

**Supplementary material**

**Modern calibration and historical testing of small-area, fire-interval reconstruction methods**

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**Table S1. Local ponderosa pine chronologies from the International Tree-ring Data Bank used to crossdate tree-age and fire-scar samples**

Source: <http://www.ncdc.noaa.gov/paleo/treering.html>

Chronology	Authors	Period	Location (AZ)
Girl's Ranch	Graybill, D.A.	1660–1986	Sitgreaves National Forest
Gus Pearson	Graybill, D.A.	1550–1987	Gus Pearson Natural Area
Walnut Canyon	Graybill, D.A.	1420–1987	Walnut Canyon National Monument
Walnut Canyon	Stokes, M.A.; Harlan, T.P.	1447–1966	Walnut Canyon National Monument

**Table S2. Values used to calculate modern, individual plot-ATFI (Eqn 1)**

Fire years in each plot, with the number of scars recording the fire year in parentheses.  $\Sigma$ TA (tree age) is the sum of number of years each tree sampled in the plot, was alive during the analysis period. SN (scar number) is the number of scars found among the trees sampled in the plot. Mean SF (scarring fraction) is the observed fraction of trees receiving a scar, from each individual fire-year, averaged among all fires years in the plot

Plot	Fire years	$\Sigma$ TA	SN	Mean SF	ATFI
1	2007 (3), 1984 (8)	754	11	0.212	14.5
2	2006 (10)	754	10	0.385	29.0
3	2002 (5), 1997 (5), 1987 (3)	1189	13	0.106	9.7
4	2007 (13), 1984 (18)	1160	31	0.388	14.5
5	1985 (11)	725	11	0.440	29.0
6	2000 (12), 1994 (2)	1160	14	0.175	14.5
7	2002 (6)	1160	6	0.150	29.0
8	1996 (3), 1986 (7)	667	10	0.217	14.5
9	2007 (6), 1985 (1), 1981 (19)	725	26	0.347	9.7
10	1996 (14)	1189	14	0.341	29.0
11	1996 (15)	1160	15	0.375	29.0
12	2006 (9)	725	9	0.360	29.0
13	2006 (1), 1996 (13)	725	14	0.280	14.5
14	2006 (4), 1995 (6)	725	10	0.200	14.5
15	2005 (4), 1992 (13)	1160	17	0.213	14.5
16	2002 (4), 1996 (5)	1160	9	0.113	14.5
17	2002 (9)	1421	9	0.184	29.0
18	2005 (2), 1992 (15), 1990 (1)	1160	18	0.150	9.7
19	1985 (3)	754	3	0.115	29.0
20	2006 (6), 1988 (10)	1189	16	0.195	14.5
21	2005 (6)	754	6	0.231	29.0
22	2007 (10), 1988 (11)	725	21	0.420	14.5
23	2007 (5), 1998 (5)	696	10	0.208	14.5
24	2007 (3), 1985 (13)	725	16	0.320	14.5
25	2002 (6), 1995 (9)	725	15	0.300	14.5
26	2000 (8), 1989 (6)	1160	14	0.175	14.5
27	2002 (4), 1990 (9)	1160	13	0.163	14.5
28	2002 (4), 1995 (11), 1979 (1)	1160	16	0.133	9.7
29	2002 (2), 1995 (11), 1979 (2)	1160	15	0.125	9.7
30	2002 (4), 1995 (2), 1988 (9)	1189	15	0.122	9.7
All		29116	407	0.238	17.9

**Table S3. Modern mean fire intervals (*MFI*) estimated by each parameter across the study area, and eastern and western subareas and compared to the population *MFI* from fire rotation**

Parameter refers to (1) the mean plot-all-tree-fire-interval (*ATFI*) calculated by Eqn 1, (2) mean plot-*CFI<sub>all</sub>* calculated from fire years on all scarred samples, (3) mean plot-*CFI<sub>10%</sub>* from fire years recorded on ≥10% of the scarred, recording samples in each plot, (4) mean plot-*CFI<sub>25%</sub>* from fire years recorded on ≥25% of the scarred, recording samples in each plot, (5) pooled *ATFI* based on the sum of all tree ages (*TA*) and scars (*SN*), and mean scarring fraction (*SF*) of all plots within the subarea and (6) pooled *CFI<sub>all</sub>* based on all fire years found on all scars within the subarea. All *CFI* parameters were calculated over the full analysis period (1979–2007). *n* refers to either (1) number of individual-plot parameters averaged together for each of the mean plot-parameters or (2) number of intervals between fires for the pooled parameters. *MFI* refers to the mean fire interval (years) estimated by each parameter. Range is the difference between the highest and lowest plot estimate of *MFI* in a subarea. s.e. refers to the standard error or the estimate of the standard deviation based on sample data (Ott 1988). Absolute error (years) calculated as the absolute value of the difference between population *MFI* and estimated *MFI*. Relative error (%) calculated as RE (%) = 100 × (Absolute error/population *MFI*). Probabilities are significant at: \*, *P* < 0.05

Parameter	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Study area (4370 ha, Population <i>MFI</i> = 17.1 years)								
Mean plot- <i>ATFI</i>	30	17.9	19.3	1.39	0.57	0.575	0.8	4.7
Mean plot- <i>CFI<sub>all</sub></i>	30	11.7	21.7	0.50	-10.74	<0.001*	5.4	31.6
Mean plot- <i>CFI<sub>10%</sub></i>	30	12.9	19.3	0.42	-10.00	<0.001*	4.2	24.6
Mean plot- <i>CFI<sub>25%</sub></i>	30	19.8	19.3	1.30	2.09	0.045*	2.7	15.8
Pooled <i>ATFI</i>	1	17.0	–	–	–	–	0.1	0.6
Pooled <i>CFI<sub>all</sub></i>	20	1.5	2.0	0.15	-101.98	<0.001*	15.6	91.2
Eastern subarea (2215 ha, Population <i>MFI</i> = 16.6 years)								
Mean plot- <i>ATFI</i>	16	18.4	19.3	2.17	0.85	0.410	1.8	10.8
Mean plot- <i>CFI<sub>all</sub></i>	16	11.5	19.3	0.71	-7.18	<0.001*	5.1	30.7
Mean plot- <i>CFI<sub>10%</sub></i>	16	12.7	19.3	0.60	-6.50	<0.001*	3.9	23.5
Mean plot- <i>CFI<sub>25%</sub></i>	16	20.8	14.5	1.86	2.28	0.037*	4.2	25.3
Pooled <i>ATFI</i>	1	17.5	–	–	–	–	0.9	5.4
Pooled <i>CFI<sub>all</sub></i>	12	2.4	4.0	0.51	-27.58	<0.001	14.2	85.5

**Table S3. (Cont.)**

Parameter	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Western subarea (2155 ha, Population <i>MFI</i> = 17.5 years)								
Mean plot- <i>ATFI</i>	14	17.3	19.3	1.73	-0.14	0.894	0.2	1.7
Mean plot- <i>CFI</i> <sub>all</sub>	14	11.9	21.7	0.73	-7.61	<0.001*	5.6	32.0
Mean plot- <i>CFI</i> <sub>10%</sub>	14	13.1	19.3	0.60	7.27	<0.001*	4.4	25.1
Mean plot- <i>CFI</i> <sub>25%</sub>	14	18.6	14.5	1.82	0.63	0.540	1.1	6.3
Pooled <i>ATFI</i>	1	16.4	–	–	–	–	1.1	6.3
Pooled <i>CFI</i> <sub>all</sub>	13	2.2	5	0.47	-32.56	<0.001*	15.3	87.4

**Table S4. Modern mean fire intervals (*MFI*) estimated by each parameter across five six-plot regions and compared to the population *MFI* for each subarea**

Refer to Table S3 for table notes. Probabilities are significant at: \*,  $P < 0.05$

Parameter	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Subarea 1 (877 ha, Population <i>MFI</i> = 20.8 years)								
Mean plot- <i>ATFI</i>	6	18.5	19.3	3.40	-0.67	0.534	2.3	11.1
Mean plot- <i>CFI</i> <sub>all</sub>	6	12.1	4.8	1.07	-8.11	<0.001*	8.7	41.8
Mean plot- <i>CFI</i> <sub>10%</sub>	6	12.9	4.8	1.01	-7.81	<0.001*	7.9	38.0
Mean plot- <i>CFI</i> <sub>25%</sub>	6	16.9	14.5	2.42	-1.61	0.169	3.9	18.8
Pooled <i>ATFI</i>	1	15.5	–	–	–	–	5.3	25.5
Pooled <i>CFI</i> <sub>all</sub>	8	3.8	8.0	1.01	-16.83	<0.001*	17.0	81.7
Subarea 2 (928 ha, Population <i>MFI</i> = 13.1 years)								
Mean plot- <i>ATFI</i>	6	13.7	19.3	3.16	0.20	0.853	0.6	4.6
Mean plot- <i>CFI</i> <sub>all</sub>	6	9.7	7.3	1.07	-3.17	0.025*	3.4	26.0
Mean plot- <i>CFI</i> <sub>10%</sub>	6	12.1	4.8	1.07	-0.93	0.394	1.1	8.4
Mean plot- <i>CFI</i> <sub>25%</sub>	6	24.2	14.5	3.06	3.62	0.015*	11.1	84.7
Pooled <i>ATFI</i>	1	12.0	–	–	–	–	1.1	8.4
Pooled <i>CFI</i> <sub>all</sub>	8	3.6	7.0	0.89	-11.83	<0.001	9.5	72.5
Subarea 3 (624 ha, Population <i>MFI</i> = 19.4 years)								
Mean plot- <i>ATFI</i>	6	21.8	14.5	3.24	0.72	0.501	2.4	12.4
Mean plot- <i>CFI</i> <sub>all</sub>	6	12.1	4.8	1.08	-6.80	<0.001*	7.3	37.6
Mean plot- <i>CFI</i> <sub>10%</sub>	6	12.9	4.8	1.02	-6.42	<0.001*	6.5	29.1
Mean plot- <i>CFI</i> <sub>25%</sub>	6	21.8	14.5	3.24	0.72	0.501	2.4	12.4
Pooled <i>ATFI</i>	1	22.4	–	–	–	–	3.0	15.5
Pooled <i>CFI</i> <sub>all</sub>	6	6.0	16.0	2.88	-4.65	0.010*	13.4	69.1

**Table S4. (Cont.)**

Parameter	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Subarea 4 (872 ha, Population <i>MFI</i> = 22.3 years)								
Mean plot- <i>ATFI</i>	6	19.3	14.5	3.06	−0.97	0.376	3.0	13.5
Mean plot- <i>CFI</i> <sub>all</sub>	6	14.5	0.0	–	–	–	7.8	35.0
Mean plot- <i>CFI</i> <sub>10%</sub>	6	14.5	0.0	–	–	–	7.8	35.0
Mean plot- <i>CFI</i> <sub>25%</sub>	6	19.3	14.5	3.06	−0.97	0.376	3.0	13.5
Pooled <i>ATFI</i>	1	16.7	–	–	–	–	5.6	25.1
Pooled <i>CFI</i> <sub>all</sub>	7	4.3	9.0	1.34	−13.44	<0.001*	18.0	80.7
Subarea 5 (1068 ha, Population <i>MFI</i> = 14.5 years)								
Mean plot- <i>ATFI</i>	6	16.1	19.3	2.70	0.60	0.575	1.6	11.0
Mean plot- <i>CFI</i> <sub>all</sub>	6	10.1	4.8	0.96	−4.57	0.006*	4.4	30.3
Mean plot- <i>CFI</i> <sub>10%</sub>	6	12.1	19.3	1.07	−2.24	0.076	2.4	16.6
Mean plot- <i>CFI</i> <sub>25%</sub>	6	16.9	19.3	2.42	1.00	0.363	2.4	16.6
Pooled <i>ATFI</i>	1	15.7	–	–	–	–	1.2	8.3
Pooled <i>CFI</i> <sub>all</sub>	9	3.3	9.0	1.03	−10.87	<0.001*	11.2	77.2

**Table S5. Historical mean fire intervals (*MFI*) estimated by each parameter across the study area and eastern and western subareas and compared to population *MFI*s**

Mean plot refers to parameter values derived by averaging plot values across plots within the subarea. Pooled refers to: (1) *CFI* values calculated as the average interval between fires by pooling all, 10% or 25% scarred, recording samples in a subarea or (2) *ATFI* values calculated by summing tree ages (*TA*) and scar numbers (*SN*), and averaging scarring fractions (*SF*) among all plots in the subarea. FP refers to full analysis period, meaning the *CFI<sub>all</sub>*, *CFI<sub>10%</sub>* or *CFI<sub>25%</sub>* was calculated as the average interval between fire years found on all, 10% or 25% of recording samples, as well as the interval between the beginning and end of the analysis period. F2F refers to fire-to-fire intervals, meaning the *CFI<sub>all</sub>*, *CFI<sub>10%</sub>* or *CFI<sub>25%</sub>* was calculated from the average interval between only fire years found on all, 10% or 25% scarred, recording samples. *n* refers to either 1) number of individual-plot parameters averaged together for each of the mean plot-parameters or 2) number of intervals between fires for the pooled parameters. *MFI* refers to the mean fire interval (years) estimated by each parameter. Range is the difference between the highest and lowest plot estimate of *MFI* in a subarea. s.e. refers to the standard error or the estimate of the standard deviation based on sample data (Ott 1988). Absolute error (years) calculated as the absolute value of the difference between population *MFI* and estimated *MFI*. Relative error (%) calculated as  $RE (\%) = 100 \times (\text{Absolute error} / \text{population } MFI)$ . Probabilities are significant at: \*,  $P < 0.05$

Parameter	<i>n</i>	Mean plot							Pooled							
		<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Study area (4370 ha, Population <i>MFI</i> = 33.2)									Period 1684–1879							
<i>ATFI</i>	28	32.7	73.9	4.00	−0.13	0.895	0.5	1.5	1	32.4	–	–	–	–	0.8	2.3
<i>FP CFI<sub>all</sub></i>	28	29.5	59.4	3.06	−1.22	0.234	3.7	11.1	48	4.1	12	0.40	−71.99	<0.001*	29.1	87.7
<i>FP CFI<sub>10%</sub></i>	28	29.5	59.4	3.05	−1.21	0.238	3.7	11.1	25	7.9	22	1.31	−19.26	<0.001*	25.3	76.2
<i>FP CFI<sub>25%</sub></i>	28	31.6	57.4	2.84	−0.55	0.589	1.6	4.8	11	17.9	40	4.14	−3.69	0.004*	15.3	46.1
<i>F2F CFI<sub>all</sub></i>	28	28.0	102.0	4.40	−1.18	0.247	5.2	15.7	47	4.1	12.0	0.41	−70.54	<0.001*	29.1	87.7
<i>F2F CFI<sub>10%</sub></i>	28	28.0	102.0	4.39	−1.18	0.250	5.2	15.7	23	8.1	22.0	1.41	−17.76	<0.001*	25.1	75.6
<i>F2F CFI<sub>25%</sub></i>	28	31.7	102.0	4.33	−0.35	0.729	1.5	4.5	9	20.7	40.0	4.56	−2.75	0.025*	12.5	37.7

**Table S5. (Cont.)**

Parameter	<i>n</i>	Mean plot							Pooled							
		<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Eastern subarea (2215 ha, Population <i>MFI</i> = 24.9)									Period 1684–1879							
<i>ATFI</i>	16	24.0	62.0	3.76	−0.24	0.814	0.9	3.6	1	28.1	–	–	–	–	3.2	12.8
<i>FP CFI</i> <sub>all</sub>	16	22.6	44.7	2.79	−0.84	0.413	2.3	9.2	36	5.5	16.0	0.59	−32.84	<0.001*	19.4	77.9
<i>FP CFI</i> <sub>10%</sub>	16	22.6	44.7	2.77	−0.82	0.426	2.3	9.2	23	8.6	17.0	1.16	−14.14	<0.001*	16.3	65.5
<i>FP CFI</i> <sub>25%</sub>	16	26.0	42.6	2.68	0.39	0.700	1.1	4.4	11	17.9	39.0	3.77	−1.85	0.093	7.0	28.1
<i>F2F CFI</i> <sub>all</sub>	16	17.5	55.0	3.19	−2.33	0.034*	7.4	29.7	34	5.7	16.0	0.61	−31.67	<0.001*	19.2	77.1
<i>F2F CFI</i> <sub>10%</sub>	16	17.5	55.0	3.18	−2.31	0.036*	7.4	29.7	21	8.9	17.0	1.24	−12.97	<0.001*	16.0	64.3
<i>F2F CFI</i> <sub>25%</sub>	16	22.6	55.0	3.95	−0.59	0.566	2.3	9.2	9	20.7	37.0	4.04	−1.05	0.325	4.2	16.9
Western subarea (2155 ha, Population <i>MFI</i> = 50.4)									Period 1684–1879							
<i>ATFI</i>	12	44.2	70.6	6.71	−0.92	0.615	6.2	12.3	1	40.9	–	–	–	–	9.5	18.9
<i>FP CFI</i> <sub>all</sub>	12	38.7	55.4	5.08	−2.30	0.042*	11.7	23.8	25	7.9	25.0	1.22	−34.82	<0.001*	42.5	84.3
<i>FP CFI</i> <sub>10%</sub>	12	38.7	55.4	5.08	−2.30	0.042*	11.7	23.8	15	13.1	36.0	2.47	−15.14	<0.001*	37.3	74.0
<i>FP CFI</i> <sub>25%</sub>	12	39.2	52.0	4.90	−2.28	0.044*	11.2	22.2	12	16.3	33.0	3.36	−10.13	<0.001*	34.1	67.7
<i>F2F CFI</i> <sub>all</sub>	12	42.0	94.1	7.81	−1.07	0.307	8.4	16.7	24	7.8	25.0	1.27	−33.46	<0.001*	42.6	84.5
<i>F2F CFI</i> <sub>10%</sub>	12	42.0	94.1	7.81	−1.07	0.307	8.4	16.7	13	13.9	36.0	2.81	−13.05	<0.001*	36.5	72.4
<i>F2F CFI</i> <sub>25%</sub>	12	43.8	91.3	7.44	−1.88	0.396	6.6	13.1	10	18.0	33.0	3.85	−8.42	<0.001*	32.4	64.3



**Table S6. Historical mean fire intervals (MFI) estimated by each parameter across five, six-plot subareas and compared to the population MFI for each subarea**

Refer to Table S5 for table notes. Probabilities are significant at: \*,  $P < 0.05$

Parameter	n	Mean plot					AE (years)	RE (%)	n	MFI (years)	Range (years)	Pooled			AE (years)	RE (%)
		MFI (years)	Range (years)	s.e.	T-value	P-value						s.e.	T-value	P-value		
Subarea 1 (877 ha, Population MFI = 23.0)																
Period 1684–1879																
ATFI	6	23.8	17.9	3.00	0.28	0.793	0.8	3.5	1	24.9	–	–	–	–	1.9	8.2
FP CFI <sub>all</sub>	6	23.6	21.1	3.48	0.17	0.874	0.6	2.6	24	8.2	23.0	1.11	–13.32	<0.001*	14.8	64.3
FP CFI <sub>10%</sub>	6	23.6	21.1	3.48	0.17	0.874	0.6	2.6	20	9.8	20.0	1.29	–10.23	<0.001*	13.2	57.4
FP CFI <sub>25%</sub>	6	26.6	11.6	2.24	1.60	0.170	3.6	15.7	9	21.8	15.0	3.07	–0.40	0.701	1.2	5.2
F2F CFI <sub>all</sub>	6	17.5	11.2	1.77	–3.09	0.027*	5.5	23.9	22	7.8	16.0	0.90	–16.84	<0.001*	15.2	66.1
F2F CFI <sub>10%</sub>	6	17.5	11.2	1.77	–3.09	0.027*	5.5	23.9	19	9.1	16.0	1.11	–12.57	<0.001*	13.9	60.4
F2F CFI <sub>25%</sub>	6	20.3	11.8	1.99	–1.37	0.228	2.7	11.7	8	21.4	24.0	3.40	–0.48	0.647	1.6	7.0
Subarea 2 (928 ha, Population MFI = 26.4)																
Period 1684–1879																
ATFI	6	28.7	62.0	9.61	0.24	0.819	2.3	8.7	1	32.6	–	–	–	–	6.2	23.7
FP CFI <sub>all</sub>	6	25.1	42.7	6.53	–0.20	0.850	1.3	4.9	21	9.3	22.0	1.21	–14.06	<0.001*	17.1	64.8
FP CFI <sub>10%</sub>	6	25.1	42.7	6.53	–0.20	0.850	1.3	4.9	20	9.8	22.0	1.31	–12.72	<0.001*	16.6	62.9
FP CFI <sub>25%</sub>	6	25.7	42.7	6.40	–0.11	0.914	0.7	2.7	15	13.1	22.0	2.20	–6.06	<0.001*	13.3	50.4
F2F CFI <sub>all</sub>	6	19.9	55.0	8.66	–0.75	0.490	6.5	24.6	19	9.7	22.0	1.30	–12.87	<0.001*	16.7	63.3
F2F CFI <sub>10%</sub>	6	19.9	55.0	8.66	–0.75	0.490	6.5	24.6	18	10.3	22.0	1.39	–11.58	<0.001*	16.1	61.0
F2F CFI <sub>25%</sub>	6	20.4	55.0	8.58	–0.69	0.519	6.0	22.7	13	14.2	31.0	2.36	–5.15	<0.001*	12.2	46.2
Subarea 3 (624 ha, Population MFI = 26.7)																
Period 1684–1879																
ATFI	6	18.8	13.0	1.92	–4.13	0.009*	7.9	29.6	1	20.9	–	–	–	–	5.8	21.8
FP CFI <sub>all</sub>	6	18.4	11.7	1.96	–4.21	0.008*	8.3	31.1	28	7.0	21.0	1.1	–17.84	<0.001*	19.7	73.8
FP CFI <sub>10%</sub>	6	18.6	11.7	1.87	–4.31	0.008*	8.1	30.3	21	9.3	20.0	1.34	–12.96	<0.001*	17.4	65.2
FP CFI <sub>25%</sub>	6	25.0	22.7	3.42	–0.51	0.634	1.7	6.4	9	21.8	35.0	4.12	–1.20	0.266	4.9	18.4
F2F CFI <sub>all</sub>	6	14.9	6.2	0.90	13.21	<0.001*	11.8	44.2	26	7.0	21.0	1.19	–16.58	<0.001*	20.6	77.2
F2F CFI <sub>10%</sub>	6	15.1	6.2	0.85	13.69	<0.001*	11.6	43.4	19	9.5	20.0	1.48	–11.62	<0.001*	17.2	64.4
F2F CFI <sub>25%</sub>	6	27.4	40.1	6.52	0.10	0.922	0.7	2.6	7	25.7	26.0	4.07	–0.21	0.843	1.0	3.7
Subarea 4 (872 ha, Population MFI = 39.1)																
Period 1687–1879																
ATFI	5	42.6	66.8	11.8	0.30	0.780	3.5	9.0	1	36.5	–	–	–	–	2.6	6.6
FP CFI <sub>all</sub>	5	40.6	52.0	8.57	0.17	0.873	1.5	3.8	12	16.1	27.0	3.01	–7.66	<0.001*	23.4	58.9
FP CFI <sub>10%</sub>	5	40.6	52.0	8.57	0.17	0.873	1.5	3.8	11	17.5	33.0	3.43	–6.28	<0.001*	21.6	55.2
FP CFI <sub>25%</sub>	5	40.6	52.0	8.57	0.17	0.873	1.5	3.8	11	17.5	33.0	3.43	–6.28	<0.001*	21.6	55.2
F2F CFI <sub>all</sub>	5	47.6	88.8	16.2	0.52	0.627	8.5	21.7	11	17.1	27.0	3.10	–7.03	<0.001*	22.0	56.3
F2F CFI <sub>10%</sub>	5	47.6	88.8	16.2	0.52	0.627	8.5	21.7	10	18.8	33.0	3.53	–5.69	<0.001*	20.3	51.9
F2F CFI <sub>25%</sub>	5	49.4	88.8	15.7	0.65	0.549	10.3	26.3	10	18.8	33.0	3.53	–5.69	<0.001*	20.3	51.9

**Table S6. (Cont.)**

Parameter	Mean plot						Pooled									
	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Subarea 5 (1068 ha, Population <i>MFI</i> = 67.6)									Period 1695–1879							
ATFI	5	54.7	50.0	8.79	-1.46	0.217	12.9	19.1	1	56.6	–	–	–	–	11.0	16.2
<i>FP CFI</i> <sub>all</sub>	5	44.0	42.3	7.47	-3.16	0.034*	23.6	34.9	14	13.2	30.0	2.26	-24.24	<0.001*	54.4	80.5
<i>FP CFI</i> <sub>10%</sub>	5	44.0	42.3	7.47	-3.16	0.034*	23.6	34.9	10	16.8	30.0	3.16	-16.09	<0.001*	50.8	75.1
<i>FP CFI</i> <sub>25%</sub>	5	44.0	42.3	7.47	-3.16	0.034*	23.6	34.9	10	16.8	30.0	3.16	-16.09	<0.001*	50.8	75.1
<i>F2F CFI</i> <sub>all</sub>	5	46.4	41.5	8.10	-2.62	0.059	21.2	31.4	12	14.7	24.0	2.33	-22.75	<0.001*	52.9	78.3
<i>F2F CFI</i> <sub>10%</sub>	5	46.4	41.5	8.10	-2.62	0.059	21.2	31.4	9	18.8	30.0	3.55	-13.77	<0.001*	48.8	72.2
<i>F2F CFI</i> <sub>25%</sub>	5	46.4	41.5	8.10	-2.62	0.059	21.2	31.4	9	18.8	30.0	3.55	-13.77	<0.001*	48.8	72.2

**Table S7. Historical mean fire intervals (*MFI*) estimated by each parameter across the Grandview region of the South Rim compared to the estimated population *MFI* for the region**

Refer to Table S5 for table notes. Probabilities are significant at: \*,  $P < 0.05$

Parameter	<i>n</i>	Mean plot							Pooled							
		<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)	<i>n</i>	<i>MFI</i> (years)	Range (years)	s.e.	<i>T</i> -value	<i>P</i> -value	AE (years)	RE (%)
Grandview region (644 ha, Population <i>MFI</i> = 25.7 years)									Period 1684–1879							
<i>ATFI</i>	4	22.7	14.1	3.01	−0.98	0.400	3.0	11.7	1	22.1	–	–	–	–	3.6	14.0
<i>FP CFI</i> <sub>all</sub>	4	22.7	21.1	4.32	−0.69	0.540	3.0	11.7	22	8.9	24.0	1.4	−11.81	<0.001*	16.8	65.4
<i>FP CFI</i> <sub>10%</sub>	4	22.7	21.1	4.32	−0.69	0.540	3.0	11.7	18	10.3	24.0	1.6	−9.41	<0.001*	15.4	59.9
<i>FP CFI</i> <sub>25%</sub>	4	26.0	11.1	2.62	0.11	0.920	0.3	1.2	11	16.4	33.0	3.4	−2.70	<0.001*	9.3	36.2
<i>F2F CFI</i> <sub>all</sub>	4	15.8	7.57	1.77	−5.59	0.011*	9.9	38.5	20	8.6	22.0	1.30	−13.21	<0.001*	17.1	66.5
<i>F2F CFI</i> <sub>10%</sub>	4	15.8	7.57	1.77	−5.59	0.011*	9.9	38.5	17	10.1	22.0	1.53	−10.21	<0.001*	15.6	60.7
<i>F2F CFI</i> <sub>25%</sub>	4	18.2	11.0	2.33	−3.25	0.048*	7.5	29.2	10	17.2	30.0	3.73	−2.28	0.049*	8.5	33.1

## References

Ott L (1988) ‘An Introduction to Statistical Methods and Data Analysis’, 3rd edn. (PWS-Kent Publishing Company: Boston, MA)