

HW 2

Summarize the dataset Mushroom

Tzu-Ping Sher

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Variable Definition

表 1: Data Coding Book

Variable	Data Type	Definition	Note
family	Nominal	Name of the mushroom family	
name	Nominal	Mushroom species name	
class	Nominal	Edibility classification	poisonous=p, edible=e
cap-diameter	Metrical	Cap diameter range	Float number(s) in cm (two values = min max, one value = mean)
cap-shape	Nominal	Shape of the cap	bell=b, convex=x, flat=f, sunken=s, spherical=p, others=o
cap-surface	Nominal	Texture of the cap surface	fibrous=i, grooves=g, scaly=y, smooth=s, shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w, fleshy=e
cap-color	Nominal	Color of the cap	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k
does.bruise.or.bleed	Nominal	Whether the mushroom bruises or bleeds	bruises-or-bleeding=t, no=f
gill.attachment	Nominal	How the gills are attached to the stem	adnate=a, adnexed=x, decurrent=d, free=e, sinuate=s, pores=p, none=f, unknown=?
gill.spacing	Nominal	Spacing of the gills	close=c, distant=d, none=f

gill.color	Nominal	Color of the gills	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k, none=f
stem.height	Metrical	Stem height range	Float number(s) in cm (two values = min max, one value = mean)
stem.width	Metrical	Stem width range	Float number(s) in mm (two values = min max, one value = mean)
stem.root	Nominal	Type of stem base	bulbous=b, swollen=s, club=c, cup=u, equal=e, rhizomorphs=z, rooted=r
stem.surface	Nominal	Surface texture of the stem	fibrous=i, grooves=g, scaly=y, smooth=s, shiny=h, leathery=l, silky=k, sticky=t, wrinkled=w, fleshy=e, none=f
stem.color	Nominal	Color of the stem	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k, none=f
veil.type	Nominal	Type of veil	partial=p, universal=u
veil.color	Nominal	Color of the veil	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k, none=f
has.ring	Nominal	Whether the mushroom has a ring	ring=t, none=f
ring.type	Nominal	Type of ring	cobwebby=c, evanescent=e, flaring=r, grooved=g, large=l, pendant=p, sheathing=s, zone=z, scaly=y, movable=m, none=f, unknown=?
spore.print.color	Nominal	Color of the spore print	brown=n, buff=b, gray=g, green=r, pink=p, purple=u, red=e, white=w, yellow=y, blue=l, orange=o, black=k
habitat	Nominal	Habitat where the mushroom grows	grasses=g, leaves=l, meadows=m, paths=p, heaths=h, urban=u, waste=w, woods=d
season	Nominal	Seasons in which the mushroom appears	spring=s, summer=u, autumn=a, winter=w

Data Description

1. In the original data, the variables 'cap.diameter' , 'stem.height' , and 'stem.width' are coded in two possible ways: if there are two numbers, they represent the min and max values; if there is only one number, it is treated as the mean. I have created six new variables — 'cap.diameter_min' , 'cap.diameter_max' , 'stem.height_min' , 'stem.height_max' ,

- 'stem.width_min' , and 'stem.width_max' —to store the corresponding values. If the original value is the mean, both the min and max are filled with that number.
2. This dataset includes 173 species of mushrooms with caps from various families and one entry for each species. Each species is identified as definitely edible, definitely poisonous, or of unknown edibility and not recommended (the latter class was combined with the poisonous class).
 3. Of the 20 variables, 17 are nominal and 3 are metrical. The values of each nominal variable are a set of possible values and for the metrical variables a range of possible values.
 4. There are 40 missing values in the cap.surface variable. The variable "cap.surface" has 40 distinct combinations.
 5. There are no missing values in the "does.bruise.or.bleed" variable. According to the descriptive statistics, 82.7% of the samples show no bruise or bleeding, while 17.3% indicate the presence of bruising or bleeding.
 6. There are 28 missing values in the "gill.attachment" variable. In addition, there are 8 possible categories for gill attachment, with "adnate" being the most frequent, accounting for 22.1% of the samples
 7. There are 71 missing values in the "gill.spacing" variable. It has three possible categories: "close" , "distant" , and "none" . Among these, "close" accounts for 68.6%, "distant" accounts for 21.6%, and "none" accounts for 9.8%.
 8. It is worth mentioning that the variables "stem.surface" , "veil.type" , "veil.color" , and "Spore.print.color" each have more than 100 missing values.
 9. The mean of 'cap.diameter_min' is 4.043, while the mean of 'cap.diameter_max' is 9.435. The minimum value of 'cap.diameter_min' is 0.4 and the maximum value is 50, indicating a large range..
 10. The mean of 'stem.width_min' is 8.529, and its median is 8. Since these two values are quite close, it suggests that the distribution of this variable is fairly symmetrical.
 11. The mean of 'stem.height_min' is 4.306 and its median is 4. Since these two values are quite close, it suggests that the distribution of this variable is fairly symmetrical.

```
library(reticulate)
library(Hmisc)
mushroom = read.csv("D:/HW_statistical_consulting/mushroom/primary_data.csv",
                    header = TRUE, sep = ";", quote = "\"",
                    stringsAsFactors = FALSE,
                    fill = TRUE)
var_metrical = c("cap.diameter", "stem.width", "stem.height")
for (var in var_metrical) {
  new_min = paste0(var, "_min")
  new_max = paste0(var, "_max")

  cleaned_values = gsub("\\[|\\]", "", mushroom[[var]])
  split_values = strsplit(cleaned_values, ",")

  extracted_values = lapply(split_values, function(x) as.numeric(trimws(x)))
  mushroom[[new_min]] = as.numeric(sapply(extracted_values, function(x) if (length(x) == 1) x[1] else x))
  mushroom[[new_max]] = as.numeric(sapply(extracted_values, function(x) if (length(x) == 1) x[1] else x))
}
# cap.diameter, stem.width, stem.height
mushroom_modified = mushroom[, !names(mushroom) %in% var_metrical]

latex(describe(mushroom_modified), file = "")
```

mushroom_modified
26 Variables 173 Observations

family

n	missing	distinct
173	0	23

lowest :	Amanita Family	Bolbitius Family	Bolete Family	Bracket Fungi	Chanterelle Family
highest:	Russula Family	Saddle-Cup Family	Stropharia Family	Tricholoma Family	Wax Gill Family

name

n	missing	distinct
173	0	173

lowest :	Amethyst Deceiver	Aniseed Funnel Cap	Apricot Fungus	Bare-toothed Russula	Bay Bolete
highest:	Yellow-gilled Russula	Yellow-staining Mushroom	Yellow-stemmed Bell Cap	Yellow Swamp Russula	Yellow Wax cap

class

n	missing	distinct
173	0	2

Value	e	p
Frequency	77	96
Proportion	0.445	0.555

cap.shape

n	missing	distinct
173	0	27

lowest :	[b, f, s]	[b, f]	[b, x, f]	[b, x]	[b]
highest:	[x, f]	[x, o]	[x, p]	[x, s]	[x]

Cap.surface

n	missing	distinct
133	40	40

lowest :	[d, e, y, i]	[d, k, s]	[d, k]	[d, s]	[d]
highest:	[t]	[w, t]	[w]	[y, s]	[y]

cap.color

n	missing	distinct
173	0	67

lowest :	[b, p, e, y]	[b, u]	[b]	[e, n, p, w]	[e, n, y]
highest:	[y, n]	[y, o, g, n, r]	[y, o, r, n]	[y, o]	[y]

does.bruise.or.bleed

n	missing	distinct
173	0	2

Value	[f]	[t]
Frequency	143	30
Proportion	0.827	0.173

gill.attachment

n	missing	distinct
145	28	8

Value	[a, d]	[a]	[d]	[e]	[f]	[p]	[s]	[x]
Frequency	8	32	25	16	10	17	16	21
Proportion	0.055	0.221	0.172	0.110	0.069	0.117	0.110	0.145

gill.spacing

n	missing	distinct
102	71	3

Value	[c]	[d]	[f]
Frequency	70	22	10
Proportion	0.686	0.216	0.098

gill.color

n	missing	distinct
173	0	59

lowest :	[b, p, w]	[b, u]	[b]	[e]	[f]
highest:	[y, o, e]	[y, r, k]	[y, r]	[y, w]	[y]

stem.root

n	missing	distinct	
27	146	5	

Value	[b]	[c]	[f]	[r]	[s]
Frequency	9	2	3	4	9
Proportion	0.333	0.074	0.111	0.148	0.333

stem.surface

n	missing	distinct	
65	108	14	

Value	[f]	[g]	[h]	[i, s]	[i, t]	[i, y]	[i]	[k, s]	[k]	[s, h]	[s]	[t]
Frequency	3	5	1	1	1	1	11	1	4	1	15	7
Proportion	0.046	0.077	0.015	0.015	0.015	0.015	0.169	0.015	0.062	0.015	0.231	0.108

Value	[y, s]	[y]
Frequency	1	13
Proportion	0.015	0.200

stem.color

n	missing	distinct	
173	0	41	

lowest :	[b, u]	[e, n]	[e, u, y]	[e, y]	[e]
highest:	[w]	[y, e, n]	[y, n]	[y, o, k]	[y]

veil.type

n	missing	distinct	value
9	164	1	[u]

Value	[u]
Frequency	9
Proportion	1

veil.color

n	missing	distinct	
21	152	7	

Value	[e, n]	[k]	[n]	[u]	[w]	[y, w]	[y]
Frequency	1	1	1	1	15	1	1
Proportion	0.048	0.048	0.048	0.048	0.714	0.048	0.048

has.ring

n	missing	distinct	
173	0	2	

Value	[f]	[t]
Frequency	130	43
Proportion	0.751	0.249

ring.type

n	missing	distinct	
166	7	13	

Value	[e, g]	[e]	[f]	[g, p]	[g]	[l, e]	[l, p]	[l, r]	[l]	[m]	[p]	[r]
Frequency	1	6	137	2	2	1	1	2	2	1	2	3
Proportion	0.006	0.036	0.825	0.012	0.012	0.006	0.006	0.012	0.012	0.006	0.012	0.018

Value	[z]
Frequency	6
Proportion	0.036

Spore.print.color

n	missing	distinct	
18	155	8	

Value	[g]	[k, r]	[k, u]	[k]	[n]	[p, w]	[p]	[w]
Frequency	1	1	1	5	3	1	3	3
Proportion	0.056	0.056	0.056	0.278	0.167	0.056	0.167	0.167

habitat

n	missing	distinct	
173	0	21	

lowest :	[d, h]	[d]	[g, d, h]	[g, d]	[g, h, d]
highest:	[m, d]	[m, h]	[m]	[p, d]	[w]

season

n missing distinct
173 0 10

Value	[a, w]	[a]	[s, a, w]	[s, u, a, w]	[s, u, a]	[s, u]
Frequency	15	16	1	13	5	3
Proportion	0.087	0.092	0.006	0.075	0.029	0.017
Value	[s]	[u, a, w]	[u, a]	[u]		
Frequency	1	12	106	1		
Proportion	0.006	0.069	0.613	0.006		

cap.diameter_min

n missing distinct Info Mean pMedian Gmd .05 .10 .25 .50 .75 .90 .95
173 0 14 0.976 4.043 3.5 3.038 1 1 2 3 5 7 8

Value	0.4	0.5	0.7	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	10.0	12.0	50.0
Frequency	2	4	1	17	39	24	26	29	11	4	9	4	2	1
Proportion	0.012	0.023	0.006	0.098	0.225	0.139	0.150	0.168	0.064	0.023	0.052	0.023	0.012	0.006

For the frequency table, variable is rounded to the nearest 0

cap.diameter_max

n missing distinct Info Mean pMedian Gmd .05 .10 .25 .50 .75 .90 .95
173 0 20 0.991 9.435 8.5 6.548 2 3 5 8 12 15 20

Value	1.0	1.3	1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	12.0	14.0
Frequency	3	1	4	7	6	12	18	16	7	16	3	28	18	3
Proportion	0.017	0.006	0.023	0.040	0.035	0.069	0.104	0.092	0.040	0.092	0.017	0.162	0.104	0.017

Value	15.0	18.0	20.0	25.0	30.0	50.0
Frequency	15	3	5	5	2	1
Proportion	0.087	0.017	0.029	0.029	0.012	0.006

For the frequency table, variable is rounded to the nearest 0

stem.width_min

n missing distinct Info Mean pMedian Gmd .05 .10 .25 .50 .75 .90 .95
173 0 16 0.98 8.529 8 6.804 1 2 4 8 10 19 20

Value	0.0	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	10.0	12.0	15.0	20.0
Frequency	3	1	9	18	12	12	19	7	1	10	42	1	20	16
Proportion	0.017	0.006	0.052	0.104	0.069	0.069	0.110	0.040	0.006	0.058	0.243	0.006	0.116	0.092

Value	30.0	40.0
Frequency	1	1
Proportion	0.006	0.006

For the frequency table, variable is rounded to the nearest 0

stem.width_max

n missing distinct Info Mean pMedian Gmd .05 .10 .25 .50 .75 .90 .95
173 0 21 0.992 15.79 14 13.49 2 3 8 12 20 30 40

lowest : 0 1 2 3 4, highest: 40 50 60 80 100

stem.height_min

n missing distinct Info Mean pMedian Gmd .05 .10 .25 .50 .75 .90 .95
173 0 12 0.957 4.306 4 2.233 2.0 2.0 3.0 4.0 5.0 6.8 8.0

Value	0	1	2	3	4	5	6	7	8	10	12	15
Frequency	3	2	21	38	52	24	15	3	7	5	1	2
Proportion	0.017	0.012	0.121	0.220	0.301	0.139	0.087	0.017	0.040	0.029	0.006	0.012

For the frequency table, variable is rounded to the nearest 0

stem.height_max

n missing distinct Info Mean pMedian Gmd .05 .10 .25 .50 .75 .90 .95
173 0 19 0.977 8.873 8 4.37 4.0 5.0 6.0 8.0 10.0 14.8 15.0

Value	0	2	3	4	5	6	7	8	9	10	11	12	14	15
Frequency	3	1	2	6	14	25	16	37	2	35	1	12	1	10
Proportion	0.017	0.006	0.012	0.035	0.081	0.145	0.092	0.214	0.012	0.202	0.006	0.069	0.006	0.058

Value	18	20	25	30	35
Frequency	1	4	1	1	1
Proportion	0.006	0.023	0.006	0.006	0.006

For the frequency table, variable is rounded to the nearest 0

Table one

The following table is table one presenting descriptive statistics of the study sample. Since there are more than 100 missing values in "stem.surface", "veil.type", "veil.color", and "Spore.print.color" variables, we may remove those variables from the table one.

```
library(tableone)
vars_tableone = c("cap.shape", "Cap.surface", "cap.color",
                  "does.bruise.or.bleed",
                  "gill.attachment", "gill.color", "stem.root",
                  "stem.color", "has.ring", "ring.type", "habitat",
                  "season", "cap.diameter_min", "cap.diameter_max",
                  "stem.width_min", "stem.width_max",
                  "stem.height_min", "stem.height_max")
tableone = CreateTableOne(data = mushroom_modified, strata = "class",
                          vars = vars_tableone, test = FALSE)
print(tableone)
```

n	Stratified by class	
	e	p
	77	96
cap.shape (%)		
[b, f, s]	0 (0.0)	1 (1.0)
[b, f]	2 (2.6)	3 (3.1)
[b, x, f]	0 (0.0)	1 (1.0)
[b, x]	0 (0.0)	3 (3.1)
[b]	2 (2.6)	8 (8.3)
[c, f]	0 (0.0)	2 (2.1)
[c, x, f]	1 (1.3)	0 (0.0)
[c, x]	1 (1.3)	0 (0.0)
[c]	1 (1.3)	2 (2.1)
[f, s]	3 (3.9)	5 (5.2)
[f, x]	1 (1.3)	1 (1.0)
[f]	4 (5.2)	4 (4.2)
[o]	1 (1.3)	7 (7.3)
[p, b]	1 (1.3)	2 (2.1)
[p, c, o]	1 (1.3)	0 (0.0)
[p, f]	2 (2.6)	0 (0.0)
[p, x, f]	2 (2.6)	0 (0.0)
[p, x]	3 (3.9)	1 (1.0)
[p]	0 (0.0)	1 (1.0)
[s, o]	2 (2.6)	0 (0.0)
[s]	4 (5.2)	5 (5.2)
[x, f, s]	7 (9.1)	6 (6.2)
[x, f]	14 (18.2)	15 (15.6)
[x, o]	0 (0.0)	1 (1.0)
[x, p]	1 (1.3)	1 (1.0)
[x, s]	1 (1.3)	2 (2.1)
[x]	23 (29.9)	25 (26.0)
Cap.surface (%)		
	19 (24.7)	21 (21.9)
[d, e, y, i]	0 (0.0)	1 (1.0)
[d, k, s]	0 (0.0)	1 (1.0)
[d, k]	1 (1.3)	1 (1.0)
[d, s]	1 (1.3)	0 (0.0)

[d]	4 (5.2)	5 (5.2)
[e, k, s, h]	0 (0.0)	1 (1.0)
[e, t, k]	0 (0.0)	1 (1.0)
[e, y]	1 (1.3)	0 (0.0)
[e]	3 (3.9)	2 (2.1)
[g, h]	0 (0.0)	1 (1.0)
[g, s, d]	0 (0.0)	1 (1.0)
[g, s, h, t]	1 (1.3)	0 (0.0)
[g, s, t]	1 (1.3)	0 (0.0)
[g]	5 (6.5)	7 (7.3)
[h, s, d]	1 (1.3)	0 (0.0)
[h, s, t]	0 (0.0)	1 (1.0)
[h, t, w]	0 (0.0)	1 (1.0)
[h, t, y]	0 (0.0)	1 (1.0)
[h, t]	6 (7.8)	4 (4.2)
[h]	3 (3.9)	2 (2.1)
[i, e]	0 (0.0)	1 (1.0)
[i, y]	2 (2.6)	0 (0.0)
[i]	0 (0.0)	4 (4.2)
[k, e]	0 (0.0)	1 (1.0)
[k]	0 (0.0)	4 (4.2)
[l]	2 (2.6)	2 (2.1)
[s, d]	1 (1.3)	0 (0.0)
[s, h]	0 (0.0)	1 (1.0)
[s, i]	0 (0.0)	1 (1.0)
[s, t]	2 (2.6)	2 (2.1)
[s, y]	1 (1.3)	2 (2.1)
[s]	8 (10.4)	5 (5.2)
[t, h, s]	1 (1.3)	0 (0.0)
[t, h]	1 (1.3)	1 (1.0)
[t, w, d]	0 (0.0)	1 (1.0)
[t]	2 (2.6)	10 (10.4)
[w, t]	1 (1.3)	0 (0.0)
[w]	2 (2.6)	3 (3.1)
[y, s]	1 (1.3)	0 (0.0)
[y]	7 (9.1)	7 (7.3)
cap.color (%)		
[b, p, e, y]	0 (0.0)	1 (1.0)
[b, u]	1 (1.3)	0 (0.0)
[b]	1 (1.3)	0 (0.0)
[e, n, p, w]	0 (0.0)	1 (1.0)
[e, n, y]	2 (2.6)	0 (0.0)
[e, n]	0 (0.0)	2 (2.1)
[e, o, k]	0 (0.0)	1 (1.0)
[e, o]	0 (0.0)	1 (1.0)
[e, p, w]	0 (0.0)	1 (1.0)
[e, u, y]	0 (0.0)	1 (1.0)
[e]	0 (0.0)	3 (3.1)
[g, k]	1 (1.3)	1 (1.0)
[g, n, k]	0 (0.0)	1 (1.0)
[g, n]	6 (7.8)	4 (4.2)
[g, r, k, n]	0 (0.0)	1 (1.0)
[g, r, n]	0 (0.0)	2 (2.1)
[g, u, n, p]	1 (1.3)	0 (0.0)

[g, u, n]	0 (0.0)	1 (1.0)
[g]	0 (0.0)	1 (1.0)
[k, n, w]	1 (1.3)	0 (0.0)
[l, g, b, w]	1 (1.3)	0 (0.0)
[l, k]	0 (0.0)	1 (1.0)
[l, r, w]	1 (1.3)	0 (0.0)
[l, u, g, n]	1 (1.3)	0 (0.0)
[l, y]	1 (1.3)	0 (0.0)
[n ,w]	1 (1.3)	0 (0.0)
[n, b]	1 (1.3)	1 (1.0)
[n, e, y]	0 (0.0)	1 (1.0)
[n, e]	1 (1.3)	4 (4.2)
[n, g]	3 (3.9)	0 (0.0)
[n, o, e]	1 (1.3)	0 (0.0)
[n, o, y, w]	0 (0.0)	1 (1.0)
[n, o]	2 (2.6)	2 (2.1)
[n, p, e]	1 (1.3)	1 (1.0)
[n, r, u, y]	1 (1.3)	0 (0.0)
[n, w]	1 (1.3)	3 (3.1)
[n, y, e]	1 (1.3)	0 (0.0)
[n, y, w]	1 (1.3)	0 (0.0)
[n, y]	3 (3.9)	6 (6.2)
[n]	22 (28.6)	16 (16.7)
[o, b]	1 (1.3)	0 (0.0)
[o, e, n, k]	0 (0.0)	1 (1.0)
[o, n]	1 (1.3)	0 (0.0)
[o, p, e]	1 (1.3)	0 (0.0)
[o, y, r]	0 (0.0)	1 (1.0)
[o, y]	0 (0.0)	3 (3.1)
[o]	0 (0.0)	2 (2.1)
[p]	0 (0.0)	2 (2.1)
[r, l]	0 (0.0)	1 (1.0)
[r, n]	0 (0.0)	1 (1.0)
[r, p, y]	0 (0.0)	1 (1.0)
[r, y]	0 (0.0)	1 (1.0)
[r]	0 (0.0)	1 (1.0)
[u, k]	1 (1.3)	0 (0.0)
[u]	0 (0.0)	2 (2.1)
[w, g]	1 (1.3)	1 (1.0)
[w, n]	2 (2.6)	2 (2.1)
[w, p, o]	1 (1.3)	0 (0.0)
[w, u]	0 (0.0)	1 (1.0)
[w, y, g, n]	0 (0.0)	1 (1.0)
[w, y]	1 (1.3)	1 (1.0)
[w]	6 (7.8)	6 (6.2)
[y, n]	0 (0.0)	3 (3.1)
[y, o, g, n, r]	0 (0.0)	1 (1.0)
[y, o, r, n]	0 (0.0)	1 (1.0)
[y, o]	0 (0.0)	1 (1.0)
[y]	6 (7.8)	4 (4.2)
does.bruise.or.bleed = [t] (%)	14 (18.2)	16 (16.7)
gill.attachment (%)	10 (13.0)	18 (18.8)
[a, d]	5 (6.5)	3 (3.1)

[a]	11 (14.3)	21 (21.9)
[d]	9 (11.7)	16 (16.7)
[e]	10 (13.0)	6 (6.2)
[f]	4 (5.2)	6 (6.2)
[p]	12 (15.6)	5 (5.2)
[s]	7 (9.1)	9 (9.4)
[x]	9 (11.7)	12 (12.5)
gill.color (%)		
[b, p, w]	0 (0.0)	1 (1.0)
[b, u]	1 (1.3)	0 (0.0)
[b]	1 (1.3)	0 (0.0)
[e]	0 (0.0)	1 (1.0)
[f]	4 (5.2)	6 (6.2)
[g, k]	1 (1.3)	1 (1.0)
[g, n, u]	0 (0.0)	1 (1.0)
[g, n]	1 (1.3)	2 (2.1)
[g, p]	1 (1.3)	0 (0.0)
[g, r, w]	0 (0.0)	1 (1.0)
[g, u]	0 (0.0)	1 (1.0)
[g, w, y]	1 (1.3)	0 (0.0)
[g, w]	2 (2.6)	0 (0.0)
[g]	3 (3.9)	1 (1.0)
[k, n]	2 (2.6)	4 (4.2)
[k, p, w]	1 (1.3)	0 (0.0)
[k, p]	0 (0.0)	1 (1.0)
[n, e, y]	0 (0.0)	1 (1.0)
[n, p]	0 (0.0)	2 (2.1)
[n, r]	0 (0.0)	1 (1.0)
[n, u]	0 (0.0)	1 (1.0)
[n, w]	0 (0.0)	2 (2.1)
[n, y]	1 (1.3)	1 (1.0)
[n]	3 (3.9)	8 (8.3)
[o, b]	1 (1.3)	0 (0.0)
[o, e]	1 (1.3)	1 (1.0)
[o, y]	1 (1.3)	4 (4.2)
[o]	2 (2.6)	2 (2.1)
[p, n, k]	1 (1.3)	0 (0.0)
[p, n]	1 (1.3)	0 (0.0)
[p, w]	3 (3.9)	2 (2.1)
[p, y, r]	0 (0.0)	1 (1.0)
[p, y]	0 (0.0)	1 (1.0)
[p]	3 (3.9)	5 (5.2)
[r, y]	0 (0.0)	1 (1.0)
[r]	1 (1.3)	0 (0.0)
[u, w]	1 (1.3)	0 (0.0)
[w, b, n]	0 (0.0)	1 (1.0)
[w, g, k]	0 (0.0)	1 (1.0)
[w, g, p, n]	0 (0.0)	1 (1.0)
[w, g, u]	0 (0.0)	1 (1.0)
[w, g]	0 (0.0)	1 (1.0)
[w, n]	3 (3.9)	2 (2.1)
[w, p, y]	1 (1.3)	0 (0.0)
[w, p]	1 (1.3)	2 (2.1)
[w, r]	0 (0.0)	1 (1.0)

[w, u, g, n]	1 (1.3)	0 (0.0)
[w, y, g, n]	0 (0.0)	1 (1.0)
[w, y]	3 (3.9)	2 (2.1)
[w]	21 (27.3)	15 (15.6)
[y, e, n]	1 (1.3)	0 (0.0)
[y, g, k]	0 (0.0)	1 (1.0)
[y, k]	1 (1.3)	0 (0.0)
[y, n]	1 (1.3)	4 (4.2)
[y, o, e]	0 (0.0)	1 (1.0)
[y, r, k]	0 (0.0)	1 (1.0)
[y, r]	1 (1.3)	0 (0.0)
[y, w]	0 (0.0)	1 (1.0)
[y]	6 (7.8)	7 (7.3)
stem.root (%)		
	67 (87.0)	79 (82.3)
[b]	6 (7.8)	3 (3.1)
[c]	0 (0.0)	2 (2.1)
[f]	0 (0.0)	3 (3.1)
[r]	0 (0.0)	4 (4.2)
[s]	4 (5.2)	5 (5.2)
stem.color (%)		
[b, u]	1 (1.3)	0 (0.0)
[e, n]	1 (1.3)	2 (2.1)
[e, u, y]	0 (0.0)	1 (1.0)
[e, y]	1 (1.3)	0 (0.0)
[e]	0 (0.0)	1 (1.0)
[f]	0 (0.0)	3 (3.1)
[g, w]	1 (1.3)	0 (0.0)
[g, n]	1 (1.3)	3 (3.1)
[g, r, n]	0 (0.0)	2 (2.1)
[g, u, n]	0 (0.0)	1 (1.0)
[g, w]	2 (2.6)	0 (0.0)
[g]	2 (2.6)	0 (0.0)
[k, n]	1 (1.3)	1 (1.0)
[k]	0 (0.0)	1 (1.0)
[l, r, w]	1 (1.3)	0 (0.0)
[n, e]	0 (0.0)	2 (2.1)
[n, g]	1 (1.3)	1 (1.0)
[n, o]	1 (1.3)	1 (1.0)
[n, p, w]	1 (1.3)	0 (0.0)
[n, p]	0 (0.0)	1 (1.0)
[n, w]	2 (2.6)	1 (1.0)
[n, y]	1 (1.3)	1 (1.0)
[n]	15 (19.5)	20 (20.8)
[o, e]	1 (1.3)	0 (0.0)
[o, n]	1 (1.3)	0 (0.0)
[o, y]	1 (1.3)	4 (4.2)
[o]	0 (0.0)	1 (1.0)
[p]	0 (0.0)	2 (2.1)
[r, y]	0 (0.0)	1 (1.0)
[u, e]	0 (0.0)	1 (1.0)
[u]	1 (1.3)	1 (1.0)
[w, l, n]	0 (0.0)	1 (1.0)
[w, n]	2 (2.6)	1 (1.0)

[w, o]	1 (1.3)	0 (0.0)
[w, u]	0 (0.0)	1 (1.0)
[w, y]	1 (1.3)	2 (2.1)
[w]	32 (41.6)	25 (26.0)
[y, e, n]	0 (0.0)	1 (1.0)
[y, n]	0 (0.0)	4 (4.2)
[y, o, k]	0 (0.0)	1 (1.0)
[y]	5 (6.5)	8 (8.3)
has.ring = [t] (%)	17 (22.1)	26 (27.1)
ring.type (%)		
	4 (5.2)	3 (3.1)
[e, g]	0 (0.0)	1 (1.0)
[e]	3 (3.9)	3 (3.1)
[f]	61 (79.2)	76 (79.2)
[g, p]	0 (0.0)	2 (2.1)
[g]	2 (2.6)	0 (0.0)
[l, e]	0 (0.0)	1 (1.0)
[l, p]	1 (1.3)	0 (0.0)
[l, r]	2 (2.6)	0 (0.0)
[l]	1 (1.3)	1 (1.0)
[m]	1 (1.3)	0 (0.0)
[p]	1 (1.3)	1 (1.0)
[r]	1 (1.3)	2 (2.1)
[z]	0 (0.0)	6 (6.2)
habitat (%)		
[d, h]	1 (1.3)	3 (3.1)
[d]	47 (61.0)	57 (59.4)
[g, d, h]	1 (1.3)	0 (0.0)
[g, d]	6 (7.8)	4 (4.2)
[g, h, d]	1 (1.3)	2 (2.1)
[g, l, d]	0 (0.0)	1 (1.0)
[g, l, m, d]	1 (1.3)	0 (0.0)
[g, m, d]	1 (1.3)	4 (4.2)
[g, m]	3 (3.9)	2 (2.1)
[g, u, d]	1 (1.3)	0 (0.0)
[g]	1 (1.3)	10 (10.4)
[h, d]	0 (0.0)	2 (2.1)
[l, d, h]	1 (1.3)	0 (0.0)
[l, d]	7 (9.1)	6 (6.2)
[l, h]	1 (1.3)	0 (0.0)
[l]	1 (1.3)	0 (0.0)
[m, d]	2 (2.6)	1 (1.0)
[m, h]	0 (0.0)	1 (1.0)
[m]	1 (1.3)	1 (1.0)
[p, d]	0 (0.0)	2 (2.1)
[w]	1 (1.3)	0 (0.0)
season (%)		
[a, w]	9 (11.7)	6 (6.2)
[a]	5 (6.5)	11 (11.5)
[s, a, w]	1 (1.3)	0 (0.0)
[s, u, a, w]	7 (9.1)	6 (6.2)
[s, u, a]	1 (1.3)	4 (4.2)
[s, u]	2 (2.6)	1 (1.0)
[s]	1 (1.3)	0 (0.0)

[u, a, w]	8 (10.4)	4 (4.2)
[u, a]	43 (55.8)	63 (65.6)
[u]	0 (0.0)	1 (1.0)
cap.diameter_min (mean (SD))	4.75 (5.74)	3.47 (2.27)
cap.diameter_max (mean (SD))	10.86 (7.29)	8.29 (5.58)
stem.width_min (mean (SD))	10.12 (6.80)	7.26 (5.71)
stem.width_max (mean (SD))	18.61 (15.68)	13.52 (11.84)
stem.height_min (mean (SD))	4.52 (2.20)	4.14 (2.31)
stem.height_max (mean (SD))	9.58 (5.03)	8.30 (4.03)