aspect.ratio=0.5,
        plot.background = element_rect(fill = NA,color=NA),
        panel.background = element_rect(fill = NA,color=NA))

```

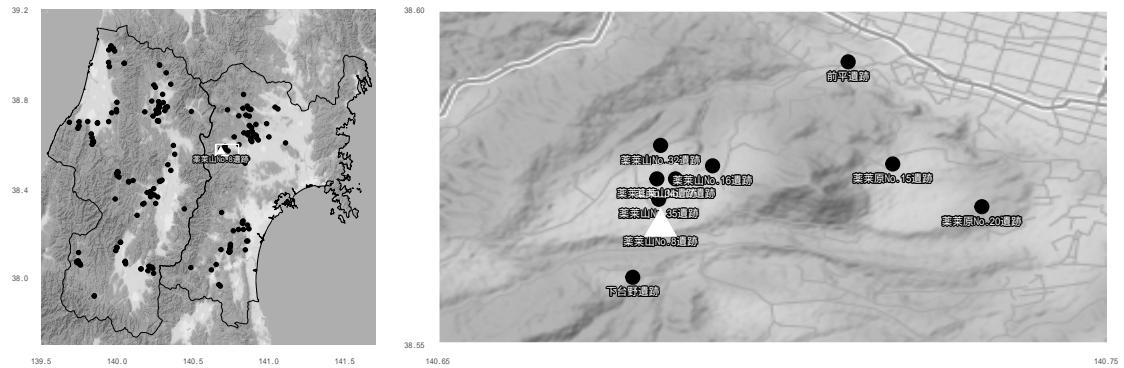
MY_sites2



Layout maps

#patchwork package を用いてレイアウト

```
MY_sites + MY_sites2 + plot_layout(ncol=2, widths = c(1,2))
```



4.Tables / 出土遺物の組成表を作成

葵菜山 No.8 遺跡出土石器の属性表を読み込み、各種集計表を作成します。

Attribute table

石器組成表（全点）を作成

```

#csv の読み込み
YY8 <- read.csv("YY8-dataset/YY8-all.csv",header=T)

# 目的の表に合わせて項目を抽出・調整 (tidyverse package)
YY8a <- YY8%>%
  count(Concentration, Type)%>%
  spread(Concentration,n)%>%
  column_to_rownames(var="Type")

YY8a[is.na(YY8a)] <- 0

YY8b<-data.frame(YY8a,apply(YY8a,1,sum))

YY8b<-rbind(YY8b,apply(YY8b,2,sum))

rownames(YY8b) <- c(rownames(YY8a), "SUM")

colnames(YY8b) <- c("C1", "C2", "C3", "NA", "SUM")

#kableExtra package, See https://haozhu233.github.io/kableExtra/awesome_table_in_pdf.pdf
kbl(YY8b,booktabs=T,digits =2,
  caption = ' 石器組成表（全点）')%>%
  kable_styling(font_size = 7,
                latex_options = "striped",position = "center")%>%
  column_spec(1:5, width = "2cm")

```

Attribute table by Concentration

集中地点ごとの石器組成を作成

```

Type<-c("BL", "CH", "CO", "FL", "PI", "SP", "Tools", "Retouched", "MF", "Refitted")

YY8c<- YY8 %>%
  filter(Memo!="Jyomon" & !is.na(Concentration))%>%
  count(Concentration,Type)%>%
  spread(Concentration,n)%>%
  column_to_rownames(var="Type")

YY8c[is.na(YY8c)] <- 0

MF1 <- YY8 %>%

```

表1 石器組成表（全点）

	C1	C2	C3	NA	SUM
AH	2	1	0	2	5
AX	1	0	0	1	2
BF	0	0	1	4	5
BL	0	3	2	6	11
CH	107	18	29	22	176
CO	12	1	1	2	16
DR	0	0	0	1	1
ES	1	1	1	0	3
FL	73	20	57	47	197
HS	0	0	0	1	1
KN	6	2	0	0	8
Other	0	0	0	1	1
PE	0	0	1	5	6
PI	6	2	1	1	10
PO	1	0	0	2	3
RBL	0	1	4	1	6
RF	11	4	9	11	35
SP	16	1	1	2	20
SS	0	2	0	0	2
石匙	5	0	0	0	5
SUM	241	56	107	109	513

```

filter(Memo!="Jyomon" & !is.na(Concentration) & MF!=0)%>%
count(Concentration,MF)%>%
spread(Concentration,n)

MF2 <- MF1[-1]

YY8d <- YY8c[c("SS","KN","ES"),]
Tools <-apply(YY8d, 2, sum)

YY8e <- YY8c[c("RBL","RF"),]
Retouched <-apply(YY8e, 2, sum)

Refitted <-c(12,5,10)
YY8f <- YY8c[!(rownames(YY8c) %in% c("KN", "ES", "RF","RBL","SS")), ]
YY8g <- rbind(YY8f,Tools,Retouched,MF2,Refitted)
rownames(YY8g) <- Type
colnames(YY8g) <- c(1:3)

YY8h<-data.frame(YY8g,apply(YY8g,1,sum))
YY8i<-rbind(YY8h,apply(YY8h,2,sum))

```

表2 集中地点ごとの石器組成

	1	2	3	SUM
BL	0	3	2	5
CH	107	18	29	154
CO	12	1	1	14
FL	73	20	57	150
PI	6	2	1	9
SP	16	1	1	18
Tools	7	5	1	13
Retouched	11	5	13	29
MF	46	20	23	89
Refitted	12	5	10	27
SUM	290	80	138	508

```

rownames(YY8i) <- c(Type, "SUM")
colnames(YY8i) <- c(1:3, "SUM")

kbl(YY8i, booktabs=T, digits =2,
     caption = '集中地点ごとの石器組成')%>%
  kable_styling(font_size = 7,
                latex_options = "striped", position = "center")%>%
  column_spec(1:4, width = "2cm")

```

Attribute table by Concentration(percentage)

集中地点ごとの石器組成（出現頻度）を作成

```

YY8j <- as.data.frame(t(YY8g[-10,]))%>%
  map_df(~.x/rowSums(t(YY8g[-10,])))%>%t()

colnames(YY8j) <- Type[-10]
rownames(YY8j) <- c("C1", "C2", "C3")
YY8j <- data.frame(YY8j)

kbl(YY8j, booktabs=T, digits =3,
     caption = '集中地点ごとの石器組成（出現頻度）')%>%
  kable_styling(font_size = 7,
                latex_options = "striped", position = "center")%>%
  column_spec(1:9, width = "1cm")

```

表3 集中地点ごとの石器組成（出現頻度）

	BL	CH	CO	FL	PI	SP	Tools	Retouched	MF
C1	0.000	0.385	0.043	0.263	0.022	0.058	0.025	0.040	0.165
C2	0.040	0.240	0.013	0.267	0.027	0.013	0.067	0.067	0.267
C3	0.016	0.227	0.008	0.445	0.008	0.008	0.008	0.102	0.180

```
# 主成分分析用のデータを作成
PCA<-rbind(t(YY8j),Refitted)
YY_PCA <- as.data.frame(t(PCA))
```

Attribute table by raw Material classification

集中地点ごとの母岩の出現頻度を作成

```
YY8k <-YY8%>%
  filter(Memo!="Jyomon" & !is.na(X) & !is.na(Concentration), Mat_no<=16)%>%
  count(Concentration,Mat_no)%>%
  spread(Concentration,n)%>%
  column_to_rownames(var="Mat_no")
YY8k[is.na(YY8k)] <- 0

table3<-data.frame(YY8k,apply(YY8k,1,sum))%>%
  rbind(apply(YY8k,2,sum))
colnames(table3)<- c(1:3,"SUM")
rownames(table3)<-c(1:16,"SUM")

kbl(table3,booktabs=T,digits =2,
     caption = '集中地点ごとの母岩の出現頻度')%>%
  kable_styling(font_size = 7,
                latex_options = "striped",position = "center")%>%
  column_spec(1:5, width = "2cm")
```

表4 集中地点ごとの母岩の出現頻度

	1	2	3	SUM
1	1	2	4	7
2	30	0	0	30
3	3	11	10	24
4	1	0	1	2
5	49	0	1	50
6	11	0	1	12
7	34	0	0	34
8	3	0	2	5
9	8	0	0	8
10	7	1	0	8
11	2	0	0	2
12	0	7	0	7
13	0	1	5	6
14	24	0	0	24
15	0	1	1	2
16	0	0	17	17
SUM	173	23	42	173

5.Artifact Distribution / 遺物分布の分析

属性表から平面位置情報 (XY) を用いて分布図を作成します。

ここでは強調したい特徴ごとに複数の図を作図し、最終的に合成します。また、クラスター分析・K 関数法による遺物分布の分析を行います。 ## Data proccesing

```
# 属性表から平面位置情報のある遺物かつ縄文石器以外を抽出
YY8dis<-YY8%>%
  filter(!is.na(X) & Memo!="Jyomon")

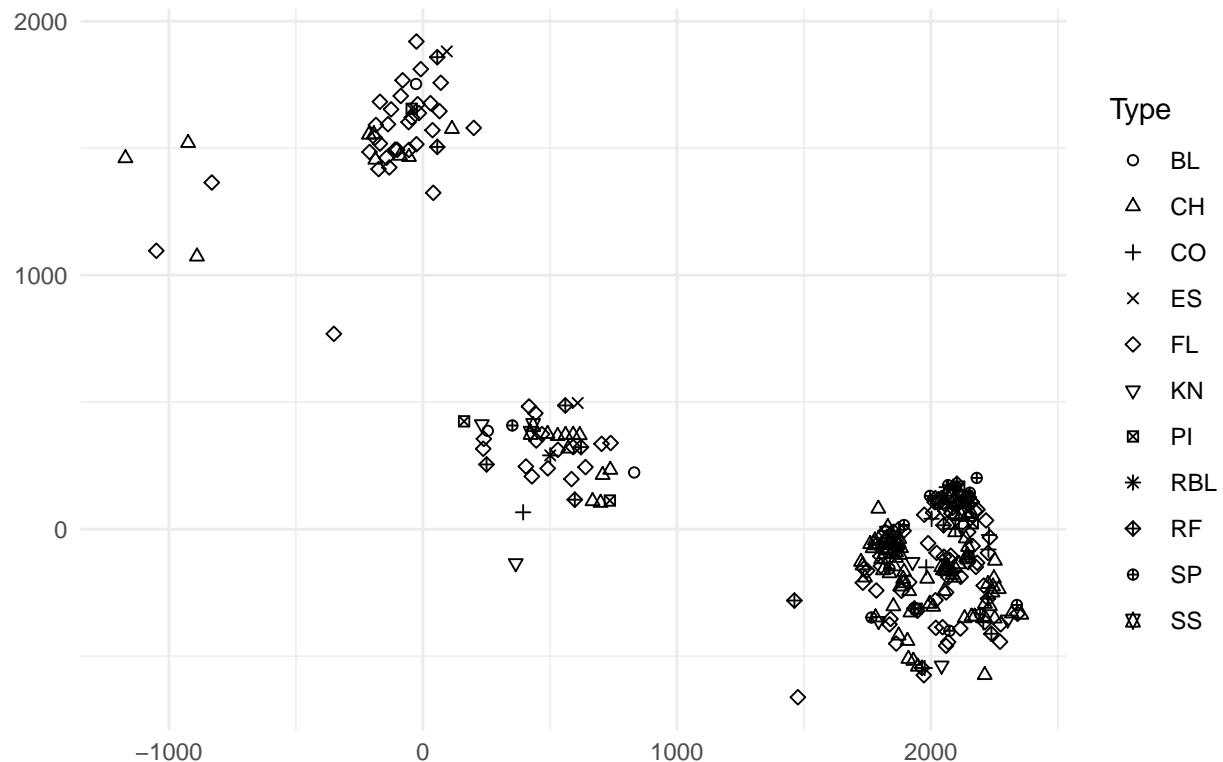
YY8dis$Type <- factor(YY8dis$Type)
YY8dis$Mat_no<- factor(YY8dis$Mat_no)
df<-data.frame(YY8dis$X,YY8dis$Y)
```

Drawing distribution maps ### By Types

```
# 器種別の遺物分布を描画する
nomal<-ggplot(data=YY8dis)+
  scale_shape_manual(values=1:nlevels(YY8dis$Type)) +
  geom_point(aes(x=X,y=Y,shape=Type))+
```

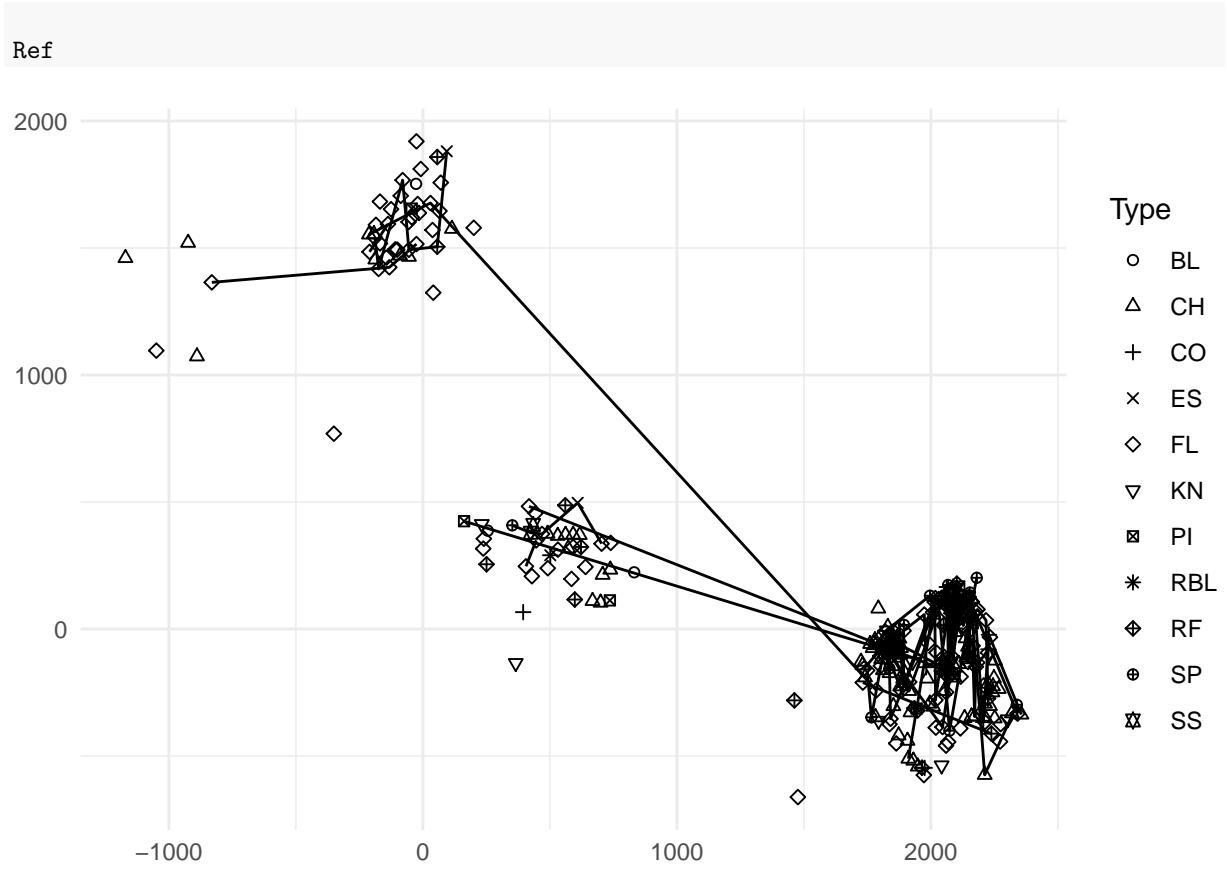
```
  labs(x = NULL, y = NULL)
```

nomal



Add Refit lines

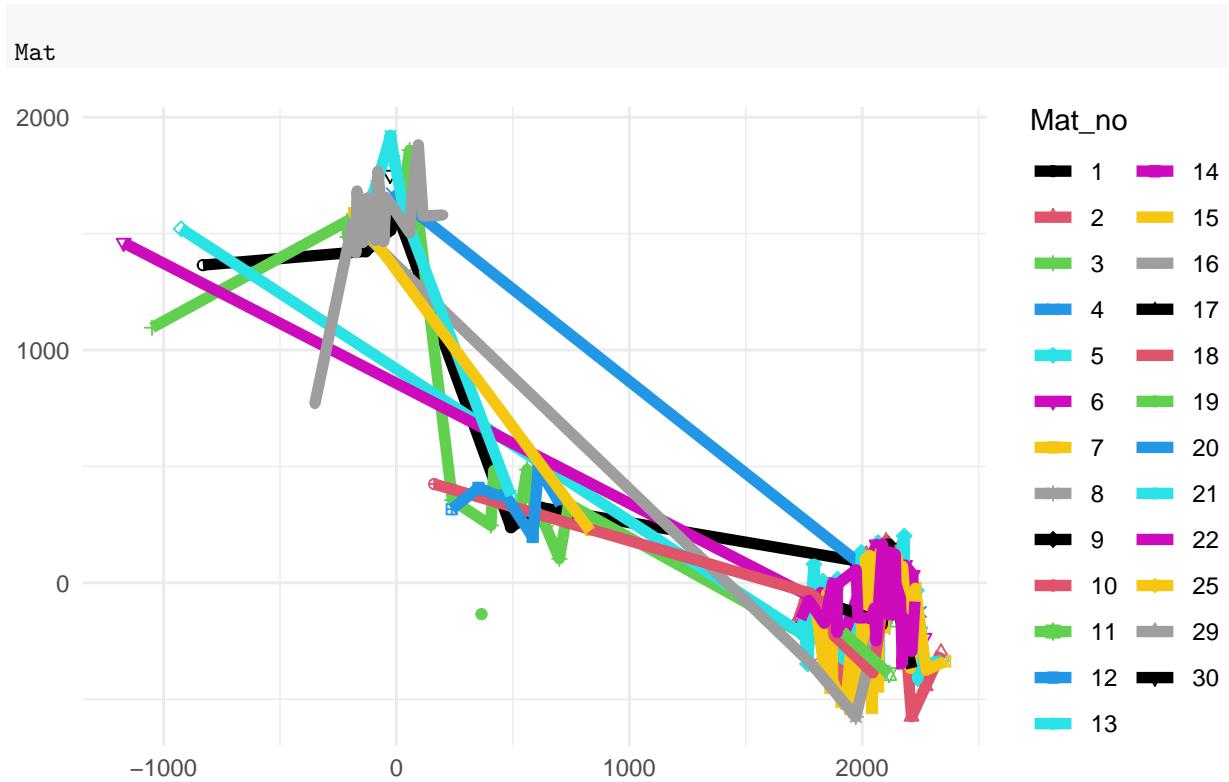
```
# 器種別の遺物分布の上に接合線を追加する  
Refline<-YY8dis %>%  
  select_("Refit","X","Y")%>%  
  drop_na()  
  
Ref<-ggplot(data=YY8dis)+  
  scale_shape_manual(values=1:nlevels(YY8dis$Type)) +  
  geom_point(aes(x=X,y=Y,shape=Type))+  
  geom_line(data=Refline,aes(x=X,y=Y,group =Refit))+  
  theme_minimal() +  
  coord_fixed() +  
  labs(x = NULL, y = NULL)
```



By raw Material classification

```
# 母岩分類ごとに結線する
Matline<-YY8dis%>%
  select_("Mat_no","X","Y")%>%
  drop_na()

Mat<-ggplot(data=Matline)+%
  scale_color_manual(values=1:nlevels(Matline$Mat_no)) +
  scale_shape_manual(values=1:nlevels(Matline$Mat_no)) +
  geom_point(aes(x=X,y=Y,shape=Mat_no,color=Mat_no))+%
  geom_line(data=Matline,lwd=2,aes(x=X,y=Y,group =Mat_no,color=Mat_no))+%
  theme_minimal()+
  coord_fixed()+
  labs(x = NULL, y = NULL)
```



c. Cluster analyses on the artifact distribution

非階層クラスター分析（Kmeans 法）により、遺物分布にまとまりがあるか分析する。

Clustering with 3 random partitions(Kmeans)

```
# 3箇所にクラスタリング (kmeans 法)
set.seed(3)
km<-kmeans(df, 3, iter.max = 1000,nstart = 100)

df$cluster<-km$cluster

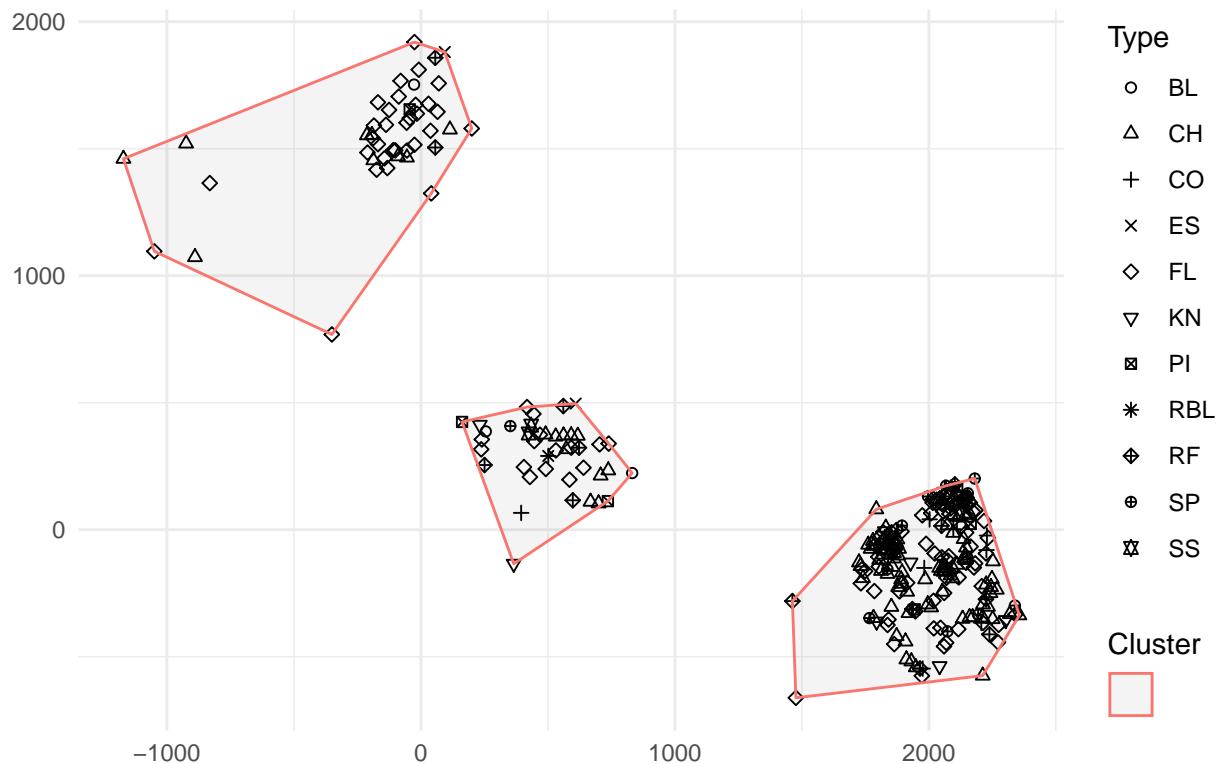
hulls <- YY8dis %>%
  mutate(cluster = km$cluster) %>%
  group_by(cluster) %>%
  slice(chull(X, Y))
```

```

custom3<-nomal+
  geom_polygon(data=hulls,
    aes(X,Y, group=cluster, colour="gray90"),
    alpha=0.05)+
  scale_color_hue(name = "Cluster", labels = NULL)

custom3

```



Clustering with 5 random partitions(Kmeans)

```

# 5箇所にクラスタリング (kmeans法)
km5<-kmeans(df, 5, iter.max = 1000,nstart = 100)

df$cluster<-km5$cluster

hulls5 <- YY8dis %>%
  mutate(cluster = km5$cluster) %>%
  group_by(cluster) %>%

```

```

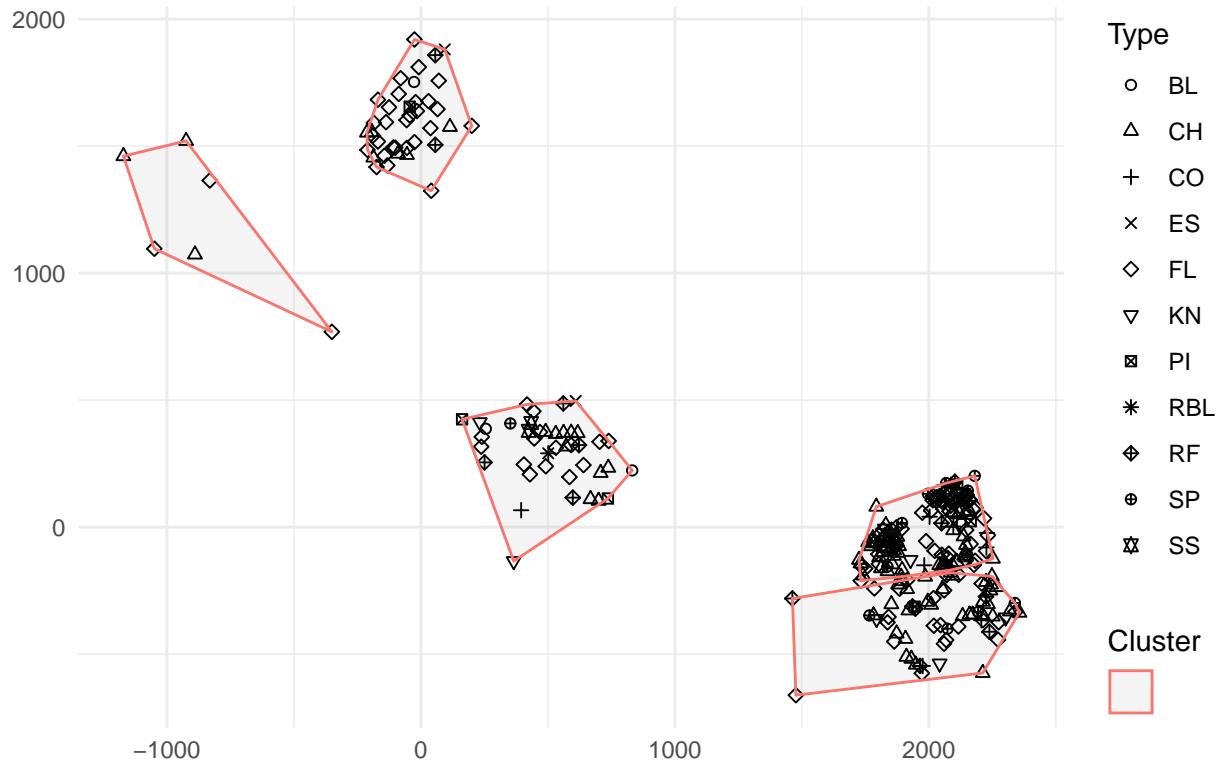
slice(chull(X, Y))

custom5<-nomal+
  geom_polygon(data=hulls5,
    aes(X,Y, group=cluster, colour="gray90"),
    alpha=0.05)+

  scale_color_hue(name = "Cluster", labels = NULL )

```

custom5



d.Drawing the results

スケール・方位付きの合成平面図を作成する。

```

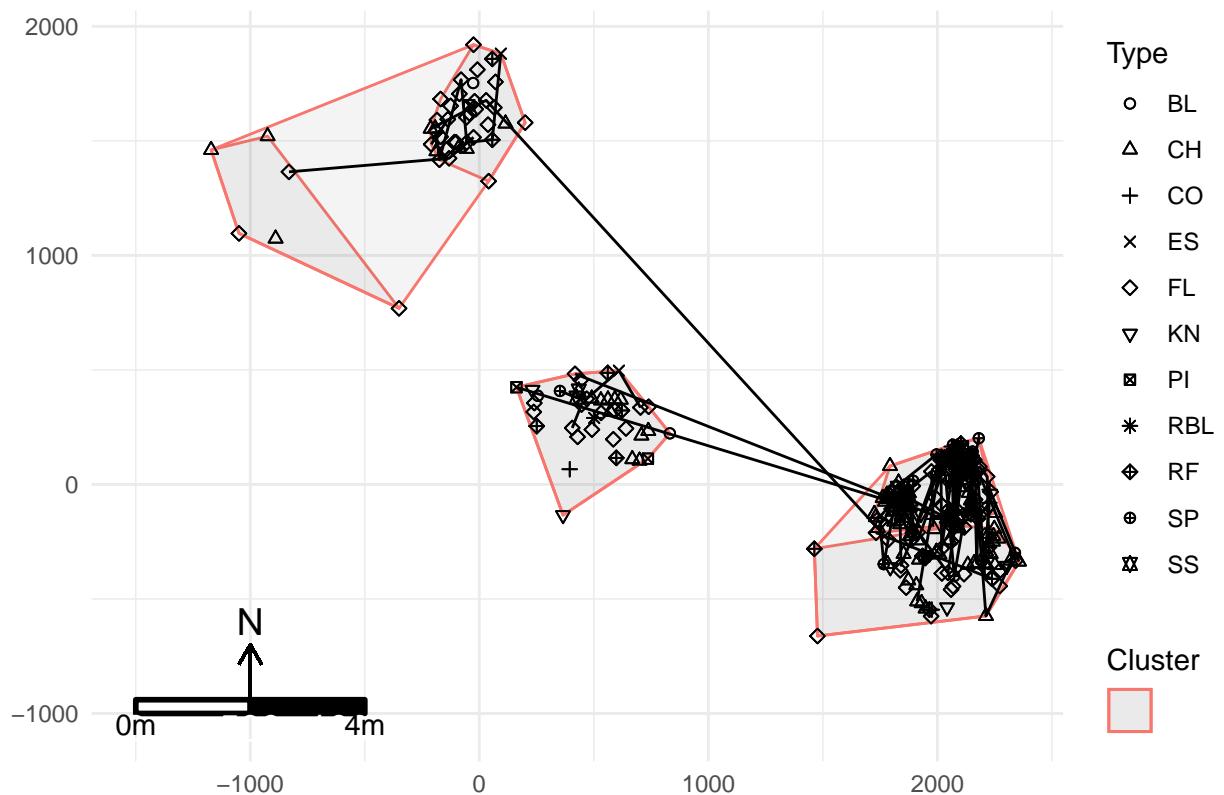
custom<-nomal+
  geom_polygon(data=hulls5,
    aes(X,Y, group=cluster, colour="gray90"),
    alpha=0.05)+
```

```

geom_polygon(data=hulls,
             aes(X,Y, group=cluster, colour="gray90"),
             alpha=0.05) +
scale_color_hue(name = "Cluster", labels = NULL ) +
geom_point(aes(x=X,y=Y,shape=Type)) +
geom_line(data=Refline,aes(x=X,y=Y,group =Refit)) +
scalebar(dist= 500,
         dist_unit = "m",
         st.color = "white",
         transform = F,
         location="bottomleft",
         x.min=-1500,x.max =2500,y.min = -1000, y.max = 2000 ) +
annotate("text", x = -500, y= -1050, label = "4m") +
annotate("text", x = -1500,y= -1050, label = "0m") +
geom_segment(arrows=arrow(length=unit(3,"mm")),
             aes(x=-1000,xend=-1000,y=-1000,yend=-700),
             colour="black") +
annotate("text", x=-1000, y=-600,
         label="N",
         colour="black",
         size=5)

custom

```



e. Riley's K function to evaluate the distribution

Ripley の K 関数法では各点から一定の距離 (h) 以内にある点の個数をカウントし、それを総点数と密度で除して基準化します。K 統計量は距離 h に従って変化することを利用し、モンテカルロ・シミュレーション結果 ($n=100$) と比較して、ミクロなスケールとマクロなスケールで分布がどのような傾向にあるかを検討します。全点に対する分析では明瞭な密集傾向がみられ、集中地点間の比較では第三集中地点のみマクロスケールにおいて分散傾向がみられました。

Riley's K function

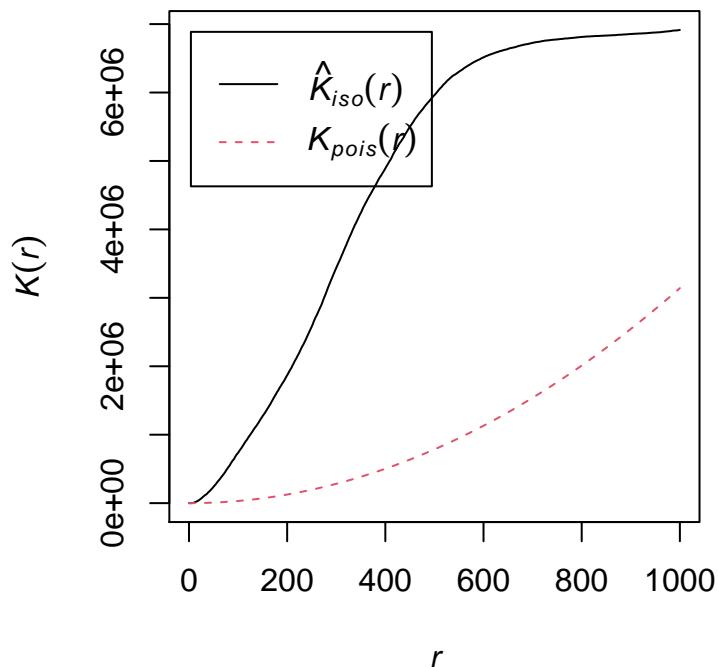
遺物平面分布（全点）に対して、K 関数法を実行。

```
set.seed(3)
ppp <- ppp(YY8dis$X, YY8dis$Y,
            c(-1200,3000),
            c(-1000,2000),
            marks=YY8dis$Concentration%>%
              as.factor())
kf<-Kest(ppp,rmax=1000,
```

```

correction="Ripley")%>%
plot()

```



Montecarlo simulation

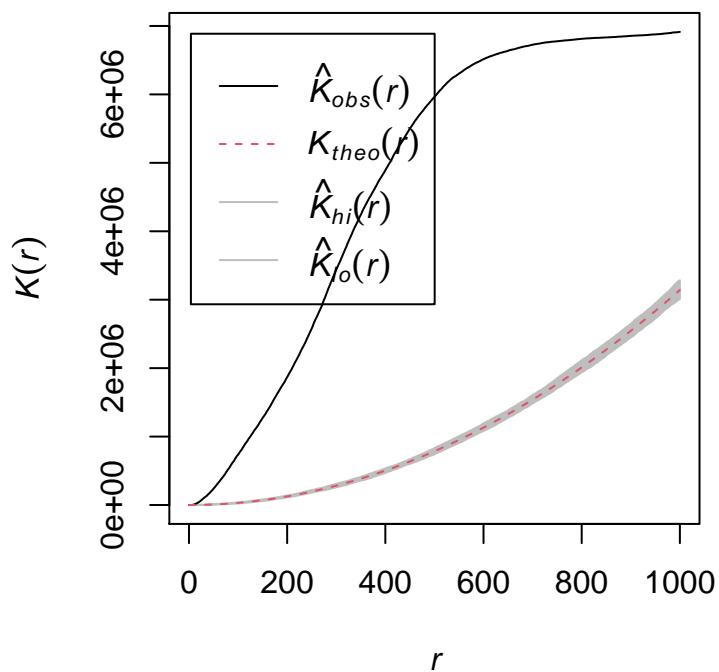
ランダムな分布を想定したシミュレーション結果との比較

```

# モンテカルロ・シミュレーション結果との比較
Kf <- envelope(ppp,Kest,rmax=1000,
                 fix.marks = T,
                 nsim=100)
plot(Kf)

```

Kf



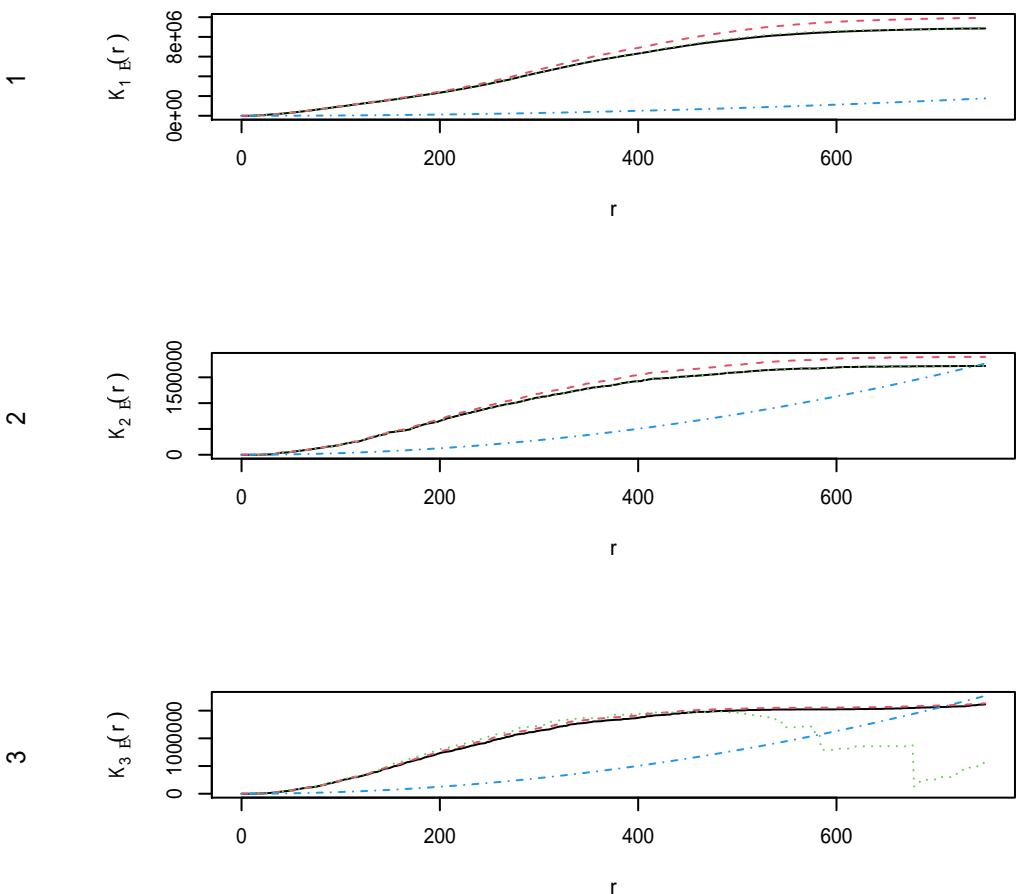
By Concentrations

集中地点ごとに分けて K 関数法を適用

```
# 第3集中地点は、マクロスケールで分散傾向を示す
```

```
plot(alltypes(ppp, "Kdot"))
```

array of Kdot functions for ppp.



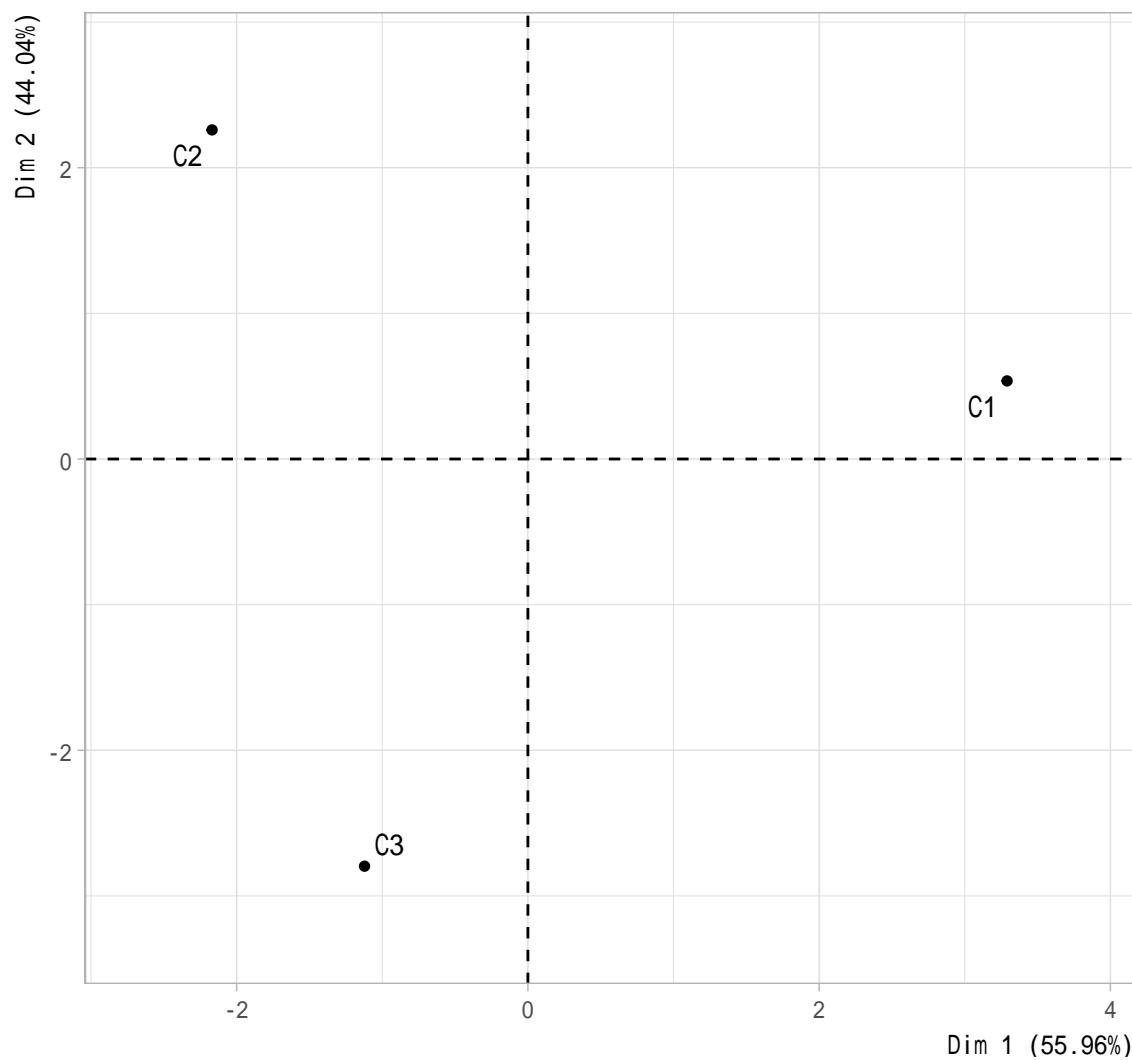
6. PCA analysis / 器種組成の主成分分析

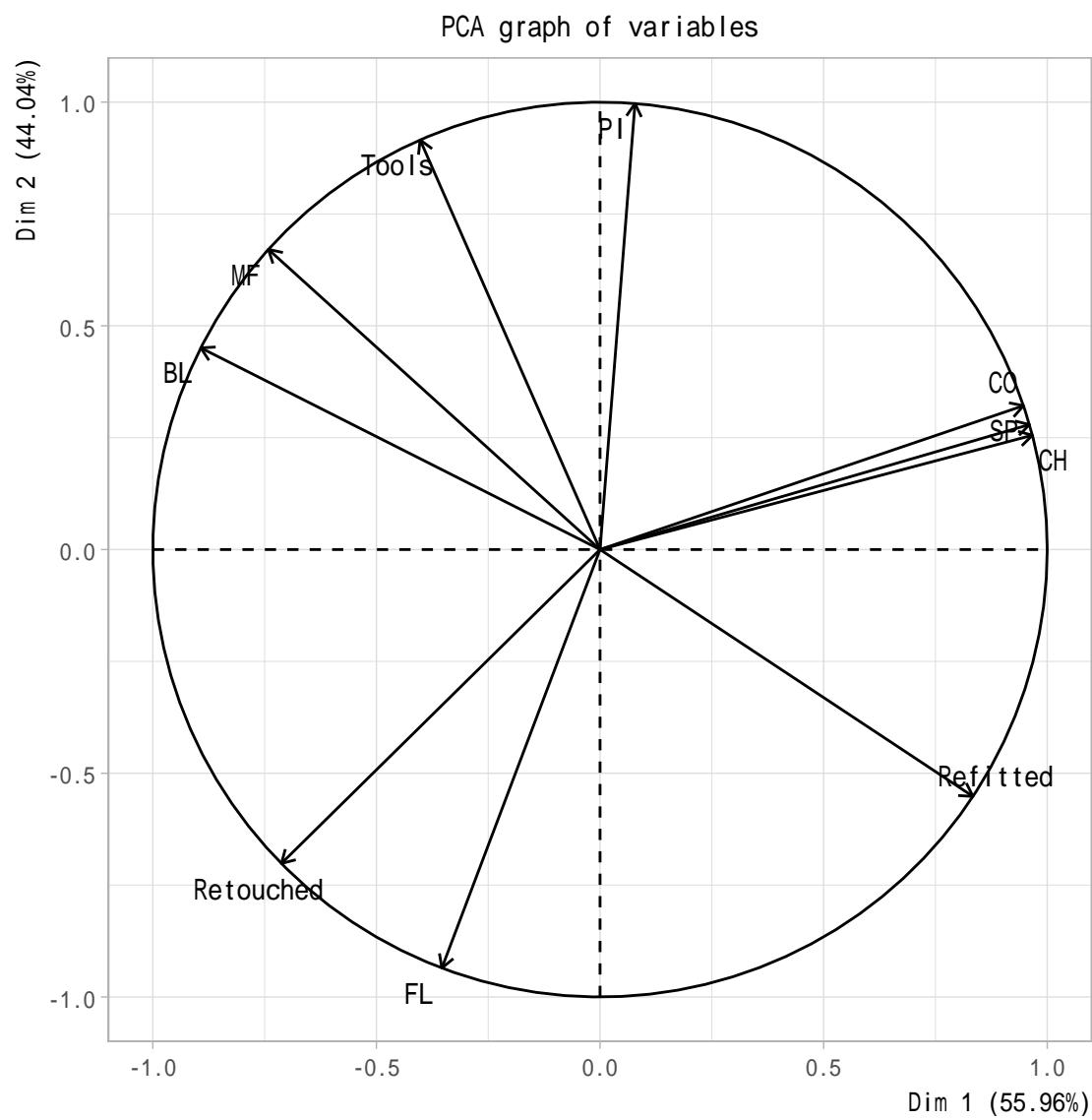
集中地点ごとの器種組成に対して主成分分析を行い、地点の特徴を把握する。

PCA and Scree plot

```
#先に作成したデータに主成分分析を実行し、各主成分の得点を Scree plot で評価  
PCAresult<-PCA(YY_PCA)
```

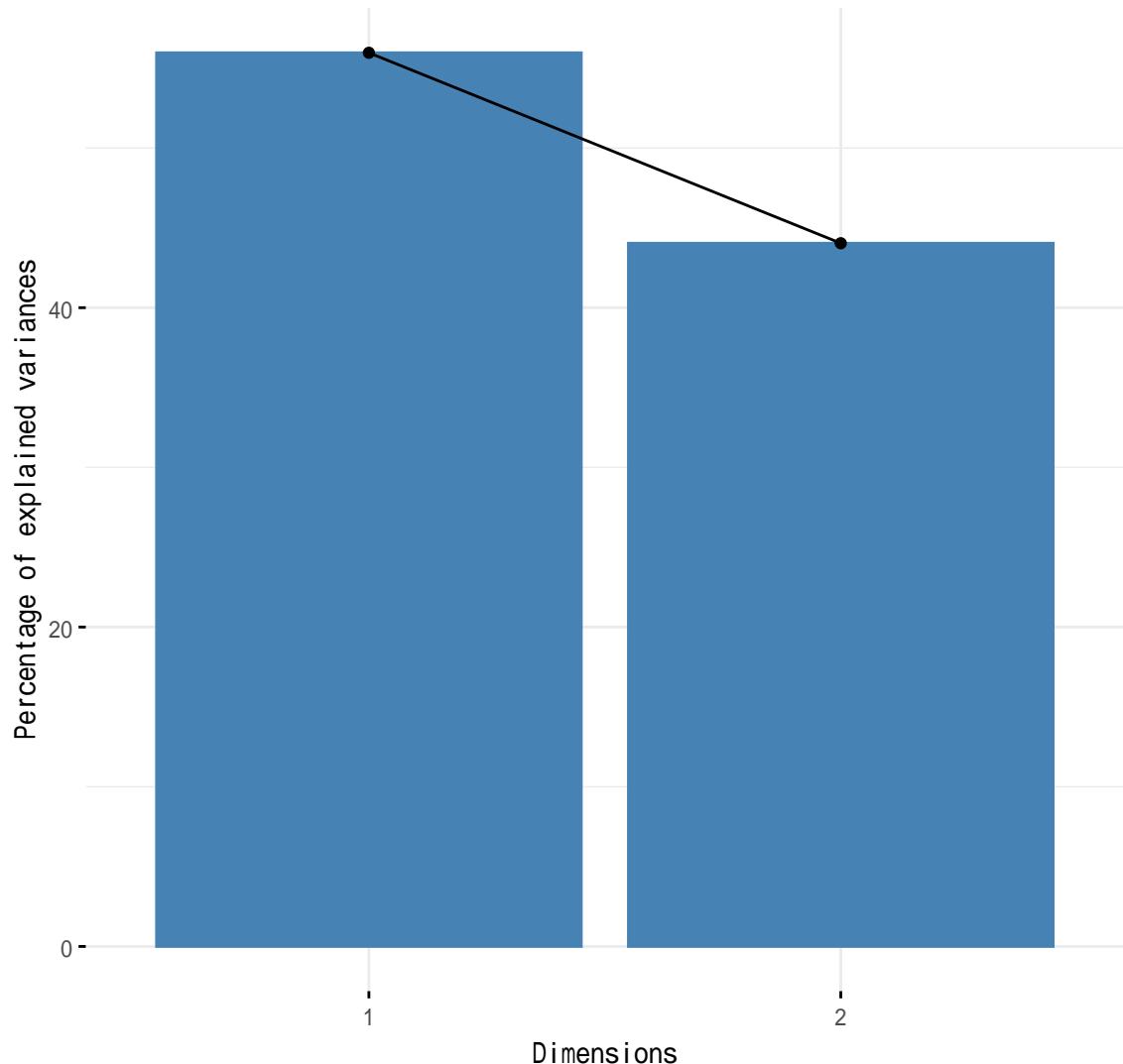
PCA graph of individuals





```
fviz_screepplot(PCAresult)
```

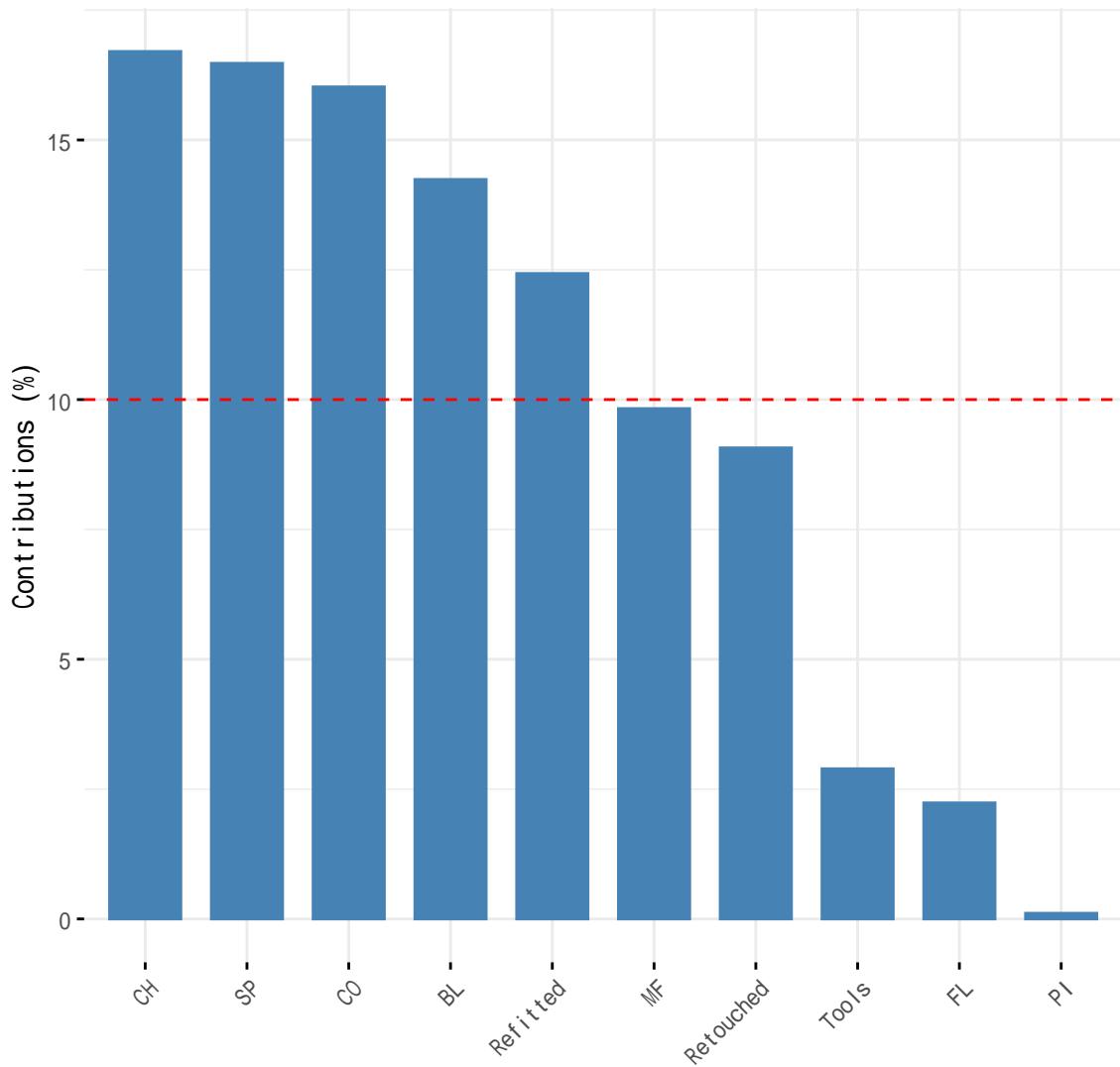
Scree plot



PC Contributions

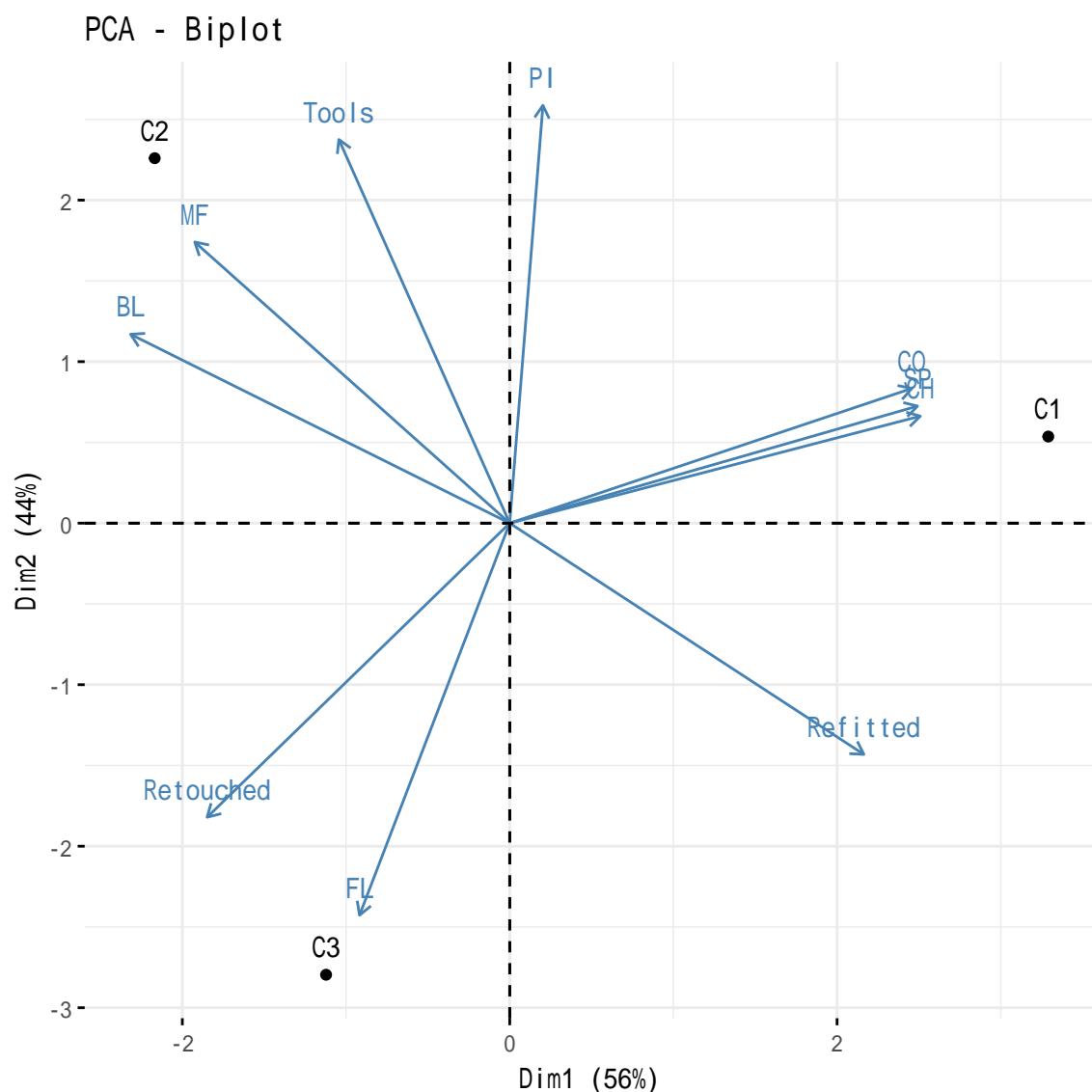
```
# 各要素の主成分への寄与率を表示  
fviz_contrib(PCAresult,  
             choice = "var",  
             axes = 1,  
             top = 10)
```

Contribution of variables to Dim-1



Results

```
# 分析結果を biplot で出力  
fviz_pca_biplot(PCAresult)
```



7. Technique / 石刃・剥片分割技術の地点間変異

集中地点ごとに異なる石刃・剥片分割技術の様相を示す。

Difinition the bar plot function

```
#Barplot の描画には関数の定義を行う
#data, i=x 軸、 j=y 軸
BarPlot1 <- function(data, i){
```

```

Data <- data[!is.na(data[,i]),]
VName1 = colnames(Data)[i]

P <- Data %>%
  dplyr::select_(VName1) %>%
  table %>% as.data.frame() %>%
  ggplot(aes(x = ., y = Freq)) +
  geom_bar(stat = "identity") +
  geom_text(aes(x = ., y = Freq,
                label = Freq,
                vjust = -0.5),
            size = 5) +
  theme_classic(base_size = 18) +
  labs(title = colnames(Data)[i] , y = "")

print(P) #

}

#=====

BarPlot2 <- function(data, i, j){

  Data <- data[!is.na(data[,i]),]
  VName1 = colnames(Data)[i]
  VName2 = colnames(Data)[j]

  P <- Data %>%
    dplyr::group_by_(VName1) %>%
    dplyr::select_(VName2) %>%
    table %>% as.data.frame() %>%
    ggplot(aes_string(x = VName1,
                      y = "Freq",
                      fill = VName2)) +
    geom_bar(stat = "identity",
              position = "dodge") +
    geom_text(aes_string(x = VName1,

```

```

        y = "Freq", label = "Freq",
        vjust = -0.5,
        group = VName2),
    position = position_dodge(width = 0.9),
    size = 5) +
theme_classic(base_size = 18) +
labs(title = paste(VName1, " * ", VName2), x = "", y = "")

print(P)

}

#=====

BarPlot3 <- function(data, i, j){

  Data <- data[!is.na(data[,i]),]
  VName1 = colnames(Data)[i]
  VName2 = colnames(Data)[j]

  P <- Data %>%
    dplyr::group_by_(VName1) %>%
    dplyr::select_(VName2) %>%
    table %>% as.data.frame() %>%
    dplyr::arrange_(VName1) %>%
    dplyr::group_by_(VName1) %>%
    dplyr::mutate(Pos = cumsum(Freq) - (Freq * 0.5)) %>%
    ggplot(aes_string(x = paste("reorder(x = ", VName1, ", X = Freq, FUN = sum)"),
                      y = "Freq", fill = VName2)) +
    geom_bar(stat = "identity",
              position = "stack",
              alpha = 0.7) +
    coord_flip() +
    guides(fill = guide_legend(reverse = TRUE)) +
    geom_text(aes(label = Freq, y = Pos),
              size = 5) +
}

```

```

    theme_classic(base_size = 18) +
    theme(panel.grid.major = element_line(color = "lightgray"),
          panel.grid.major.y = element_blank(),
          plot.background = element_rect(color = "gray", size = 1)) +
    labs(title = paste(VName1, " * ", VName2),
         x = "", y = "")

  print(P)
}

#=====

BarPlot4 <- function(data, i, j, type){

  Data <- data[!is.na(data[,i]),]
  VName1 = colnames(Data)[i]
  VName2 = colnames(Data)[j]
  switch (type,
    "dodge" = BarPlot2(Data, i, j),
    "stack" = BarPlot3(Data, i, j))
}

```

Types of Refitted artifact(Frequency)

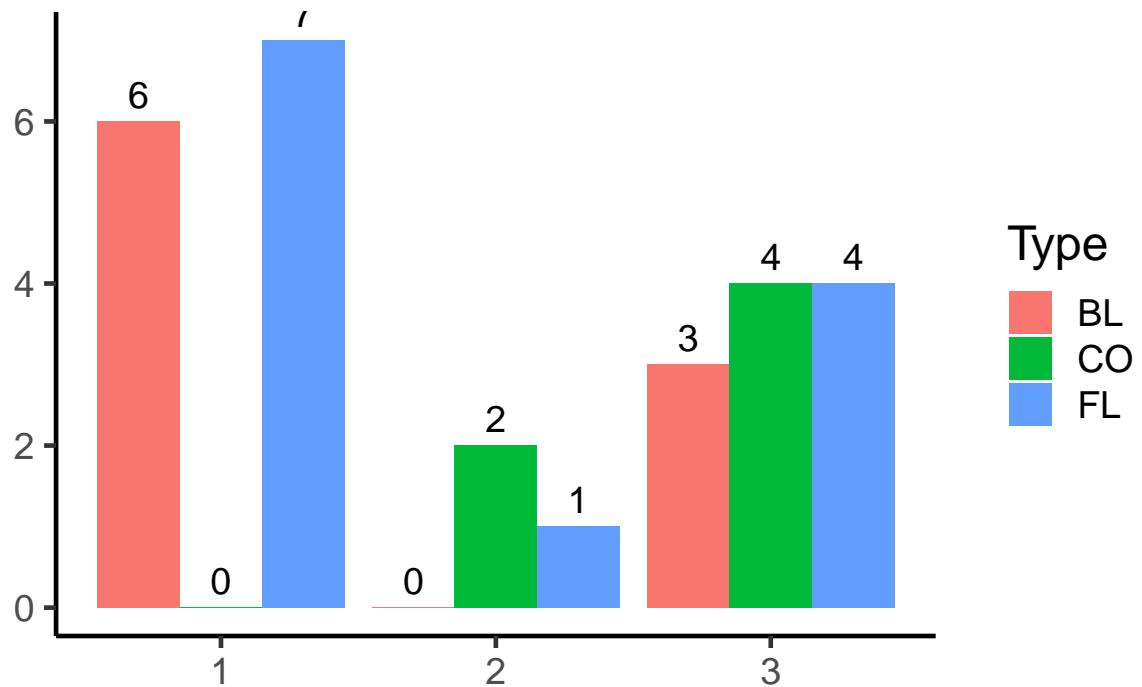
```

# 接合資料の素材となる石器の形態について頻度を集中地点ごとに示す
YY81<- read.csv("YY8-dataset/YY8-Refitted.csv",
                  fileEncoding="UTF-8-BOM",) %>%
  data.frame()

BarPlot4(YY81, 3, 4,
        type = "dodge")

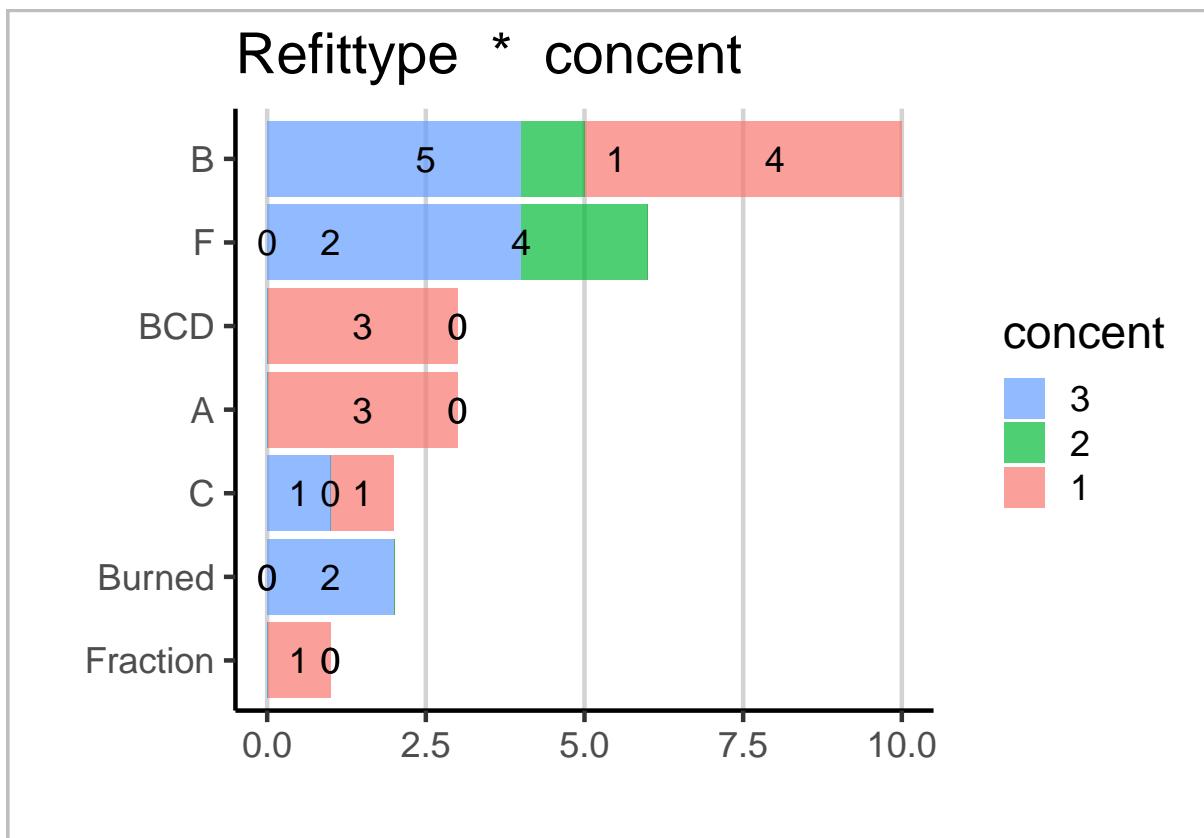
```

concent * Type



Technique of Refitted artifact(Frequency)

```
# 素材に対する分割剥離技術の類型について出現頻度を集中地点ごとに示す  
BarPlot4(YY81, 1, 3, type = "stack")
```



8.Afterword / おわりに

本稿で用いたデータの内、属性表（CSV）の作成にかかる石器の計測計量・観察などは宮城旧石器研究会の活動および鈴木秋平の修士論文（東北大学大学院 2018 年度）によるものです。

データの公開にあたり、宮城県加美町教育委員会の承諾を得ています。R による解析および本稿の文責は熊谷にあります。本稿の分析・R スクリプトおよび論文に関してご意見・ご指摘をお待ちしております。

The Attribute table of Yakuraisan No.8 site has been created based on the activities of the Society for Miyagi Palaeolithic Researches and Shuhei SUZUKI's Master's thesis(Graduate school of Tohoku University, 2019-3). All data has been released with the consent of the Kami Town Board of Education, Miyagi Prefecture.

Appendix/ table

薬萊山 No.8 遺跡出土遺物の属性表について掲載。

```
opts <- options(knitr.kable.NA = "")  
kbl(YY8, longtable = T, booktabs=T, digits =2,
```

```
caption = ' 葉萊山 No.8 遺跡出土石器属性表')%>%  
kable_styling(font_size = 7,  
              latex_options = c("scale_down","repeat_header","striped"),  
              position = "center")%>%landscape()%>%  
column_spec(c(5,6), width = "1cm")
```

表5: 葉萊山 No.8 遺跡出土石器属性表

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
1	FL				X-19			SH	19.80	24.80	3.50	2.15			0
2	BF				O-41			SH	31.00	23.70	4.70	3.03		Jyomon	0
3	CH				I-25			SH	13.50	18.10	4.70	1.06	13		0
4	CH				I-25			SH	17.40	18.95	2.10	0.55	5		0
5	AH				I-40			SH	32.90	32.00	11.70			Jyomon	0
6	BL				I-25			SH	31.60	16.40	2.80	1.56			0
7	RF	1			I-40			SH	15.32	21.69	5.17	1.00	1		1
8	BF				P-21			SH	26.30	11.20	5.60	1.49		Jyomon	0
9	FL				P-21		?	SH	32.30	29.70	8.05	8.08			0
10	FL				P-21			SH	30.20	20.20	3.70	2.08			0
11	FL				P-22			SH	25.20	17.80	2.60	0.84			0
12	CH				G-30			SH	18.00	12.30	1.70	0.36			0
13	CH				L-37			SH	9.80	12.80	2.10	0.16			0
14	FL				P-22			SH	22.20	24.60	2.50	1.44			0
15	RF				P-21			SH	60.80	26.50	12.00	15.58			0
16	FL				P-22			SH	26.35	16.70	1.50	0.97			0
17	CH				J-38			SH	15.60	15.00	1.50	0.13			0
18	PO				H-26			SH	58.20	23.30	10.40	15.25		Jyomon	0
19	FL				F-29			SH	24.90	15.80	2.40	0.48			0
20	CH		3		M-38			SH	10.20	14.20	3.00	0.37			0
21	FL	6			M-38			SH					3		0
22	FL	24			M-38			SH	38.70	22.10	10.40	5.92	16		0
24	RF				M-38			SH	30.50	28.90	5.70	3.40	16		1
25	FL	26			M-38			SH	32.80	26.20	8.50	7.38	16		0
26	CO				N-32			SH	35.00	43.90	28.00		12		0
27	RBL				M-38			SH	99.70	39.00	13.70	44.34	23		1
28	CH				M-42			SH	19.50	13.70	1.70	0.48			0
29	FL				M-38			SH	58.50	35.50	8.70	14.98			0
30	CH	1			M-38			SH	16.70	18.05	4.77	1.31	1		0
31	FL	26			M-38			SH	32.30	18.30	7.70	3.83	16		0
32	CH				M-38			SH	11.90	12.30	2.25	0.23	16		0
33	CH				M-38			SH	8.80	7.60	4.30	0.23			0
34	FL				M-38			SH	41.70	61.10	13.10	29.05			1
35	FL	1			M-38			SH	61.80	57.90	22.80	68.01	1		1
36	FL				M-38			SH	17.70	21.40	5.40	1.86	16		0
37	CH				M-38			SH	14.50	8.10	2.20	0.34	16		0
38	FL	1			M-38			SH	25.75	29.91	5.95	3.03	1		0
39	FL	26			M-38			SH	30.10	31.90	9.40	8.08	16		0
40	RF				M-38			SH	52.50	20.60	10.90	9.01	13		0
41	FL	5			M-38			SH					3		0
42	FL				M-38			SH	30.20	55.20	14.10	24.75			0
43	RF				M-38			SH	17.50	18.60	5.40	1.56	16		0

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
44	CO	10		3	M-38			SH	66.55	46.95	10.80	38.40	4		0
45	RF	24		3	M-38			SH	38.40	36.90	13.10	11.05	16		1
46	FL	1		3	M-38			SH	24.10	35.10	10.00	6.40	1		0
47	FL	27		3	M-38			SH	22.45	14.20	6.15	1.26	16		0
48	FL	4		3	M-38			SH					3		0
49	CH			3	M-38			SH	12.50	9.60	5.80	0.53			0
50	FL	1		3	M-38			SH	62.70	53.10	21.60	51.75	1		1
51	FL			3	M-38			SH	27.10	21.50	5.10	1.41			0
52	FL	5		3	M-38			SH					3		0
53	RBL			3	M-38			SH	44.10	31.70	13.00	20.58	11		0
54	BL			3	M-38			SH	43.20	31.60	11.30	13.82	15		0
55	FL	3		3	M-38			SH	23.35	30.80	5.00	1.88	3		1
56	CH			3	M-38			SH	13.50	6.20	1.90	0.10			0
57	石匙			1	K-35	Y2U		SH	66.45	26.50	8.45	13.16		Jyomon	0
58	FL	22		3	M-38			SH	45.60	32.20	7.60	7.50	13		0
59	RF	5		3	M-38			SH					3		0
60	SP			3	M-38			SH	16.20	5.80	4.20	0.35			0
61	HS			O-40					112.20	31.70	14.90	87.42		Jyomon	0
42	62	CH		O-40				SH	12.10	13.50	1.80	0.34			0
	63	FL	1	L-38				SH	28.16	19.50	4.80	2.22	1		1
	64	RF		L-38				SH	64.60	35.00	9.00	17.56			1
	65	CH		3	M-39			TS	19.80	14.60	2.20	0.59			0
	66	FL		3	M-39			SH	22.10	26.90	6.80	2.71			0
	67	RF		3	M-39			SH	21.20	19.40	6.30	1.77			0
68	CH			3	M-39			SH	13.00	14.30	1.70	0.18			0
69	BF			3	M-39			TF	27.50	21.80	6.10	27.60		Jyomon	0
70	PE			3	M-39								3	Jyomon	0
71	FL			N-32				SH	24.60	25.50	9.70	2.89			0
72	FL			N-32				SH	45.80	43.80	9.90	16.76	3		0
73	BL			N-32				SH	58.50	37.20	9.90	17.02	26		1
74	BL			N-32				SH	60.90	32.40	7.50	11.36	27		0
75	FL			N-32				SH	14.70	22.50	5.85	2.68	16		0
76	FL			G-32				SH	26.10	31.90	4.50	3.72			0
78	FL			I-35				TF	34.10	28.60	7.90	5.78			0
79	CH			E-27				SH	15.80	9.90	1.10	0.29			0
80	FL			N-23				?	48.70	28.40	8.20	11.63			0
81	CH			P-20				SH	13.30	12.40	3.70	0.54			0
82	BL			P-39	Y3			SH	104.80	36.60	10.40	29.82	28		1
83	FL	13		G-35	Y4			SH	34.40	47.60	19.20	9.21	5		0
85	FL			N-35	Y3			SH	18.50	21.10	3.10	0.78			0
86	RBL			O-39	Y5M			SH	70.70	40.60	8.10	23.12	24		1
87	FL			O-34	Y3			SH	55.50	32.20	14.00	21.36	12		0

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
88	FL		3	M-38				SH	27.30	22.60	5.40	3.91	15		0
89	FL			E	Ground		?		42.70	26.80	9.00	6.16			0
90	PE			E	Ground		?		22.70	17.20	5.40	1.21		Jyomon	0
91	FL			E	Ground			Sandstone	27.50	21.90	8.30	3.95			0
92	FL			E	Ground		?		21.60	16.70	4.85	1.37			0
93	FL			E	Ground			SH	35.30	28.60	5.90	4.88			0
94	FL			E	Ground			SH	14.90	21.60	3.10	0.65			0
95	CH			E	Ground			SH	12.50	13.30	2.20	0.60			0
96	CH			E	Ground			SH	12.30	19.50	3.10	0.44			0
97	FL			E	Ground			SH	20.00	17.20	4.20	0.88			0
98	SP	11		E	Ground			SH	22.50	11.40	9.25	1.77	5		0
99	FL			E	Ground			SH	41.40	23.80	5.05	4.52			0
100	BF			E	Ground		?		29.50	19.00	9.70	3.92		Jyomon	0
101	CH			E	Ground		?		15.80	18.40	6.10	1.13			1
102	FL			E	Ground			TS	12.80	20.15	1.40	0.41			0
103	FL			E	Ground			TS	17.95	21.10	2.80	0.78			0
104	FL			E	Ground			TF	46.70	37.70	7.60	12.43			0
105	FL			E	Ground			SH	27.80	19.95	4.80	3.38			0
106	FL			E	Ground			SH	35.50	44.00	2.60	5.12			0
107	RF			E	Ground			SH	44.00	39.25	13.20	18.26			0
109	CO			E	Ground		?		19.70	43.50	17.80	13.68			0
110	FL			E	Ground			SH	30.40	1.20	7.75	3.06	10		0
111	CH			E	Ground			TU	16.20	18.70	3.00	0.67			0
112	PE			E	Ground		?							Jyomon	0
113	RF			E	Ground			SH	21.45	17.80	3.15	1.25			0
114	RF			E	Ground			SH	2.62	1.84	1.95	2.58	2		1
115	PE			E	Ground		?		19.90	10.70	4.80	0.78		Jyomon	0
116	PE			E	Ground		?		11.00	8.00	3.00	0.33		Jyomon	0
117	FL			E	Ground			TF	27.45	30.00	8.15	5.18			0
118	AH			E	Ground			SH	15.70	11.80	2.65	0.48		Jyomon	0
119	RF			E	Ground			TF	22.00	21.60	2.90	0.96			0
120	FL			E	Ground			CL	22.10	15.20	8.90	4.21			0
121	FL			E	Ground			SH	27.80	14.10	3.80	0.64			0
122	CH			E	Ground		?		19.10	23.70	5.40	1.82			0
123	FL			E	Ground			SH	28.80	31.10	10.30	9.36	9		0
124	CH			E	Ground			SH	17.10	19.60	2.10	0.51			0
125	Other			E	Ground			TF	25.80	36.95	16.35	10.71		Jyomon	0
126	CH		C-46	Ground				TF	17.70	18.50	6.50	0.94			0
127	CH			E	Ground			SH	11.90	10.60	1.80	0.15			0
128	CH			E	Ground			SH	17.45	19.30	5.30	1.38			0
129	BL			E	Ground			TF	181.50	55.00	15.40	145.96			1

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF	
130	PO			E	Ground			SH	49.40	25.80	6.25	7.65		Jyomon	0	
132	AX			E	Ground			?	74.95	32.70	10.50	41.62		Jyomon	0	
134	BF			E	Ground			SH	95.20	44.60	13.30	45.18		Jyomon	0	
135	DR			E	Ground			SH	75.80	43.30	9.30	21.18		Jyomon	0	
136	SP	11		1	K-36	Y3	2180.78	201.54	SH	54.60	23.10	8.50	8.39	5		1
137	SP	15		1	K-36	Y3	2067.94	173.12	SH	31.30	15.40	8.55	3.23	5		0
138	RF	2		1	K-36	Y3	2102.44	178.40	SH	29.82	31.37	6.67	3.63	2		1
139	CO	23		1	K-36	Y3	2087.02	166.63	SH	46.80	47.10	13.70	28.97	14		0
140	FL			1	K-36	Y3	2072.40	147.55	SH	21.30	22.95	3.75	1.95			0
141	CO	2		1	K-36	Y3	2051.70	130.91	SH	30.85	38.50	15.45	12.72	2		0
142	SP	11		1	K-36	Y3	1996.50	130.91	SH	62.80	16.40	5.75	11.10	5		1
143	SP	2		1	K-36	Y3	2153.59	143.49	SH	35.95	17.35	7.45	3.87	2		1
144	RF	14		1	K-36	Y3	2148.72	126.04	SH	39.40	45.00	7.40	8.15	5		0
145	FL	17		1	K-36	Y3	2146.69	119.95	SH	29.25	39.05	6.00	5.76	7		0
146	RF			1	K-36	Y3	2138.57	113.05	SH	50.90	26.60	9.50	8.62	8		0
147	FL	11		1	K-36	Y3	2161.70	106.55	SH	23.10	43.55	8.60	3.68	5		1
148	FL	17		1	K-36	Y3	2100.01	110.61	SH	21.10	24.10	5.00	2.42	7		0
149	CO	2		1	K-36	Y3	2065.10	109.39	SH	30.75	44.30	9.95	13.80	2		0
150	SP	2		1	K-36	Y3	2045.61	100.46	SH	46.10	14.50	5.40	4.36	2		1
151	FL	15		1	K-36	Y3	2056.98	71.64	SH	27.60	24.40	6.00	2.23	5		0
152	FL	15		1	K-36	Y3	2009.08	65.15	SH	38.20	52.40	9.40	11.78	5		0
153	FL	23		1	K-36	Y3	1974.17	56.62	SH	23.10	25.10	3.50	1.85	14		0
154	CO	17		1	K-36	Y3	2002.99	40.80	SH	54.50	42.10	14.75	25.35	7		1
155	RF			1	K-36	Y3	2050.08	15.22	SH	37.40	25.40	7.30	5.67			0
156	CO	17		1	K-36	Y3	2110.56	34.71	SH	41.30	36.90	22.20	32.75	7		0
157	CO	16		1	K-36	Y3	2096.35	2.23	SH	14.00	31.30	38.45	13.57	6		0
158	FL	16		1	K-36	Y3	2184.03	76.92	SH	37.80	26.90	10.50	7.59	6		0
159	FL	17		1	K-36	Y3	2173.48	71.24	SH	42.40	33.30	8.15	14.75	7		1
160	PI	17		1	K-36	Y3	2164.95	22.93	SH	32.30	39.70	15.60	18.37	7		0
161	FL	16		1	K-36	Y3	2217.31	34.30	SH	22.55	22.55	5.35	1.80	6		0
162	FL	23		1	J-36	Y3	2147.09	-11.16	SH	16.60	24.30	3.40	1.02	14		0
163	CO	17		1	J-36	Y3	2228.68	-22.93	SH	66.10	37.75	14.30	26.69	7		1
164	FL			1	J-36	Y3	2232.74	-32.27	SH	20.60	23.80	8.85	2.70	5		0
165	CO	23		1	J-36	Y3	2226.65	-80.17	SH	37.75	47.75	11.45	19.47	14		0
166	FL			1	J-36	Y3	2225.03	-93.56	SH	19.35	20.70	3.35	1.57	7		0
167	FL	23		1	J-36	Y3	2164.55	-66.37	SH	16.70	27.35	4.55	1.65	14		1
168	FL	23		1	J-36	Y3	2146.28	-130.10	SH	19.80	26.60	14.20	2.32	14		0
169	FL	17		1	J-36	Y3	2078.49	-104.52	SH	21.40	27.10	3.90	2.32	7		1
170	FL			1	J-36	Y3	2074.03	-121.17	SH	26.20	33.30	7.40	4.65	5		1
171	FL	23		1	J-36	Y3	2051.30	-108.58	SH	16.85	26.70	10.90	2.65	14		0
172	FL			1	J-36	Y3	2022.88	-93.56	SH	20.85	22.80	2.80	1.23	3		0

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
173	FL			1	J-36	Y3	1989.19	-55.41	SH	22.90	16.90	6.55	1.23		0
174	KN			1	J-36	Y3	1927.90	-129.28	SH	54.30	19.20	4.40	3.90	17	0
175	CO	23		1	J-36	Y3	1981.88	-150.39	SH	53.80	42.80	12.65	20.38	14	0
176	FL	23		1	J-36	Y3	2060.23	-249.03	SH	40.75	12.10	9.20	4.27	14	0
177	FL	8		1	J-36	Y3	2117.46	-187.74	SH	26.40	25.90	3.80	2.18	3	0
178	FL			1	J-36	Y3	2182.41	-132.53	SH	21.20	23.90	2.80	1.30	5	0
179	AH			1	J-36	Y3			SH	22.65	13.45	3.70	0.67		Jyomon 0
180	FL			1	J-36	Y3	2208.38	-222.24	SH					5	0
181	CH			1	J-36	Y3	2242.48	-249.44	SH	18.15	14.55	2.25	0.50		0
182	RF	16		1	J-36	Y3	2225.03	-273.79	SH	21.70	20.05	9.40	2.56	6	0
183	SP	2		1	J-35	Y3	2338.68	-298.55	SH	21.30	8.70	7.60	1.32	2	1
184	KN			1	J-35	Y3	2302.56	-355.79	SH	23.95	16.30	2.80	1.21	18	0
185	CO	17		1	J-36	Y3	2206.36	-366.74	SH	62.60	37.40	16.90	31.34	7	0
186	FL			1	J-36	Y3	2116.24	-391.51	SH	26.50	18.30	3.20	0.82	11	0
187	FL			1	J-36	Y3	2068.34	-444.68	SH	50.40	35.20	15.50	29.60	7	0
188	FL			1	J-36	Y3	2059.82	-459.29	SH	22.90	19.55	4.50	1.18		0
189	FL	2		1	J-36	Y3	2272.52	-443.46	SH	22.00	21.60	5.30	1.38	2	0
190	石匙			1	K-35	Y3			SH	62.90	22.00	6.30	7.38		Jyomon 0
191	石匙			1	K-35	Y3			SH	67.00	26.50	5.40	10.85		Jyomon 0
192	石匙			1	K-35	Y3			SH	99.50	25.60	7.20	20.95		Jyomon 0
193	KN			2	J-38	Y3	365.53	-134.16	SH	90.70	35.40	15.00	36.35	19	1
194	CO			2	K-38	Y3	394.75	66.37	SH	49.50	36.20	17.20	22.64		1
195	RF			2	K-38	Y3	598.12	115.89	SH	53.50	51.05	8.20	21.18		1
196	BL			2	K-37	Y3	831.92	223.05	SH	53.60	35.20	10.60	23.01	15	1
197	FL			2	K-38	Y3	640.33	244.16	SH	43.20	39.70	15.10	16.72	3	0
198	FL	7		2	K-38	Y3			SH					3	0
199	FL			2	K-38	Y3	585.13	197.07	SH	31.45	41.60	6.85	7.01	12	0
200	FL			2	K-38	Y3	491.77	239.29	SH	15.40	27.80	7.30	3.22	1	1
201	FL	7		2	K-38	Y3	405.71	246.59	SH	33.10	23.20	10.10	6.14	3	0
202	RF			2	K-38	Y3	250.65	254.71	SH	56.85	26.90	8.85	9.41		1
203	FL			2	K-38	Y3	237.66	316.41	SH	26.70	21.05	9.90	4.04	12	0
204	FL			2	K-38	Y3	240.10	355.38	SH	26.20	19.00	9.40	3.83	3	1
205	FL	7		2	K-38	Y3	446.30	348.88	SH					3	0
206	SS	21		2	K-38	Y3	424.38	378.92	SH	60.65	49.90	10.30	21.75	12	1
207	RBL			2	K-38	Y3	501.51	290.43	SH	54.90	26.80	11.70	12.09	25	1
208	FL			2	K-38	Y3	531.55	312.35	SH	55.40	36.90	13.70	18.45	3	1
209	PI	19		2	K-38	Y3	162.16	424.38	SH	35.40	21.40	5.90	3.74	10	0
210	KN			2	K-38	Y3	231.98	413.02	SH	116.60	27.90	11.80	28.77	20	1
211	BL			2	K-38	Y3	255.52	387.04	SH	112.30	34.90	13.90	55.36	29	1
212	SP	21		2	K-38	Y3	352.13	408.15	SH	27.90	18.05	7.10	3.04	12	1
213	FL	8		2	K-38	Y3	417.89	482.84	SH	37.40	24.90	6.90	3.92	3	0
214	FL			2	K-38	Y3	443.06	456.05	SH	44.40	48.20	8.90	14.44	3	1

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
215	SS			2	K-38	Y3	434.13	409.77	SH	19.70	21.30	6.70	2.52		0
216	AH			2	K-35	Y2			SH	23.70	13.00	2.95	0.86	Jyomon	0
217	FL			3	M-38	Y3	200.32	1579.62	SH	29.40	8.85	7.90	0.91	16	0
218	CH	26		3	M-38	Y3	114.27	1575.56	SH	16.40	19.30	7.20	2.32	16	0
219	FL	22		3	M-38	Y3	37.95	1570.69	SH	41.30	24.30	9.80		13	1
220	FL	27		3	M-38	Y3	65.56	1645.38	SH	22.30	22.80	7.10	3.06	16	0
221	FL	3		3	M-38	Y3	29.83	1677.04	SH	29.20	39.50	10.40	7.61	3	1
222	FL			3	M-38	Y3	70.43	1757.41	SH	43.30	26.20	12.10	7.36	3	0
223	ES	24		3	M-38	Y3	93.97	1880.81	SH	46.80	42.70	10.30	19.34	16	1
224	RF			3	M-39	Y3	56.63	1858.08	SH	27.20	24.00	6.70	4.02	3	1
225	FL			3	M-39	Y3	-25.37	1919.78	SH	42.60	54.70	14.20	17.66	13	0
226	FL			3	M-39	Y3	-8.32	1810.99	SH	38.30	32.60	7.30	7.20	13	1
227	BL			3	M-39	Y3	-26.99	1752.54	SH	47.35	34.40	12.40	25.27	30	1
228	FL	24		3	M-39	Y3	-79.76	1767.15	SH	40.10	33.80	13.20	16.83	16	0
229	FL			3	M-39	Y3	-87.07	1705.45	SH	39.10	38.05	15.55	14.60	13	0
230	FL			3	M-39	Y3	-169.06	1682.72	SH	19.90	22.35	9.95	2.23	16	0
231	FL			3	M-39	Y3	-125.22	1652.69	SH	14.80	27.75	10.45	4.61	16	0
232	FL	10		3	M-39	Y3	-20.50	1672.98	SH	34.50	46.55	7.35	7.65	4	1
233	FL			3	M-39	Y3	-15.63	1638.07	SH	34.70	28.90	6.10	6.17	1	1
234	PI			3	M-39	Y3	-44.04	1655.12	SH	38.40	38.90	12.60	18.18	16	0
235	FL	4		3	M-39	Y3	-137.40	1594.23	SH					3	0
236	FL	6		3	M-39	Y3	-56.22	1602.35	SH					3	0
237	FL			3	L-39	Y3	-169.06	1517.92	SH	45.80	41.10	14.90	25.12	13	0
238	FL			3	L-39	Y3	-100.87	1493.57	SH	33.90	29.30	9.50	6.14	16	0
239	FL	1		3	L-39	Y3	-25.37	1515.49	SH	31.10	32.10	7.51	9.39	1	1
240	RF	24		3	L-39	Y3	56.63	1504.93	SH	32.45	40.60	8.60	10.72	16	0
241	FL			1	K-38	Y3	1476.52	-661.85	SH	29.20	18.70	3.90	1.68		0
242	RF			1	K-38	Y3	1462.72	-281.10	SH	21.60	22.70	6.60	3.83		1
243	PI			2	K-38	Y3	736.13	112.64	SH	43.70	23.80	10.60	8.79		1
244	CH			2	K-38	Y3	699.60	103.71	SH	11.50	18.50	1.80	0.38	3	0
245	CH			2	K-38	Y3	667.93	110.21	SH	10.80	7.55	2.50	0.13		0
246	CH			2	K-38	Y3	737.75	233.60	SH	14.35	7.60	3.30	0.39		0
247	CH			2	K-38	Y3	707.71	213.31	SH	13.30	12.20	2.30	0.28		0
248	FL			2	K-38	Y3	739.38	339.14	SH	34.00	23.35	7.30	4.64	3	1
249	FL	21		2	K-38	Y3	703.66	335.90	SH	39.40	44.10	13.10	20.51	12	0
250	CH			2	K-38	Y3	617.60	369.99	SH	16.20	17.55	4.55	1.07		0
251	CH			2	K-38	Y3	591.62	371.62	SH	13.05	15.10	2.00	0.35		0
252	CH			2	K-38	Y3	561.58	370.80	SH	8.10	10.80	3.05	0.20		0
253	CH			2	K-38	Y3	530.73	366.74	SH	18.10	8.05	1.70	0.27		0
254	RF	9		2	K-38	Y3	622.47	322.91	SH	25.30	14.20	4.50	1.33	1	0
255	FL			2	K-38	Y3	591.62	322.91	SH	10.90	20.80	3.20	0.44	3	0
256	CH			2	K-38	Y3	572.14	317.22	TS	14.30	13.60	5.75	0.55		0

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
257	RF			2	K-38	Y3	560.77	486.90	SH	19.60	16.90	4.10	1.12	3	1
258	ES	21		2	K-38	Y3	609.48	496.64	SH	48.20	33.90	13.70	22.31	12	1
259	FL			2	K-38	Y3	429.26	207.63	SH	11.40	22.65	4.30	0.99	0	
260	CH			2	K-38	Y3	490.96	374.86	SH	11.60	6.90	3.10	0.18	13	0
261	FL	21		2	K-38	Y3	469.04	374.05	SH	60.85	54.50	14.10		12	1
262	CH			1	J-36	Y3	2252.22	-124.41	SH	13.10	9.90	2.80	0.19	4	0
263	CH			1	J-36	Y3	2110.97	-137.81	SH	19.60	8.75	2.95	0.42	14	0
264	CH			1	J-36	Y3	2094.73	-152.02	SH	13.45	15.30	2.20	0.35		0
265	FL	18		1	J-36	Y3	2083.77	-169.47	SH	25.70	12.00	4.95	1.37	9	0
266	CH	2		1	K-36	Y3	2145.87	59.26	SH	19.70	25.10	6.65	2.03	2	1
267	FL	2		1	K-36	Y3	2148.72	96.61	SH	25.10	18.30	5.80	2.56	2	1
268	FL	15		1	K-36	Y3	2081.74	62.10	SH	27.30	53.10	12.90	14.36	5	0
269	FL	14		1	K-36	Y3	2085.80	83.82	SH	36.00	40.70	13.65	10.60	5	1
270	RF			1	K-36	Y3	2101.63	93.56	SH	21.50	7.50	2.00	0.29		0
271	PI	19		1	K-36	Y3	2119.08	103.71	SH	33.50	24.70	8.90	5.46	10	1
272	CH			1	K-36	Y3	2160.28	119.14	SH	18.20	18.85	9.30	1.57		0
273	FL	2		1	K-36	Y3	2017.60	121.78	SH	31.40	30.20	12.80	7.90	2	1
274	FL			1	K-36	Y3	2031.41	118.12	SH	14.20	22.90	3.85	1.09	7	0
275	FL	17		1	K-36	Y3	2015.57	105.94	SH	34.90	25.10	7.45	6.16	7	0
276	FL	11		1	K-36	Y3	2029.38	103.91	SH	51.95	35.10	10.30	14.17	5	1
277	PI	23		1	K-36	Y3	2117.46	132.53	SH	43.10	33.15	11.20	15.94	14	0
278	FL	17		1	K-36	Y3	2075.85	130.71	SH	25.00	36.50	4.60	4.70	7	1
279	PI	18		1	K-36	Y3	2111.57	167.24	SH					9	0
280	SP	2		1	K-36	Y3	2098.18	166.02	SH	38.40	22.50	4.75	1.95	2	1
281	CO	16		1	K-36	Y3	2062.46	165.21	SH	64.40	41.20	16.45	38.02	6	0
282	CH			1	K-36	Y3	2042.16	119.34	SH	10.50	13.40	2.25	0.21	6	0
283	CH			1	K-36	Y3	2073.01	117.72	SH	13.30	7.50	1.20	0.09		0
284	FL	15		1	K-36	Y3	2052.92	100.06	SH	28.30	36.00	9.40	7.27	5	0
285	FL	23		1	K-36	Y3	2142.63	122.38	SH	31.95	34.35	5.80	5.85	14	1
286	FL	23		1	J-36	Y3	2177.54	-148.77	SH	29.65	18.15	6.85	3.68	14	0
287	CH			1	J-36	Y3	2225.23	-215.74	SH	6.45	5.80	1.45	0.03		0
288	CH			1	J-36	Y3	2248.37	-193.82	SH	12.40	11.00	3.40	0.24	5	0
289	CH	16		1	J-36	Y3	2244.71	-225.89	SH	11.70	13.50	4.95	0.52	6	0
290	CH			1	K-36	Y3	2267.45	-236.04	SH	15.50	8.95	4.75	0.41	6	0
291	CH			1	J-35	Y3	2319.00	-332.04	SH	11.70	8.10	3.00	0.23		0
292	FL	14		1	J-35	Y3	2341.32	-333.26	SH	34.40	33.80	19.80	6.93	5	1
293	CH	17		1	J-35	Y3	2356.34	-336.91	SH	10.70	24.70	21.45	4.12	7	0
294	CH	2		1	J-36	Y3	2098.99	58.66	SH	8.20	3.30	11.30	3.10	2	1
295	CH			1	K-36	Y3	2130.45	107.97	SH	17.30	17.60	3.50	0.37	7	0
296	CH			1	K-36	Y3	2158.86	63.73	SH	10.30	8.10	5.85	0.31	1	0
297	CH			1	K-36	Y3	2147.90	47.90	SH	9.10	7.60	1.50	0.70	5	0

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
298	CH			1	K-36	Y3	2119.08	56.42	SH	14.70	11.60	5.75	0.54	2	0
299	FL	2		1	K-36	Y3	2127.61	13.39	SH	18.40	22.40	5.05	2.22	2	0
300	CH			1	K-36	Y3	2072.81	17.45	SH	16.90	7.45	1.95	0.27	2	0
301	CH			1	K-36	Y3	2095.54	-12.18	SH	13.25	13.45	2.20	0.49	2	0
302	CH			1	J-36	Y3	2136.94	-36.53	SH	8.20	9.70	0.95	0.08	9	0
303	CH			1	J-36	Y3	2146.28	-69.82	SH	16.95	15.60	3.60	0.78	5	0
304	CH			1	J-36	Y3	2143.44	-102.29	SH	7.10	6.00	0.40	0.02	5	0
305	CH			1	J-36	Y3	2138.97	-112.03	SH	4.10	7.20	0.95	0.02	2	0
306	CH			1	J-36	Y3	2143.84	-118.93	SH	7.05	7.30	0.90	0.02	5	0
307	SP	2		1	J-36	Y3	2151.56	-110.00	SH	41.70	23.00	9.10	8.22	2	1
308	CH			1	J-36	Y3	2040.74	-149.78	SH	11.30	9.20	1.20	0.10	14	0
309	CH			1	J-36	Y3	2047.24	-161.96	SH	7.05	9.25	0.75	0.05	5	0
310	CH			1	J-36	Y3	2057.79	-165.61	SH	10.05	14.45	2.55	0.27	7	0
311	CH			1	J-36	Y3	2065.50	-161.56	SH	6.90	11.60	4.00	0.23		0
312	CH			1	J-36	Y3	2056.57	-152.22	SH	14.40	9.80	1.90	0.22		0
313	CH			1	J-36	Y3	2065.91	-147.35	SH	7.30	7.55	1.50	0.10	2	0
314	CH			1	J-36	Y3	2059.41	-139.64	SH	11.35	13.70	1.70	0.15		0
315	FL	2		1	J-36	Y3	2069.56	-189.16	SH	30.15	30.00	5.50	4.89	2	1
316	CH			1	J-36	Y3	2093.51	-191.19	SH	5.15	14.80	4.60	0.82	7	0
48															
317	CH			1	J-36	Y3	2052.92	-243.96	?	11.45	10.40	2.45	0.21		0
318	CH			1	J-36	Y3	2213.26	-293.88	SH	8.50	9.00	1.05	0.11	14	0
319	CH			1	J-36	Y3	2232.74	-303.22	SH	17.35	13.20	3.20	0.74	5	1
320	CH			1	J-36	Y3	2251.41	-351.93	SH	19.20	9.20	3.30	0.41	5	0
321	CH			1	J-36	Y3	2211.63	-345.43	SH	9.85	9.60	2.05	0.22	7	0
322	SP	2		1	J-36	Y3	2193.77	-334.48	SH	27.40	13.00	5.75	1.81	2	0
323	FL			1	J-36	Y3	2212.85	-366.54	SH	21.10	26.70	2.50	1.51	9	0
324	FL			1	J-36	Y3	2274.96	-374.66	SH	21.30	14.30	3.80	0.87	7	0
325	RF	12		1	J-36	Y3	2238.42	-412.00	SH	22.20	32.00	4.95	3.31	5	1
326	FL			1	J-36	Y3	1853.21	-10.15	SH	14.65	20.50	1.90	0.48	5	0
327	CH			1	J-36	Y3	1847.12	-46.27	SH	19.70	9.10	5.10	0.42	7	0
328	CH			1	J-36	Y3	1846.92	-98.64	SH	8.30	11.80	2.10	0.14	2	0
329	CH	2		1	J-36	Y3	2212.04	-574.37	SH	16.15	13.50	3.40	0.56	2	1
330	KN			1	J-36	Y3	2042.37	-537.03	SH	30.10	18.10	5.80	2.90	7	0
331	ES			1	J-36	Y3			SH	34.15	25.80	9.60	5.46	10	0
332	FL			1	J-36	Y3	1972.55	-575.18	SH	54.40	50.80	16.10	26.56	8	0
333	RF			1	J-36	Y3	1965.24	-546.36	SH	27.20	24.20	7.45	4.38		0
334	CO			1	J-36	Y3	1975.80	-546.77	SH	29.10	35.40	20.20	22.50		0
335	CH	17		1	J-36	Y3	1911.66	-510.64	SH	15.05	14.00	4.40	0.55	7	0
336	CH			1	J-36	Y3	1908.01	-440.01	SH	12.40	15.40	1.50	0.10	2	0
337	CH			1	J-36	Y3	1873.10	-418.90	SH	15.70	16.90	1.45	0.36	7	0
338	FL			1	J-36	Y3	1863.76	-450.57	SH	27.50	26.00	6.10	2.74	7	0
339	SP	11		1	J-36	Y3	2073.62	-400.23	SH	62.80	25.10	13.40	19.95	5	1

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
340	FL	19		1	J-36	Y3	2046.02	-386.03	SH	43.20	13.50	8.45	2.84	10	1
341	FL			1	J-36	Y3	2019.63	-388.46	SH	30.40	27.70	5.80	5.06		1
342	CH			1	J-36	Y3	2132.88	-350.71	SH	15.45	10.10	1.40	0.39		0
343	CH	23		1	J-36	Y3	2172.26	-344.62	SH	13.30	6.40	2.85	0.20	14	0
344	CH			1	J-36	Y3	2160.08	-344.62	SH	9.60	11.40	2.10	0.18		0
345	CH			1	J-36	Y3	1948.60	-541.49	SH	11.10	7.50	1.55	0.08	7	0
346	CH			1	J-36	Y3	1931.14	-518.35	SH	13.10	9.40	2.90	0.18	7	0
347	CH			1	J-36	Y3	1995.68	-293.88	SH	17.65	15.70	4.70	1.02	7	0
348	FL	17		1	J-36	Y3	2018.42	-279.68	SH	41.10	13.50	10.90	5.74	7	0
349	CH			1	J-36	Y3	2009.08	-305.65	SH	6.20	10.30	2.30	0.13	7	0
350	FL			1	J-36	Y3	1946.97	-321.48	SH	15.10	22.40	6.50	1.45	7	0
351	PI			1	J-36	Y3	1944.13	-313.37	SH	34.70	27.20	6.40	7.36		1
352	RF			1	J-36	Y3	1935.20	-312.56	SH	12.10	12.50	5.80	0.45		0
353	FL			1	J-36	Y3	1837.38	-375.07	SH	21.50	10.10	2.80	0.44	7	0
354	FL	15		1	J-36	Y3	1841.44	-353.55	SH	31.00	33.60	9.30	5.04	5	0
355	CH			1	J-36	Y3	1852.40	-303.62	Sh	10.70	9.75	2.05	0.17		0
356	KN			1	J-36	Y3	1794.35	-361.67	SH	53.70	16.50	4.80	4.17	21	0
357	SP	15		1	J-36	Y3	1765.94	-347.87	SH	61.80	23.80	8.05	10.64	5	0
358	CH			1	J-36	Y3	1919.78	-327.98	SH	18.70	16.00	2.90	5		0
359	CH			1	J-36	Y3	1782.17	-347.46	SH	9.90	8.60	2.30	0.06	8	0
360	CH			1	J-36	Y3	1894.61	-168.05	SH	18.10	17.10	3.80	1.00	5	0
361	RF	2		1	J-36	Y3			SH	13.25	14.20	5.55	0.62	2	1
362	CH			1	J-36	Y3	1856.46	-146.54	SH	14.40	15.80	4.40	0.87		0
363	SP	15		1	J-36	Y3	1836.97	-155.47	SH	38.30	14.60	9.90	3.74	5	0
364	CH			1	J-36	Y3	1837.38	-173.73	SH	19.75	6.90	1.95	0.14	14	0
365	FL	3		1	J-36	Y3	1785.42	-241.52	SH	36.60	32.90	7.60	8.59	3	1
366	CH			1	J-36	Y3	1811.40	-161.96	SH	11.50	10.65	3.10	0.39	5	0
367	FL	15		1	J-36	Y3	1803.28	-145.32	SH	27.00	22.40	3.50	2.65	5	0
368	FL	12		1	J-36	Y3	1732.25	-211.08	SH	19.50	21.00	5.90	1.89	5	1
369	CH			1	J-36	Y3	1740.77	-190.38	SH	14.80	19.80	8.80	2.00		0
370	FL	15		1	J-36	Y3	1749.29	-163.18	SH	23.60	12.40	2.35	0.78	5	0
371	FL	23		1	J-36	Y3	1736.30	-155.87	SH	42.20	24.20	8.50	6.11	14	1
372	CH			1	J-36	Y3	1731.03	-142.88	SH	8.20	9.20	1.20	0.07	2	0
373	CH			1	J-36	Y3	1724.94	-128.68	SH	13.30	4.75	1.40	0.05		0
374	CH	16		1	J-36	Y3	1914.50	-243.96	SH	18.65	19.20	6.10		6	0
375	FL			1	J-36	Y3	1914.91	-208.64	SH	16.40	20.50	2.00	0.79	11	0
376	FL	2		1	J-36	Y3	1884.46	-242.74	SH	19.25	24.10	9.15	2.92	2	1
377	CH	23		1	J-36	Y3	1892.58	-212.70	SH	9.70	8.10	2.10	0.70	14	0
378	CH			1	J-36	Y3	1890.96	-195.65	SH	18.60	16.70	2.80	0.45	14	0
379	CH	23		1	J-36	Y3			SH	8.20	14.90	2.10	0.23	14	0
380	CH			1	J-36	Y3	1879.19	-225.69	SH	11.45	13.40	1.90	0.24	10	0
381	CH			1	J-36	Y3	1882.64	-74.89	SH	8.70	7.35	3.20	0.39	5	0

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF	
382	CH			1	J-36	Y3	1878.98	-101.28	SH	11.80	10.50	1.05	0.12	5	0	
383	CH			1	J-36	Y3	1862.75	-113.05	SH	17.60	13.20	1.50	0.26		0	
384	CH			1	J-36	Y3	1863.15	-91.53	SH	11.80	13.10	3.00	0.36	9	0	
385	FL			1	J-36	Y3	1867.21	-77.73	SH	31.20	11.00	8.80	2.04	10	1	
386	FL			1	J-36	Y3	1868.43	-63.93	SH	15.05	24.10	2.85	0.74	7	0	
387	FL	18		1	J-36	Y3	1862.75	-54.19	SH					9	0	
388	KN			1	J-36	Y3	1860.11	-73.88	SH	61.30	27.40	12.60	18.10	10	1	
389	CH			1	J-36	Y3	1859.70	-66.16	SH	16.20	10.70	1.80	0.18	14	0	
390	FL			1	J-36	Y3	1865.99	-39.58	SH	11.70	21.90	3.15	0.47	5	0	
391	FL	23		1	J-36	Y3	1892.79	-6.90	SH	24.75	20.30	3.45	1.40	14	0	
392	FL	23		1	J-36	Y3	1872.08	-1.22	SH	25.30	28.70	6.70	3.15	14	0	
393	CH			1	J-36	Y3	1804.30	-118.53	SH	6.20	8.25	5.25	0.21		0	
394	FL			1	J-36	Y3	1801.05	-106.76	SH	22.20	19.30	5.60	1.39	7	1	
395	SP	15		1	J-36	Y3	1813.83	-73.47	SH	46.60	17.70	5.15	3.64	5	0	
396	SP	2		1	J-36	Y3	1810.59	-54.39	SH	32.40	26.30	5.25	3.08	2	1	
397	FL	16		1	J-36	Y3	1822.76	-41.00	SH	15.30	20.40	4.10	1.19	6	1	
398	石匙			1	J-36	Y3			SH	15.95	10.10	9.40	0.61		Jyomon	0
399	FL	11		1	J-36	Y3	1804.50	-30.85	SH	30.10	33.00	3.60	3.82	5	1	
400	FL	16		1	J-36	Y3	1797.19	-69.01	SH	21.70	12.70	4.80	1.19	6	0	
401	CH			1	J-36	Y3	1779.74	-44.65	SH	15.10	7.10	6.10	6.10	10	0	
402	CH			1	J-36	Y3	1770.81	-75.09	SH	14.40	9.80	3.95	0.46	14	0	
403	KN			1	K-36	Y3	1826.82	-6.09	SH	45.00	32.10	7.30	10.39	22	1	
404	FL	11		1	J-36	Y3	1819.92	-9.74	SH	40.90	27.10	5.60	3.16	5	0	
405	SP			1	J-36	Y3	1894.21	16.24	SH	26.50	4.60	6.20	0.21	5	0	
406	CH			1	J-36	Y3	1873.91	-57.23	SH	9.40	9.60	3.50	0.25			
407	PI			1	J-36	Y3	1843.47	-58.05	SH	16.95	7.30	4.90	0.36	9	0	
408	CH	19		1	J-36	Y3	1824.79	-82.81	SH	12.80	8.00	1.90	0.16	10	0	
409	CH			1	J-36	Y3	1820.74	-97.83	SH	12.10	7.70	1.70	0.14	5	0	
410	CH			1	J-36	Y3	1824.79	-76.72	SH	8.70	15.40	4.35	0.29	5	0	
411	CH			1	J-36	Y3	1782.58	-63.73	SH	11.80	4.70	1.70	0.09	5	0	
412	CH			1	J-36	Y3	1761.07	-58.86	SH	13.65	10.10	4.10	0.40	2	0	
413	CH			1	K-36	Y3	1830.48	8.12	SH	15.80	14.90	2.50	0.37	5	0	
414	CH			1	J-36	Y3	1826.82	-33.69	SH	8.90	13.90	1.15	0.12	2	0	
415	CH			1	J-36	Y3	1793.13	80.37	SH	9.20	7.40	1.80	0.12	5	0	
416	CH			1	K-36	Y3	1875.94	-38.16	SH	10.30	5.00	1.20	0.03	2	0	
417	CH			1	J-36	Y3	1985.54	-195.25	SH	9.50	6.80	1.90	0.02	5	0	
418	CH			1	J-36	Y3	2085.80	-179.42	SH	14.70	7.45	0.75	0.09	9	0	
419	CH			3	J-36	Y3	-924.47	1520.56	SH	9.45	7.15	0.65	0.03	5	0	
420	CH			3	M-39	Y3	-1171.27	1460.48	SH	18.30	11.20	6.75	0.89	6	0	
421	FL			3	M-39	Y3	-350.51	768.80	SH	22.70	15.30	8.80	1.15	16	0	
422	FL	24		3	M-39	Y3	-55.00	1492.96	SH	58.60	59.90	15.80	27.86	16	1	

表5：藥萊山 No.8 遺跡出土石器属性表 (*continued*)

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
463	CH			3	M-38 · 39, L-38 · 39	Y3M		SH	8.55	9.60	3.60	0.24	16		0
464	CH			3	M-38 · 39, L-38 · 39	Y3M		SH	13.10	8.70	2.35	0.11	5		0
465	CH			3	M-38 · 39, L-38 · 39	Y3M		SH	5.70	11.90	2.05	0.08	16		0
466	CH				K-37	Y3		SH	10.70	8.10	2.45	0.22			0
467	SP				K-37	Y3		SH	22.00	7.00	4.60	0.49			0
468	CH			2	K-38	Y3		SH	15.60	13.30	2.30	0.25	3		0
469	CH			2	J-38	Y3		SH	18.20	11.30	7.45	0.06	3		0
470	FL				J-37	Y3		SH	14.60	21.60	2.35	0.75			0
471	RF	9			J-37	Y3		SH	24.10	14.10	5.40	1.87	1		1
472	AX			1	K-35	Y2		TF	34.05	17.80	8.70	8.92		Jyomon	0
52	473	SP		1	K-35	Y2		SH	30.50	14.55	9.30	2.12	2		0
	474	AH		1	K-35	Y2		SH	25.80	15.40	3.40	1.13		Jyomon	0
	475	BL			K-31	Y3		SH	58.80	21.80	6.40	8.24	32		1
	476	RF	25		K-31	Y3		SH	16.90	21.90	4.70	1.51	8		0
	477	FL			K-31	Y3		SH	33.75	27.80	8.90	6.39	8		1
	478	CH			K-31	Y3		SH	16.10	19.30	7.95	1.08	13		0
	479	FL			K-31	Y3		SH	47.90	59.70	12.30	29.20	8		0
	480	PI			K-31	Y3		SH	49.70	46.40	11.80	26.78			0
	481	FL			K-31	Y3		SH	81.30	47.55	20.00	45.79	8		1
	482	FL			L-38	Ground		SH	28.85	16.10	5.00	1.96	16		0
	483	RF	25		J-31	Y3		SH	23.30	22.55	6.60	2.74	8		0
	484	RF			E	Ground		TF	44.70	36.40	11.00	15.74			0
	485	FL			E	Ground		?	56.40	50.90	8.40	22.21			0
	486	CH						SH	4.85	11.20	1.90	0.11	16		0
	487	FL		3	M-38	Y4		SH	22.70	17.50	4.20	0.89			0
488	FL		3	M-38	Y4?		?								0
489	FL						?								0
490	FL	7					SH						3		0
491	FL						?								0
492	FL						?								0
493	FL						?								0
494	CH		1	K-36	Y3M		?		16.40	12.05	3.05	0.39		Jyomon	0
495	PO		1	K-36	Y3M		TF		12.30	16.60	5.60	0.85		Jyomon	0

表5: 葉萊山 No.8 遺跡出土石器属性表 (*continued*)

No	Type	Refit	Concentration	Grid	Layer	X	Y	Material	MXL.mm.	MXW.mm.	MXT.mm.	Weight.g.	Mat_no	Memo	MF
496	CH			1	K-36	Y3M		SH	10.70	10.40	1.80	0.10	2		0
497	CH			1	K-36	Y3M		SH	13.70	19.45	4.40	0.54	5		0
498	CH			1	K-36	Y3M		SH	19.00	12.65	2.35	0.59			0
499	CH			1	K-36	Y3M		SH	11.40	11.60	1.25	0.23	5		0
500	CH			1	K-36	Y3M		SH	10.80	14.20	2.20	0.27			0
501	CH	23		1	K-36	Y3M		SH	10.80	14.50	2.70	0.43	14		0
502	CH			1	K-36	Y3M		SH	8.30	7.30	1.40	0.11	2		0
503	CH			1	K-36	Y3M		SH	18.00	12.20	4.55	0.81	7		0
504	CH	2		1	K-36	Y3M		SH	17.75	14.40	4.10	0.54	2		0
505	CH			1	K-36	Y3M		SH	10.45	13.15	2.70	0.26			0
506	CH			1	K-36	Y3M		SH	9.05	6.50	1.40	0.02			0
507	CH			1	K-36	Y3M		SH	8.10	7.45	1.05	0.06			0
508	CH			1	K-36	Y3M		SH	13.10	9.70	2.30	0.18			0
509	CH			1	K-36	Y3M		SH	7.70	5.95	0.90	0.07			0
510	CH			1	K-36	Y3M		SH	8.95	7.70	1.20	0.03			0
511	CH			1	K-36	Y3M		SH	12.00	11.60	2.30	0.24	5		0
512	CH			1	K-36	Y3M		SH	9.05	9.10	1.40	0.07			0
513	CH			1	K-36	Y3M		SH	5.95	10.60	1.50	0.07			0
514	CH			1	K-36	Y3M		SH	12.30	11.05	0.90	0.15	3		0
515	CH			1	K-36	Y3M		SH	6.20	11.10	1.70	0.05	5		0
516	CH			3		Y3M		SH	15.80	16.20	5.00	0.52			0
517	CH			3		Y3M		SH	10.60	15.30	2.10	0.35	3		0
518	CH			3		Y3M		SH	8.95	11.80	2.40	0.23	3		0
519	CH	22		3		Y3M		SH	10.00	9.10	2.00	0.14	13		0
520	CH			3		Y3M		SH	8.25	8.70	2.00	0.09			0