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Supplemental Material

Table S1. This table summarizes criteria used to select the Poisson k parameter. The criteria come from 27 different model runs using different values of k .

Table S2. This table summarizes the raw OxCal P-sequence output using $k = 0.003$.

Table S3. This table summarizes the raw OxCal P-sequence output using $k = 0.005$.

Table S4. This table summarizes the raw OxCal P-sequence output using $k = 0.007$.

Table S5. This table summarizes the raw OxCal P-sequence output using $k = 0.01$.

Table S6. This table summarizes the raw OxCal P-sequence output using $k = 0.02$.

Table S7. This table summarizes the raw OxCal P-sequence output using $k = 0.03$.

Table S8. This table summarizes the raw OxCal P-sequence output using $k = 0.04$.

Table S9. This table summarizes the raw OxCal P-sequence output using $k = 0.05$.

Table S10. This table summarizes the raw OxCal P-sequence output using $k = 0.06$.

Table S11. This table summarizes the raw OxCal P-sequence output using $k = 0.07$.

Table S12. This table summarizes the raw OxCal P-sequence output using $k = 0.08$.

Table S13. This table summarizes the raw OxCal P-sequence output using $k = 0.09$.

Table S14. This table summarizes the raw OxCal P-sequence output using $k = 0.1$.

Table S15. This table summarizes the raw OxCal P-sequence output using $k = 0.2$.

Table S16. This table summarizes the raw OxCal P-sequence output using $k = 0.3$.

Table S17. This table summarizes the raw OxCal P-sequence output using $k = 0.4$.

Table S18. This table summarizes the raw OxCal P-sequence output using $k = 0.5$.

Table S19. This table summarizes the raw OxCal P-sequence output using $k = 0.6$.

Table S20. This table summarizes the raw OxCal P-sequence output using $k = 0.8$.

Table S21. This table summarizes the raw OxCal P-sequence output using $k = 1$.

Table S22. This table summarizes the raw OxCal P-sequence output using $k = 2$.

Table S23. This table summarizes the raw OxCal P-sequence output using $k = 3$.

Table S24. This table summarizes the raw OxCal P-sequence output using $k = 4$.

Table S25. This table summarizes the raw OxCal P-sequence output using $k = 5$.

Table S26. This table summarizes the raw OxCal P-sequence output using $k = 6$.

Table S27. This table summarizes the raw OxCal P-sequence output using $k = 8$.

Table S28. This table summarizes the raw OxCal P-sequence output using $k = 10$.

Table S29. This table summarizes fossil foraminifera counts across contact A.

Table S30. This table summarizes fossil foraminifera counts across contact B.

Table S31. This table summarizes fossil foraminifera counts across contact C.

Table S32. This table summarizes fossil foraminifera counts across contact D.

Table S33. This table summarizes fossil foraminifera counts across contact E.

Figure S1. Composite simplified lithostratigraphy and age constraints used in the development of northern Humboldt Bay age-depth models. Calibrated radiocarbon likelihood distributions and posterior age model are shown in light grey and dark grey (95% confidence interval). The age probability distributions (95% confidence) are the results from OxCal ‘Sequence’ model are shown in orange. Results of Bayesian age model implemented with OxCal version 4.3.2 (Bronk Ramsey 2017) that used the IntCal13 atmospheric calibration curve (Reimer et al., 2013). Tie-lines connect radiocarbon age PDF’s to the appropriate depths on the composite simplified lithostratigraphic column.

Figure S2. The plots on this page show clear inflections in the various criteria where the Poisson value is $k = 0.1$. Model results for all twenty six runs using the appropriate k value can be found in Table S1-27.

Figure S3. Plot of overlapping age-depth models of Bchron and OxCal ‘P-sequence’ (where $k = 0.1$).

Figure S4. Plot of Bchron age-depth model.

Figure S5. Plot of OxCal ‘P-sequence’ age-depth model (where $k=0.1$).

Figure S6. The OxCal P-sequence model code (using $k = 0.1$).

Figure S7. The OxCal ‘Sequence’ model code.

REFERENCES CITED

Bronk Ramsey et al., 2017, OxCal 4.3.2.

Reimer, P.J., Bard, E., Bayliss, A., Beck, J.W., Blackwell, P.G., Ramsey, C.B., Buck, C.E., Cheng, H., Edwards, R.L., Friedrich, M. and Grootes, P.M., 2013, IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP: Radiocarbon, v. 55, no. 4, p. 1869–1887.

Table S1. This table summarizes criteria used to select the Poisson k parameter. The criteria come from 27 different model runs using different values of k .

k value	Agreement Index (model)	Number of A indices <60%	Mean Confidence Interval (yr)	Standard Deviation	Normalized Age Deviation	Standard Deviation
0.003	70.1	2	89.47	40.09	0.95	1.04
0.005	69.7	3	89.12	39.75	0.76	0.60
0.007	69.9	1	83.88	36.72	0.98	1.03
0.01	71.5	1	83.59	37.01	1.04	1.08
0.02	68.4	2	87.94	40.49	0.99	1.21
0.03	65.6	2	86.18	36.94	1.01	0.95
0.04	65.1	3	85.18	38.26	0.82	0.62
0.05	66.4	2	83.00	39.05	0.95	0.76
0.06	60.6	2	78.00	35.33	1.11	1.10
0.07	59.8	3	66.65	32.26	1.53	1.34
0.08	62.3	3	81.29	39.57	1.22	0.98
0.09	58.3	4	85.88	44.25	1.18	1.24
0.1	56.5	5	87.53	46.50	1.16	1.04
0.2	34.1	5	92.56	44.21	4.35	11.39
0.3	14.2	6	61.06	47.63	3.77	4.69
0.4	6.6	6	55.06	42.38	11.34	19.90
0.5	8.7	6	54.71	42.78	6.19	8.31
0.6	6.1	6	60.94	48.75	8.41	14.84
0.8	8.2	6	55.35	48.56	7.10	9.76
1	5.9	6	59.06	48.26	4.48	6.49
2	4.2	6	79.41	44.14	6.21	10.10
3	3.6	6	56.47	34.85	7.93	11.51
4	1.2	8	56.24	36.50	12.14	17.13
5	1.1	9	55.24	32.31	7.03	12.38
6	0.6	10	51.24	33.82	8.37	8.95
8	0	11	19.47	7.43	20.57	16.90
10	0	11	17.94	5.61	15.46	10.46

Table S2. This table summarizes the raw OxCal P-sequence output using $k = 0.003$.

	UNMODELLED (BP)						MODELLED (BP)						A _{model} =	70.1					Confidence Interval (yr)	Normalized Age Deviation ¹
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{overall} =	77.8	A _{comb}	A	L	P		
2014																				
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63				100			100	
1700 CE							251	250	95.4	250	0	250							100	
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	804	95.5	909	28	920				80.1			80.6	130.00
EQ2							935	832	95.4	919	18	924							95.5	
late MR.14.02.B.225-226	955	802	95.4	902	40	921	934	915	95.4	924	6	925				161.6			96.3	19.00
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	917	95.4	926	4	926				128.3			93.4	17.00
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	939	916	95.4	927	5	927				120.9			89.2	23.00
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	961	921	95.4	937	11	934				70.5			88.3	40.00
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1059	966	95.4	1009	27	1003				98.6			55.6	93.00
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1060	974	95.4	1015	27	1009				99.8			60.6	86.00
							1284	967	95.4	1132	116	1132							57.2	
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1284	1184	95.4	1251	28	1263				91.9			71.7	100.00
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1285	1185	95.4	1256	27	1266				98.5			76.9	100.00
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1298	1188	95.4	1266	24	1272				64.6			87.1	110.00
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1395	1320	95.4	1360	18	1361				97.4			100	75.00
R_Date C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1690	1569	95.4	1629	34	1617				114.6			5	121.00
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1692	1571	95.4	1632	33	1618				82.2			3.8	121.00
							1691	1572	95.4	1632	33	1618							3.5	
MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1691	1572	95.4	1633	33	1618				57.4			3.6	119.00
	Warning! Poor agreement - A= 57.4%(A'c= 60.0%)																			
C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1692	1572	95.4	1633	33	1619				106.8			3.6	120.00
R_Date MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1694	1571	95.4	1636	32	1621				58.5			4.5	123.00
	Warning! Poor agreement - A= 58.5%(A'c= 60.0%)																			
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1571	95.5	1638	33	1621				128			5.4	124.00
y base of section							1695	1571	95.5	1638	33	1621							5.4	
P-sequence Northern Humboldt																			Mean=	89.47
																			StDev=	40.09

Table S3. This table summarizes the raw OxCal P-sequence output using $k = 0.005$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 69.7 Aoverall= 78.2				Confidence Interval (yr)	Normalized Age Deviation ¹			
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C		
2014																					
Boundary surface		-63	-64	95.4	-63	0	-63		-63	-64	95.4	-63	0	-63		100			100		
1700 CE								251	250	95.4	250	0	250					100			
R_Date MD.14.06.168.5-169.5		926	798	95.4	860	39	850		934	805	95.4	908	28	918		87.2			77.2	129.00	1.71
EQ2								935	835	95.4	918	19	923					69.7			
late MR.14.02.B.225-226		955	802	95.4	902	40	921		935	913	95.4	924	11	925		158.1			94	22.00	2.00
R_Date MD.14.06.C.169.5-170.5		952	803	95.3	913	31	923		935	917	95.4	926	7	926		125.3			94.5	18.00	1.86
MR.14.05.B.188.5-189.5		959	910	95.4	926	19	927		938	916	95.4	928	5	928		122			92	22.00	0.40
R_Date MD.14.03.C.212.5-213.5		965	928	95.4	947	11	947		960	921	95.4	936	10	933		69			92.9	39.00	1.10
MR.14.02.A.273-273.5		1058	961	95.4	1008	30	1004		1059	969	95.4	1011	26	1005		99			56.9	90.00	0.12
R_Date C.14.02.D.125.5-126		1072	969	95.4	1025	34	1021		1061	976	95.4	1017	27	1013		100.9			51.7	85.00	0.30
								1285	971	95.4	1159	108	1198					25.8			
R_Date C.14.02.D.130-130.5		1278	1181	95.4	1229	29	1233		1283	1185	95.4	1245	30	1258		96.3			73.5	98.00	0.53
MR.14.05.C.246-247		1281	1182	95.4	1232	31	1240		1284	1186	95.4	1250	30	1263		100.9			77.5	98.00	0.60
R_Date MD.17.13.D.250-251		1302	1190	95.4	1278	20	1283		1297	1187	95.4	1261	29	1271		59.6			71.7	110.00	0.59
							Warning! Poor agreement - A= 59.6%(A'c= 60.0%)														
R_Date MD.14.05.A.276-277		1401	1326	95.4	1363	18	1363		1396	1321	95.4	1361	18	1361		97.8			99.9	75.00	0.11
C.14.02.C.168.5-169.5		1695	1557	95.4	1618	41	1609		1690	1570	95.4	1628	34	1617		114.5			3.6	120.00	0.29
R_Date MD.14.05.B1.306.5-307.5		1707	1604	95.4	1654	30	1658		1692	1571	95.3	1630	33	1618		81			3.1	121.00	0.73
								1692	1571	95.4	1631	33	1618					3.1			
R_Date MR.14.02.A.297.5-298		1690	1544	95.4	1594	33	1588		1692	1572	95.4	1632	33	1618		58			3.2	120.00	1.15
							Warning! Poor agreement - A= 58.0%(A'c= 60.0%)														
R_Date C.14.02.C.170-171.5		1693	1561	95.4	1616	39	1606		1693	1572	95.5	1633	33	1619		106.6			3.1	121.00	0.52
MD.14.04.B.379.5-380.5		1709	1614	95.4	1659	28	1658		1695	1571	95.4	1636	33	1621		58.4			4.3	124.00	0.70
							Warning! Poor agreement - A= 58.4%(A'c= 60.0%)														
MD.14.05.B1.308-309		1695	1565	95.4	1632	40	1622		1695	1572	95.4	1638	33	1621		127.8			5.2	123.00	0.18
Boundary base of section								1695	1572	95.4	1638	33	1621					5.2			
once Northern Humboldt																		Mean=	89.12	0.76	
																		StDev=	39.75	0.60	

Table S4. This table summarizes the raw OxCal P-sequence output using $k = 0.007$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 69.9 Aoverall= 77.6				Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	829	95.4	911	26	920		82.2			86	105.00	1.96
EQ2							935	851	95.4	919	17	923					88.1		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	934	914	95.4	924	6	925		159.4			92.6	20.00	3.67
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	916	95.4	925	4	926		127.4			92.7	18.00	3.00
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	939	916	95.4	927	5	927		119			91.3	23.00	0.20
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	960	922	95.4	937	10	934		74			91.7	38.00	1.00
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1057	972	95.4	1011	25	1008		97.3			36.7	85.00	0.12
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1060	975	95.4	1016	25	1012		101.7			33.6	85.00	0.36
							1285	970	95.4	1143	115	1192					12.6		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1284	1185	95.4	1248	30	1262		93.2			37.2	99.00	0.63
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1285	1186	95.4	1251	29	1264		101.1			38.5	99.00	0.66
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1297	1187	95.4	1263	28	1271		61.1			33	110.00	0.54
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1396	1321	95.4	1361	18	1361		98			99.9	75.00	0.11
R_Date C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1693	1570	95.4	1644	36	1655		108.3			4.6	123.00	0.72
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1694	1572	95.4	1648	35	1670		92.8			3.1	122.00	0.17
							1694	1573	95.4	1649	35	1673					2.7		
MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1694	1574	95.4	1650	35	1674		49			2.5	120.00	1.60
	Warning! Poor agreement - A= 49.0%(A'c= 60.0%)																		
C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1694	1575	95.5	1652	34	1674		100.7			2.3	119.00	1.06
R_Date MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1695	1602	95.4	1654	33	1675		63.9			2	93.00	0.15
MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1603	95.4	1654	33	1675		131.2			2.2	92.00	0.67
base of section							1695	1603	95.4	1654	33	1675					2.2		
base of section Northern Humboldt																		Mean=	83.88
																		StDev=	36.72

Table S5. This table summarizes the raw OxCal P-sequence output using $k = 0.01$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 71.5 Aoverall= 77.6				Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	834	95.4	912	22	920		78.6			48.6	100.00	2.36
EQ2							935	878	95.4	917	16	922					40.4		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	934	914	95.4	924	6	925		159.6			88.3	20.00	3.67
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	917	95.4	926	4	926		127.8			88.6	17.00	3.25
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	939	916	95.4	928	6	927		120.4			88.1	23.00	0.33
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	959	921	95.4	937	10	933		71.7			75.9	38.00	1.00
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1056	974	95.4	1012	24	1010		97.6			55.4	82.00	0.17
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1059	977	95.4	1017	24	1017		103.5			53.7	82.00	0.33
							1285	973	95.4	1148	117	1194					19.7		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1283	1185	95.4	1250	29	1262		93.1			67.4	98.00	0.72
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1285	1186	95.4	1254	27	1265		100			77	99.00	0.81
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1298	1187	95.4	1265	26	1272		64.9			81.4	111.00	0.50
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1397	1321	95.4	1361	18	1361		98			100	76.00	0.11
R_Date C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1693	1569	95.4	1643	37	1631		109			27.6	124.00	0.68
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1694	1571	95.4	1647	36	1668		90.5			27.5	123.00	0.19
							1694	1572	95.4	1649	35	1672					28.9		
MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1694	1573	95.4	1650	35	1674		49.6			28.2	121.00	1.60
			Warning! Poor agreement - A= 49.6%(A'c= 60.0%)																
C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1694	1601	95.4	1652	34	1674		101.1			27.2	93.00	1.06
R_Date MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1695	1574	95.4	1654	33	1675		63.7			30	121.00	0.15
MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1696	1603	95.4	1655	33	1676		130.6			29.3	93.00	0.70
Boundary base of section							1696	1603	95.4	1655	33	1676					29.3		
ence Northern Humboldt																	Mean=	83.59	1.04
																	StDev=	37.01	1.08

Table S6. This table summarizes the raw OxCal P-sequence output using $k = 0.02$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 68.4 Aoverall= 76.9				Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	805	95.4	907	30	919		83.2			69.3	129.00	1.57
EQ2							935	824	95.4	917	22	923					63.2		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	935	916	95.4	925	5	926		160.6			85.9	19.00	4.60
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	917	95.4	926	4	926		126.8			87	17.00	3.25
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	937	917	95.4	927	5	927		124.3			91.6	20.00	0.20
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	957	921	95.4	935	9	932		64.2			50.2	36.00	1.33
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1060	976	95.4	1019	25	1022		96.6			23.3	84.00	0.44
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1060	980	95.4	1023	26	1026		102.5			21.5	80.00	0.08
							1284	976	95.4	1160	104	1196					40.5		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1282	1184	95.4	1241	32	1255		98.4			24.5	98.00	0.38
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1284	1185	95.4	1246	32	1262		103			19.9	99.00	0.44
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1297	1186	95.4	1257	33	1270		57.9			16.8	111.00	0.64
			Warning! Poor agreement - A= 57.9%(A'c= 60.0%)																
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1399	1322	95.4	1362	18	1362		98.8			99.9	77.00	0.06
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1692	1570	95.4	1636	36	1619		110.8			16.1	122.00	0.50
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1694	1572	95.4	1641	34	1621		88.6			14.5	122.00	0.38
							1694	1572	95.4	1641	34	1622					12.5		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1693	1574	95.3	1642	34	1622		52			12.2	119.00	1.41
			Warning! Poor agreement - A= 52.0%(A'c= 60.0%)																
R_Date C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1694	1574	95.4	1644	34	1623		102.3			12	120.00	0.82
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1695	1574	95.4	1647	34	1627		62.3			12.2	121.00	0.35
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1574	95.3	1648	34	1632		129.6			13	121.00	0.47
γ base of section							1695	1574	95.3	1648	34	1632					13		
P-sequence Northern Humboldt																	Mean=	87.94	0.99
																	StDev=	40.49	1.21

Table S7. This table summarizes the raw OxCal P-sequence output using $k = 0.03$.

	UNMODELLED (BP)						MODELLED (BP)						A _{model} = 65.6					Confidence Interval (yr)	Normalized Age Deviation ¹
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P	C		
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	933	835	95.4	908	25	918		86.4			12.8	98.00	1.92
EQ2							935	853	95.4	915	19	921					14.2		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	935	913	95.4	924	7	925		158.8			86.9	22.00	3.14
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	916	95.4	926	4	926		126.5			78.5	19.00	3.25
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	953	916	95.4	929	6	928		116.4			66.3	37.00	0.50
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	956	922	95.4	935	9	932		70.9			79.7	34.00	1.33
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1060	982	95.4	1028	23	1034		96			62.9	78.00	0.87
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1062	986	95.4	1031	23	1037		102.1			62.4	76.00	0.26
							1285	980	95.4	1172	102	1206					48.1		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1283	1185	95.4	1247	30	1261		94.5			77.4	98.00	0.60
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1285	1186	95.4	1250	30	1264		102.1			81.1	99.00	0.60
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1295	1187	95.4	1259	30	1269		54.5			79.7	108.00	0.63
	Warning! Poor agreement - A= 54.5%(A'c= 60.0%)																		
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1400	1324	95.4	1362	18	1363		99.4			99.9	76.00	0.06
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1691	1570	95.4	1638	37	1621		110.2			7.4	121.00	0.54
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1693	1571	95.4	1643	36	1623		88.3			6.2	122.00	0.31
							1694	1571	95.4	1644	36	1624					6.5		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1693	1574	95.4	1645	35	1625		52.6			7.3	119.00	1.46
	Warning! Poor agreement - A= 52.6%(A'c= 60.0%)																		
R_Date C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1694	1575	95.3	1647	34	1630		101.9			7.7	119.00	0.91
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1694	1575	95.4	1648	34	1663		62.1			8.7	119.00	0.32
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1575	95.4	1650	33	1669		129.8			10.6	120.00	0.55
gy base of section							1695	1575	95.4	1650	33	1669					10.6		
P-sequence Northern Humboldt																		Mean=	86.18
																		StDev=	36.94

Table S9. This table summarizes the raw OxCal P-sequence output using $k = 0.05$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 66.4				Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	804	95.4	906	30	918		88.9			90.9	130.00	1.53
EQ2							935	828	95.4	916	22	923					87.3		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	935	915	95.4	924	9	925		159.2			91.4	20.00	2.44
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	917	95.4	926	5	926		126.1			93.7	17.00	2.60
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	936	918	95.4	928	4	928		123.6			92.6	18.00	0.50
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	954	921	95.4	934	8	932		64.1			94.8	33.00	1.63
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1061	987	95.4	1033	20	1039		97.6			79.4	74.00	1.25
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1063	988	95.4	1035	21	1041		101			76.3	75.00	0.48
							1284	984	95.4	1150	101	1187					52.6		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1282	1184	95.4	1243	32	1259		97.3			72.3	98.00	0.44
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1284	1185	95.4	1247	32	1263		104.4			72	99.00	0.47
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1295	1186	95.4	1254	33	1268		51.4			67.4	109.00	0.73
	Warning! Poor agreement - A= 51.4%(A'c= 60.0%)																		
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1400	1329	95.4	1363	17	1364		100.3			99.9	71.00	0.00
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1691	1570	95.4	1637	37	1620		109.2			18.5	121.00	0.51
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1693	1573	95.4	1644	34	1625		91			14.1	120.00	0.29
							1694	1573	95.4	1645	34	1626					14.4		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1694	1574	95.4	1646	34	1627		49.9			14.7	120.00	1.53
	Warning! Poor agreement - A= 49.9%(A'c= 60.0%)																		
R_Date C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1694	1575	95.4	1647	34	1631		101.3			14.6	119.00	0.91
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1695	1601	95.4	1649	33	1664		62.7			15.3	94.00	0.30
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1602	95.4	1650	33	1670		130			17.3	93.00	0.55
by base of section							1695	1602	95.4	1650	33	1670					17.3		
P-sequence Northern Humboldt																		Mean=	83.00
																		StDev=	39.05

Table S10. This table summarizes the raw OxCal P-sequence output using $k = 0.06$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 60.6 Aoverall= 70.7				Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	828	95.4	909	27	919		84			92.8	106.00	1.81
EQ2							935	840	95.4	919	17	924					49.2		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	935	915	95.4	925	6	926		159.3			67.9	20.00	3.83
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	917	95.4	926	4	927		124.9			75.1	18.00	3.25
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	936	918	95.4	928	4	928		125.5			89.8	18.00	0.50
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	954	921	95.4	933	8	931		60.1			85.7	33.00	1.75
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1064	988	95.4	1039	17	1043		95			68.9	76.00	1.82
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1065	1000	95.4	1041	18	1045		100.9			68.1	65.00	0.89
							1281	1002	95.5	1135	91	1142					34.9		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1280	1182	95.4	1228	34	1234		105			28.4	98.00	0.03
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1282	1185	95.4	1232	35	1242		110.9			30.2	97.00	0.00
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1293	1185	95.4	1239	38	1259		38.8			29.8	108.00	1.03
	Warning! Poor agreement - A= 38.8%(A'c= 60.0%)																		
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1400	1330	95.4	1364	17	1364		100.4			99.8	70.00	0.06
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1690	1567	95.4	1629	35	1616		111.7			9.8	123.00	0.31
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1693	1574	95.4	1637	33	1620		86.4			2.8	119.00	0.52
							1693	1575	95.4	1638	32	1620					2.8		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1693	1599	95.4	1639	33	1621		52.9			0.4	94.00	1.36
	Warning! Poor agreement - A= 52.9%(A'c= 60.0%)																		
R_Date C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1694	1600	95.4	1640	33	1621		104.1			0.4	94.00	0.73
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1694	1601	95.4	1642	32	1622		60.7			0.5	93.00	0.53
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1601	95.4	1644	32	1624		129.8			0.8	94.00	0.38
by base of section							1695	1601	95.4	1644	32	1624					0.8		
P-sequence Northern Humboldt																	Mean=	78.00	1.11
																	StDev=	35.33	1.10

Table S11. This table summarizes the raw OxCal P-sequence output using $k = 0.07$.

	UNMODELLED (BP)						MODELLED (BP)						A _{model} = 59.8						Confidence	Normalized
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P	C	Interval (yr)	Age	
																			Deviation ¹	
2014																				
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100			
1700 CE							251	250	95.4	250	0	250					100			
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	829	95.4	908	27	918		86.9			92.7	105.00	1.78	
EQ2							935	839	95.4	919	18	923					82.9			
late MR.14.02.B.225-226	955	802	95.4	902	40	921	935	915	95.4	925	6	926		157.9			91.9	20.00	3.83	
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	918	95.4	927	4	927		123.1			92.7	17.00	3.50	
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	936	919	95.4	928	4	928		126.9			96.1	17.00	0.50	
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	951	921	95.4	932	7	931		54.5			95	30.00	2.14	
	Warning! Poor agreement - A= 54.5%(A'c= 60.0%)																			
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1063	995	95.4	1037	19	1043		95.5			65.6	68.00	1.53	
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1065	985	95.4	1039	20	1044		100.5			66.2	80.00	0.70	
							1283	996	95.3	1150	95	1187					62.1			
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1281	1183	95.4	1235	35	1252		100.8			60.1	98.00	0.17	
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1283	1185	95.4	1239	35	1259		109.5			55	98.00	0.20	
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1294	1185	95.4	1244	37	1265		42.4			52.4	109.00	0.92	
	Warning! Poor agreement - A= 42.4%(A'c= 60.0%)																			
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1401	1330	95.4	1364	17	1365		100.6			99.9	71.00	0.06	
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1625	1570	95.4	1607	14	1612		121.7			97.5	55.00	0.79	
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1629	1573	95.4	1612	11	1615		71.2			98.5	56.00	3.82	
							1629	1573	95.4	1613	10	1615					98.6			
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1629	1574	95.4	1613	10	1616		64.1			98.6	55.00	1.90	
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1630	1573	95.4	1614	10	1616		111.2			98.5	57.00	0.20	
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1658	1571	95.4	1617	13	1617		53.7			98.5	87.00	3.23	
	Warning! Poor agreement - A= 53.7%(A'c= 60.0%)																			
MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1682	1572	95.5	1619	16	1618		125			98.1	110.00	0.81	
Boundary base of section							1682	1572	95.5	1619	16	1618					98.1			
ence Northern Humboldt																		Mean=	66.65	1.53
																		StDev=	32.26	1.34

Table S12. This table summarizes the raw OxCal P-sequence output using $k = 0.08$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 62.3				Confidence Interval (yr)	Normalized Age Deviation ¹		
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C	
2014																				
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100				100		
1700 CE							251	250	95.4	250	0	250						100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	829	95.4	906	30	919		85.6				53.2	105.00	1.53
EQ2							935	832	95.4	916	23	924						47		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	935	916	95.4	925	9	926		160.4				95.4	19.00	2.56
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	918	95.4	926	4	926		126.8				94.9	17.00	3.25
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	935	918	95.4	927	4	928		127.1				90.9	17.00	0.25
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	952	921	95.4	932	7	931		58.3				94.4	31.00	2.14
	Warning! Poor agreement - A= 58.3%(A'c= 60.0%)																			
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1063	1005	95.4	1042	16	1045		94.8				92.2	58.00	2.13
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1065	1004	95.4	1043	16	1047		100.7				92.3	61.00	1.13
							1283	1001	95.4	1141	95	1137						73.6		
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1282	1183	95.4	1238	34	1253		99.3				61	99.00	0.26
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1284	1185	95.4	1241	34	1259		106.5				59.8	99.00	0.26
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1293	1186	95.4	1248	36	1266		44.7				62.2	107.00	0.83
	Warning! Poor agreement - A= 44.7%(A'c= 60.0%)																			
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1401	1331	95.4	1365	17	1365		100.8				99.9	70.00	0.12
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1685	1567	95.4	1611	21	1612		119.7				81.6	118.00	0.33
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1688	1572	95.5	1617	19	1615		74.9				82.8	116.00	1.95
							1688	1574	95.4	1618	19	1616						80.9		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1689	1574	95.5	1619	19	1616		61.3				79.5	115.00	1.32
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1689	1574	95.4	1620	19	1617		109.2				79.8	115.00	0.21
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1690	1573	95.5	1621	19	1618		55.1				78.5	117.00	2.00
	Warning! Poor agreement - A= 55.1%(A'c= 60.0%)																			
MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1692	1574	95.4	1623	21	1619		127.2				77.7	118.00	0.43
boundary base of section							1692	1574	95.4	1623	21	1619						77.7		
once Northern Humboldt																			Mean=	81.29
																			StDev=	39.57

Table S13. This table summarizes the raw OxCal P-sequence output using $k = 0.09$.

	UNMODELLED (BP)						MODELLED (BP)						A _{model} = 58.3					Confidence Interval (yr)	Normalized Age Deviation ¹
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P	C		
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	934	830	95.4	910	25	919		84.8			76.2	104.00	2.00
EQ2							935	862	95.4	919	16	923					87.8		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	934	916	95.4	925	5	926		160.4			93.7	18.00	4.60
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	918	95.4	926	4	927		125.3			93.6	17.00	3.25
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	935	918	95.4	928	4	928		126.4			88.1	17.00	0.50
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	951	921	95.4	932	7	931		57.3			80.2	30.00	2.14
	Warning! Poor agreement - A= 57.3%(A'c= 60.0%)																		
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1063	1000	95.4	1044	24	1045		95.6			35.3	63.00	1.50
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1170	998	95.4	1046	25	1046		97.1			33.8	172.00	0.84
							1283	999	95.3	1137	89	1152					32.9		
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1281	1182	95.4	1225	34	1203		105.4			25.6	99.00	0.12
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1282	1185	95.4	1228	35	1206		113.4			23.4	97.00	0.11
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1291	1185	95.4	1233	38	1242		33.4			22.5	106.00	1.18
	Warning! Poor agreement - A= 33.4%(A'c= 60.0%)																		
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1401	1331	95.4	1365	17	1365		100.8			99.7	70.00	0.12
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1689	1566	95.4	1620	31	1614		115.4			78.7	123.00	0.06
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1691	1572	95.4	1627	29	1617		80.7			75.3	119.00	0.93
							1691	1573	95.4	1628	29	1617					75.2		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1691	1598	95.4	1629	29	1618		56.9			73.7	93.00	1.21
	Warning! Poor agreement - A= 56.9%(A'c= 60.0%)																		
C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1692	1600	95.4	1631	29	1618		106.6			74.5	92.00	0.52
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1694	1574	95.3	1632	29	1619		57.4			75.4	120.00	0.93
	Warning! Poor agreement - A= 57.4%(A'c= 60.0%)																		
MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1575	95.4	1634	30	1620		127.8			74.1	120.00	0.07
base of section							1695	1575	95.4	1634	30	1620					74.1		
P-sequence Northern Humboldt																		Mean=	85.88
																		StDev=	44.25

Table S15. This table summarizes the raw OxCal P-sequence output using $k = 0.2$.

	UNMODELLED (BP)						MODELLED (BP)						A _{model} =					Confidence Interval (yr)	Normalized Age Deviation ¹
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P	C		
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	933	831	95.4	909	24	917		92.3			96.7	102.00	2.04
EQ2							935	837	95.4	918	17	923					94.5		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	935	916	95.4	926	5	926		160.6			94	19.00	4.80
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	918	95.4	926	4	927		125.8			95	17.00	3.25
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	935	919	95.4	928	4	928		127.5			95.8	16.00	0.50
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	949	921	95.4	932	6	931		55.9			92.4	28.00	2.50
				Warning! Poor agreement - A= 55.9%(A'c= 60.0%)															
R_Date MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1175	1029	95.4	1138	50	1165		19.1			43.9	146.00	2.60
				Warning! Poor agreement - A= 19.1%(A'c= 60.0%)															
R_Date C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1175	1027	95.4	1139	50	1165		33.5			43.7	148.00	2.28
				Warning! Poor agreement - A= 33.5%(A'c= 60.0%)															
							1274	1030	95.4	1172	43	1183					72.2		
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1274	1180	95.4	1199	19	1194		117.1			56.5	94.00	1.58
R_Date MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1273	1181	95.4	1200	20	1195		126.7			50.1	92.00	1.60
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1277	1182	95.4	1201	22	1195		11.6			55.6	95.00	3.50
				Warning! Poor agreement - A= 11.6%(A'c= 60.0%)															
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1401	1334	95.4	1366	17	1366		101.2			99.9	67.00	0.18
R_Date C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1689	1566	95.4	1625	35	1614		106.8			35.8	123.00	0.20
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1692	1572	95.4	1638	33	1621		86.8			21.8	120.00	0.48
EQ4							1693	1573	95.4	1640	33	1621					22.2	120.00	49.70
MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1693	1574	95.4	1642	34	1622		51.2			23.7	119.00	1.41
				Warning! Poor agreement - A= 51.2%(A'c= 60.0%)															
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1694	1574	95.4	1642	33	1622		101.2			22.8	120.00	0.79
R_Date MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1694	1574	95.3	1643	33	1623		60.8			23.2	120.00	0.48
MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1696	1576	95.4	1646	33	1627		126			25.5	120.00	0.42
Boundary base of section							1696	1576	95.4	1646	33	1627					25.5		
P_Sequence Northern Humboldt																	Mean=	92.56	4.35
																	StDev=	44.21	11.39

Table S17. This table summarizes the raw OxCal P-sequence output using $k = 0.4$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 6.6 Aoverall= 7.1					Confidence Interval (yr)	Normalized Age Deviation ¹
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P	C		
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	932	836	95.4	910	20	916		97.6			99.1	96.00	2.50
							935	856	95.4	919	15	923					97.9		61.27
R_Date MR.14.02.B.225-226	955	802	95.4	902	40	921	935	918	95.4	926	4	927		159.2			95.2	17.00	6.00
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	919	95.4	927	3	928		122.6			93.8	16.00	4.67
R_Date MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	936	920	95.4	928	3	929		131.7			98.4	16.00	0.67
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	942	921	95.4	930	5	930		44.3			97.3	21.00	3.40
							Warning! Poor agreement - A= 44.3%(A'c= 60.0%)												
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1174	1161	95.4	1167	3	1167		0.3			96.7	13.00	53.00
							Warning! Poor agreement - A= 0.3%(A'c= 60.0%)												
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1174	1161	95.4	1167	3	1167		10.9			96.5	13.00	47.33
							Warning! Poor agreement - A= 10.9%(A'c= 60.0%)												
							1200	1161	95.4	1180	13	1179					95.7		
R_Date IC.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1204	1183	95.4	1194	7	1193		118.8			95.7	21.00	5.00
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1205	1184	95.4	1194	7	1194		129			95.8	21.00	5.43
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1205	1184	95.4	1195	8	1194		8			95.7	21.00	10.38
							Warning! Poor agreement - A= 8.0%(A'c= 60.0%)												
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1401	1336	95.4	1367	16	1367		102.5			99.2	65.00	0.25
R_Date JC.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1684	1564	95.4	1611	28	1607		111.9			11.8	120.00	0.25
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1689	1574	95.3	1625	27	1616		75.7			2	115.00	1.07
							1690	1575	95.4	1627	27	1617					1.7		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1691	1595	95.4	1629	28	1618		56.4			1.8	96.00	1.25
							Warning! Poor agreement - A= 56.4%(A'c= 60.0%)												
R_Date IC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1691	1597	95.4	1629	28	1618		106.6			1.8	94.00	0.46
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1692	1598	95.4	1629	28	1618		54.7			1.7	94.00	1.07
							Warning! Poor agreement - A= 54.7%(A'c= 60.0%)												
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1598	95.4	1633	28	1621		123.5			1.9	97.00	0.04
Boundary base of section							1695	1598	95.4	1633	28	1621					1.9		
nce Northern Humboldt																		Mean=	55.06
																		StDev=	42.38

Table S18. This table summarizes the raw OxCal P-sequence output using $k = 0.5$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 8.7				Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100				100	
1700 CE							251	250	95.4	250	0	250						100	
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	931	840	95.4	911	18	916	99.5					99.6	91.00
							935	895	95.4	919	14	923						98.8	
R_Date MR.14.02.B.225-226	955	802	95.4	902	40	921	935	918	95.4	927	4	927	159.3					99.3	17.00
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	920	95.4	927	3	928	123					99.4	15.00
R_Date MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	936	920	95.4	928	3	929	131.9					96.1	16.00
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	941	921	95.4	930	4	930	42					97.3	20.00
							Warning! Poor agreement - A= 42.0%(A'c= 60.0%)												
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1174	1161	95.4	1167	6	1167	0.4					97.2	13.00
							Warning! Poor agreement - A= 0.4%(A'c= 60.0%)												
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1174	1161	95.4	1167	6	1167	10.9					97.8	13.00
							Warning! Poor agreement - A= 10.9%(A'c= 60.0%)												
							1199	1162	95.4	1180	12	1180						94.4	
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1203	1183	95.4	1193	5	1193	118.7					82.8	20.00
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1203	1184	95.4	1193	5	1193	128.3					86	19.00
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1204	1184	95.4	1193	5	1193	7.8					89	20.00
							Warning! Poor agreement - A= 7.8%(A'c= 60.0%)												
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1400	1338	95.4	1368	16	1368	102.6					99.3	62.00
R_Date JC.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1683	1565	95.4	1613	29	1607	108					40.5	118.00
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1689	1574	95.4	1627	28	1616	77					27.4	115.00
							1690	1575	95.5	1629	29	1617						26.1	
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1692	1594	95.4	1631	29	1618	54.8					25.6	98.00
							Warning! Poor agreement - A= 54.8%(A'c= 60.0%)												
R_Date C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1692	1594	95.4	1632	29	1619	104.1					25.7	98.00
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1693	1595	95.4	1632	29	1619	56.3					25.7	98.00
							Warning! Poor agreement - A= 56.3%(A'c= 60.0%)												
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1598	95.4	1636	29	1622	122.1					25.5	97.00
Boundary base of section							1695	1598	95.4	1636	29	1622						25.5	
nce Northern Humboldt																		Mean=	54.71
																		StDev=	42.78

Table S19. This table summarizes the raw OxCal P-sequence output using $k = 0.6$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 6.1				Confidence Interval (yr)	Normalized Age Deviation ¹		
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C	
2014																				
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100				100		
1700 CE							251	250	95.4	250	0	250						100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	930	829	95.4	910	20	915		101.2				97	101.00	2.50
EQ2							935	832	95.4	917	17	922						96.9		53.94
R_Date MR.14.02.B.225-226	955	802	95.4	902	40	921	935	916	95.4	925	14	927		157.4				95.4	19.00	1.64
R_Date MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	918	95.4	925	14	927		121.5				93.9	17.00	0.86
R_Date MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	936	920	95.4	926	14	928		130.4				97.3	16.00	0.00
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	943	920	95.4	927	14	929		38.5				96.1	23.00	1.43
	Warning! Poor agreement - A= 38.5%(A'c= 60.0%)																			
R_Date MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1174	1161	95.4	1167	5	1167		0.3				91.8	13.00	31.80
	Warning! Poor agreement - A= 0.3%(A'c= 60.0%)																			
R_Date JC.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1174	1161	95.4	1167	5	1167		10.8				89.9	13.00	28.40
	Warning! Poor agreement - A= 10.8%(A'c= 60.0%)																			
							1199	1162	95.4	1180	11	1180						93.3		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1204	1183	95.4	1193	6	1192		118.6				78.1	21.00	6.00
R_Date MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1204	1183	95.4	1193	6	1193		127.1				76.3	21.00	6.50
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1205	1184	95.4	1194	6	1193		7.7				76.3	21.00	14.00
	Warning! Poor agreement - A= 7.7%(A'c= 60.0%)																			
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1400	1340	95.4	1369	15	1369		102.8				97.3	60.00	0.40
R_Date C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1682	1564	95.4	1611	29	1606		106.9				10.8	118.00	0.24
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1689	1572	95.4	1625	29	1616		73.6				2.1	117.00	1.00
EQ4							1690	1572	95.4	1627	29	1617						1.9		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1691	1573	95.4	1630	30	1618		56.9				2.2	118.00	1.20
	Warning! Poor agreement - A= 56.9%(A'c= 60.0%)																			
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1692	1573	95.4	1630	30	1618		105				2.2	119.00	0.47
R_Date MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1692	1573	95.3	1631	30	1619		54.2				2.2	119.00	0.93
	Warning! Poor agreement - A= 54.2%(A'c= 60.0%)																			
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1575	95.4	1634	30	1622		120.7				2.5	120.00	0.07
Boundary base of section							1695	1575	95.4	1634	30	1622						2.5		
P_Sequence Northern Humboldt																		Mean=	60.94	8.41
																		StDev=	48.75	14.84

Table S20. This table summarizes the raw OxCal P-sequence output using $k = 0.8$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 8.2					Confidence	Normalized
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P	C	Interval (yr)	Age Deviation ¹
2014																			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100			100		
1700 CE							251	250	95.4	250	0	250					100		
late MD.14.06.168.5-169.5	926	798	95.4	860	39	850	930	893	95.4	913	13	915		103.7			99.8	37.00	4.08
							934	904	95.4	920	10	922					99.3		
MR.14.02.B.225-226	955	802	95.4	902	40	921	935	919	95.4	927	3	927		162.3			97.4	16.00	8.33
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	921	95.4	927	3	927		126.3			95.1	13.00	4.67
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	935	921	95.4	928	3	928		134.4			93.1	14.00	0.67
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	938	921	95.4	929	3	929		35			98.1	17.00	6.00
							Warning! Poor agreement - A= 35.0%(A'c= 60.0%)												
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1174	1162	95.4	1167	5	1168		0.3			97.6	12.00	31.80
							Warning! Poor agreement - A= 0.3%(A'c= 60.0%)												
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1174	1162	95.4	1168	5	1168		10.5			96.3	12.00	28.60
							Warning! Poor agreement - A= 10.5%(A'c= 60.0%)												
							1197	1164	95.4	1180	10	1180					98.5		
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1202	1183	95.4	1192	5	1192		118.4			92.3	19.00	7.40
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1202	1184	95.4	1193	5	1192		127.1			90.2	18.00	7.80
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1203	1184	95.4	1193	5	1192		7.7			90	19.00	17.00
							Warning! Poor agreement - A= 7.7%(A'c= 60.0%)												
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1401	1341	95.4	1370	15	1371		102.2			96	60.00	0.47
R_Date JC.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1680	1563	95.4	1612	30	1605		102.9			2.9	117.00	0.20
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1688	1572	95.4	1626	29	1615		72.7			0.3	116.00	0.97
							1689	1573	95.4	1628	30	1617					0.2		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1690	1573	95.4	1631	30	1618		56.9			0.2	117.00	1.23
							Warning! Poor agreement - A= 56.9%(A'c= 60.0%)												
C.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1690	1573	95.4	1631	30	1618		104.6			0.2	117.00	0.50
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1691	1573	95.4	1632	30	1619		54.2			0.2	118.00	0.90
							Warning! Poor agreement - A= 54.2%(A'c= 60.0%)												
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1576	95.4	1636	30	1622		120.4			0.3	119.00	0.13
y base of section							1695	1576	95.4	1636	30	1622					0.3		
Sequence Northern Humboldt																	Mean=	55.35	7.10
																	StDev=	48.56	9.76

Table S21. This table summarizes the raw OxCal P-sequence output using $k = 1$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 5.9				Confidence Interval (yr)	Normalized Age Deviation ¹		
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C	
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100				100		
1700 CE							251	250	95.4	250	0	250						100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	930	830	95.4	911	17	915		105.3				97.7	100.00	3.00
EQ2							935	901	95.4	918	15	922						97.4		
R_Date MR.14.02.B.225-226	955	802	95.4	902	40	921	935	918	95.4	925	14	927		158.8				97.8	17.00	1.64
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	935	919	95.4	925	14	927		122.5				97.5	16.00	0.86
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	935	919	95.4	926	14	928		132.2				97.5	16.00	0.00
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	938	920	95.4	926	14	929		29.4				96.1	18.00	1.50
	Warning! Poor agreement - A= 29.4%(A'c= 60.0%)																			
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1174	1161	95.4	1167	8	1168		0.2				98	13.00	19.88
	Warning! Poor agreement - A= 0.2%(A'c= 60.0%)																			
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1175	1161	95.4	1167	8	1168		10.2				98.5	14.00	17.75
	Warning! Poor agreement - A= 10.2%(A'c= 60.0%)																			
							1196	1164	95.4	1179	10	1180						99.5		
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1202	1182	95.4	1192	6	1191		118.4				95.1	20.00	6.17
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1202	1183	95.4	1192	6	1192		126.5				94	19.00	6.67
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1202	1184	95.4	1192	6	1192		7.6				93.7	18.00	14.33
	Warning! Poor agreement - A= 7.6%(A'c= 60.0%)																			
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1400	1343	95.4	1371	15	1372		101.5				94.4	57.00	0.53
R_Date JC.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1679	1562	95.4	1610	30	1604		100.4				8.5	117.00	0.27
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1686	1572	95.4	1625	30	1615		69.8				4.5	114.00	0.97
							1688	1573	95.4	1627	30	1616						4.5		
MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1690	1574	95.4	1630	31	1618		58.7				4.7	116.00	1.16
	Warning! Poor agreement - A= 58.7%(A'c= 60.0%)																			
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1690	1574	95.4	1630	31	1618		104.6				4.7	116.00	0.45
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1690	1574	95.4	1630	31	1618		52.5				4.8	116.00	0.94
	Warning! Poor agreement - A= 52.5%(A'c= 60.0%)																			
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1695	1578	95.4	1635	31	1622		119.8				5	117.00	0.10
Boundary base of section							1695	1578	95.4	1635	31	1622						5		
nce Northern Humboldt																		Mean=	59.06	4.48
																		StDev=	48.26	6.49

Table S22. This table summarizes the raw OxCal P-sequence output using $k = 2$.

	UNMODELLED (BP)						MODELLED (BP)						A _{model} =	4.2					Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P	C				
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63									
1700 CE							251	250	95.4	250	0	250									
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	926	803	95.4	865	44	836		99				17.7			
EQ2							930	815	95.4	871	44	838							15		
R_Date MR.14.02.B.225-226	955	802	95.4	902	40	921	934	830	95.4	876	45	841		97.5				14.1	104.00	0.58	
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	831	95.4	877	45	841		67.8				14.1	103.00	0.80	
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	934	831	95.4	877	45	841		61.6				14	103.00	1.09	
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	934	831	95.4	877	45	842		8.6				13.9	103.00	1.56	
	Warning! Poor agreement - A= 8.6%(A'c= 60.0%)																				
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1175	1161	95.4	1168	5	1169		0.2				94.1	14.00	32.00	
	Warning! Poor agreement - A= 0.2%(A'c= 60.0%)																				
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1175	1161	95.4	1168	5	1169		9.6				95.5	14.00	28.60	
	Warning! Poor agreement - A= 9.6%(A'c= 60.0%)																				
							1195	1165	95.4	1179	8	1180							99.7		
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1200	1181	95.4	1191	5	1191		117.8				98.2	19.00	7.60	
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1200	1182	95.4	1191	5	1191		122.3				98.4	18.00	8.20	
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1200	1182	95.4	1191	5	1191		7.1				98.4	18.00	17.40	
	Warning! Poor agreement - A= 7.1%(A'c= 60.0%)																				
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1400	1345	95.4	1372	13	1373		103.5				96.2	55.00	0.69	
R_Date JC.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1665	1555	95.4	1593	22	1594		105.2				72.7	110.00	1.14	
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1678	1566	95.4	1606	23	1608		44.1				72	112.00	2.09	
	Warning! Poor agreement - A= 44.1%(A'c= 60.0%)																				
							1680	1569	95.4	1609	23	1610							72.8		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1684	1571	95.4	1612	23	1613		78.2				73.7	113.00	0.78	
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1684	1571	95.4	1612	23	1613		113.5				73.7	113.00	0.17	
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1684	1571	95.4	1612	23	1613		35.7				73.6	113.00	2.04	
	Warning! Poor agreement - A= 35.7%(A'c= 60.0%)																				
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1689	1574	95.4	1617	23	1618		111.7				76.2	115.00	0.65	
Boundary base of section							1689	1574	95.4	1617	23	1618							76.2		
nce Northern Humboldt																			Mean=	79.41	6.21
																			StDev=	44.14	10.10

Table S23. This table summarizes the raw OxCal P-sequence output using $k = 3$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 3.6				Confidence Interval (yr)	Normalized Age Deviation ¹	
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63						100	100
1700 CE							251	250	95.4	250	0	250						100	100
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	926	821	95.4	904	26	912		113.4					
EQ2							930	826	95.4	910	26	918							
R_Date MR.14.02.B.225-226	955	802	95.4	902	40	921	934	832	95.4	916	26	924		158					
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	934	832	95.4	916	26	925		125					
R_Date MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	934	832	95.4	916	26	925		110.1					
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	934	832	95.4	917	26	925		10.1					
	Warning! Poor agreement - A= 10.1%(A'c= 60.0%)																		
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1178	1163	95.4	1170	5	1170		0.2		98.2		15.00	32.40
	Warning! Poor agreement - A= 0.2%(A'c= 60.0%)																		
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1176	1163	95.4	1170	5	1170		8.2		98.5		13.00	29.00
	Warning! Poor agreement - A= 8.2%(A'c= 60.0%)																		
							1190	1169	95.4	1179	6	1180					99.4		
R_Date C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1197	1182	95.4	1189	3	1189		116.2		91.1		15.00	13.33
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1197	1182	95.4	1189	3	1190		115.2		90.4		15.00	14.33
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1198	1182	95.4	1189	3	1190		6.3		91.3		16.00	29.67
	Warning! Poor agreement - A= 6.3%(A'c= 60.0%)																		
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1396	1347	95.4	1372	12	1372		107.5		99.3		49.00	0.75
R_Date JC.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1610	1556	95.4	1585	16	1587		103.2		90.3		54.00	2.06
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1620	1567	95.4	1597	17	1602		30.5		89		53.00	3.35
	Warning! Poor agreement - A= 30.5%(A'c= 60.0%)																		
							1623	1570	95.4	1600	17	1605					89.4		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1625	1571	95.4	1602	17	1608		92.1		89.7		54.00	0.47
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1625	1571	95.4	1602	17	1608		118.1		89.9		54.00	0.82
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1625	1571	95.4	1602	17	1608		24.6		89.8		54.00	3.35
	Warning! Poor agreement - A= 24.6%(A'c= 60.0%)																		
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1631	1576	95.4	1608	17	1613		105.9		91.4		55.00	1.41
Boundary base of section							1631	1576	95.4	1608	17	1613				91.4			
nce Northern Humboldt																	Mean=	56.47	7.93
																	StDev=	34.85	11.51

Table S25. This table summarizes the raw OxCal P-sequence output using $k = 5$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 1.1				Confidence Interval (yr)	Normalized Age Deviation ¹					
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C	Overall= 0.4			
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63							100	100			
1700 CE							251	250	95.4	250	0	250								100			
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	919	806	95.4	856	42	830		80.1			1.2			113.00	0.10		
EQ2							924	817	95.4	862	42	834								0.9			
R_Date MR.14.02.B.225-226	955	802	95.4	902	40	921	928	829	95.4	868	41	837		75.7			0.6			99.00	0.83		
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	928	829	95.4	868	41	837		47.5			0.6			99.00	1.10		
							Warning! Poor agreement - A= 47.5%(A'c= 60.0%)																
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	928	828	95.4	868	41	837		28.2			0.6			100.00	1.41		
							Warning! Poor agreement - A= 28.2%(A'c= 60.0%)																
MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	928	828	95.4	868	41	837		0.6			0.6			100.00	1.93		
							Warning! Poor agreement - A= 0.6%(A'c= 60.0%)																
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1178	1165	95.4	1170	4	1171		0.2			86			13.00	40.50		
							Warning! Poor agreement - A= 0.2%(A'c= 60.0%)																
IC.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1179	1165	95.4	1170	4	1171		7.1			84.5			14.00	36.25		
							Warning! Poor agreement - A= 7.1%(A'c= 60.0%)																
EQ3							1190	1168	95.4	1180	6	1179								95.5			
R_Date JC.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1198	1180	95.4	1189	8	1187		112.1			88.8			18.00	5.00		
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1197	1180	95.4	1189	8	1188		99.7			88.7			17.00	5.38		
MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1197	1180	95.4	1189	8	1188		4.6			87.7			17.00	11.13		
							Warning! Poor agreement - A= 4.6%(A'c= 60.0%)																
R_Date MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1392	1347	95.4	1369	11	1369		114.5			93.4			45.00	0.55		
IC.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1602	1553	95.4	1573	15	1568		82.1			97.7			49.00	3.00		
MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1616	1565	95.4	1584	16	1578		19.2			97.4			51.00	4.38		
							Warning! Poor agreement - A= 19.2%(A'c= 60.0%)																
EQ4							1617	1567	95.4	1587	17	1581								97.2			
MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1621	1570	95.4	1590	17	1582		111.8			96.8			51.00	0.24		
JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1621	1570	95.4	1590	17	1583		119.9			96.7			51.00	1.53		
R_Date MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1621	1570	95.4	1590	17	1583		11.1			96.7			51.00	4.06		
							Warning! Poor agreement - A= 11.1%(A'c= 60.0%)																
MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1625	1574	95.4	1595	17	1588		88			96.9			51.00	2.18		
base of section							1625	1574	95.4	1595	17	1588								96.9			
P_Sequence Northern Humboldt																				Mean=	55.24	7.03	
																				StDev=	32.31	12.38	

Table S27. This table summarizes the raw OxCal P-sequence output using $k = 8$.

	UNMODELLED (BP)						MODELLED (BP)						Amodel= 0 Aoverall= 0				Confidence Interval (yr)	Normalized Age Deviation ¹		
	from	to	%	μ	σ	m	from	to	%	μ	σ	m	A _{comb}	A	L	P			C	
2014																				
Boundary surface	-63	-64	95.4	-63	0	-63	-63	-64	95.4	-63	0	-63		100				100		
1700 CE							251	250	95.4	250	0	250						100		
R_Date MD.14.06.168.5-169.5	926	798	95.4	860	39	850	833	809	95.4	821	6	822		48.9				99.9	24.00	6.50
	Warning! Poor agreement - A= 48.9%(A'c= 60.0%)																			
							836	818	95.4	827	4	828						99.9		
late MR.14.02.B.225-226	955	802	95.4	902	40	921	840	827	95.4	834	2	834		34				99.8	13.00	34.00
	Warning! Poor agreement - A= 34.0%(A'c= 60.0%)																			
MD.14.06.C.169.5-170.5	952	803	95.3	913	31	923	840	827	95.4	834	2	834		12				99.9	13.00	39.50
	Warning! Poor agreement - A= 12.0%(A'c= 60.0%)																			
MR.14.05.B.188.5-189.5	959	910	95.4	926	19	927	840	828	95.4	834	2	834		3.1				99.9	12.00	46.00
	Warning! Poor agreement - A= 3.1%(A'c= 60.0%)																			
R_Date MD.14.03.C.212.5-213.5	965	928	95.4	947	11	947	840	828	95.4	834	2	834						99.9	12.00	56.50
	Warning! Poor agreement - A= 0.0%(A'c= 60.0%)																			
MR.14.02.A.273-273.5	1058	961	95.4	1008	30	1004	1178	1166	95.4	1171	5	1171		0.1				96.4	12.00	32.60
	Warning! Poor agreement - A= 0.1%(A'c= 60.0%)																			
C.14.02.D.125.5-126	1072	969	95.4	1025	34	1021	1179	1166	95.4	1171	5	1171		5.9				95.9	13.00	29.20
	Warning! Poor agreement - A= 5.9%(A'c= 60.0%)																			
EQ3							1188	1171	95.4	1179	4	1179						99.7		
C.14.02.D.130-130.5	1278	1181	95.4	1229	29	1233	1195	1180	95.4	1186	3	1186		108.4				97.9	15.00	14.33
MR.14.05.C.246-247	1281	1182	95.4	1232	31	1240	1194	1181	95.4	1186	3	1186		88.5				97.8	13.00	15.33
R_Date MD.17.13.D.250-251	1302	1190	95.4	1278	20	1283	1194	1181	95.4	1186	3	1186		3.4				98	13.00	30.67
	Warning! Poor agreement - A= 3.4%(A'c= 60.0%)																			
MD.14.05.A.276-277	1401	1326	95.4	1363	18	1363	1382	1349	95.4	1365	8	1365		125.1				99.8	33.00	0.25
C.14.02.C.168.5-169.5	1695	1557	95.4	1618	41	1609	1578	1551	95.4	1563	7	1563		58				99.3	27.00	7.86
	Warning! Poor agreement - A= 58.0%(A'c= 60.0%)																			
R_Date MD.14.05.B1.306.5-307.5	1707	1604	95.4	1654	30	1658	1588	1562	95.4	1574	7	1574		13.5				99.1	26.00	11.43
	Warning! Poor agreement - A= 13.5%(A'c= 60.0%)																			
							1594	1565	95.4	1577	7	1576						98.8		
R_Date MR.14.02.A.297.5-298	1690	1544	95.4	1594	33	1588	1593	1567	95.4	1579	7	1579		121.8				99	26.00	2.14
R_Date JC.14.02.C.170-171.5	1693	1561	95.4	1616	39	1606	1593	1567	95.4	1579	7	1579		123				99	26.00	5.29
MD.14.04.B.379.5-380.5	1709	1614	95.4	1659	28	1658	1593	1567	95.4	1579	7	1579		4.7				99.1	26.00	11.43
	Warning! Poor agreement - A= 4.7%(A'c= 60.0%)																			
R_Date MD.14.05.B1.308-309	1695	1565	95.4	1632	40	1622	1599	1572	95.4	1585	7	1584		75.6				99.2	27.00	6.71
Boundary base of section							1599	1572	95.4	1585	7	1584						99.2		
nce Northern Humboldt																		Mean=	19.47	20.57
																		StDev=	7.43	16.90

Table S29. This table summarizes fossil foraminifera counts across contact A.

Depth	Hs	Bp	Ti	Jm	Mf	Rn	Mp	Ab	Tt	SUM
108.5	18	49	49	63	27	5		2		213
109.5	10	43	51	57	26	3		1		191
110.5	12	25	49	113	10	1				210
111.5	9	61	57	53	30	1				211
112.5	11	35	38	119	25	8				236
113.5	8	36	35	101	25	6		3		214
115.5	54	114	18	22	11					219
116.5	87	125	20	32	5		5		2	276
117.5	31	119	55	14	3					222
118.5	72	55	47	11	20					205
119.5		57	82	70	4				2	215

Hs - *Haplophragmoides* spp.

BP – *Balticammina pseudomacrescens*

Ti – *Trochammina inflata*

Jm – *Jadammina macrescens*

Mf – *Miliammina fusca*

Rn – *Reophax* spp.

Mp – *Miliammina petila*

Ab – *Amobaculites* spp.

Tt – *Trochamminita irregularis*

Table S30. This table summarizes fossil foraminifera counts across contact B.

Depth	Hs	Bp	Ti	Jm	Mf	Rn	Mp	Ab	Tt	SUM
159.5	12	45	28	23	2					111
160.5	10	49	29	37	4					129
161.5	16	70	36	58					1	182
162.5	12	49	16	23	1					115
159.5	12	45	28	23	2					111
160.5	10	49	29	37	4					129

Hs - *Haplophragmoides* spp.

BP – *Balticammina pseudomacrescens*

Ti – *Trochammina inflata*

Jm – *Jadammina macrescens*

Mf – *Miliammina fusca*

Rn – *Reophax* spp.

Mp – *Miliammina petila*

Ab – *Amobaculites* spp.

Tt – *Trochamminita irregularis*

Table S31. This table summarizes fossil foraminifera counts across contact C.

Depth	Hs	Bp	Ti	Jm	Mf	Rn	Mp	Ab	Tt	SUM
165.5	12	13	60	78	45	2				210
166.5	25	19	59	50	56	1				210
168.5	13	21	57	57	65	1		1		215
169.5	6	2	11	14	16					49
171.5	15	85	49	28	31					208
173.5	11	75	75	45	5					211
174.5	37	24	72	63	13					209
175.5	14	81	59	51	6		1			212

Hs - *Haplophragmoides* spp.

BP – *Balticammina pseudomacrescens*

Ti – *Trochammina inflata*

Jm – *Jadammina macrescens*

Mf – *Miliammina fusca*

Rn – *Reophax* spp.

Mp – *Miliammina petila*

Ab – *Amobaculites* spp.

Tt – *Trochamminita irregularis*

Table S32. This table summarizes fossil foraminifera counts across contact D.

Depth	Hs	Bp	Ti	Jm	Mf	Rn	Mp	Ab	Tt	SUM
242.5	8	36	32	79	25	15	0	9		204
245.5	9	24	33	73	33	13	0	12		197
246.5	14	38	44	62	32	16	1	15		222
249.5	38	105	20	56					3	222
251.5	4	12	33	54					2	105
253.5	7	7	149	46						209

Hs - *Haplophragmoides* spp.

BP – *Balticammina pseudomacrescens*

Ti – *Trochammina inflata*

Jm – *Jadammina macrescens*

Mf – *Miliammina fusca*

Rn – *Reophax* spp.

Mp – *Miliammina petila*

Ab – *Amobaculites* spp.

Tt – *Trochamminita irregularis*

Table S33. This table summarizes fossil foraminifera counts across contact E.

Depth	Hs	Bp	Ti	Jm	Mf	Rn	Mp	Ab	Tt	SUM
302.5	1		61	6	131	10		6		215
304.5	1	1	65	7	119	12		2		207
306.5	1	0	50	1	130	15		3		200
309.5	5	1	57	6	84	7				160
311.5	1	1	23	2	29	2		2		60

Hs - *Haplophragmoides* spp.

BP – *Balticammina pseudomacrescens*

Ti – *Trochammina inflata*

Jm – *Jadammina macrescens*

Mf – *Miliammina fusca*

Rn – *Reophax* spp.

Mp – *Miliammina petila*

Ab – *Amobaculites* spp.

Tt – *Trochamminita irregularis*

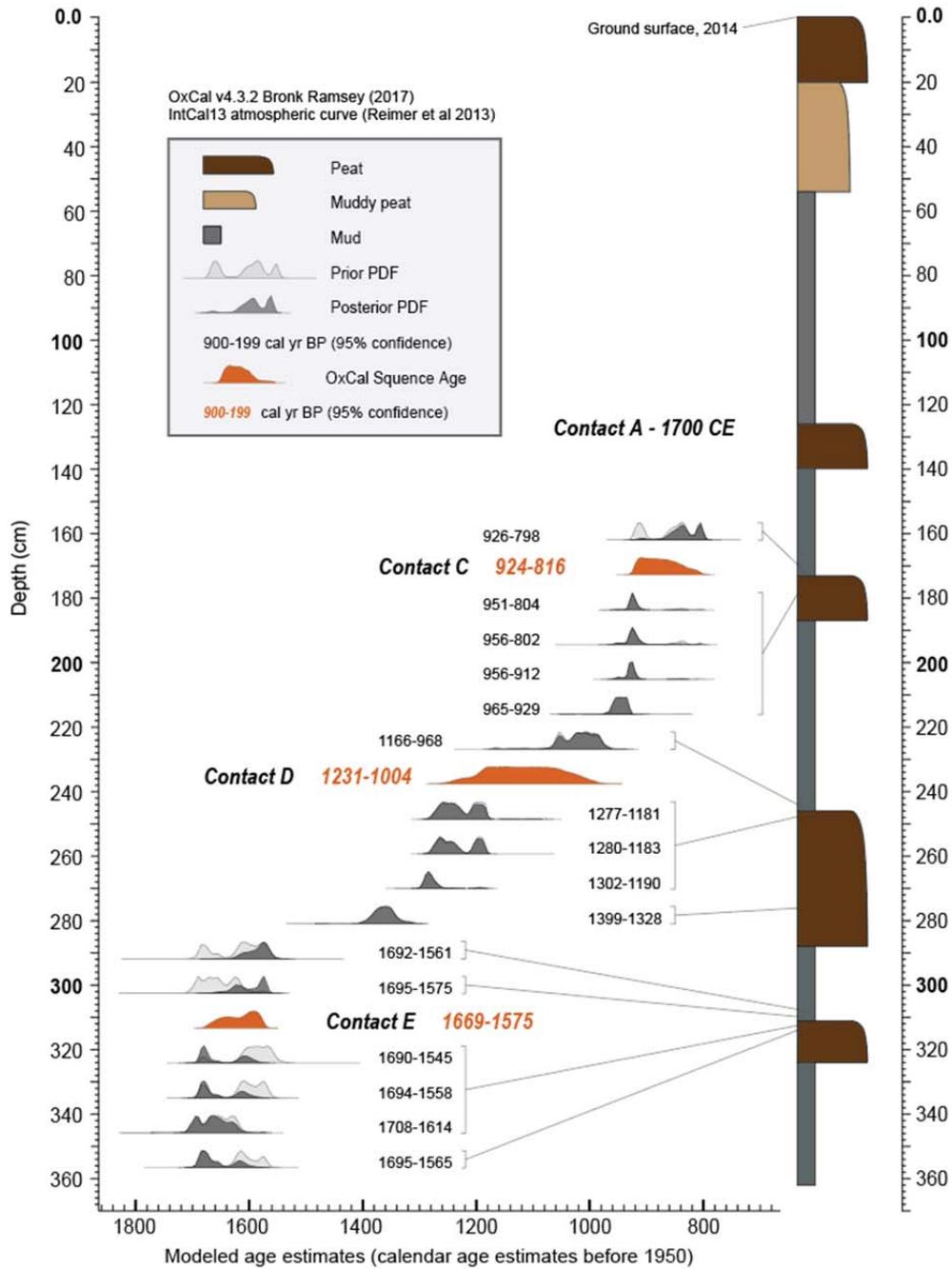


Figure S1. Composite simplified lithostratigraphy and age constraints used in the development of northern Humboldt Bay age-depth models. Calibrated radiocarbon likelihood distributions and posterior age model are shown in light gray and dark gray (95% confidence interval). The age probability distributions (95% confidence) are the results from OxCal 'Sequence' model are shown in orange. Results of Bayesian age model implemented with OxCal version 4.3.2 (Bronk Ramsey, 2017) that used the IntCal13 atmospheric calibration curve (Reimer et al., 2013). Tie-lines connect radiocarbon age PDF's to the appropriate depths on the composite simplified lithostratigraphic column.

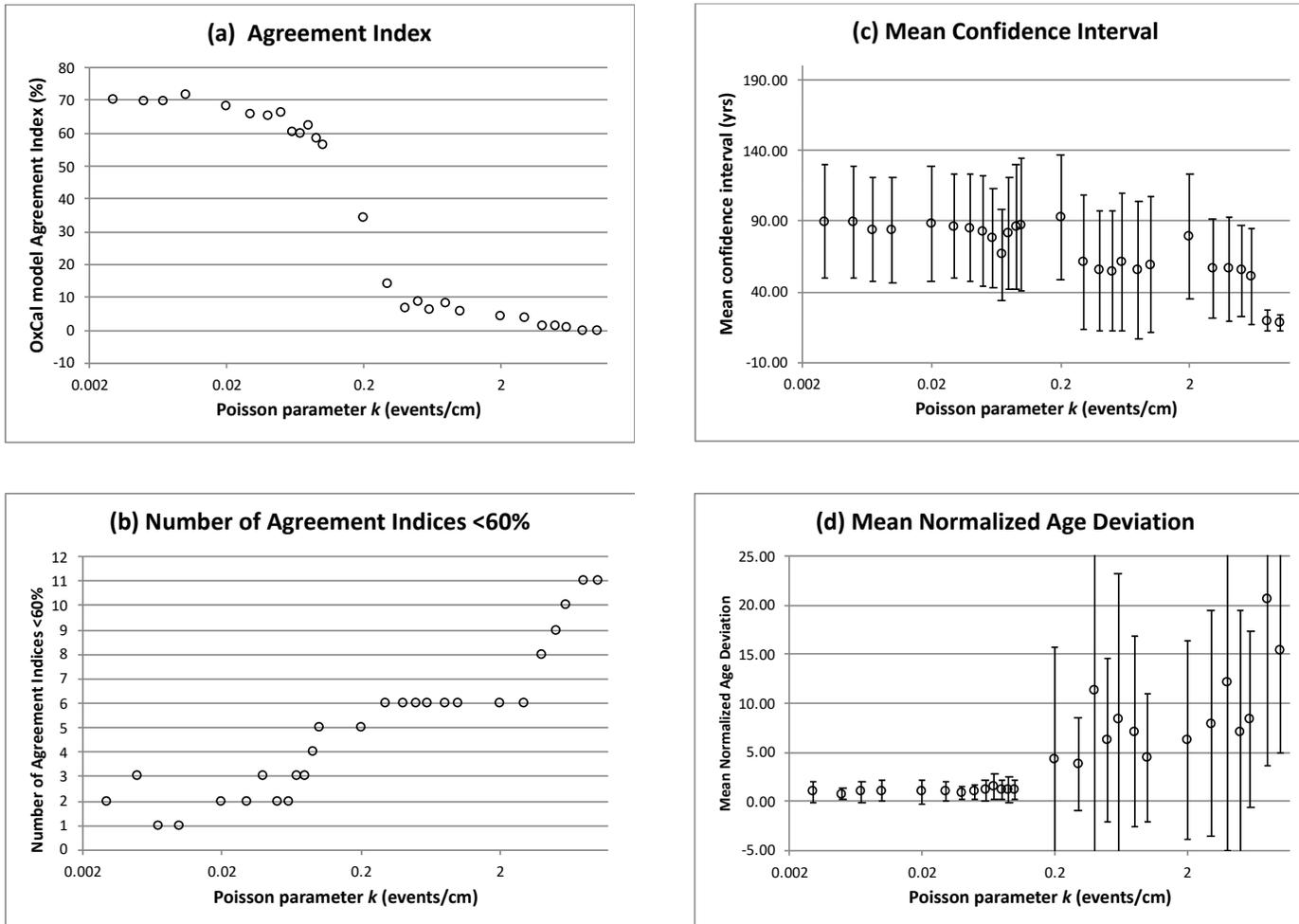


Figure S2. The plots on this page show clear inflections in the various criteria where the Poisson value is $k=0.1$. Model results for all 27 runs using the appropriate k value can be found Table S1-27.

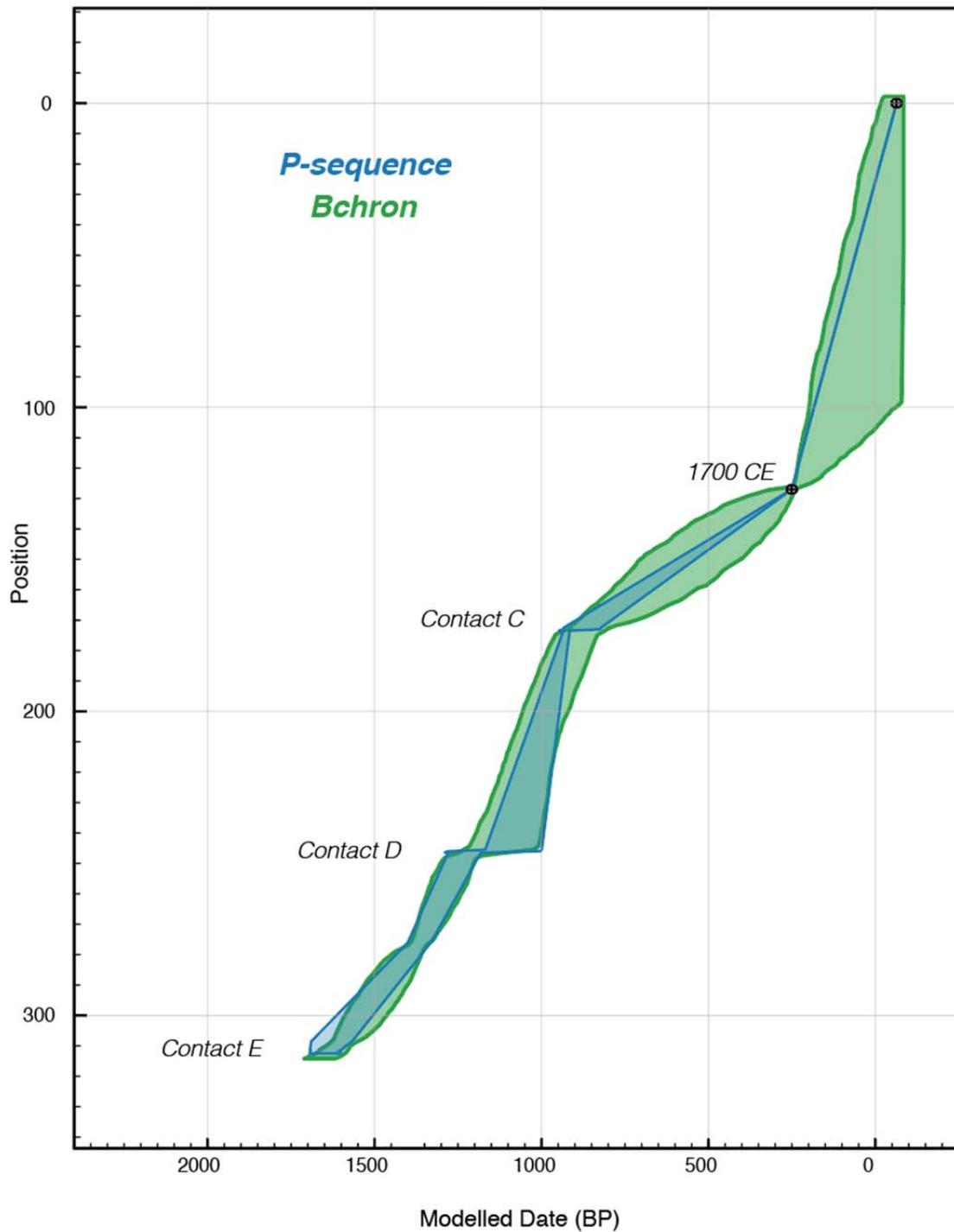


Figure S3. Plot of overlapping age-depth models of Bchron and OxCal “P-sequence” (where $k=0.1$).

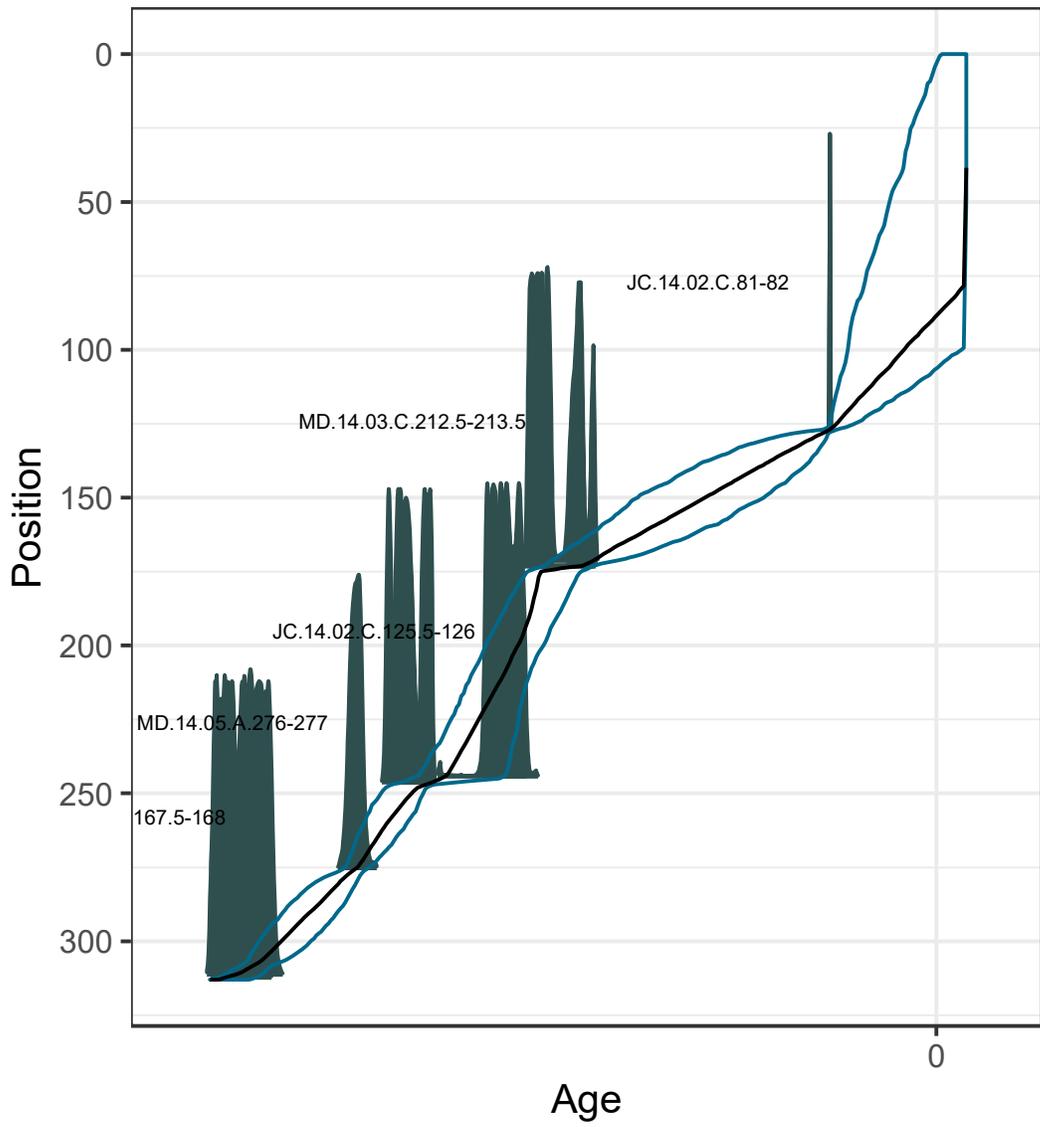


Figure DR4. Plot of Bchron age-depth model.

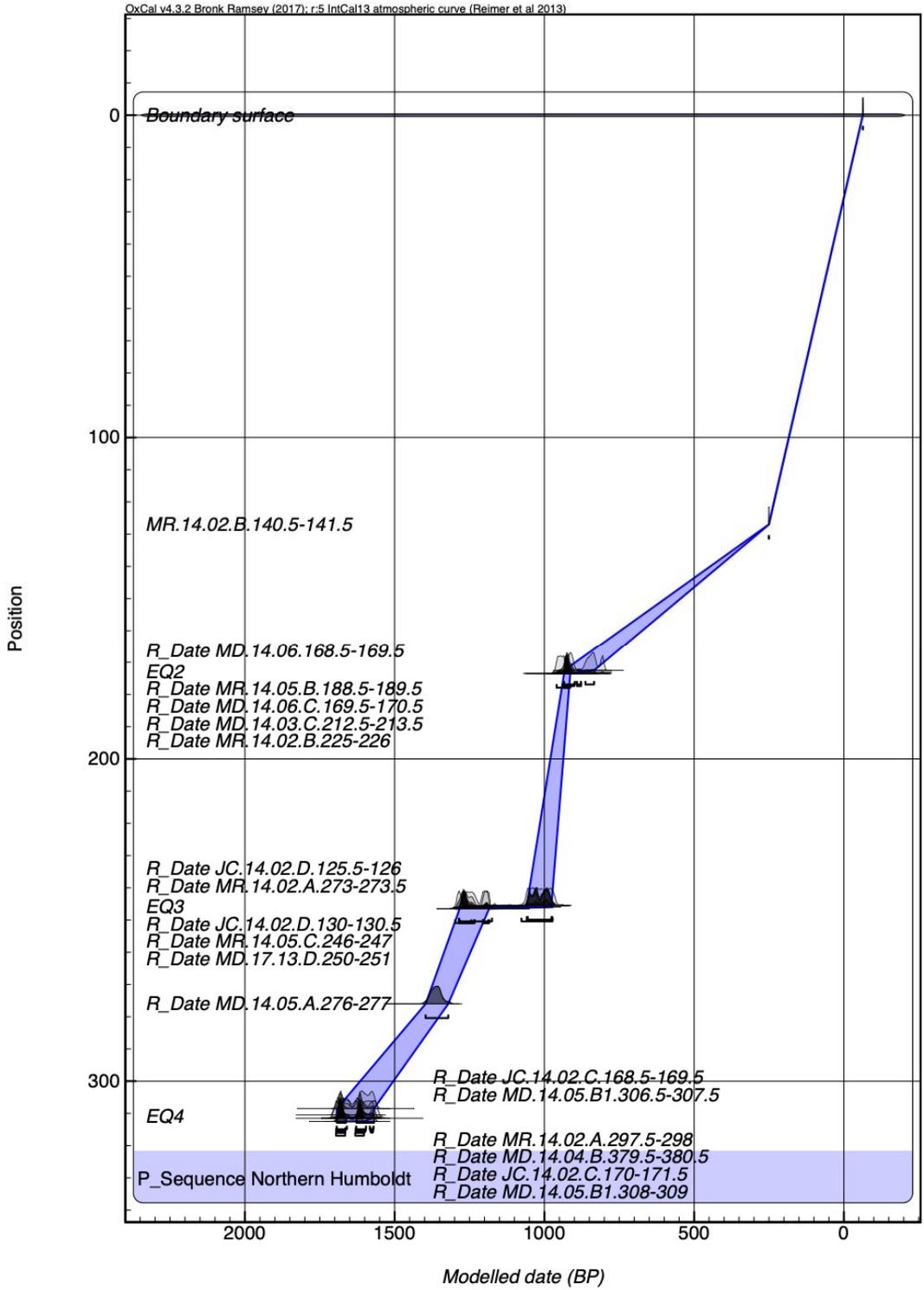


Figure DR5. Plot of OxCal “P-sequence’ age-depth model (where $k=0.1$).

```

Plot(P-Sequence)
{
P_Sequence("Northern Humboldt", 0.1)
{
Boundary("base of section");
R_Date("MD.14.05.B1.308-309", 1720, 15)
{
z=312.5;
};
};
R_Date("MD.14.04.B.379.5-380.5", 1750, 15)
{
z=311.5;
};
};
R_Date("JC.14.02.C.170-171.5", 1710, 15)
{
z=311.5;
};
};
R_Date("MR.14.02.A.297.5-298", 1690, 20)
{
z=311.5;
};
};
Date("EQ4")
{
z=311;
};
};
R_Date("MD.14.05.B1.306.5-307.5", 1740, 15)
{
z=310.5;
};
};
R_Date("JC.14.02.C.168.5-169.5", 1710, 20)
{
z=308.5;
};
};
R_Date("MD.14.05.A.276-277", 1480, 15)
{
z=276;
};
};
R_Date("MD.17.13.D.250-251", 1340, 20)
{
z=246.5;
};
};
R_Date("MR.14.05.C.246-247", 1290, 15)
{
z=246.5;
};
};
R_Date("JC.14.02.D.130-130.5", 1280, 20)
{
z=246.5;
};
};
Date("EQ3")
{
z=246;
};
};
R_Date("JC.14.02.D.125.5-126", 1130, 20)
{
z=245.5;
};
};
R_Date("MR.14.02.A.273-273.5", 1100, 20)
{
z=245.5;
};
};
R_Date("MD.14.03.C.212.5-213.5", 1040, 15)
{
z=173.5;
};
};
R_Date("MR.14.05.B.188.5-189.5", 1000, 15)
{
z=173.5;
};
};
R_Date("MD.14.06.C.169.5-170.5", 990, 15)
{
z=173.5;
};
};
R_Date("MR.14.02.B.225-226", 990, 20)
{
z=173.5;
};
};
Date("EQ2")
{
z=173;
};
};
R_Date("MD.14.06.168.5-169.5", 955, 15)
{
z=172.5;
};
};
Date("1700 CE", 1700.1)
{
z=127;
};
};
Boundary("surface", 2014)
{
z=0;
};
};
};
};

```

Figure DR6. The OxCal P-sequence model code (using $k = 0.1$).

```

Plot(Sequence)
{
  Sequence("Northern Humboldt Bay")
  {
    Boundary("base");
    Phase("contact 4 max")
    {
      R_Date("JC.14.02.C.170-171.5", 1710, 15);
      R_Date("MD.14.05.B1.308-309", 1720, 15);
      R_Date("MD.14.04.B.379.5-380.5", 1750, 15);
      R_Date("MR.14.02.A.297.5-298", 1690, 20);
    };
    Date("contact 4");
    Phase("contact 4 min")
    {
      R_Date("JC.14.02.C.168.5-169.5", 1710, 20);
      R_Date("MD.14.05.B1.306.5-307.5", 1740, 15);
    };
    Phase("contact 3 max")
    {
      R_Date("JC.14.02.D.130-130.5", 1280, 20);
      R_Date("MD.14.05.A.276-277", 1480, 15);
      R_Date("MR.14.05.C.246-247", 1290, 15);
      R_Date("MR.17.13.d.250-251", 1340, 20);
    };
    Date("contact 3");
    Phase("contact 3 min")
    {
      R_Date("JC.14.02.D.125.5-126", 1130, 20);
    };
    Phase("contact 2 max")
    {
      R_Date("MD.14.06.C.169.5-170.5", 990, 15);
      R_Date("MD.14.03.C.212.5-213.5", 1040, 15);
      R_Date("MR.14.05.B.188.5-189.5", 1000, 15);
      R_Date("MR.14.02.B.225-226", 990, 20);
    };
    Date("contact 2");
    Phase("contact 2 min")
    {
      R_Date("MD.14.06.168.5-169.5", 955, 15);
    };
    Phase("contact 1 max")
    {
      Date("1700 CE", 1700.1);
    };
    Date("contact 1");
    Boundary("settlement", 1850);
  };
};

```

Figure DR7. The OxCal ‘Sequence’ model code.