Appendix 1. Code legend for the 37 continuous and nominal scale variables examined in the 129 prehistoric study sample specimens.

Variable Number and Description

1. REGION OF ORIGIN:
- 1: Chilcotin
- 2: Mid-Fraser
- 3: Lower Fraser
- 4: Thompson River
- 5: South Thompson - Shuswap
- 6: Nicola
- 7: North Okanagan
- 8: South Okanagan
- 9: Arrow Lakes
- 10: East Kootenay

2. SITE TYPE:
- 0: Unknown
- 1: Housepit
- 2: Buried lithic scatter
- 3: Cachepit
- 4: Dwelling platform

3. LITHIC RAW MATERIAL:
- 1: Chalcedony
- 2: Chert
- 3: Basalt

4. THERMAL ALTERATION:
- 0: No
- 1: Yes

5. RELATIVE AGE:
- 0: Unknown
- 1: 3500 to 2400 BP (Shuswap horizon)
- 2: 2400 to 1200 BP (Plateau horizon)
- 3: 1200 to 200 BP (Kamloops horizon)

6. FRAGMENTATION STATE:
- 1: Complete
- 2: Almost complete (tip gone)
- 3: Distal half of projection absent
- 4: Basal portion (proximal half)
- 5: Entire distal projection
- 6: Distal tip
- 7: Medial section
- 8: Part of basal aspect missing
- 9: Resharpened/Remodelled

Continued...

Appendix 1 (continued).

7. MODIFICATION STATE:
- 0: Absent
- 1: Resharpened/Remodelled
- 2: Recycled
- 3: Weathered
- 4: Water worn.

8. MAXIMUM TOOL LENGTH (in mm)

9. MAXIMUM WIDTH (in mm)

10. MAXIMUM THICKNESS (in mm)

11. WEIGHT (in grams)

12. PROJECTION LENGTH (in mm)

13. PROJECTION AVERAGE THICKNESS (in mm)

14. PROJECTION BASAL WIDTH (in mm)

15. PROJECTION MEDIAL WIDTH (in mm)

16. PROJECTION DISTAL WIDTH (in mm)

17. PROJECTION ANGLE (in degrees)

18. PROJECTION DISTAL TIP EDGE ANGLE (in degrees)

19. PROJECTION DISTAL TIP SPINE PLANE ANGLE (in deg.)

20. VENTRAL CURVATURE DEPTH (in mm)

21. CONCAVE MARGIN SIDE: 1: Left 2: Right.

22. CONCAVE MARGIN LENGTH (in mm)

23. CONCAVE MARGIN CURVATURE DEPTH (in mm)

24. CONCAVE MARGIN RETOUCH:
- 0: No margin
- 1: Unifacial
- 2: Bifacial

25. CONCAVE MARGIN MEAN EDGE ANGLE (in degrees)

Continued...

Appendix 1 (continued).

26. CONCAVE MARGIN SPINE PLANE ANGLE (in degrees)

27. OPPOSITE MARGIN LENGTH (in mm)

28. OPPOSITE MARGIN OUTLINE:

0: Margin absent
1: Concave
2: Moderately concave
3: Convex
4: Moderately convex
5: Straight
6: Recurved
7: Irregular

29. OPPOSITE MARGIN RETOUCH:

0: Margin absent
1: Unifacial
2: Bifacial
3: None present
4: Inverse unifacial
5: Ground

30. OPPOSITE MARGIN MEAN EDGE ANGLE (in degrees)

31. OPPOSITE MARGIN SPINE PLANE ANGLE (in degrees)

32. PROXIMAL MARGIN EDGE OUTLINE:

1:Type A; 2:B; 3:C; 4:D; 5:E; 6:F; 7:G; 8:H; 9:Miscellaneous Irregular
(see Figure 4 for outline definitions).

33. PROXIMAL MARGIN LENGTH (in mm)

34. PROXIMAL MARGIN WIDTH (in mm)

35. PROXIMAL MARGIN RETOUCH:

0: Margin absent
1: Unifacial
2: Bifacial
3: None present

36. OVERALL MICROWEAR TRACE INTENSITY:

0: No use wear evident
1: Slight
2: Moderate
3: Pronounced

37. RESIDUE: 0: Absent 1: Present.

Appendix 2. Values for the 37 continuous and nominal scale variables recorded for the 129 study sample specimens. Codes descriptions are presented in Appendix 1. The symbol " -- " indicates a missing value.

DgQu16:129

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	1	1	1	0	1	0	33.9	24.2	6.2	4.1	1.9	3.5	22.2	6.5	1.3	45	75	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.2	1	22.9	2.3	1	75	60	20.0	6	1	60	60	1	16.5	14.5	2	1	0

DhQv48:865

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	1	0	4	0	--	17.6	4.5	--	--	3.2	17.5	--	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	65	55	--	0	0	--	--	2	15.0	11.1	1	1	0

DhQv48:1386

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	1	2	3	0	--	16.4	4.4	---	---	2.8	16.3	10.0	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	70	60	--	3	1	65	65	2	13.0	9.0	2	0	0

DhQv48:1479

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	0	2	1	0	42.9	25.3	7.3	6.4	20.0	4.8	20.5	6.6	4.7	15	85	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.5	1	21.2	3.6	1	80	80	20.9	1	1	90	70	2	22.0	6.8	1	0	0

DhQv48:1572

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	0	2	1	1	28.8	20.1	7.3	3.5	16.5	5.7	28.9	7.8	5.2	25	115	115

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.7	1	20.3	2.0	1	85	75	17.6	2	2	75	55	1	12.0	7.2	2	2	1

DhQv48:1646

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	3	0	2	1	0	34.4	21.7	8.2	4.0	20.2	3.0	20.6	7.6	3.9	25	85	75

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	22.5	4.5	2	80	80	14.2	7	1	85	75	4	17.0	18.1	1	0	0

DhQv48:1932

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	0	2	5	0	--	--	--	--	23.3	3.1	18.2	6.1	5.0	15	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	23.5	4.1	1	55	55	23.3	3	1	60	45	0	--	--	0	1	0

DhQv48:1997

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	0	2	1	0	30.7	15.6	6.1	2.0	21.0	2.6	14.6	5.2	1.5	20	85	15

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.8	1	20.5	4.5	1	75	65	16.0	6	1	80	65	2	10.2	8.1	3	1	0

Continued ...

Appendix 2 (continued).

DhQv48:2021

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	0	0	1	1	36.0	23.0	6.5	4.9	17.4	3.5	22.3	6.6	3.3	30	90	90

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	28.8	4.0	1	75	65	16.1	5	1	60	45	1	21.0	12.0	1	0	0

DhQv48:2097

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	1	2	1	0	17.7	1.5	4.4	.7	9.5	2.2	10.2	3.3	.5	30	10	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	13.3	1.6	1	70	65	10.0	5	1	60	60	2	8.6	4.8	3	1	0

DhQv48:2478

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
8	2	1	0	0	1	1	31.0	21.1	6.3	3.5	17.5	5.5	21.0	10.0	3.5	40	80	80

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	21.5	2.2	2	85	80	20.0	3	2	90	90	1	16.0	7.0	1	2	1

DiQm4:183

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	2	0	1	1	0	31.0	15.1	5.1	1.9	16.5	2.5	15.0	3.1	1.6	15	65	65

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.8	1	19.7	4.2	1	60	60	17.0	4	3	80	80	4	12.0	13.0	3	3	0

DiQm4:205

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	1	0	1	1	0	25.6	15.4	3.4	1.6	14.5	3.1	15.1	7.7	4.0	30	100	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.5	1	16.3	2.0	1	50	50	17.7	7	1	70	70	1	12.0	6.5	3	2	0

DiQm6:13

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	1	1	0	3	0	--	22.9	5.3	--	--	5.3	21.6	--	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	70	60	--	3	1	55	35	1	15.0	10.1	1	1	0

DiQm6:16

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	1	0	0	1	0	49.0	16.3	4.0	3.2	27.5	3.5	18.9	9.3	2.2	25	30	30

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.7	1	27.2	3.5	1	80	65	32.0	7	1	70	40	2	21.5	11.3	3	2	0

DiQv5:247

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
7	1	1	1	0	7	0	--	22.8	3.9	--	--	3.4	22.5	11.7	--	25	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	60	60	--	4	1	65	40	0	--	--	0	0	0

Continued ...

Appendix 2 (continued).

DiQv5:273

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
7	1	1	1	0	1	0	44.6	16.1	3.7	3.3	15.5	3.4	14.7	7.4	4.7	15	110	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.3	1	24.0	2.3	1	70	50	28.0	5	3	80	80	2	19.5	12.9	2	1	0

DjQj1:19

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	2	0	2	1	3	35.2	21.3	4.6	3.2	20.0	3.0	20.5	8.7	5.5	30	30	30

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	21.5	2.5	1	55	55	20.5	7	1	75	75	1	16.0	14.0	1	2	1

DjQj1:200

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	1	0	0	1	3	39.0	21.3	3.7	3.1	21.5	2.8	20.0	9.6	6.5	10	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.7	1	21.8	3.7	2	40	40	17.5	5	1	50	50	3	19.0	18.3	3	2	0

DjQj1:324

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	2	0	2	1	3	29.1	21.7	6.2	4.5	15.5	14.9	13.1	9.8	8.2	10	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.8	1	18.5	.8	1	65	65	28.3	5	1	55	55	5	20.0	21.6	3	2	1

DjRi3:4629

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
3	1	1	0	1	1	0	36.8	25.9	11.5	9.9	17.2	5.9	22.7	8.2	2.8	45	70	65

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.2	1	18.9	1.9	1	120	60	19.5	5	1	70	55	1	20.0	25.0	1	3	1

DjRi5:2164

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
3	1	1	0	3	2	0	29.9	16.2	4.0	1.9	22.5	2.4	16.4	7.3	--	15	80	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.5	2	19.5	2.0	1	75	65	19.2	5	1	75	75	2	9.0	8.3	1	1	0

DjRi5:10722

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
3	1	1	1	1	1	0	31.3	19.2	9.5	5.1	23.1	5.5	19.2	7.2	2.0	40	70	40

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	23.1	1.5	1	100	85	12.9	6	1	75	60	2	9.0	12.9	4	2	1

DjRi5:11637

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
3	1	1	1	2	1	0	23.4	15.9	5.0	1.9	13.8	3.4	15.9	7.5	5.3	30	80	80

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.2	1	15.2	2.6	1	80	65	16.6	6	1	75	30	4	12.0	15.0	0	3	1

Continued ...

Appendix 2 (continued).

DjRi5:12423

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
3	1	1	1	2	3	0	--	27.2	6.1	--	--	4.9	25.1	12.4	--	30	95	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	65	65	--	2	1	75	60	1	21.0	15.7	2	2	0

DjRi5:12820

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
3	1	1	1	2	1	1	26.8	16.8	4.4	1.9	14.1	3.9	14.3	7.5	2.6	40	95	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	2	15.2	1.8	1	80	70	19.0	5	1	80	70	4	9.2	16.0	1	2	0

DkQm5:273

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	1	1	1	1	3	0	--	21.7	8.5	--	--	7.4	19.9	11.1	--	35	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	2	--	--	1	65	65	--	5	1	90	90	2	11.5	10.5	1	2	0

DlQl6:41

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	2	3	31.4	14.0	4.4	1.9	15.2	3.3	3.8	7.0	3.0	35	65	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	16.0	2.2	1	80	65	21.6	3	4	50	50	7	17.0	--	3	1	0

DlQv37:56

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
7	2	1	1	2	1	0	27.7	20.5	3.2	1.7	20.0	3.2	21.0	6.1	2.2	25	95	50

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.5	1	22.0	5.0	1	75	50	18.0	3	1	60	60	2	9.7	16.2	2	1	0

DlQv39:11

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
7	2	1	0	1	1	0	32.7	8.8	6.2	2.5	22.0	5.0	12.7	7.7	.7	50	75	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	22.2	2.9	1	70	70	18.2	3	2	55	55	1	11.5	4.8	1	1	1

DlQv39:27

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
7	2	2	0	1	1	0	49.5	25.7	10.2	9.4	28.5	6.6	23.2	9.5	2.6	45	45	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.5	1	30.7	3.0	1	85	85	19.6	7	1	70	55	2	23.0	11.0	1	3	1

EaQl1:137

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	1	0	1	0	30.3	22.0	3.4	1.9	16.1	2.0	18.5	6.5	.8	55	70	35

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	7	20.4	2.0	1	45	45	14.9	1	1	55	55	2	12.5	16.7	3	1	0

Continued ...

Appendix 2 (continued).

EaQl1:244

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	0	0	1	1	31.0	20.8	4.7	2.7	19.0	3.3	19.8	7.5	1.2	45	95	40

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.7	1	24.7	1.9	1	80	65	20.5	5	1	60	60	2	10.0	18.2	3	2	0

EaQl1:405

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	1	0	1	1	33.4	24.2	8.5	4.9	18.0	4.5	22.8	6.5	1.7	35	85	25

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	22.2	3.1	1	85	70	11.0	1	1	80	80	2	17.0	8.9	3	1	0

EaQl1:416

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	0	28.8	20.0	7.2	2.5	15.5	3.0	19.3	6.5	3.0	45	60	40

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.7	1	19.7	3.1	1	70	70	11.2	4	3	40	40	4	11.5	16.8	3	2	0

EaQl10:71

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	0	0	2	0	40.6	20.1	8.9	5.5	26.5	7.1	20.1	11.5	6.5	10	55	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.6	1	25.0	0	1	60	60	20.8	2	3	65	65	2	12.5	12.5	1	3	1

EaQl10:59

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	3	0	0	1	3	50.8	21.5	6.4	4.7	31.0	4.0	8.6	8.9	7.5	15	40	40

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	2	29.7	3.1	1	70	70	20.3	1	1	80	80	7	21.0	13.8	3	2	0

EaQl10:139

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	0	36.8	15.9	5.2	2.5	23.0	7.0	13.8	8.7	2.5	25	105	35

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.5	1	24.1	2.7	1	70	70	24.0	3	3	75	75	8	13.0	10.5	3	1	0

EaQl10:141

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	1	0	1	0	23.8	15.5	3.9	1.3	76.0	2.2	13.7	4.1	2.9	25	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	6.4	2.5	1	55	50	15.6	4	1	50	50	4	7.5	8.9	3	2	0

EaQl14:55

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	1	0	1	0	41.4	18.3	4.2	2.9	24.0	3.4	18.2	8.4	6.0	15	50	50

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.8	1	23.2	3.9	1	65	65	22.0	3	1	70	45	2	18.0	10.8	3	1	0

Continued ...

Appendix 2 (continued).

EaQl14:56

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	0	0	1	0	27.9	18.7	5.2	2.3	14.0	2.6	21.8	7.6	3.5	30	15	15

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.5	2	16.6	2.3	1	60	60	24.8	4	1	80	55	2	13.3	5.4	1	1	0

EaQl14:57

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	1	35.6	20.6	6.5	5.0	23.8	4.6	20.1	7.0	1.6	45	80	80

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.2	2	24.0	1.7	1	80	80	19.2	2	1	90	90	2	1.4	17.8	1	1	0

EaQl14:58

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	1	32.9	19.1	7.7	4.3	12.5	4.0	18.4	6.6	1.7	60	95	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	19.0	1.3	1	90	70	13.5	3	2	65	65	1	22.2	7.0	1	2	0

EaQl14:59

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	1	0	1	0	30.7	20.6	5.9	3.0	20.0	3.9	19.9	7.8	2.0	45	90	90

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	22.5	3.5	1	60	60	22.5	3	2	45	40	1	14.5	9.0	2	2	0

EaQl14:60

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	0	33.7	18.0	4.5	2.3	34.0	3.3	16.0	5.5	3.2	15	40	30

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
2.6	1	23.9	3.1	1	65	60	23.1	1	1	50	50	8	9.0	15.3	2	2	0

EaQl14:61

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	0	40.7	22.1	5.7	5.1	20.0	3.8	18.3	7.9	2.2	35	85	50

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
3.9	2	20.7	3.1	1	85	70	21.0	5	1	80	70	2	23.0	14.5	3	2	1

EaQl14:62

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	0	34.7	18.5	6.0	3.6	18.3	3.2	18.2	6.8	2.0	40	75	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.9	1	23.0	3.1	1	70	55	25.0	3	1	65	65	2	17.0	12.1	3	2	0

EaQl14:65

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	0	0	2	3	25.5	19.2	4.1	1.9	15.0	2.4	19.1	7.3	--	40	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	2	13.9	--	1	60	60	--	2	1	75	75	2	11.0	7.0	3	1	0

Continued ...

Appendix 2 (continued).

EaQl14:736

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	0	0	1	0	48.8	22.9	7.1	6.9	21.5	5.5	19.6	6.7	2.7	25	80	60

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.6	2	22.7	2.2	1	80	75	25.5	5	1	80	80	7	27.0	--	1	1	1

EaQl14:737

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	1	0	0	1	1	33.6	21.5	8.2	4.0	19.5	3.3	15.6	7.7	2.5	40	50	40

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	21.5	2.7	1	75	65	18.9	5	1	60	60	4	15.0	20.0	1	2	0

EaQl14:825

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	0	0	2	0	34.3	16.8	5.7	3.5	15.0	3.5	16.6	6.5	2.2	40	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	29.0	2.0	1	75	60	25.8	5	2	80	55	2	18.0	11.8	3	3	0

EaQl14:826

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
9	2	2	0	0	1	0	31.4	19.8	5.2	2.6	14.0	2.8	19.0	5.5	2.5	45	90	30

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.4	1	18.6	2.3	1	60	60	14.7	4	1	55	45	4	15.0	15.5	3	2	0

EbRd3:18

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
6	1	2	1	0	2	0	--	17.5	3.5	--	--	3.5	7.5	8.6	--	25	95	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	85	65	--	4	1	70	60	7	2.0	5.4	3	2	0

EbRj-y:618

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	0	1	1	0	2	0	37.5	27.2	6.3	4.1	28.0	4.6	17.2	8.5	--	20	95	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	18.0	4.4	1	65	65	27.0	7	1	75	50	2	21.0	8.0	3	2	1

EcRh12:55

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	3	1	1	2	1	0	26.8	18.0	5.0	2.1	15.2	4.3	16.7	5.5	3.5	50	85	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.8	1	18.5	1.8	1	70	70	9.7	5	1	65	65	2	11.5	9.2	3	1	0

EcRh12:56

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	3	1	1	2	3	0	--	20.5	7.3	3.3	--	5.0	20.9	8.4	--	40	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	65	65	--	5	3	55	55	2	14.5	13.3	1	1	0

Continued ...

Appendix 2 (continued).

EdQa8:32

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
10	2	1	0	2	3	0	--	23.9	6.4	--	--	5.0	23.5	16.3	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	55	55	--	4	1	25	25	2	12.0	6.3	3	1	0

EdQx20:A-7001

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	2	1	0	0	1	0	49.9	21.6	17.9	13.0	29.5	9.0	20.7	7.2	2.1	20	95	95

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.5	2	28.5	2.9	1	90	90	22.5	6	1	85	85	8	29.0	25.8	3	1	0

EdQx20:B1-100

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	2	0	30.9	14.9	6.8	2.8	18.5	6.1	14.3	7.8	--	30	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	9.1	1.0	1	85	85	21.0	5	3	55	55	2	11.0	10.4	2	2	0

EdRa9:350

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	2	1	0	34.3	17.0	4.3	2.5	22.0	2.5	16.8	9.4	5.0	30	65	65

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.7	1	22.5	2.9	1	65	65	24.5	3	1	70	70	1	10.3	7.5	3	2	0

EdRa9:378

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	2	8	3	--	24.4	4.5	4.0	30.1	3.8	23.2	13.5	1.5	45	40	40

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	7	30.6	2.5	1	80	70	11.7	3	1	80	45	0	--	--	0	2	1

EdRa22:1-31

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	2	1	1	27.6	21.7	6.1	3.2	19.0	5.2	21.0	8.8	3.2	40	90	90

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	22.5	1.7	1	80	80	18.7	2	1	85	85	4	1.7	18.0	1	1	0

EdRa22:1-37

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	2	1	0	26.3	16.7	3.6	1.6	12.5	2.0	15.8	5.6	2.7	40	110	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.3	1	15.1	2.0	1	75	75	15.4	5	1	60	60	7	14.5	8.0	3	1	0

EdRa22:2-105

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	2	1	0	49.0	25.5	9.6	12.6	26.0	7.5	21.6	6.6	3.5	35	95	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	26.5	2.7	1	85	85	21.5	4	1	65	65	7	28.0	14.8	3	1	0

Continued ...

Appendix 2 (continued).

EdR113:5

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	2	1	0	0	1	0	33.3	17.2	6.3	3.4	16.5	4.3	16.4	4.5	1.9	20	55	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.1	1	19.2	40	1	75	75	25.0	6	1	85	65	1	19.0	6.4	2	1	1

EeQw3:565

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	1	0	50.5	21.6	7.4	6.5	23.0	3.9	7.8	4.2	2.7	25	90	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.2	2	2.2	2.5	1	90	80	26.6	1	1	110	90	4	29.0	--	3	1	0

EeQw3:588

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	0	2	1	24.8	16.5	5.0	3.0	13.3	3.8	16.1	6.5	--	25	70	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	27.5	2.4	1	60	60	14.5	5	1	75	65	2	12.0	8.9	1	1	0

EeQw3:594

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	0	1	1	33.5	22.8	4.7	3.9	18.5	3.3	24.0	5.0	1.0	60	110	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.3	1	24.2	2.1	1	70	60	18.1	6	1	80	75	2	17.5	4.5	3	1	0

EeQw3:596

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	1	3	49.7	27.2	7.1	7.4	25.0	4.6	25.0	10.5	3.9	50	60	50

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.2	1	25.7	4.1	1	75	60	31.5	4	1	65	65	2	26.5	10.0	3	0	0

EeQw3:618

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	0	3	0	--	29.5	6.3	5.5	--	3.5	25.2	11.2	--	45	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	90	50	--	5	1	80	60	1	17.0	18.3	1	1	0

EeQw3:692

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	1	0	52.5	31.1	9.5	15.1	35.5	4.9	29.7	15.5	4.1	35	90	15

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.7	7	38.8	3.7	1	85	65	37.0	3	2	65	65	2	20.0	21.9	3	2	1

EeQw3:811

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	0	1	0	28.9	19.1	4.9	3.2	16.0	3.0	8.6	5.8	2.4	20	55	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	20.4	4.0	2	85	85	13.5	5	2	85	70	2	11.5	8.0	2	1	0

Continued ...

Appendix 2 (continued).

EeQw6:197

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	1	0	1	0	37.2	19.8	4.8	3.2	20.0	3.8	19.2	10.1	3.7	20	90	20

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	20.5	4.0	1	65	65	19.0	3	1	60	45	9	17.5	9.0	3	0	0

EeQw6:203

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	0	1	0	45.4	27.5	10.0	11.0	24.0	9.6	25.0	9.0	4.2	30	90	90

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	29.5	3.6	1	95	75	20.0	4	2	80	55	7	22.0	19.6	3	0	0

EeQw6:313

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	0	1	3	41.0	22.7	7.5	1.9	19.5	5.4	22.5	11.2	--	25	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.3	1	22.0	3.0	1	65	65	30.0	5	1	75	45	2	19.5	19.5	3	1	0

EeQw6:365

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	9	1	--	--	6.4	--	22.5	4.0	--	8.6	.5	25	50	20

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.9	1	26.5	3.7	1	85	60	--	6	1	60	50	0	--	--	0	2	0

EeQw6:511

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	1	0	1	0	39.4	17.1	6.0	3.0	27.5	4.2	16.3	7.0	1.3	25	85	75

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
3.7	1	27.4	2.2	1	85	85	20.4	2	1	70	70	1	12.0	8.0	1	2	1

EeQw6:516

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	0	9	2	--	--	4.8	--	--	4.5	--	6.9	--	30	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	95	65	--	5	2	75	50	9	--	--	1	1	0

EeQw6:555

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	0	1	0	40.5	25.3	6.8	5.3	18.5	4.4	25.8	8.7	6.2	20	70	70

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.9	2	20.0	3.1	1	60	60	11.2	5	1	80	80	2	21.0	7.2	3	1	0

EeQw6:633

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	0	1	0	37.0	17.4	5.6	3.5	19.0	4.0	16.7	9.5	2.7	50	30	30

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.3	1	20.9	1.4	1	65	65	17.7	3	3	40	35	2	18.5	18.4	3	2	0

Continued ...

Appendix 2 (continued).

EeQw6:722

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	1	0	50.3	42.8	8.8	11.8	27.5	4.5	42.5	8.3	2.3	25	70	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.5	7	30.8	5.5	1	90	90	30.5	1	1	90	90	1	23.0	18.3	3	1	0

EeQw6:773

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	2	0	57.0	29.6	10.3	17.4	30.0	6.5	29.3	17.5	--	35	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.9	1	30.5	1.0	1	60	60	26.7	4	1	65	30	2	17.0	22.1	2	2	0

EeQw6:779

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	2	0	68.8	24.6	8.5	16.9	3.5	7.5	22.2	14.3	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.6	1	33.7	4.5	1	80	80	35.7	2	3	80	80	2	29.5	12.5	3	3	1

EeRb3:52

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	2	3	0	--	25.8	7.7	7.5	--	4.6	23.7	14.0	--	35	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	80	70	--	1	1	75	65	1	5.0	9.5	1	1	0

EeRb3:875

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	2	1	0	33.3	19.9	6.1	3.0	13.5	3.3	18.3	7.2	4.1	40	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.8	1	18.3	3.0	1	65	55	12.5	2	3	35	35	2	20.5	12.6	1	2	0

EeRb3:910

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	1	2	1	1	35.4	18.3	17.0	4.1	18.0	5.7	17.5	5.6	.6	35	75	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.7	1	17.2	1.9	1	70	70	18.0	5	1	70	70	2	2.3	11.4	2	1	0

EeRb3:1181

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	2	1	0	38.3	19.6	5.8	3.0	26.5	2.5	19.5	8.3	5.2	20	15	15

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.7	2	27.2	3.1	1	55	55	23.0	2	1	50	50	2	9.0	11.8	1	1	0

EeRb3:1184

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	2	3	0	--	17.6	3.7	--	--	3.7	17.1	7.6	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	80	80	--	4	1	70	50	4	6.0	11.5	3	0	0

Continued ...

Appendix 2 (continued).

EeRb10:6

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	1	1	0	36.6	16.0	5.4	2.3	25.0	4.1	15.6	7.0	1.6	30	75	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	26.4	1.4	1	75	60	24.6	4	1	70	55	2	12.5	8.6	1	3	1

EeRb11:72

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	0	3	0	--	18.9	4.6	2.5	--	3.1	17.8	9.8	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	70	65	--	5	1	60	40	1	17.0	9.0	2	3	0

EeRb70:6490

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	2	1	0	33.5	21.3	3.7	2.5	16.5	1.9	19.8	7.0	2.6	25	90	60

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	20.1	3.0	1	40	40	17.7	7	2	45	45	6	17.5	18.5	2	3	0

EeRh1:33

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	2	2	0	0	1	0	48.8	21.1	7.3	8.1	28.0	4.1	21.2	7.0	4.3	20	100	35

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.4	1	30.4	4.6	1	85	70	29.0	4	2	70	70	2	21.0	15.7	3	2	1

EeRj63:327

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	2	1	0	0	1	1	37.4	16.9	10.2	5.0	20.9	4.0	15.2	7.5	5.0	25	80	60

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.3	1	17.7	1.3	1	55	55	19.0	4	1	70	70	9	17.0	--	3	2	0

EeRk4:1-51

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	1	1	0	16.4	16.2	5.0	2.1	16.0	3.2	15.5	4.6	1.5	30	50	15

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	16.2	2.2	1	90	80	21.5	6	3	60	60	1	13.0	16.3	3	2	1

EeRk4:6-403

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	2	2	0	31.2	20.5	6.2	4.7	23.0	4.9	20.4	9.9	3.6	40	105	105

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.4	1	18.8	2.6	1	80	65	16.0	3	1	75	60	1	9.5	10.0	1	1	0

EeRk4:6-407

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	1	2	3	0	--	18.9	6.5	4.0	--	4.0	22.1	9.5	--	50	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	70	60	--	7	1	45	35	7	13.0	19.7	1	2	0

Continued ...

Appendix 2 (continued).

EeRk4:6-462

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	2	1	0	34.9	16.6	5.6	2.4	25.0	5.0	16.0	5.6	3.5	15	60	55

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.4	1	20.5	3.4	1	75	75	21.5	5	1	75	60	2	9.5	9.1	1	3	0

EeRk4:6-1043

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	2	1	2	1	0	53.9	22.9	10.2	10.0	28.5	5.2	22.7	13.7	3.3	20	45	40

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.1	1	30.0	3.1	1	60	55	27.5	4	3	35	35	9	27.0	15.0	3	2	0

EeRk4:6-1124

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	3	0	2	3	0	--	23.6	6.1	5.1	--	4.1	23.4	10.8	--	30	110	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	90	90	--	3	2	50	50	2	19.5	13.3	2	3	1

EeRk4:19-1007

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	2	1	0	33.7	15.9	5.6	2.5	21.5	4.3	5.5	6.7	4.5	20	75	65

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.6	1	22.6	3.2	1	75	70	18.8	4	1	85	65	4	13.0	13.0	3	3	1

EeRk4:19-1253

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	2	1	0	46.5	29.5	8.5	7.2	24.0	3.5	22.8	7.5	3.3	25	50	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.5	1	24.4	5.0	1	55	55	24.3	2	4	60	60	8	22.5	23.2	3	1	0

EeRk4:19-2119

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	3	0	2	1	0	64.7	29.6	7.5	11.4	43.0	5.1	29.6	10.7	4.4	25	50	50

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
5.2	1	45.2	8.0	1	70	55	31.9	7	1	70	45	6	22.0	16.3	3	3	1

EeRk4:20-372

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	0	1	0	30.5	15.6	5.1	2.3	14.0	3.4	3.1	5.5	.8	30	60	20

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.7	1	15.8	2.1	1	75	65	13.0	4	3	60	60	6	17.5	9.7	3	2	1

EeR14:364

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	0	1	0	26.0	19.8	4.2	2.2	19.4	2.7	19.8	12.5	4.0	50	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	21.7	.3	1	65	65	20.0	4	1	60	60	2	7.0	6.0	1	1	1

Continued ...

Appendix 2 (continued).

EeR17:1000

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	0	1	1	22.2	14.2	4.3	1.3	1.0	1.7	14.0	4.2	1.1	50	55	20

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	13.0	2.4	1	80	50	12.5	4	3	55	30	2	10.1	6.0	2	1	1

EeR17:1107

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	1	1	0	2	2	1	24.3	17.2	4.4	2.1	8.8	3.0	16.9	7.0	3.3	55	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.6	1	14.5	1.1	1	75	55	9.0	7	1	65	65	7	18.0	4.5	2	1	1

EeR191:7

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
2	2	1	1	0	1	1	31.1	19.7	6.9	4.1	17.0	4.2	19.5	6.2	2.5	45	75	75

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.9	1	20.9	2.9	1	95	95	13.0	5	1	75	80	2	15.5	13.6	2	2	0

EfQu3:55

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	0	2	8	0	--	--	9.4	--	21.5	6.4	--	7.7	1.5	30	85	60

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
2.1	1	21.0	--	1	100	80	21.0	5	1	90	85	0	--	--	0	2	1

EfQu3:308

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	0	2	0	53.5	27.3	6.5	7.3	28.0	4.3	27.2	8.6	2.3	40	90	30

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	35.2	2.9	1	70	60	33.4	6	1	75	65	7	20.0	17.0	3	1	1

EfQu6:126

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	0	1	0	60.5	34.5	8.1	12.0	31.5	4.4	33.8	7.3	3.3	35	65	65

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.8	1	36.5	6.4	1	80	65	30.9	4	1	80	65	7	27.0	11.0	1	2	0

EfQv2:187

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	3	0	0	1	3	43.3	21.6	9.3	8.1	2.7	6.2	21.2	10.1	4.4	40	80	80

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	29.1	.9	1	75	75	24.0	4	2	70	60	2	19.5	6.4	2	3	0

EfQv10:114

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	2	1	0	1	0	56.2	27.7	7.7	10.0	36.5	6.8	26.7	13.5	6.9	25	45	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.9	1	39.4	4.0	1	90	90	40.0	4	1	80	60	2	21.0	14.1	3	3	0

Continued ...

Appendix 2 (continued).

EfQv10:186

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	1	1	0	0	1	1	25.2	17.7	6.6	2.0	16.5	3.5	15.0	4.7	3.0	25	80	60

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	21.3	2.6	1	65	65	18.2	5	1	90	60	2	14.5	5.5	1	1	0

EfQw1:437

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	2	2	0	0	2	0	42.1	25.6	6.1	5.5	21.5	3.4	25.6	9.8	--	20	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.4	1	25.9	2.4	1	80	50	24.0	1	4	60	60	2	20.5	14.0	3	2	1

EfQw1:563

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	2	2	0	0	2	0	38.2	20.5	6.5	5.7	20.2	5.4	19.6	10.1	--	20	100	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.5	1	23.5	3.1	1	75	65	--	3	2	50	50	3	17.5	18.7	3	3	1

EfQw1:564

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
5	2	2	0	0	2	0	49.7	28.3	5.9	8.1	29.5	5.0	28.0	10.8	4.6	30	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.7	1	35.0	5.1	1	85	75	35.0	3	1	80	60	2	21.5	13.8	3	3	1

EfRf3:77

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
4	2	1	0	0	1	0	42.2	21.9	10.6	7.0	26.0	5.0	21.5	7.2	3.2	30	95	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.9	1	26.6	1.9	1	50	50	26.7	2	3	85	85	8	15.5	14.5	3	1	0

EkSa13:3039

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1	3	0	0	1	0	50.3	22.3	5.1	5.1	30.0	3.5	20.7	6.4	2.6	25	25	25

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.1	2	30.4	3.1	1	75	50	31.0	2	1	80	50	3	25.0	16.5	3	1	1

FiRs1:361

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	3	0	2	1	1	47.1	21.7	6.2	6.6	22.5	4.4	20.9	13.4	4.5	55	105	105

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
0	1	23.0	3.1	1	85	60	17.8	4	1	50	50	9	24.0	12.0	1	3	1

FiRs1:539

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	1	2	1	0	37.5	27.1	3.2	2.8	25.1	3.0	25.0	5.3	4.2	10	75	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	28.7	6.0	1	65	40	24.0	3	1	60	40	2	15.0	7.7	2	1	0

Continued ...

Appendix 2 (continued).

FiRs1:1352

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	2	0	2	3	0	--	19.1	3.4	--	--	3.4	19.1	--	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	50	50	--	5	1	--	--	2	16.5	10.5	2	1	0

FiRs1:1587

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	1	2	1	0	37.3	15.4	6.1	3.2	24.5	4.7	15.3	4.1	1.4	20	105	45

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.3	1	26.0	30	1	90	90	22.2	5	1	100	100	2	15.0	15.3	1	1	0

FiRs1:2028

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	1	2	1	0	29.6	17.6	4.8	2.4	1.5	4.2	15.3	16.8	5.5	30	90	80

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.5	1	15.9	1.8	1	85	75	18.8	2	1	60	60	1	15.0	8.7	1	2	0

FiRs1:3496

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	0	2	3	0	--	15.1	4.0	--	--	2.9	15.0	--	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	75	75	--	3	1	--	--	2	17.0	8.3	1	0	0

FiRs1:3818

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	1	2	1	0	36.1	20.4	7.9	3.8	28.0	3.6	20.2	8.7	2.8	25	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	28.1	3.9	1	55	55	25.5	4	1	80	40	2	13.0	10.7	2	1	0

FiRs1:4413

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	1	2	1	0	37.3	21.6	3.7	3.2	21.5	3.6	21.2	6.4	1.5	25	100	70

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1.0	1	25.7	5.1	1	70	55	20.0	5	3	65	65	2	16.0	15.1	3	2	1

FiRs1:5340

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	0	2	2	0	37.0	20.5	6.4	4.5	25.0	4.7	19.2	8.2	--	15	90	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
.8	1	27.0	5.0	1	70	70	16.5	4	1	60	50	2	13.5	6.7	1	2	0

FiRs1:5493

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	0	2	3	0	--	20.7	4.2	--	--	3.2	20.7	--	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	65	65	--	3	1	70	40	1	22.0	5.2	1	1	0

Continued ...

Appendix 2 (continued).

FiRs1:5699

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	4	1	1	2	3	0	--	21.0	3.5	--	--	2.7	20.9	12.7	--	--	--	--

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
--	1	--	--	1	80	65	--	5	1	80	70	2	14.0	10.5	0	2	1

Appendix 3. Frequencies and relative percentages for ordinal and nominal scale attribute variables for the 129 prehistoric key-shaped formed unifaces in the study sample.

REGION OF ORIGIN:

	Chilcotin	Mid-Fraser	Lower Fraser	Thompson	S. Thompson-Shuswap	Nicola	North Okanagan	South Okanagan	Arrow Lakes	East Kootenay
n:	12	16	6	5	42	1	5	11	30	1
%:	9.3	12.4	4.7	3.9	32.6	.8	3.9	8.5	23.3	.8

SITE TYPE:

	Housepit	Lithic Scatter	Dwelling Platform	Cachepit	Unknown
n:	70	45	11	2	1
%:	54.3	34.9	8.5	1.5	.8

LITHIC RAW MATERIAL TYPE:

	Chalcedony	Chert	Basalt
n:	78	36	15
%:	60.5	27.9	11.6

EVIDENCE FOR THERMAL ALTERATION:

	Present	Absent
n:	35	94
%:	27.1	72.9

RELATIVE AGE:*

	Shuswap horizon	Plateau horizon	Kamloops horizon	Unknown
n:	9	48	1	71
%:	7.0	37.2	.8	55.0

CONCAVE MARGIN SIDE:

	Left	Right
n:	115	14
%:	89.1	10.9

CONCAVE MARGIN RETOUCH TYPE:

	Unifacial	Bifacial
n:	125	4
%:	96.9	3.1

OPPOSITE MARGIN OUTLINE:

	Moderately concave	Slightly concave	Moderately convex	Slightly convex	Straight	Recurved	Irregular	Margin absent
n:	9	14	24	27	34	10	10	1
%:	7.0	10.8	18.6	20.9	26.3	7.8	7.8	.8

Continued ...

Appendix 3 (continued).

OPPOSITE MARGIN RETOUCH TYPE:

	Unifacial	Bifacial	Inverse Unifacial	None	Margin Absent
n:	94	15	3	16	1
%:	72.9	11.6	2.3	12.4	.8

PROXIMAL MARGIN FORMAL OUTLINE TYPE:

	A	B	C	D	E	F	G	H	Miscell. Irregular
n:	23	61	3	12	1	3	11	5	10
%:	17.8	47.3	2.3	9.3	.8	2.3	8.5	3.9	7.8

PROXIMAL MARGIN RETOUCH TYPE:

	Unifacial	Bifacial	None	Unknown
n:	41	23	57	8
%:	31.8	17.8	44.2	6.2

OVERALL MICROWEAR TRACE INTENSITY:

	Absent	Slight	Moderate	Pronounced
n:	10	53	47	19
%:	7.8	41.1	36.4	14.7

FRAGMENTATION STATE:

	Complete	Almost complete	Distal 1/2 of proj. absent	Proximal portion only	Entire distal projection	Medial section	Portion of Proximal section absent
n:	88	18	16	1	1	1	4
%:	68.2	13.9	12.4	.8	.8	.8	3.1

MODIFICATION STATE:

	Relatively unmodified	Significantly resharpened	Recycled	Weathered
n:	98	20	1	10
%:	75.9	15.5	.8	7.8

EVIDENCE FOR RESIDUES:

	Present	Absent
n:	37	92
%:	28.7	71.3

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* Shuswap horizon: ca. 4000/3500 to 2400 BP; Plateau horizon: ca. 2400 to 1200 BP; Kamloops horizon: ca. 1200 to 200 BP.

Appendix 4. Information concerning key-shaped formed unifaces provided by various Northwest researchers who responded by mail.

Researcher: Robert Ackerman
Affiliation: Washington State University
Research Area: Arctic and Subarctic
Comments: "Such tool forms are common in the Arctic and Subarctic Sub-Arctic ... These flake tools are called flakeknives and occur in the Norton and Denbigh phases of the Bering Sea region. Norton dates from roughly 500 BC to AD 1000. Denbigh dates ca. 2200-1000 BC. Some of your objects also appear to be similar to the mitten-shaped burin of the Denbigh phase. ... The Arctic is a bit far off, but there could be similarity of function that is responsible for the cultural convergence. The form is rather widespread throughout the Arctic and Subarctic zones. I do not know about the boreal forest. I would suspect that the tool form is rather generalized and one that is utilized in working organic materials such as bone." (Letter dated December 21, 1987).

Researcher: Margaret Bertulli
Affiliation: Prince of Wales Northern Heritage Center, Northwest Territories
Research Area: Arctic
Comments: "The artifacts you describe seem similar to what have been called concave sidescrapers in the Arctic region. They have appeared in Pre-Dorset, Dorset Independence I and Independence II components in the Arctic." (Letter dated December 23, 1987).

Researcher: Raymond LeBlanc
Affiliation: University of Alberta
Research Area: Arctic and Subarctic
Comments: "... it is my impression that such objects are rare in sites in the boreal forest region of Northern Alberta. The same appears to be true for the late prehistoric period (last 2500 years or so) in the Northern Yukon. ... As to the function of these objects, my guess is that they were used for scraping wood, bone, or antler shafts. This is a fairly standard interpretation, however, and it would be certainly desirable to verify this with some experimentation, followed by use-wear analysis of archaeological examples." (Letter dated December, 1987).

Continued...

Appendix 4 (continued).

Researcher: James Helmer
Affiliation: University of Calgary
Research Area: Arctic
Comments: "I am familiar with the "key-shaped" formed unifaces that you mention from my own experience in the Plateau quite a few years ago. You will be interested to know that very similar artefacts occur in Early Palaeo-Eskimo assemblages dating from circa 4500-3000 BP. In Arctic assemblages these tools are referred to as concave sidescrapers (though sometimes this type of tool has been included in the generic class of flake knife too). ... They never make up a very large percentage of any assemblage but nonetheless are common. No one that I know of has done a typological analysis of these objects. Based on my own material from Devon Island I suspect that there have been some stylistic changes through time. But, this is purely a subjective determination based on a small sample. According to Moreau Maxwell (1973, 1985) these concave sidescrapers may persist into Late Palaeo-Eskimo complexes but they certainly aren't common after circa 3000 B.P. I do not know for sure what the functional replacement was though it may well have been the ground burin (burin-like tool in the literature)." (Letter dated February 4, 1988).

Researcher: Robert McGhee
Affiliation: Archaeological Survey of Canada
Research Area: Canadian Museum of Civilization
Comments: "... very similar objects occur in the Arctic regions where they are associated with the ASTt. Although they occur throughout the Paleoeskimo tradition, they are characteristic only of the earlier stages -- what in Arctic Canada is known as Independence and Pre-Dorset. Here they are known as "concave sidescrapers", with the implied but unverified function of having been used as spokeshaves in working wood or harder organic materials. They are also identified as burin blanks ... left-handed people used ones which were reversed in plan from the tools used by right handers. ... the frequencies for my Port Refuge sites, and for the three components which had adequate numbers, came up with the following: Cold Component (about 2000 BC?): 7/532 formed artifacts; Upper Beaches component (about 1500 BC?): 14/472. After about 500 BC, they occur only rarely ..." (Letter dated December 17, 1987).

Continued...

Appendix 4 (continued).

Researcher: David Morrison
Affiliation: Archaeological Survey of Canada
Research Area: Arctic
Comments: "... they occur in the Arctic. Specifically, they are a Palaeoeskimo tool type, normally called "concave sidescrapers". They occur in Independence I, Pre-Dorset and Dorset (i.e. 2000 B.C. to A.D. 1000), but seem to be particularly common in Independence I and Pre-Dorset. I've always assumed (like most others I think) that they were used primarily for shaping wood, antler and ivory. Nothing like these occur in the Subarctic as far as I know, at least not as a well-defined "type". Nor do they occur in the late prehistoric Thule culture of the Arctic." (Letter dated December 22, 1987).

Researcher: Milton Wright
Affiliation: Archaeological Survey of Alberta
Research Area: Northern Alberta
Comments: "The items you describe are what I have termed crescentic knives or scrapers in sites ranging from Late Woodland in Ontario to undated contexts in the northern parklands of Alberta. The major problem with this "class" of lithic tool is the extreme variability that I see in formal properties. To be sure the outline form of the tool is relatively consistent, but they can appear on reworked bifaces, unifaces, and utilized flakes. While you may be able to identify a particular sub-set of "key-shaped unifaces" I think the functional aspect of these tools is also mirrored in the reworked bifaces and unifaces that I term crescentic tools. It seems most reasonable that such tools would be associated with wood working - presumably shaft preparation for thrusting spears, arrow shafts, etc." (Letter dated February 2, 1988).

Researcher: David Chance
Affiliation: University of Idaho
Research Area: Eastern Columbia Plateau
Comments: "The artifacts are called by us "Right Perforators" at Kettle Falls where they are an important marker, in large size, of the Ksunku period. Shorter ones, termed "Short Right Perforators" were found to be diagnostic of the Sinaikst period at Kettle Falls. In the southern Plateau they have not been recognized except by myself. They seem to characterize the Tucannon phase (5000 - 2500 BP). ... My belief, based on cursory examination, is that they are probably leather punches. Note that "left-handed" ones are virtually unknown." (Letter dated December 16, 1987).

Continued...

Appendix 4 (continued).

Researcher: Robert Greengo
Affiliation: University of Washington
Research Area: Central Columbia Plateau
Comments: "... that class occurred rarely if at all, in the Priest Rapids-Wanapum region of the Middle Columbia. Similar forms occurred infrequently in the Chief Joseph region, farther up the Columbia." (Letter dated January 18, 1988).

Researcher: Leslie Davis
Affiliation: Montana State University
Research Area: Montana
Comments: "I have shown your letter to two other experienced archaeologists active in this part of the world and they, like myself, do not recognize such an artifact class. From the photocopied illustration, one gets the (perhaps unfortunate) impression that the class includes objects which are superficially morphologically similar, but which may actually combine functionally dissimilar or diverse subclasses." (Letter dated January 6, 1988).

Researcher: John Brumley
Affiliation: Ethos Consultants Ltd., Medicine Hat, Alberta
Research Area: Northern Plains
Comments: "I am not aware of any tools closely similar to the ones you illustrate in your letter. A somewhat similar tool which I refer to as a hafted spokeshave was recovered from the Cactus Flower site in association with McKean Complex materials. The distal working end of that hafted spokeshave seems closely analogous to the specimens you described. ... I have seen two similar hafted spokeshave specimens from a surface context in the Bear Paw Mountains of northern Montana; and one from a surface context in south central Saskatchewan." (Letter dated March 4, 1988).

Appendix 5. Code legend for the 55 attribute variables examined in the 35 specimens comprising the microwear study sub-sample.

Variable Number
and Description

DISTAL PROJECTION:

1. **Fracture Type:**
   1:none 2:flexure 3:torsion 4:crushed/heat spalled 5:inversely retouched

2. **Edge rounding and smoothing intensity:**
   1:absent 2:slight 3:moderate 4:pronounced

3. **Edge rounding and smoothing location:**
   1:corners 2:distal edge 3:distal edge and corners 4:distal edge corners and faces

4. **Polish intensity:**
   1:absent 2:dull 3:moderately bright 4:bright

5. **Polish location:**
   1:corners 2:distal edge 3:distal edge and corners 4:distal edge corners and faces

6. **Microflake frequency**

7. **Microflake mean size (in mm)**

8. **Microflake size minimum value (in mm)**

9. **Microflake size maximum value (in mm)**

10. **Microflake location:**
    1:distal edge 2:corner(s) 3:both

11. **Microflake orientation:**
    1:perpendicular 2:oblique 3:both

12. **Crushing intensity:**
    1:absent 2:slight 3:moderate 4:pronounced

13. **Crushing location:**
    1:corners 2:distal edge 3:distal edge and corners 4:distal edge corners and faces

14. **Striations:**
    1:absent 2:present

Continued ...

Appendix 5 (continued).

CONCAVE MARGIN AND VENTRAL EDGE ASPECT

15. **Edge rounding and smoothing intensity:**
    1:absent 2:slight 3:moderate 4:pronounced

16. **Edge rounding and smoothing location:**
    1:medial 2:medial-distal 3:medial-proximal
    4:entire edge 5:distal edge

17. **Polish intensity:**
    1:absent 2:dull 3:moderately bright 4:bright

18. **Polish location:**
    1:medial 2:medial-distal 3:medial-proximal
    4:entire edge 5:distal edge

19. **Microflake frequency**

20. **Microflake mean size (in mm)**

21. **Microflake size minimum value (in mm)**

22. **Microflake size maximum value (in mm)**

23. **Microflake location:**
    1:medial 2:medial-distal 3:medial-proximal
    4:entire edge

24. **Microflake configuration pattern:**
    1:random 2:contiguous 3:contiguous superposed

25. **Striations:**
    1:absent 2:present

26. **Crushing intensity:**
    1:absent 2:slight 3:moderate 4:pronounced

27. **Crushing location:**
    1:medial 2:medial-distal 3:medial-proximal
    4:entire edge 5:distal

Continued ...

Appendix 5 (continued).

OPPOSITE MARGIN AND VENTRAL EDGE ASPECT

28. **Edge rounding and smoothing intensity:**
    1:absent 2:slight 3:moderate 4:pronounced

29. **Edge rounding and smoothing location:**
    1:medial 2:medial-distal 3:medial-proximal 4:entire edge

30. **Polish intensity:**
    1:absent 2:dull 3:moderately bright 4:bright

31. **Polish location:**
    1:medial 2:medial-distal 3:medial-proximal
    4:entire edge

32. **Microflake frequency**

33. **Microflake mean size (in mm)**

34. **Microflake size minimum value (in mm)**

35. **Microflake size maximum value (in mm)**

36. **Microflake location:**
    1:medial 2:medial-distal 3:medial-proximal
    4:entire edge 5:dorsal edge aspect

37. **Microflake configuration pattern:**
    1:random 2:contiguous 3:contiguous superposed

38. **Striations:**
    1:absent 2:present

39. **Crushing intensity:**
    1:absent 2:slight 3:moderate 4:pronounced

40. **Crushing location:**
    1:medial 2:medial-distal 3:medial-proximal 4:entire edge

PROXIMAL MARGIN AND VENTRAL EDGE ASPECT

41. **Microwear trace:**
    1:absent 2:present

Continued ...

Appendix 5 (continued).

VENTRAL FACE

42. **Polish intensity:**
1:absent 2:dull 3:moderately bright 4:bright

43. **Polish location on projection:**
1:medial 2:medial-distal 3:medial-proximal
4:entire face 5:distal

44. **Striation intensity:**
1:absent 2:slight 3:moderate 4:pronounced

45. **Striation location:**
1:medial 2:medial-distal 3:medial-proximal
4:entire face

46. **Striation respective orientation:**
1:parallel unidirectional: 2:parallel bidirectional
3:parallel multidirectional

47. **Striation orientation with respect to edge:**
1:perpendicular 2:distal 3:proximal
4:perpendicular and distal

48. **Angle of proximally oriented striations relative to the concave margin (in degrees)**

49. **Microtopographic rounding and smoothing intensity:**
1:absent 2:slight 3:moderate 4:pronounced

50. **Microtopographic rounding and smoothing location:**
1:medial 2:medial-distal 3:medial-proximal
4:entire face

DORSAL FACE

51. **Microtopographic rounding and smoothing intensity:**
1:absent 2:slight 3:moderate 4:pronounced

52. **Microtopographic rounding and smoothing location:**
1:proximal half 2:left side of proximal half
3:dorsal surface of opposite margin 4:both 2&3

53. **Projection tip mean distal edge angle (in degrees)**

54. **Concave margin mean edge angle (in degrees)**

55. **Opposite margin mean edge angle (in degrees)**

Appendix 6. Frequencies and relative percentages of discrete nominal and ordinal scale microwear variables for the 35 prehistoric microwear sub-sample specimens, and eight experimental tools engaged in bark stripping and woodworking activities.

LITHIC RAW MATERIAL TYPES:

		Chalcedony	Chert	Basalt
Microwear Sub-sample*	n:	20	12	3
	%:	57.1	34.3	8.6
Experimental Tools**	n:	4	3	1
	%:	50.0	37.5	12.5

DISTAL PROJECTION TIP FRACTURE STATE:

		Complete	Flexure	Torsion	Indetermin.	Inversely retouched
Microwear Sub-sample	n:	16	12	4	2	1
	%:	45.7	34.3	11.4	5.7	2.9
Experimental Tools	n:	8				
	%:	100.0				

DISTAL PROJECTION TIP ROUNDING AND SMOOTHING INTENSITY:

		Absent	Slight	Moderate	Pronounced	Tip missing
Microwear Sub-sample	n:	7	11	8	8	1
	%:	20.6	32.4	23.5	23.5	-
Experimental Tools	n:	2	5	1		
	%:	25.0	62.5	12.5		

DISTAL PROJECTION TIP ROUNDING AND SMOOTHING LOCATION:

		Corners only	Distal edge only	Distal edge and corners	All	Missing/ absent
Microwear Sub-sample	n:	16	3	7	1	8
	%:	59.3	11.1	25.9	3.7	-
Experimental Tools	n:	2		4		2
	%:	33.3		66.7		-

DISTAL PROJECTION TIP POLISH INTENSITY:

		Dull	Moderately Bright	Bright	Absent	Tip missing
Microwear Sub-sample	n:	6	19	2	7	1
	%:	17.6	55.9	5.9	20.6	-
Experimental Tools	n:	2	2	2	2	
	%:	25.0	25.0	25.0	25.0	

Continued ...

Appendix 6 (continued).

DISTAL PROJECTION TIP POLISH LOCATION:

		Corners only	Distal edge only	Distal edge and corners	All	Missing/ absent
Microwear Sub-sample	n:	15	3	8	1	8
	%:	55.6	11.1	29.6	3.7	-
Experimental Tools	n:	1	2	3		2
	%	16.7	33.3	50.0		-

MICROFLAKE LOCATION ON DISTAL PROJECTION TIP:

		Corners only	Distal edge only	Distal edge and corners	Missing/ absent
Microwear Sub-sample	n:	9	6	3	17
	%:	50.0	33.3	16.7	-
Experimental Tools	n:	5	1		2
	%:	83.3	16.7		-

ORIENTATION OF MICROFLAKES ON DISTAL PROJECTION TIP:

		Perpen- dicular	Oblique	Both	Missing/ absent
Microwear Sub-sample	n:	5	8	5	17
	%:	27.8	44.4	27.8	-
Experimental Tools	n:	3	3		2
	%:	50.0	50.0		-

CRUSHING INTENSITY ON DISTAL PROJECTION TIP:

		Absent	Slight	Moderate	Pronounced	Tip missing
Microwear Sub-sample	n:	22	3	6	3	1
	%:	64.7	8.8	17.6	8.8	-
Experimental Tools	n:	6	1	1		
	%:	75.0	12.5	12.5		

CRUSHING LOCATION ON DISTAL PROJECTION TIP:

		Corners only	Distal edge only	Distal edge and corners	Missing/ absent
Microwear Sub-Sample	n:	3	7	2	23
	%:	25.0	58.3	16.7	-
Experimental Tools	n:	1		1	6
	%:	50.0		50.0	

Continued ...

Appendix 6 (continued).

EVIDENCE FOR STRIATIONS ON DISTAL PROJECTION TIP:

		Absent	Present	Tip missing
Microwear Sub-sample	n:	31	3	1
	%:	91.2	8.8	-
Experimental Tools	n:	8		

CONCAVE MARGIN EDGE ROUNDING AND SMOOTHING INTENSITY:

		Slight	Moderate	Pronounced	Absent
Microwear Sub-sample	n:	17	9	6	3
	%:	48.6	25.7	17.1	8.6
Experimental Tools	n:	2	4	2	
	%:	25.0	50.0	25.0	

CONCAVE MARGIN EDGE ROUNDING AND SMOOTHING LOCATION:

		Medial	Medial-distal	Entire	Distal	Missed/absent
Microwear Sub-sample	n:	9	16	6	1	3
	%:	28.1	50.0	18.8	3.1	-
Experimental Tools	n:	1	7			
	%:	12.5	87.0			

CONCAVE MARGIN EDGE POLISH INTENSITY:

		Dull	Moderately Bright	Bright	Absent
Microwear Sub-sample	n:	11	17	4	3
	%:	31.4	48.6	11.4	8.6
Experimental Tools	n:		1	6	1
	%:		12.5	75.0	12.5

CONCAVE MARGIN EDGE POLISH LOCATION:

		Medial	Medial-distal	Entire	Distal	Missed/absent
Microwear Sub-sample	n:	10	17	4	1	3
	%:	31.3	53.1	12.5	3.1	-
Experimental Tools	n:	1	6			1
	%:	14.3	85.7			-

Continued ...

Appendix 6 (continued).

LOCATION OF MICROFLAKES ON CONCAVE MARGIN VENTRAL EDGE ASPECT:

		Medial	Medial-distal	Medial-proximal	Entire	Missed/absent
Microwear Sub-sample	n:	13	5	1	6	10
	%:	52.0	20.0	4.0	24.0	-
Experimental Tools	n:		5		3	
	%:		62.5		37.5	

MICROFLAKE CONFIGURATION PATTERN ON CONCAVE MARGIN VENTRAL EDGE ASPECT:

		Random	Contiguous	Contiguous-superposed	Missed/absent
Microwear Sub-sample	n:	11	3	4	17
	%:	61.0	16.7	22.3	-
Experimental Tools	n:	2	2	4	
	%:	25.0	25.0	49.7	

EVIDENCE FOR STRIATIONS ON CONCAVE MARGIN VENTRAL EDGE ASPECT:

		Absent	Present
Microwear Sub-sample	n:	20	15
	%:	57.1	42.9
Experimental Tools	n:	5	3
	%:	62.5	37.5

CONCAVE MARGIN EDGE CRUSHING INTENSITY:

		Slight	Moderate	Pronounced	Absent
Microwear Sub-sample	n:	5	3	3	24
	%:	14.3	8.6	8.6	68.6
Experimental Tools	n:	4		1	3
	%:	50.0		12.5	37.5

CONCAVE MARGIN EDGE CRUSHING LOCATION:

		Medial	Medial-distal	Entire	Distal	Missed/absent
Microwear Sub-sample	n:	2	4	4	1	24
	%:	18.2	36.4	36.4	9.1	-
Experimental Tools	n:	3	3			2
	%:	50.0	50.0			-

Continued ...

Appendix 6 (continued).

OPPOSITE MARGIN EDGE ROUNDING AND SMOOTHING INTENSITY:

		Slight	Moderate	Pronounced	Absent	Margin missing
Microwear Sub-sample	n:	14	11	2	7	1
	%:	41.2	32.3	5.9	20.6	-
Experimental Tools	n:	1			7	
	%:	12.5			87.5	

OPPOSITE MARGIN EDGE ROUNDING AND SMOOTHING LOCATION:

		Medial	Medial-distal	Entire	Missing/absent
Microwear Sub-sample	n:	4	19	4	8
	%:	14.8	70.4	14.8	-
Experimental Tools	n:	1			7
	%:	100.0			-

OPPOSITE MARGIN EDGE POLISH INTENSITY:

		Dull	Moderately Bright	Bright	Absent	Margin missing
Microwear Sub-sample	n:	13	11	3	7	1
	%:	38.2	32.4	8.8	20.6	-
Experimental Tools	n:		3		5	
	%:		37.5		62.0	

OPPOSITE MARGIN EDGE POLISH LOCATION:

		Medial	Medial-distal	Entire	Missing/absent
Microwear Sub-sample	n:	6	20	1	8
	%:	22.2	74.1	3.7	-
Experimental Tools	n:	1	2		5
	%:	33.3	66.7		-

MICROFLAKE LOCATION ON OPPOSITE MARGIN VENTRAL EDGE ASPECT:

		Medial	Medial-distal	Entire	Missed/absent
Microwear Sub-sample	n:	10	10	3	12
	%:	43.5	43.5	13.0	-
Experimental Tools	n:	1	5		2
	%:	16.7	83.3		-

Continued ...

Appendix 6 (continued).

MICROFLAKE CONFIGURATION PATTERN ON OPPOSITE MARGIN VENTRAL EDGE ASPECT:

		Random	Contiguous	Contiguous superposed	Missed/ absent
Microwear Sub-sample	n:	12	3	4	16
	%:	63.2	15.8	21.1	-
Experimental Tools	n:	1		1	6
	%:	50.0		50.0	-

EVIDENCE FOR STRIATIONS ON OPPOSITE MARGIN VENTRAL EDGE ASPECT:

		Absent	Present	Margin missing
Microwear Sub-sample	n:	29	5	1
	%:	85.3	14.7	-
Experimental Tools	n:	7	1	
	%:	87.5	12.5	

OPPOSITE MARGIN EDGE CRUSHING INTENSITY:

		Slight	Moderate	Absent	Margin missing
Microwear Sub-sample	n:	6	3	25	1
	%:	17.6	8.8	73.5	-
Experimental Tools	n:	1		7	
	%:	12.5		87.5	

OPPOSITE MARGIN EDGE CRUSHING LOCATION:

		Medial-distal	Entire	Missing/ absent
Microwear Sub-sample	n:	6	3	26
	%:	66.7	33.3	-
Experimental Tools	n:	1		7
	%:	100.0		-

EVIDENCE FOR MICROWEAR ON PROXIMAL MARGIN EDGE:

		Absent	Present
Microwear Sub-sample	n:	31	4
	%:	88.6	11.4
Experimental Tools	n:	8	

Continued ...

Appendix 6 (continued).

VENTRAL FACE POLISH INTENSITY:

		Dull	Moderately Bright	Bright
Microwear Sub-sample	n:	5	18	12
	%:	14.3	51.4	34.3
Experimental Tools	n:	1	2	4
	%:	12.5	25.0	50.0

VENTRAL FACE POLISH LOCATION:

		Medial	Medial-distal	Entire	Distal	Absent
Microwear Sub-sample	n:	11	21	2	1	
	%:	31.4	60.0	5.7	2.9	
Experimental Tools	n:	1	6			1
	%:	12.5	75.0			12.5

VENTRAL FACE STRIATION INTENSITY:

		Slight	Moderate	Pronounced	Absent
Microwear Sub-sample	n:	14	3	5	13
	%:	40.0	8.6	14.3	37.1
Experimental Tools	n:	1			7
	%:	12.5			87.5

VENTRAL FACE STRIATION LOCATION:

		Medial	Medial-distal	Entire	Missed/absent
Microwear Sub-sample	n:	7	13	2	13
	%:	31.8	59.1	9.1	-
Experimental Tools	n:	1			7

VENTRAL FACE STRIATION TYPE:

		Scratched groove	Sleek	Scratched and sleek	Missing/absent
Microwear Sub-sample	n:	14	3	5	13
	%:	63.7	13.6	22.7	-
Experimental Tools	n:		1		7

Continued ...

Appendix 6 (continued).

VENTRAL FACE STRIATION ORIENTATION PATTERN TYPE:

		Parallel uni-directional	Parallel bi-directional	Parallel multi-directional	Missing/absent
Microwear Sub-sample	n:	18	1	3	13
	%:	81.8	4.5	13.6	-
Experimental Tools	n:	1			7

VENTRAL FACE STRIATION ORIENTATION PATTERN WITH RESPECT TO THE CONCAVE MARGIN:

		Distally	Proximally	Perpendicular	Missing/absent
Microwear Sub-sample	n:	19	1	2	13
	%:	86.4	4.5	9.1	-
Experimental Tools	n:	1			7

VENTRAL FACE SURFACE TOPOGRAPHY ROUNDING AND SMOOTHING INTENSITY:

		Slight	Moderate	Pronounced	Absent
Microwear Sub-sample	n:	12	4	6	13
	%:	34.3	11.4	17.1	37.1
Experimental Tools	n:	3			5
	%:	37.5			62.5

VENTRAL FACE SURFACE TOPOGRAPHY ROUNDING AND SMOOTHING LOCATION:

		Medial	Medial-distal	Entire	Proximal	Missed/absent
Microwear Sub-sample	n:	11	8	2	1	13
	%:	50.0	36.4	9.1	4.5	-
Experimental Tools	n:	2	1			5
	%:	66.7	33.3			-

DORSAL FACE SURFACE TOPOGRAPHY ROUNDING INTENSITY:

		Slight	Moderate	Pronounced	Absent
Microwear Sub-sample	n:	8	7	1	19
	%:	22.9	20.0	2.9	54.3
Experimental Tools	n:				8

Continued ...

Appendix 6 (continued).

DORSAL FACE SURFACE TOPOGRAPHY ROUNDING LOCATION:

		Entire proximal aspect	Left-proximal aspect	Medial aspect of opposite margin	Left-proximal aspect & medial aspect of opposite margin	Absent
Microwear Sub-sample	n:	6	2	2	6	19
	%:	37.5	12.5	12.5	37.5	-
Experimental Tools	n:					8

* Includes the 35 randomly sampled specimens in the prehistoric microwear sub-sample.

** Includes the eight experimental tools (ET.#'s 1-6,8,10) used exclusively on bark and wood.

Appendix 7. Summary description of physical properties of lithic raw materials used to make experimental tools (E.T.'s) #1 to #10.

Type 1 Chert.
Quarry Source: Northern Oregon; exact location and geologic context unknown.
General Description: Duochrome cryptocrystalline with wide bands of opaque dull buff vis-a-vis slightly translucent, medium red-brown with dull to waxy luster; Moh hardness is 8.0; flakability is generally considered be good to excellent, large flake blanks are easily produced and it lends itself very well to pressure flaking; used to make Experimental Tools (E.T.'s) #1 and #2 (Figures 41-49, and 54-57). Reference: Mr Cliff Smith, 4071 Lillooet Street, Burnaby, B.C..

Type 2 Chalcedony.
Quarry Source: Southern Washington; exact location and geologic context unknown.
General Description: Slightly mottled, varying between medium brown, brownish-grey, medium grey; and slightly translucent; cryptocrystalline with waxy luster; Moh hardness value is 8.0; flakeability is fair to good, with control being slightly hampered by the hardness of the material, affecting success in producing large flakes and making pressure flaking a bit difficult; tends to "hinge" at terminations; used to make E.T.'s #3 and #4 (Figures 41, 42, 58 and 59). Reference: Mr Cliff Smith, 4071 Lillooet Street, Burnaby, B.C..

Type 3 Chert.
Quarry Source: Falkland, B.C.; float pebbles in local glacio-fluvial deposits.
General Description: Overall light-brown with thin, alternating tan and light brown to medium brown bands; cryptocrystalline with waxyluster; Moh hardness value is 6.5; generally poor to fair flakability. Tends to contain a high incidence of internal perverse fracturing, and it is very brittle. This detrimentally affects production of suitable flake blanks. Flake blanks often snap when being pressure flaked. Used to make E.T. #5 (Figures 41, 42 and 60). Reference: Mrs. Ruby Gay, Vernon, B.C.

Continued ...

Appendix 7 (continued).

Type 4 Chalcedony.
Quarry Source: Pavilion B.C.; fLoat pebble found in glacio-fluvial deposits.
General Description: Highly translucent light white-grey with occasional crystalline inclusions; cryptocrystalline with waxy luster; Moh hardness value is 7.5; flakability is generally fair, but its toughness and presence of occasional internal flaws hinders large flake blank production and renders pressure flaking a bit difficult; used to produce E.T. #6 (Figures 41, 42 and 61). Found by the author during a hike.

Type 5 Chalcedony.
Quarry Source: Hat Creek Valley, B.C.; from float deposits in the Medicine Creek locality.
General Description: Generally light yellow brown, moderately translucent with an occasional inclusion of opaque white or highly translucent white-grey; cryptocrystalline with waxy luster; MOH hardness value is 8.0. Fair flakeability due to its toughness and high incidence of internal flaws. Used to make E.T.'s #7 and #8 (Figures 41, 50, 51 and 62). This material is widely known to B.C. Interior archaeologists and rockhounds, and is commonly referred to as "Hat Creek Chert". However, the example used in this study is a chalcedony.

Type 6 Basalt.
Quarry Source: Cache Creek B.C.; float pebbles in local glacio-fluvial and fluvial deposits.
General Description: Opaque black, microcrystalline with the occasional crystalline inclusion; Moh value is 6.5; flakeability is considered to be fair to excellent although the presence of occasional internal flaws and inclusions sometimes hinders effective large flake blank production and pressure flaking. Used to make E.T.'s #9 and #10 (Figures 41, 42, 64 and 65). Reference: Richards (1987). E.T. #9 was made from fine-grained basalt; E.T. #10 from fairly glassy basalt.

Appendix 8. Summary descriptions of woody plant contact materials used in the experiments.

Saskatoon bark and wood:

Saskatoon is a deciduous shrub belonging to the Rose family. It is also sometimes referred to as service berry, and commonly grows as a bush consisting of several primary stalks that vary between 1 and 7 m high. It is common throughout British Columbia and Washington, particularly in dry forests and open hillsides of the Interior Plateau. The stalks and branches are relatively straight or slightly curved, and their diameters usually differ only slightly along their lengths. The wood is quite hard, rigid, and durable, particularly when dry. The bark is relatively thin, tough, and fibrous, and cannot be easily peeled away from the wood by hand. Ethnographically, it was most commonly used to make arrows by all of the Interior Salish groups, and the Kootenay, Carrier, Upper Stalo, and Flathead. Other items produced from saskatoon wood that required bark removal and/or woodworking include digging stick shafts, spear and harpoon shafts, fire drills, implement handles, basket frames, and canoe frames (see Teit 1900:231,235,241, 1909:514,519; Turner 1979:230-232). Experimental Tools (E.T.'s) # 1, #3, #5, #6, #8, and #10 were used in the experimental component of the study to strip bark and shave, scrape, plane, incise, and engrave green saskatoon bark and wood (Appendix 8). E.T. #3 was also resharpened after being used on green sasakatoon, and was then used to work seasoned saskatoon. The saskatoon used in the study was obtained in proximity to the Keatley Creek archaeological site near the community of Pavilion in the Mid-Fraser River region of British Columbia, near Three Sisters Creek British Columbia Forestry campground about 20 km southwest of Ashcroft, B.C., and beside the Trans-Canada highway in the Thompson River Valley about 10 km north of Lytton, B.C.

Rocky Mountain juniper bark and wood:

Rocky Mountain juniper is a tree belonging to the Cypress Family that varies from low spreading shrubs about 1 m high to densely branched trees about 10 m high. It is common throughout southern British Columbia and Washington in dry environments on plains, valleys, and lower mountains. The branches are usually slightly to moderately curved, and they taper markedly along their lengths. The wood is quite hard, rigid, and durable, particularly when dry. When the outer bark is removed, the surface of the wood contains numerous small bumps, nodes, and other irregularities. The bark is quite tough, fibrous, and moderately thick, and can be easily peeled away from the wood in large strips by hand. The wood was used by the ethnographic Interior Salish groups primarily for making bows, although snowshoe frames and spear shafts were also sometimes made by the Shuswap. The Thompson also made juniper bark baskets (see Teit 1900:239; 1909:519; Turner 1979:71-73). E.T. #2 was used in the experimental component of this study to strip bark and scrape, shave, plane juniper branches (Appendix 8). The juniper was obtained in proximity to the Keatley Creek archaeological site near the community of Pavilion in the Mid-Fraser River region of British Columbia, and near Three Sisters Creek British Columbia Forestry campground about 20 km southwest of Ashcroft, B.C.

Continued...

Appendix 8 (continued).

Willow bark and wood:

There are as many as 50 species of willows indigenous to British Columbia and Washington. These occur as small shrubs measuring about .5 m high to trees 10 m high. Some characteristics, particularly bark and leaves, can vary widely between species. At least three unidentified species were used in the experimental component of this study. Their stalks and branches were long and slender with fairly consistent diameters along their lengths. When green, the wood is soft and very pliable, however, when dried it becomes stiff and brittle. The bark is moderately thick, and can be peeled away from the wood very easily by hand in long even strips. Ethnographic data indicate that debarked and worked stalks and branches of willow were commonly used by the Interior Salish groups to make fish traps, fish weirs, fire drills and tinder. Shredded willow bark was often used to make articles of clothing, cordage, nets, basketry, bags, diapers, wound dressings, and sanitary napkins (see Teit 1909:527; Turner 1979:258-265). E.T. #4 was used exclusively to strip bark and shave, scrape, and plane fresh green willow stalks and branches (Appendix 8). These were obtained in proximity to the Keatley Creek archaeological site near the community of Pavilion in the Mid-Fraser River region of British Columbia, and near Three Sisters Creek British Columbia Forestry campground about 20 km southwest of Ashcroft, B.C.

Appendix 9. Summary description of experimental tool use results.

E.T. #1
Lithic Type: Type 1 Chert
Contact Material: Saskatoon stalks and branches
Total No. of Strokes: 12,500
Mean Stroke Length: 15 cm
Total Time Elapsed: 317 min
Location of Use: Camp Kitchen area at Keatley Creek
Experimenter: Mike Rousseau
Witnesses: Bob Muir, Gyles Iannone, Peter Merchant

Comments: The concave and opposite margin edges were used in a shaving, scraping, planing action to strip bark, and modify and smooth irregularities (e.g., branch nodes, bumps, bends) of green saskatoon stalks and branches using moderate to heavy levels of applied force. The concave margin was used far more often than the opposite margin for these activities. The tip of the distal projection was used to remove bark around the branch nodes by primarily scraping and prying, and to incise linear grooves into the wood. A total of 13.2 m of fresh green stalks/branches having a mean diameter of 1.10 cm were processed. On average, 5.90 m of bark and/or wood were removed per minute, suggesting a comparatively average working rate. The tool was hafted throughout its entire use-life, and was considered to be quite effective for performing all the tasks outlined above. A slight polish and a few microflakes were evident on the concave margin edge after about 5000 strokes; a moderate polish developed and a few more microflakes had developed after about 9000 strokes; and the concave margin edge would have required resharpening to restore optimal functional efficiency at about 11,000 strokes. Polish development and microflake formation were noted to be most frequent during woodworking activities rather than with bark removal. Plant resin and fibre residues accumulated on the dorsal aspects of the concave and lateral margin, and on the ventral face of the tool.

Continued...

Appendix 9 (continued).

E.T. #2
Lithic Type: Type 1 Chert
Contact Material: Juniper branches
Total No. of Strokes: 7,700
Mean Stroke Length: 12 cm
Total Time Elapsed: 340 min
Location of Use: Keatley Creek and Three Sisters Creek Campground
Experimenter: Gyles Iannone
Witnesses: John Breffitt, Peter Merchant, Bob Muir, Mike Rousseau

Comments: The concave and opposite margin edges were used to strip bark, shave/scrape/plane down wood, and smooth irregularities in the wood (e.g., branch nodes, bumps, bends) using moderate levels of applied force. The concave margin was used most frequently for these activities. The tool was used hand-held for the first 3500 strokes, and then hafted for the remainder of its use-life. Hafting was noted to improve efficiency and manipulation of the tool. It was observed that when used unhafted, the opposite margin was used about as often as the concave margin for scraping and shaving wood. Once hafted, the concave margin was used more often and was more effective for this task. Bark removal was easier using the hafted tool. The opposite margin was often used to remove the secondary branch nodes. The distal projection was rarely used, but assisted in removing secondary branch nodes. In general, the tool was considered to be fairly effective for executing the above tasks. A total of 7.60 m of fresh green juniper branches having a mean diameter of .8 cm was processed. On average, 2.70 m of bark and/or wood were being removed per minute, suggesting a comparatively slow working rate. At about 800 strokes a few tiny microflakes were visible on the ventral edge aspects of the concave and opposite margins; by about 1200 strokes some slight polish had begun to develop in the same locations; and by about 6000 strokes several tiny microflakes were present on the medial aspects of these margins. **Note:** Use of the tool was discontinued after ca. 7,700 strokes, but it was estimated that it could have continued to have functioned quite effectively for another estimated 5000 strokes before it would have required resharpening. During use, some plant resins and fibres were deposited on the dorsal aspects of the concave and opposite margins.

Continued...

Appendix 9 (continued).

E.T. #3
Lithic Type: Type 2 Chalcedony
Contact Material: Saskatoon stalks and branches
Total No. of Strokes: 15,400
Mean Stroke Length: 15 cm
Total Time Elapsed: 415 min
Location of Use: Three Sisters Campground
Experimenter: Mike Rousseau
Witnesses: John Breffitt, Gyles Iannone, Peter Merchant, Bob Muir

Comments: The concave and opposite edges were used to strip bark, shave/scrape/plane down wood, and smooth irregularities (e.g., branch nodes, bumps, bends) using moderate to heavy applications of force. The concave margin was favoured for executing these tasks. The distal tip was used to remove bark around the branch nodes and to incise linear grooves into the wood using heavy force loads. A total of 13.8 m of fresh green saskatoon having a mean diameter of .93 cm was processed. On average, 5.55 m of bark and/or wood were being removed per minute, indicating a moderate working rate. Initially the tool was used hand-held, however, after about 3500 strokes it was decided to haft the tool to improve manipulation, enhance effectiveness by permitting greater loads of applied force. At about 6500 strokes a slight polish appeared along the medial ventral edge aspect of the concave margin; at about 9000 strokes the tool became slightly dull, and a large microflake was removed from the medial ventral edge aspect. It was still very effective after 12,000 strokes, and was still moderately sharp at the conclusion of its use episode. It is probable that the tool could have been used for at least another 4000 to 5000 strokes on green saskatoon before requiring resharpening. During use, plant resins and fibres became adhered to the dorsal aspects of the concave and opposite margins, and the ventral face. **Note:** This tool's concave margin was subsequently resharpened and used to scrape and shave seasoned (dry) saskatoon for 1000 strokes. The bark was very difficult to remove, and the wood was almost impossible to modify in any manner. Two large microflakes were removed; one at 450 strokes, and the other at 650 strokes. A third smaller microflake was also noted. No polish development was noted.

Continued...

Appendix 9 (continued).

E.T. #4
Lithic Type: Type 2 Chalcedony
Contact Material: Willow stalks and branches
Total No. of Strokes: 17,650
Mean Stroke Length: 10 cm
Total Time Elapsed: 410 min
Location of Use: Keatley Creek
Experimenter: Bob Muir
Witnesses: Rob Gargett, Gyles Iannone, Peter Merchant, Mike Rousseau

Comments: The concave and opposite margin edges were used primarily to shave and plane irregularities on the woody portions of stalks and branches (e.g., branch nodes, bumps) and occasionally to remove bark from branches. Both were undertaken using moderate levels of applied force. The concave margin was preferred for these activities. Most of the bark was removed by hand, as it was a bit easier than stripping it off with the tool. The distal tip of the projection was used to assist in removing branch nodes and the bark surrounding them. A total of 30.3 m of fresh green willow stalks and branches averaging .77 cm in thickness were processed. On average, 4.30 m of bark and/or wood were being removed per minute, indicating a slow to moderate working rate. The tool was used hafted throughout its use-life, and was considered to be quite effective at performing the tasks outlined above. It was most efficient for working mature branches. Very small twigs and branches were best stripped using strokes about 50 cm in length while "pinching" them between the thumb and ventral face of the tool. A few small microflakes were observed on the ventral edge aspect of the concave margin after about 5000 strokes. After about 10,000 strokes several more minute microflakes and a very slight polish had developed. At about 15,000 strokes the polish had become slightly more intense. **Note:** although the tool was used for 17,650 strokes, it was estimated that it could have been used for several thousand more strokes before it would have required resharpening. During use, plant resins and fibres accumulated on the dorsal aspects of the concave and opposite margins, and to the ventral face.

Continued...

Appendix 9 (continued).

E.T. #5
Lithic Type: Type 3 Chert
Contact Material: Saskatoon stalks and branches
Total No. of Strokes: 600
Mean Stroke Length: 12 cm
Total Time Elapsed: 10 min
Location of Use: Keatley Creek
Experimenter: Peter Merchant
Witnesses: Gyles Iannone, Bob Muir, Mike Rousseau

Comments: The concave and opposite edges were used to strip bark, shave/scrape/plane down wood, and smooth irregularities in the wood (e.g., branch nodes, bumps, bends) of green saskatoon using fairly heavy force load applications. The concave margin was used more frequently, and was considered to be quite effective for stripping bark, but was not very effective for shaving and scraping wood and removal of woody portions of the secondary branch nodes. The opposite margin was sometimes used to assist in the removal of the branch nodes. The distal tip was often used to assist in the removal of secondary branch nodes using heavy force loads. The tool was used unhafted throughout its entire use-life. A total of 1.57 m of fresh green branches having a mean diameter of about 2.0 cm were processed. On average, 7.20 m of bark and/or wood were being removed per minute, indicating a rather rapid working rate. By about 100 strokes, the concave margin developed several microflakes along the medial-ventral aspect of the concave margin, and by the end of its use-life, the entire edge had been subjected to moderate crushing and intense microflake removal along the entire concave margin. By about 500 strokes it was noted that the concave margin was in need of resharpening. During use, some plant resins and fibres were deposited on the dorsal aspects of the concave and opposite margins.

Continued...

Appendix 9 (continued).

E.T. #6
Lithic Type: Type 4 Chalcedony
Contact Material: Saskatoon stalks and branches
Total No. of Strokes: 5,250
Mean Stroke Length: 15 cm
Total Time Elapsed: 130 min
Location of Use: Three Sisters Creek Campground
Experimenter: Peter Merchant
Witnesses: John Breffitt, Gyles Iannone, Mike Rousseau

Comments: The concave and opposite edges were used to strip bark, shave/scrape/plane down wood, and smooth irregularities in the wood (e.g., branch nodes, bumps, bends), using heavy loads of applied force. The concave margin was used most frequently, and was regarded to have greater functional efficiency than the opposite margin for stripping bark and shaving/planing wood. The opposite margin was used occasionally to assist in removal of the seconardy branch nodes. The distal tip was used to remove bark around the branch nodes. A total of 7.60 m of fresh green saskatoon having an average diameter of .80 cm was processed. On average, 6.05 m of bark and/or wood were being removed per minute, indicating a moderate work rate. The tool was used hafted throughout its entire use-life. Initially, it was very effective at performing the above tasks. After about 2000 strokes several small microflakes had been removed from the ventral aspect of the concave margin edge, and a slight polish developed along the medial portion of the concave margin. Heavy pressure was used to remove the bark and shave wood, and this appears to have contributed to rapid appearance of microflakes and slight edge dulling. After about 4000 strokes the concave margin edge had become moderately dull, more pressure was required to shave the wood, and several more microflakes had appeared on the ventral portion of the concave margin edge aspect. The opposite margin edge was still very effective and displayed no visible microwear. At 5000 strokes the concave margin edge was quite dull and required resharpening. During use, some plant resins and fibres were deposited as residues on the dorsal aspects of the concave and opposite margins. **Note:** As with E.T. #4, Peter tended to be fairly aggressive with the tool, particularly when removing branch nodes. He also held the concave margin edge at a fairly acute angle (about 45°) with respect to the branches which may account for the high incidence of microflake removal (Mike Rousseau).

Continued...

Appendix 9 (continued).

E.T. #7
Lithic Type: Type 5 Chalcedony
Contact Material: Mule deer longbone shaft and antler (both soaked)
Total No. of Strokes: 2,200
Mean Stroke Length: 10 cm
Total Time Elapsed: 36 min
Location of Use: SFU Flintknapping pit (Dept. Arch.)
Experimenter: Mike Rousseau
Witnesses: Gyles Iannone

Comments: This tool was used hafted thoughout its use-life. Initially, the concave margin edge was used to scrape a soaked mule deer metacarpal for 500 strokes for about five minutes. Despite its sharpness and considerable pressure applied, the concave edge was totally useless for this task. However, it did effectively remove residual soft tissue adhering to the bone. It was then used to scrape and shave the beam of a mule deer antler. For this task, it was relatively effective for scraping small shavings from the outermost 1-2 mm of the surface, but after about 1000 strokes the concave margin edge became notably duller. After about 1250 strokes a great deal of force was required to remove the shavings due to increased dulling of the edge by crushing, and greater hardness of the antler beneath the outer 1-2 mm. After 1700 strokes the tool was completely ineffective for removing shavings from even the soaked portions of the antler, and the tool required resharpening. Linear grooves were incised and graved into the antler using the left ventral-lateral corner of the distal projection. This task was mostly effective for the outermost 1-2 mm, but again it became rather difficult once the soaked outer portion had been penetrated. On average, 6.10 m of antler and/or bone was being shaved/scraped per minute, suggesting a moderate to relatively fast working rate. Only very small bits and shavings of antler were observed adhering to the immediate dorsal edge aspect of the concave margin, and these were easily removed. **Note:** This tool's concave margin was resharpened and subsequently used to scrape and shave a deer antler beam that had been boiled for eight hours. About 250 strokes were executed. The outer 1-2 mm of softened cortex was removed with moderate ease, however, once this had been penetrated, tool efficiency reduced markedly. Generally, it appears that working of boiled antler with key-shaped formed unifaces is associated with about the same level of functional efficiency as working soaked antler.

Continued...

Appendix 9 (continued).

E.T. #8
Lithic Type: Type 5 Chalcedony
Contact Material: Saskatoon stalks and branches
Total No. of Strokes: 11,200
Mean Stroke Length: 15 cm
Total Time Elapsed: 232 min
Location of Use: Backyard on River Road, Delta, BC.
Experimenter: Mike Rousseau
Witnesses: None

Comments: The concave and opposite edges were used to strip bark, shave/scrape/plane down wood, and smooth irregularities in the wood (e.g., branch nodes, bumps, bends) of green saskatoon using moderate to heavy loads of applied force. The concave margin was used most frequently, and was deemed to be most efficient. The distal tip was used to remove bark around the secondary branch nodes and to incise linear grooves into the wood. A total of 13.7 m of stems and branches of fresh green saskatoon having a mean diameter of 1.1 cm was processed. On average, 7.25 m of bark and/or wood were removed per minute, indicating a relatively rapid work rate. The tool was used hafted during its entire use-life. Initially it was very effective at performing the above tasks, and a single large microflake was removed from the ventral portion of the concave margin edge aspect at about 1500 strokes, however, it was associated with an inclusion which may have been a weakened section of the tool edge. At about 5000 strokes a slight polish had developed on the medial-ventral section of the concave margin, and the tool was still very effective. By about 9000 strokes it had dulled slightly, but still functioned quite effectively. At 9500 strokes another large microflake had been removed from the medial-ventral portion of the concave margin edge aspect. **Note:** Although tool use was discontinued at 11,200 strokes, it could have been used for several thousand additional strokes before it would have required resharpening. During use, some plant resins and fibres were deposited on the dorsal aspects of the concave and opposite margins.

Continued...

Appendix 9 (continued).

E.T. #9
Lithic Type: Type 6 Basalt (fine grained)
Contact Material: Mule Deer Antler (soaked)
Total No. of Strokes: 400
Mean Stroke Length: 10 cm
Total Time Elapsed: 5 min
Location of Use: SFU Flintknapping pit (Dept. Arch.)
Experimenter: Mike Rousseau
Witnesses: Gyles Iannone

Comments: The concave margin edge was used to scrape and shave the beam of a mule deer antler, and the distal tip was used to incise and grave linear grooves in the beam. The tool was used hafted during its entire use-life. Initially the tool was effective at removing small antler shavings, but after 200 strokes large microflakes had been removed from both the dorsal and ventral portions of the concave margin edge, and several sections of the concave margin had been completely removed. At 300 strokes the tool became moderately dull, and large microflakes continued to be removed. It became completely dull and required resharpening at 400 strokes. When attempting to incise grooves, the distal margin also partially collapsed and dulled rapidly. Some small antler particles and shavings adhered loosely to the dorsal edge aspect of the concave margin during use, but these were easily removed.

Continued...

Appendix 9 (continued).

E.T. #10
Lithic Type: Type 6 Basalt (glassy)
Contact Material: Saskatoon stalks and branches
Total No. of Strokes: 7,050
Mean Stroke Length: 10 cm
Total Time Elapsed: 95 min
Location of Use: Three Sisters Creek Campground
Experimenter: John Breffitt
Witnesses: Gyles Iannone, Peter Merchant, Mike Rousseau

Comments: The concave and opposite edges were used to strip bark, shave/scrape/plane down wood, and smooth irregularities in the wood (e.g., branch nodes, bumps, bends) using moderate to heavy loads of applied force. The concave margin was considered to be most effective for performing these tasks, and was used most frequently. The distal projection tip was used to remove bark around the branch nodes and to incise linear grooves into wood. A total of 8.10 m of stalks and branches of fresh green sakatoon having a mean thickness of 1.0 cm were processed. On average, 7.40 m of bark and/or wood were being removed per minute, indicating a relatively rapid work rate. This tool was hafted during its entire use-life. Initially the tool was very effective for performing the above tasks, however, after about 3000 strokes several large microflakes were evident along the ventral portion of the concave margin edge aspect, and the edge had become moderately dull. After about 4000 strokes, microflaking along the concave margin edge was pronounced, and by 6000 strokes the concave margin edge was very dull and required resharpening. During use, some plant resins and fibres were deposited on the dorsal aspects of the concave and opposite margins.

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* Descriptions for lithic raw materials are presented in Appendix 7.
** Descriptions of the working environments are presented in Chapter 7.5.