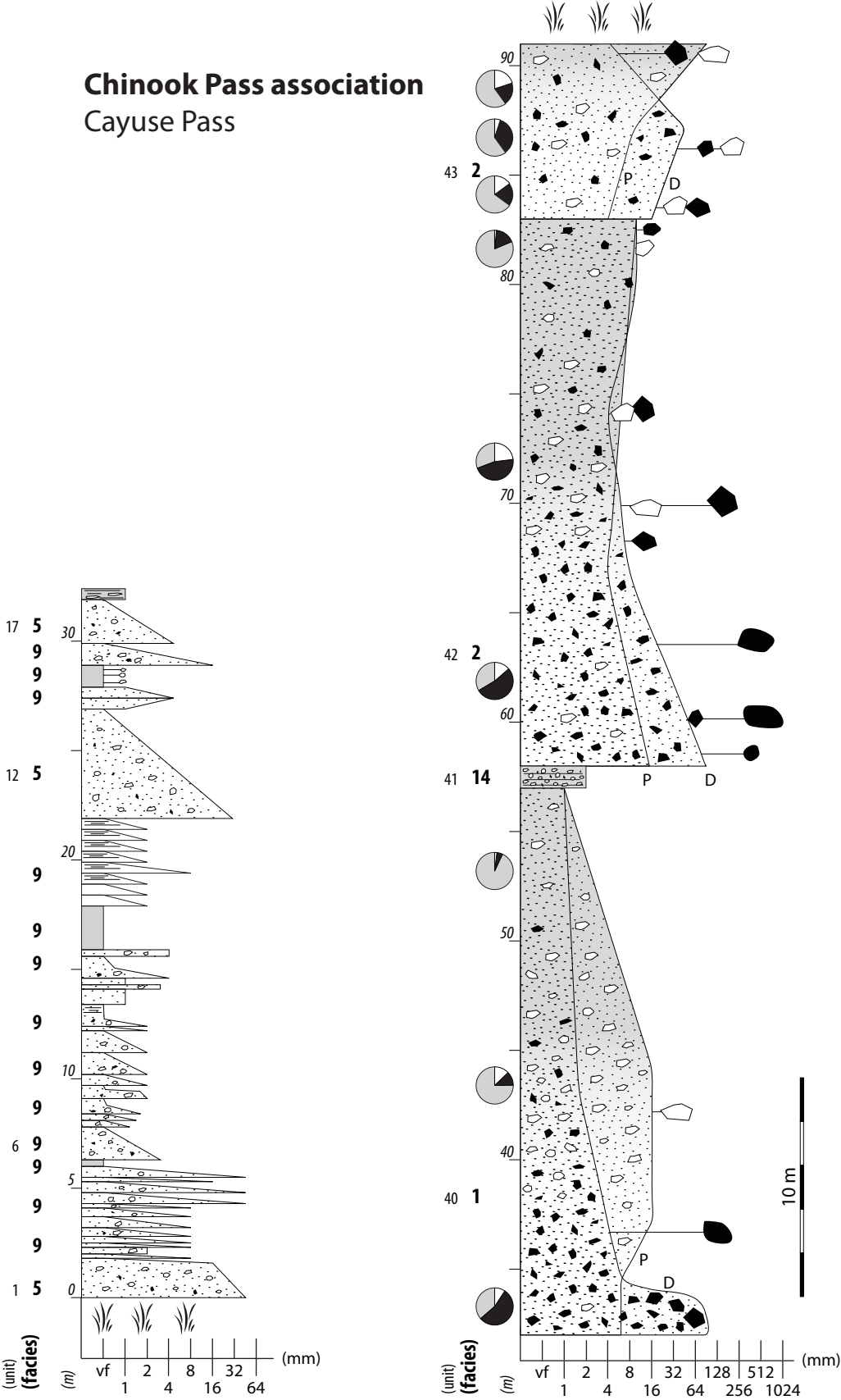
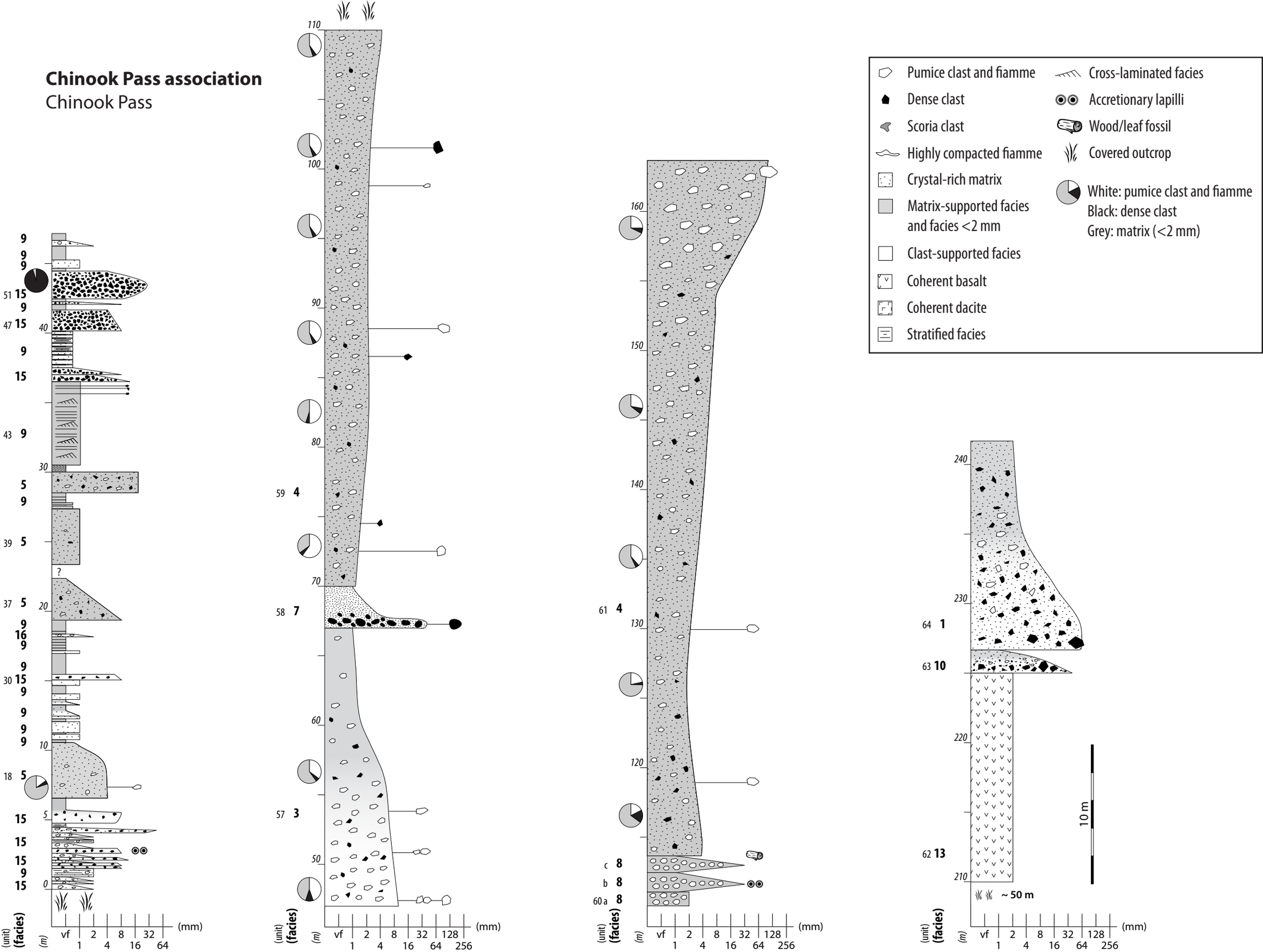
# Chinook Pass association

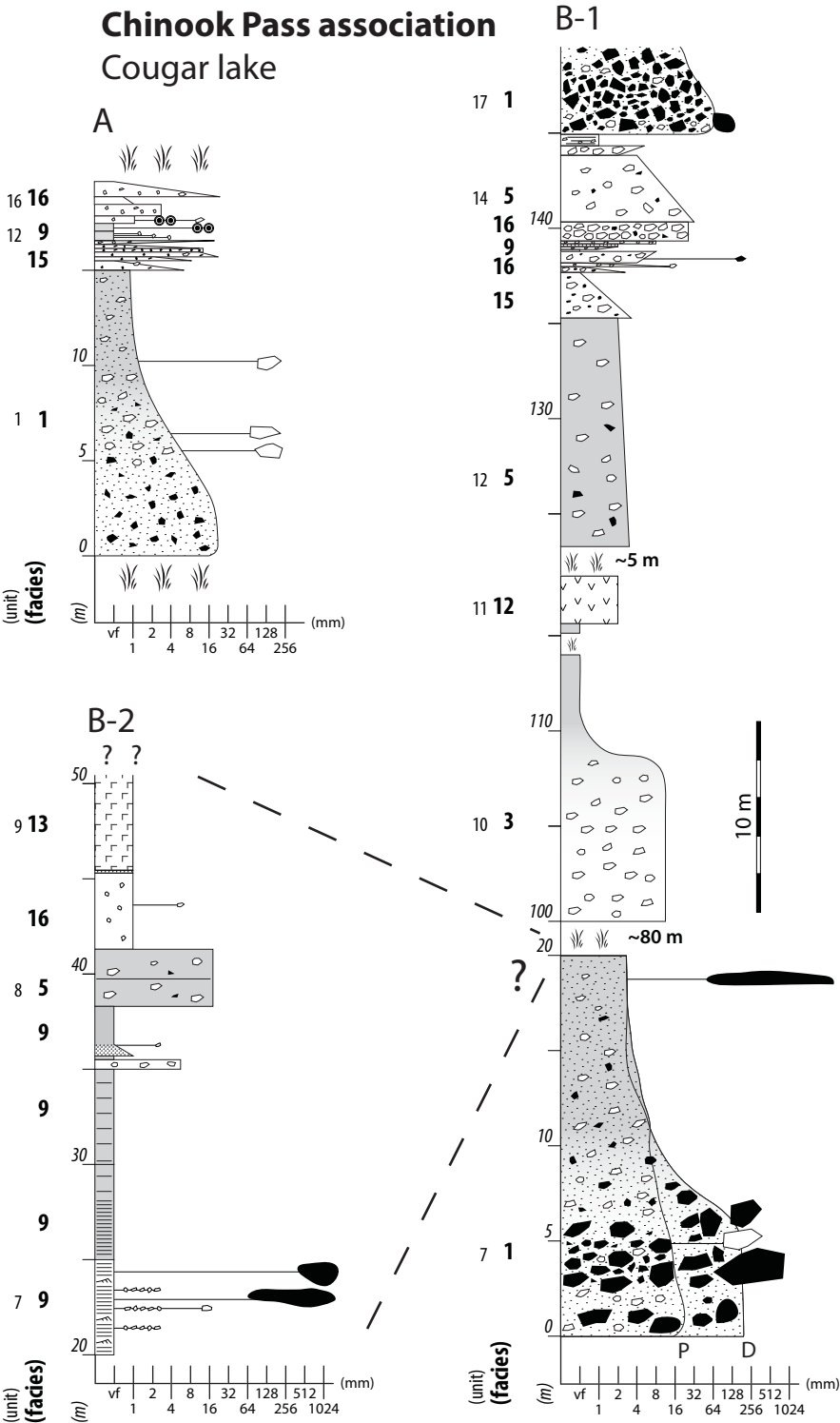
Cayuse Pass



# Chinook Pass association

Chinook Pass




Chinook Pass association
Cougar lake
A
B-1
B-2
16 16
12 9
15
1 1
10
5
0
(unit)
(facies)
(m)
vf 1 2 4 8 16 32 64 128 256 (mm)
17 1
14 5
16
9
16
15
140
130
12 5
~5 m
11 12
110
10 3
100
~80 m
10 m
20
?
10
5
7 1
0
P
D
vf 1 2 4 8 16 32 64 128 256 512 1024 (mm)
? ?
50
9 13
16
40
8 5
9
9
30
9
7 9
20
vf 1 2 4 8 16 32 64 128 256 512 1024

## White Pass association

White Pass

31.9±1.4 Ma

(30 m)

~200 m

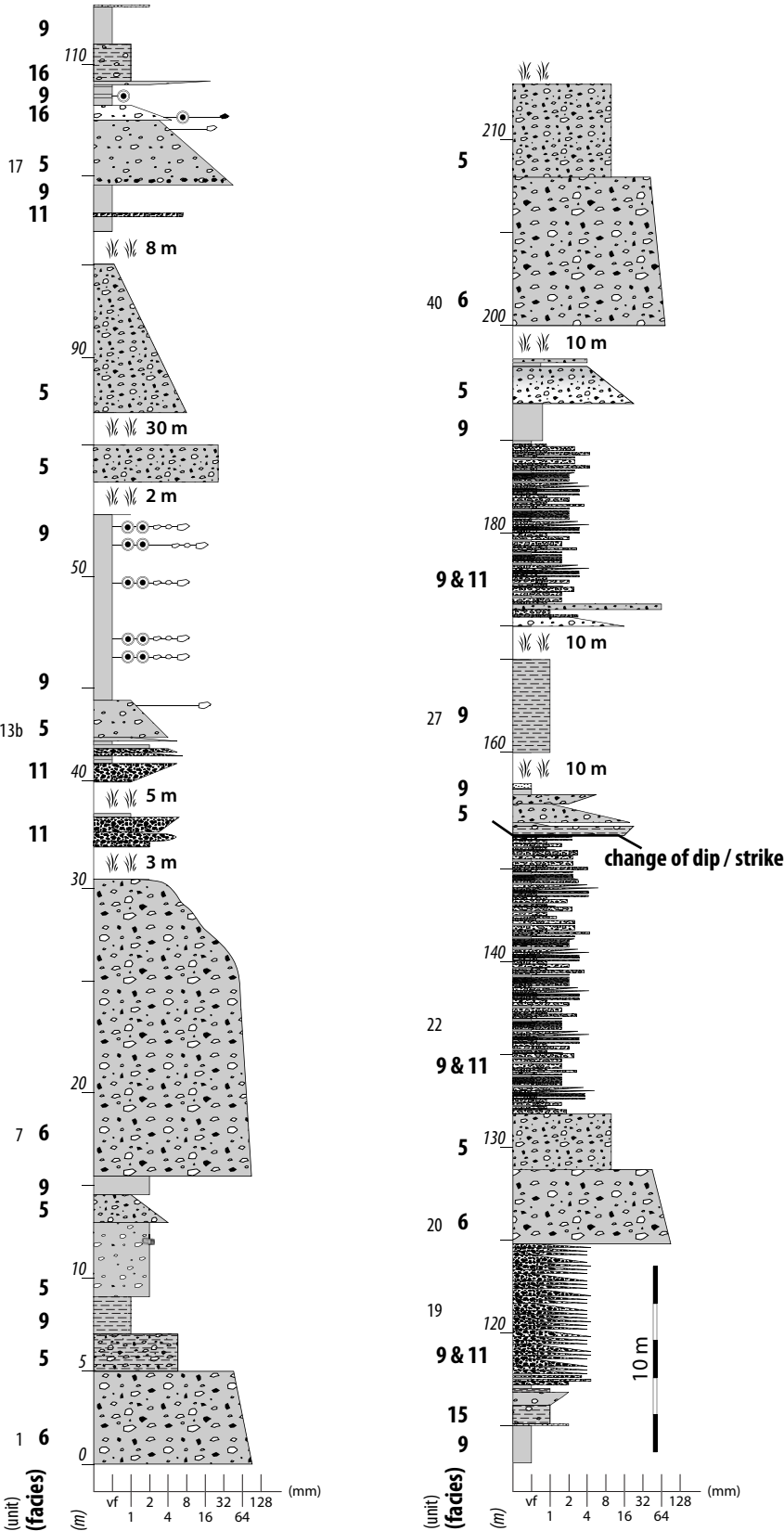
>200 m

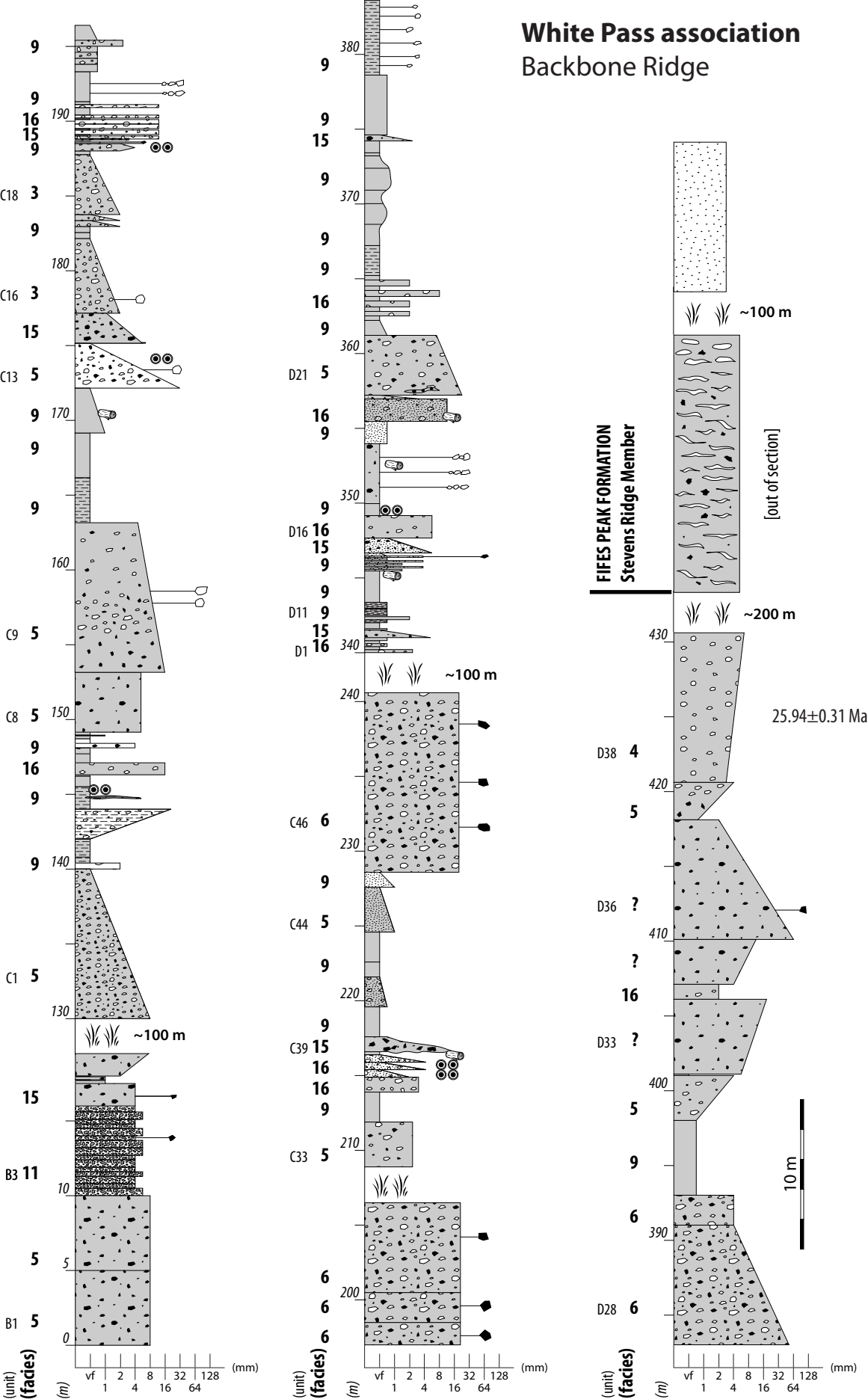
FIFES PEAK FORMATION
Stevens Ridge Member

(unit) (facies) (m) vf 1 2 4 8 16 32 64 128 (mm)

# White Pass association

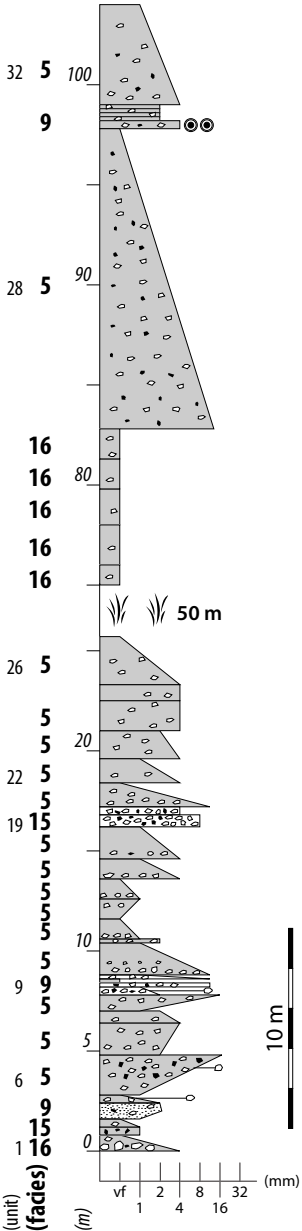
## Ohanapecosh Campground




White Pass association
Backbone Ridge
~100 m
~100 m
~200 m
FIFES PEAK FORMATION
Stevens Ridge Member
[out of section]
25.94±0.31 Ma
10 m
(unit)
(facies)
(m)
vf
1
2
4
8
16
32
64
128
(mm)

# Johnson Creek association

South Packwood



For Appendix H- Zircon Data go to (ftp://rock.geosociety.org/pub/reposit/2014/2014077_AppendixH.xlsx)

# Facies architecture of a continental, below-wave-base volcaniclastic basin: the Ohanapecosh Formation, Ancestral Cascades arc (Washington, USA)

Jutzeler M, McPhie J., Allen, S.R.

## *Digital Appendix – additional field data.*

*Chinook Pass association*

The sequences of the Chinook Pass association at Cayuse and Chinook Passes dip at 20° towards the north-northwest <4 km to the southwest of the hinge of the Chinook Pass anticline (Fig. 2). The base of the sequence is the Cayuse Pass section, which comprises multiple very thin to thick beds, overlain by a succession of extremely thick, graded beds (>20 m each; Fig. 3). The >200–m-thick Chinook Pass section overlies the Cayuse Pass section after a couple of hundred meters of hidden stratigraphy and is composed of very thin to thick beds that are overlain by numerous extremely thick (>30 m) beds (Fig. 3). Major natural cliffs at Cougar Lake on the Pacific Crest trail expose >150 m of Ohanapecosh Formation volcaniclastic facies. The Cougar Lake section is several km to the southeast of the Cayuse and Chinook Pass sections and cannot be firmly correlated with these sections. However, these facies are broadly similar, and are grouped together in the Chinook Pass association.

*White Pass association*

The >850-m-thick White Pass section consists of very thick to extremely thick and voluminous sequences of very thin to thick, dark green volcaniclastic facies, but part of the stratigraphy remains obscured by vegetation. Overall, the sequence strikes 160° and dips 45° towards the west. However, a >100-m-thick sequence of basaltic scoria breccia (unit 137, White Pass section) shows local changes in facies, dip and strike.

More to the northwest, the Ohanapecosh Formation can be followed from the Ohanapecosh Campground (Fig. 4) up to the Backbone Ridge road cut (>200 m of stratigraphy). This area could be mapped due to the exceptional removal of the dense vegetation by floods in 2006. A sequence of basaltic scoria breccia (unit 22, Ohanapecosh Campground) similar to that in the White Pass section is locally non-conformable with the stratigraphy. Southwest along the Backbone Ridge road (Fig. 4), beds strike 180° and dip 35° towards the west (>230 m of stratigraphy, in addition to 200 m of hidden stratigraphy). Outcrops of the Ohanapecosh Formation found at Indian Bar presumably belong to a higher stratigraphic level (Fiske, 1963). The top of the Ohanapecosh Formation at Backbone Ridge has been eroded and the contact is overlain by the Stevens Ridge Member (Fiske et al., 1963), and the last logged sections are very poorly preserved.

The stratigraphic position and concordance of the felsic coherent facies at Indian Bar could not be determined from the poorly preserved outcrops available, and no radiometric dates have been published. Hence, this unit could be part of the Ohanapecosh Formation, or of a younger formation.

*Red fiamme breccia, White Pass association*

The red color of the red fiamme breccia of the Stevens Ridge Member (unit 143, White Pass section) and grading in compaction help distinguish this facies from all other facies in the Ohanapecosh Formation. The basal facies of the red fiamme breccia contains very elongate white and red fiamme (aspect ratio >20) that are aligned parallel to bedding and deformed around dense clasts and alkali feldspar and minor plagioclase crystals in a red-oxidized matrix. The feldspar phenocryst content of the fiamme is <5 vol.%. The fiamme in the upper facies are substantially less compacted (aspect ratio ~5) and also contain <5 vol.% feldspar phenocrysts. The red color is not associated with a nearby intrusion that could have oxidized the unit.

TABLE A. APPENDIX

| Locality | | Location | | |
|---|---|---|---|---|
| | | Latitude (°N) | Longitude (°W) | Altitude (mbsl) |
| Chinook Pass assoc. | | | | |
| Cayuse Pass | | | | |
| (locality a on Figure 2) | start | 46°51'19.2" | 121°31'32.7" | 1'282 |
| | mid | 46°51'21.7" | 121°31'37.2" | 1'336 |
| | end | 46°51'20.6" | 121°31'07.1" | 1'293 |
| Chinook Pass | | | | |
| (localities b, c, d and e) | start | 46°51'58.5" | 121°32'14.2" | 1'448 |
| | mid | 46°52'09.1" | 121°32'00.7" | 1'573 |
| | end | 46°52'35.7" | 121°31'45.2" | 1'653 |
| Cougar Lake | | | | |
| (localities f and g) | A | 46°49'14.3" | 121°28'31.3" | 1'759 |
| | B1 start | 46°48'50.4" | 121°27'37.9" | 1'739 |
| | B1 end | 46°48'44.6" | 121°27'41.7" | 1'827 |
| | B2 | 46°48'44.4" | 121°27'23.7" | 1'843 |
| White Pass assoc. | | | | |
| White Pass | start | 46°40'33.0" | 121°31'22.9" | 805 |
| (localities l, m, n and o) | mid 1 | 46°40'41.4" | 121°31'48.5" | 776 |
| | mid 2 | 46°40'50.4" | 121°32'28.1" | 679 |
| | mid 3 | 46°41'21.9" | 121°33'14.4" | 559 |
| | end | 46°41'07.8" | 121°34'45.8" | 491 |
| Scoria cone (White Pass) | cliff | 46°41'21.9" | 121°33'14.4" | 559 |
| Ohanapecosh Campground | start | 46°44'15.4" | 121°34'21.3" | 597 |
| (locality h) | mid | 46°44'21.7" | 121°34'27.1" | 684 |
| | end | 46°44'28.9" | 121°34'33.1" | 816 |
| Backbone Ridge | B start | 46°44'52.4" | 121°34'14.0" | 822 |
| (localities i, j and k) | B end | 46°44'42." | 121°34'14.5" | 838 |
| | C start | 46°44'31.8" | 121°34'36.3" | 906 |
| | C end | 46°44'11.4" | 121°34'45.7" | 918 |
| | D start | 46°43'47.6" | 121°35'02.2" | 942 |
| | D end | 46°43'30.1" | 121°35'12.6" | 972 |
| Indian Bar | A | 46°49'10.9" | 121°37'46.3" | 1'690 |
| | B | 46°49'15.4" | 121°37'53.2" | 1'745 |
| Johnson Creek assoc. | | | | |
| South Packwood | section | 46°33'25.4" | 121°35'43.8" | 1'250 |
| (locality p) | leaves | 46°25'46.0" | 121°33'05.9" | 1'266 |

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