

Supplementary Information

$$\text{Eq. S1. } AICc = (2k - 2\log(L)) + \left(\frac{2k(k+1)}{n-k-1} \right);$$

k = number of parameters, L =likelihood of the model given the data, and n = sample size.

Table S1. Full description of pressure scenario imposed on populations with fast, medium and slow life-history speeds. N_i represents starting population size.

Scenario code category	Pressure type	Pressure change over time	Level	N_1	Starting pressure (% or fixed loss)	Yearly change in pressure	Final pressure
P1	Proportional	Constant	Low	500 and 1000	10	0	10
P1	Proportional	Constant	Medium	500 and 1000	20	0	20
P1	Proportional	Constant	High	500 and 1000	30	0	30
P2	Proportional	Decreasing	Slow	500 and 1000	30	-0.5	0
P2	Proportional	Decreasing	Medium	500 and 1000	30	-1	0
P2	Proportional	Decreasing	High	500 and 1000	30	-2	0
P3	Proportional	Increasing	Slow	500 and 1000	5	0.5	70
P3	Proportional	Increasing	Medium	500 and 1000	5	1	70
P3	Proportional	Increasing	High	500 and 1000	5	2.5	70
F1	Fixed	Constant	Low	1000	30	0	10
F1	Fixed	Constant	Medium	1000	50	0	25
F1	Fixed	Constant	High	1000	75	0	70
F1	Fixed	Constant	Low	500	70	0	80
F1	Fixed	Constant	Medium	500	80	0	100
F1	Fixed	Constant	High	500	100	0	100
F2	Fixed	Decreasing	Slow	1000	100	-1	0
F2	Fixed	Decreasing	Medium	1000	100	-2	0
F2	Fixed	Decreasing	High	1000	100	-3	0
F2	Fixed	Decreasing	Slow	500	80	-1	0
F2	Fixed	Decreasing	Medium	500	80	-2	0
F2	Fixed	Decreasing	High	500	80	-3	0
F3	Fixed	Increasing	Slow	1000	1	2	52
F3	Fixed	Increasing	Medium	1000	1	5	130
F3	Fixed	Increasing	High	1000	1	7	182
F3	Fixed	Increasing	Slow	500	1	5	130
F3	Fixed	Increasing	Medium	500	1	8	201
F3	Fixed	Increasing	High	500	1	9	226

Table S2. Deterministic curve-shapes produced by different scenarios of proportional pressure on fast, medium and slow life-history speed population models. The section of a decline-curve before the switch point (SP) is indicated by “A” and the following section by “B”.

Pressure type	Pressure change over time	r_{max}	Pressure level	N_1	SP	Section	Shape	Best fit
Proportional	Constant	0.1	Low	Any	0	NA	Linear	Linear
Proportional	Constant	0.2	Low	Any	0	NA	Concave	Exponential
Proportional	Constant	0.3	Low	Any	0	NA	Concave	Exponential
Proportional	Constant	0.1	Medium	Any	0	NA	Concave	Exponential
Proportional	Constant	0.2	Medium	Any	0	NA	Concave	Exponential
Proportional	Constant	0.3	Medium	Any	0	NA	Concave	Exponential
Proportional	Constant	0.1	High	Any	0	NA	Concave	Exponential
Proportional	Constant	0.2	High	Any	0	NA	Concave	Exponential
Proportional	Constant	0.3	High	Any	0	NA	Concave	Exponential
Proportional	Increasing	0.1	Low	1000	0	NA	Concave	Exponential
Proportional	Increasing	0.2	Low	1000	0	NA	Concave	Exponential
Proportional	Increasing	0.3	Low	1000	0	NA	Concave	Exponential
Proportional	Increasing	0.1	Medium	1000	1	A	Convex	Quadratic
Proportional	Increasing	0.1	Medium	1000	1	B	Concave	Quadratic
Proportional	Increasing	0.2	Medium	1000	0	NA	Concave	Quadratic
Proportional	Increasing	0.3	Medium	1000	0	NA	Concave	Exponential
Proportional	Increasing	0.1	High	1000	1	A	Linear	Linear
Proportional	Increasing	0.1	High	1000	1	B	Concave	Quadratic
Proportional	Increasing	0.2	High	1000	1	A	Linear	Linear
Proportional	Increasing	0.2	High	1000	1	B	Concave	Quadratic
Proportional	Increasing	0.3	High	1000	1	A	Concave	Quadratic
Proportional	Increasing	0.3	High	1000	1	B	Convex	Quadratic
Proportional	Increasing	0.1	Low	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.1	Low	500	1	B	Concave	Quadratic
Proportional	Increasing	0.2	Low	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.2	Low	500	1	B	Linear	Linear
Proportional	Increasing	0.3	Low	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.3	Low	500	1	B	Concave	Quadratic
Proportional	Increasing	0.1	Medium	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.1	Medium	500	1	B	Concave	Quadratic
Proportional	Increasing	0.2	Medium	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.2	Medium	500	1	B	Concave	Quadratic
Proportional	Increasing	0.3	Medium	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.3	Medium	500	1	B	Concave	Quadratic
Proportional	Increasing	0.1	High	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.1	High	500	1	B	Concave	Exponential
Proportional	Increasing	0.2	High	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.2	High	500	1	B	Concave	Quadratic
Proportional	Increasing	0.3	High	500	1	A	Convex, hump	Quadratic
Proportional	Increasing	0.3	High	500	1	B	Concave	Quadratic
Proportional	Decreasing	0.1	Low	1000	0	NA	Concave	Exponential
Proportional	Decreasing	0.2	Low	1000	0	NA	Concave	Exponential
Proportional	Decreasing	0.3	Low	1000	0	NA	Concave	Exponential
Proportional	Decreasing	0.1	Medium	1000	0	NA	Concave	Quadratic
Proportional	Decreasing	0.2	Medium	1000	0	NA	Concave	Exponential

Proportional	Decreasing	0.3	Medium	1000	0	NA	Concave	Quadratic
Proportional	Decreasing	0.1	High	1000	0	NA	Concave	Quadratic
Proportional	Decreasing	0.2	High	1000	0	A	Concave	Quadratic
Proportional	Decreasing	0.3	High	1000	0	NA	Concave	Quadratic
Proportional	Decreasing	0.1	Low	500	0	NA	Concave	Exponential
Proportional	Decreasing	0.2	Low	500	0	NA	Concave	Exponential
Proportional	Decreasing	0.3	Low	500	0	NA	Concave	Exponential
Proportional	Decreasing	0.1	Medium	500	0	NA	Concave	Exponential
Proportional	Decreasing	0.2	Medium	500	0	NA	Concave	Exponential
Proportional	Decreasing	0.3	Medium	500	0	NA	Concave	Exponential
Proportional	Decreasing	0.1	High	500	0	NA	Concave	Quadratic
Proportional	Decreasing	0.2	High	500	0	NA	Concave	Quadratic
Proportional	Decreasing	0.3	High	500	0	NA	Concave	Exponential

Table S3. Deterministic curve-shapes produced by different scenarios of fixed pressure on fast, medium and slow life-history speed population models. The section of a decline-curve before the switch point (SP) is indicated by “A” and the following section by “B”.

Pressure type	Pressure change over time	r_{max}	Pressure level	N_1	SP	Section	Shape	Best fit
Fixed	Constant	0.1	Low	1000	0	NA	Concave	Exponential
Fixed	Constant	0.2	Low	1000	0	NA	Concave	Exponential
Fixed	Constant	0.3	Low	1000	0	NA	Concave	Exponential
Fixed	Constant	0.1	Medium	1000	1	A	Concave	Exponential
Fixed	Constant	0.1	Medium	1000	1	B	Convex	Quadratic
Fixed	Constant	0.2	Medium	1000	1	A	Concave	Exponential
Fixed	Constant	0.2	Medium	1000	1	B	Convex	Quadratic
Fixed	Constant	0.3	Medium	1000	1	A	Concave	Exponential
Fixed	Constant	0.3	Medium	1000	1	B	Convex	Quadratic
Fixed	Constant	0.1	High	1000	1	A	Linear	Linear
Fixed	Constant	0.1	High	1000	1	B	Linear	Linear
Fixed	Constant	0.2	High	1000	1	A	Concave	Quadratic
Fixed	Constant	0.2	High	1000	1	B	Convex	Quadratic
Fixed	Constant	0.3	High	1000	1	A	Concave	Exponential
Fixed	Constant	0.3	High	1000	1	B	Convex	Quadratic
Fixed	Constant	0.1	Low	500	1	A	Linear	Linear
Fixed	Constant	0.1	Low	500	1	B	Convex	Quadratic
Fixed	Constant	0.2	Low	500	1	A	Linear	Linear
Fixed	Constant	0.2	Low	500	1	B	Convex	Quadratic
Fixed	Constant	0.3	Low	500	0	NA	Concave	Quadratic
Fixed	Constant	0.1	Medium	500	1	A	Linear	Linear
Fixed	Constant	0.1	Medium	500	1	B	Convex	Quadratic
Fixed	Constant	0.2	Medium	500	1	A	Linear	Linear
Fixed	Constant	0.2	Medium	500	1	B	Convex	Quadratic
Fixed	Constant	0.3	Medium	500	1	A	Linear	Linear
Fixed	Constant	0.3	Medium	500	1	B	Convex	Quadratic
Fixed	Constant	0.1	High	500	0	NA	Convex	Quadratic

Fixed	Constant	0.2	High	500	1	A	Linear	Linear
Fixed	Constant	0.2	High	500	1	B	Convex	Quadratic
Fixed	Constant	0.3	High	500	1	A	Convex	Linear
Fixed	Increasing	0.1	Low	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.2	Low	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.3	Low	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.1	Medium	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.2	Medium	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.3	Medium	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.1	High	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.2	High	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.3	High	1000	0	NA	Convex	Quadratic
Fixed	Increasing	0.1	Low	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.2	Low	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.3	Low	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.1	Medium	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.2	Medium	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.3	Medium	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.1	High	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.2	High	500	0	NA	Convex, hump	Quadratic
Fixed	Increasing	0.3	High	500	0	NA	Convex, hump	Quadratic
Fixed	Decreasing	0.1	Low	1000	1	A	Concave	Quadratic
Fixed	Decreasing	0.1	Low	1000	1	B	Linear	Linear
Fixed	Decreasing	0.2	Low	1000	1	A	Concave	Exponential
Fixed	Decreasing	0.2	Low	1000	1	B	Convex	Quadratic
Fixed	Decreasing	0.3	Low	1000	0	NA	Concave	Exponential
Fixed	Decreasing	0.1	Medium	1000	1	A	Concave	Exponential
Fixed	Decreasing	0.1	Medium	1000	1	B	Convex	Quadratic
Fixed	Decreasing	0.2	Medium	1000	1	A	Concave	Exponential
Fixed	Decreasing	0.2	Medium	1000	1	B	Convex	Quadratic
Fixed	Decreasing	0.3	Medium	1000	1	A	Concave	Quadratic
Fixed	Decreasing	0.1	High	1000	0	A	Concave	Exponential
Fixed	Decreasing	0.2	High	1000	0	A	Concave	Quadratic
Fixed	Decreasing	0.3	High	1000	1	A	Concave	Quadratic
Fixed	Decreasing	0.3	High	1000	1	B	Convex, up to K	Quadratic
Fixed	Decreasing	0.1	Low	500	1	A	Concave	Quadratic
Fixed	Decreasing	0.1	Low	500	1	B	Convex	Linear
Fixed	Decreasing	0.2	Low	500	1	A	Linear	Linear
Fixed	Decreasing	0.2	Low	500	1	B	Convex	Quadratic
Fixed	Decreasing	0.3	Low	500	0	NA	Concave	Quadratic
Fixed	Decreasing	0.1	Medium	500	1	A	Linear	Linear
Fixed	Decreasing	0.1	Medium	500	1	B	Convex	Quadratic

Fixed	Deceasing	0.2	Medium	500	1	A	Concave	Quadratic
Fixed	Deceasing	0.2	Medium	500	1	B	Convex	Quadratic
Fixed	Deceasing	0.3	Medium	500	1	A	Concave	Quadratic
Fixed	Deceasing	0.3	Medium	500	1	B	Convex	Quadratic
Fixed	Deceasing	0.1	High	500	0	A	Concave	Exponential
Fixed	Deceasing	0.2	High	500	1	A	Concave	Quadratic
Fixed	Deceasing	0.3	High	500	1	A	Concave	Quadratic
Fixed	Deceasing	0.3	High	500	1	B	Convex	Quadratic

Table S4. Chi-square results from two-sample test for equality of proportions between the best-fit results in null population models and those in low, constant, proportional pressure scenarios (*PI*). Significant differences at $\alpha=0.05$ are indicated by a star.

Degradation type	Specific degradation	Exponential curve diagnosis			Concave curve diagnosis		
		χ^2	<i>d.f.</i>	p-value	χ^2	<i>d.f.</i>	p-value
Years either side of pressure	25 (None)	298.52	1	<0.001*	92.85	1	<0.001*
Years either side of pressure	20	351.24	1	<0.001*	99.66	1	<0.001*
Years either side of pressure	15	374.59	1	<0.001*	98.28	1	<0.001*
Years either side of pressure	10	463.36	1	<0.001*	104.76	1	<0.001*
Years either side of pressure	5	359.63	1	<0.001*	150.8	1	<0.001*
Years after pressure	20	338.22	1	<0.001*	92.85	1	<0.001*
Years after pressure	15	378.34	1	<0.001*	89.28	1	<0.001*
Years after pressure	10	414.08	1	<0.001*	90.17	1	<0.001*
Years after pressure	5	345.65	1	<0.001*	73.91	1	<0.001*
Years before pressure	20	311.39	1	<0.001*	103.36	1	<0.001*
Years before pressure	15	327.09	1	<0.001*	104.29	1	<0.001*
Years before pressure	10	347.51	1	<0.001*	116.7	1	<0.001*
Years before pressure	5	358.7	1	<0.001*	139.79	1	<0.001*
Years before pressure	2	0.76	1	0.383	4.86	1	0.027*
Years between monitoring	1	338.22	1	<0.001*	95.55	1	<0.001*
Years between monitoring	2	284.79	1	<0.001*	95.1	1	<0.001*
Years between monitoring	3	272.94	1	<0.001*	93.29	1	<0.001*
Years between monitoring	5	160.02	1	<0.001*	20.05	1	<0.001*
Years between monitoring	8	26.67	1	<0.001*	0.36	1	0.551
Increase in observation error	1	139.9	1	<0.001*	54.17	1	<0.001*
Increase in observation error	1.5	77.7	1	<0.001*	52.44	1	<0.001*
Increase in observation error	2	59.83	1	<0.001*	46.8	1	<0.001*
Increase in observation error	2.5	10.92	1	0.001*	28.56	1	<0.001*

Table S5. Chi-square results from two-sample test for equality of proportions between best-fit frequencies for each degradation scenario in populations with low, constant, proportional pressure (*PI*). Significant differences at $\alpha=0.05$ are indicated by a star.

Degradation type	Specific degradation	Linear vs. quadratic fit			Linear vs. exponential fit			Quadratic vs. exponential fit		
		χ^2	<i>d.f.</i>	p-value	χ^2	<i>d.f.</i>	p-value	χ^2	<i>d.f.</i>	p-value
Years either side of pressure	25 (None)	259.32	1	<0.001*	329.29	1	<0.001*	6.04	1	0.014*
Years either side of pressure	20	215.60	1	<0.001*	389.83	1	<0.001*	37.04	1	<0.001*
Years either side of pressure	15	221.23	1	<0.001*	436.57	1	<0.001*	54.11	1	<0.001*
Years either side of pressure	10	65.50	1	<0.001*	455.39	1	<0.001*	218.11	1	<0.001*
Years either side of pressure	5	427.01	1	<0.001*	566.01	1	<0.001*	19.34	1	<0.001*
Years after pressure	20	206.25	1	<0.001*	359.33	1	<0.001*	29.76	1	<0.001*
Years after	15	253.84	1	<0.001*	469.23	1	<0.001*	51.55	1	<0.001*

pressure										
Years after pressure	10	101.94	1	<0.001*	404.25	1	<0.001*	129.14	1	<0.001*
Years after pressure	5	253.13	1	<0.001*	408.87	1	<0.001*	28.12	1	<0.001*
Years before pressure	20	168.17	1	<0.001*	283.64	1	<0.001*	19.63	1	<0.001*
Years before pressure	15	300.16	1	<0.001*	410.59	1	<0.001*	13.62	1	<0.001*
Years before pressure	10	242.31	1	<0.001*	403.92	1	<0.001*	30.68	1	<0.001*
Years before pressure	5	202.81	1	<0.001*	393.08	1	<0.001*	44.65	1	<0.001*
Years before pressure	2	286.15	1	<0.001*	29.80	1	<0.001*	447.90	1	<0.001*
Years between monitoring	1	239.87	1	<0.001*	385.29	1	<0.001*	25.28	1	<0.001*
Years between monitoring	2	247.53	1	<0.001*	297.00	1	<0.001*	3.16	1	0.075
Years between monitoring	3	213.76	1	<0.001*	253.33	1	<0.001*	2.24	1	0.135
Years between monitoring	5	78.91	1	<0.001*	32.06	1	<0.001*	10.99	1	<0.001*
Years between monitoring	8	195.70	1	<0.001*	6.30	1	0.012*	261.41	1	<0.001*
Increase in observation error	1	189.47	1	<0.001*	56.60	1	<0.001*	44.04	1	<0.001*
Increase in observation error	1.5	333.33	1	<0.001*	38.38	1	<0.001*	167.04	1	<0.001*
Increase in observation error	2	391.23	1	<0.001*	37.68	1	<0.001*	216.75	1	<0.001*
Increase in observation error	2.5	413.28	1	<0.001*	0.10	1	0.757	403.95	1	<0.001*

Table S6. Chi-square results from two-sample test for equality of proportions between the concavity frequencies diagnosed for each degradation scenario in populations with low, constant, proportional pressure (*PI*). Significant differences at $\alpha=0.05$ are indicated by a star.

Concave vs. Convex fit				
Degradation type	Specific degradation	χ^2	<i>d.f.</i>	p-value
Years either side of pressure	25 (None)	293.76	1	<0.001*
Years either side of pressure	20	630.44	1	<0.001*
Years either side of pressure	15	620.94	1	<0.001*
Years either side of pressure	10	665.86	1	<0.001*
Years either side of pressure	5	1000.00	1	<0.001*
Years after pressure	20	583.70	1	<0.001*
Years after pressure	15	559.50	1	<0.001*
Years after pressure	10	565.50	1	<0.001*
Years after pressure	5	456.98	1	<0.001*
Years before pressure	20	656.10	1	<0.001*
Years before pressure	15	662.60	1	<0.001*

Years before pressure	10	749.96	1	<0.001*
Years before pressure	5	917.76	1	<0.001*
Years before pressure	1	602.18	1	<0.001*
Years between monitoring	2	599.08	1	<0.001*
Years between monitoring	3	586.76	1	<0.001*
Years between monitoring	5	123.90	1	<0.001*
Years between monitoring	8	0.02	1	0.899
Years between monitoring	1	330.16	1	<0.001*
Increase in observation error	1.5	319.27	1	<0.001*
Increase in observation error	2	284.23	1	<0.001*
Increase in observation error	2.5	173.82	1	<0.001*

Table S7. Chi-square results from two-sample test for equality of proportions between the best-fit results in null population models and those in increasing fixed pressure scenarios (*F3*). Significant differences at $\alpha= 0.05$ are indicated by a star.

Degradation type	Specific degradation	Quadratic curve diagnosis			Convex curve diagnosis		
		χ^2	<i>d.f.</i>	p-value	χ^2	<i>d.f.</i>	p-value
Years either side of pressure	25 (None)	59.06	1	<0.001*	177.81	1	<0.001*
Years either side of pressure	20	20.09	1	<0.001*	150.91	1	<0.001*
Years either side of pressure	15	22.31	1	<0.001*	146.57	1	<0.001*
Years either side of pressure	10	23.46	1	<0.001*	152.55	1	<0.001*
Years either side of pressure	5	49.79	1	<0.001*	144.41	1	<0.001*
Years after pressure	20	20.09	1	<0.001*	140.13	1	<0.001*
Years after pressure	15	16.55	1	<0.001*	134.84	1	<0.001*
Years after pressure	10	16.36	1	<0.001*	148.74	1	<0.001*
Years after pressure	5	45.1	1	<0.001*	127.03	1	<0.001*
Years before pressure	20	27.06	1	<0.001*	162.51	1	<0.001*
Years before pressure	15	30.35	1	<0.001*	153.1	1	<0.001*
Years before pressure	10	27.06	1	<0.001*	152.55	1	<0.001*
Years before pressure	5	29.32	1	<0.001*	164.75	1	<0.001*
Years before pressure	2	27.06	1	<0.001*	152.01	1	<0.001*
Years between monitoring	1	23.23	1	<0.001*	138.54	1	<0.001*
Years between monitoring	2	22.31	1	<0.001*	147.11	1	<0.001*
Years between monitoring	3	33	1	<0.001*	149.28	1	<0.001*
Years between monitoring	5	33	1	<0.001*	153.1	1	<0.001*
Years between monitoring	8	45.71	1	<0.001*	179.54	1	<0.001*
Increase in observation error	1	50.11	1	<0.001*	139.07	1	<0.001*
Increase in observation error	1.5	48.21	1	<0.001*	141.2	1	<0.001*
Increase in observation error	2	50.76	1	<0.001*	122.42	1	<0.001*
Increase in observation error	2.5	51.73	1	<0.001*	123.44	1	<0.001*

Table S8. Chi-square results from two-sample test for equality of proportions between best-fit frequencies for each degradation scenario in populations with increasing, fixed pressure (*F3*). Significant differences at $\alpha= 0.05$ are indicated by a star.

Degradation type	Specific degradation	Linear vs. quadratic fit			Linear vs. exponential fit			Quadratic vs. exponential fit		
		χ^2	<i>d.f.</i>	p-value	χ^2	<i>d.f.</i>	p-value	χ^2	<i>d.f.</i>	p-value
Years either side of pressure	25 (None)	933.16	1	<0.001*	17.00	1	<0.001*	983.00	1	<0.001*
Years either side of pressure	20	476.10	1	<0.001*	155.00	1	<0.001*	845.00	1	<0.001*
Years either side of pressure	15	506.03	1	<0.001*	141.03	1	<0.001*	852.00	1	<0.001*
Years either side of pressure	10	524.30	1	<0.001*	128.26	1	<0.001*	851.04	1	<0.001*
Years either side of pressure	5	836.08	1	<0.001*	2.00	1	0.157	868.65	1	<0.001*
Years after pressure	20	477.96	1	<0.001*	151.03	1	<0.001*	842.00	1	<0.001*
Years after pressure	15	435.59	1	<0.001*	160.21	1	<0.001*	819.04	1	<0.001*
Years after pressure	10	434.70	1	<0.001*	157.37	1	<0.001*	815.08	1	<0.001*
Years after pressure	5	802.71	1	<0.001*	24.07	1	<0.001*	907.51	1	<0.001*
Years before pressure	20	562.50	1	<0.001*	125.00	1	<0.001*	875.00	1	<0.001*
Years before pressure	15	604.33	1	<0.001*	108.04	1	<0.001*	885.00	1	<0.001*
Years before pressure	10	562.50	1	<0.001*	125.00	1	<0.001*	875.00	1	<0.001*
Years before pressure	5	589.82	1	<0.001*	116.00	1	<0.001*	884.00	1	<0.001*
Years before pressure	2	564.57	1	<0.001*	121.03	1	<0.001*	872.00	1	<0.001*
Years between monitoring	1	834.40	1	<0.001*	40.09	1	<0.001*	953.00	1	<0.001*
Years between monitoring	2	817.86	1	<0.001*	38.72	1	<0.001*	941.04	1	<0.001*
Years between monitoring	3	852.50	1	<0.001*	24.38	1	<0.001*	943.10	1	<0.001*
Years between monitoring	5	852.78	1	<0.001*	35.10	1	<0.001*	958.00	1	<0.001*
Years between monitoring	8	519.44	1	<0.001*	133.11	1	<0.001*	853.02	1	<0.001*
Increase in observation error	1	507.96	1	<0.001*	137.11	1	<0.001*	849.02	1	<0.001*
Increase in observation error	1.5	635.84	1	<0.001*	98.04	1	<0.001*	895.00	1	<0.001*
Increase in observation error	2	640.32	1	<0.001*	90.35	1	<0.001*	889.04	1	<0.001*
Increase in observation error	2.5	781.46	1	<0.001*	58.00	1	<0.001*	942.00	1	<0.001*

Table S9. Chi-square results from two-sample test for equality of proportions between the concavity frequencies diagnosed for each degradation scenario in populations with increasing, fixed pressure (*F3*). Significant differences at $\alpha= 0.05$ are indicated by a star.

Degradation type	Specific degradation	Concave vs. Convex fit		
		χ^2	<i>d.f.</i>	p-value
Years either side of pressure	25 (None)	960.40	1	<0.001*
Years either side of pressure	20	781.46	1	<0.001*
Years either side of pressure	15	753.42	1	<0.001*
Years either side of pressure	10	792.10	1	<0.001*
Years either side of pressure	5	739.60	1	<0.001*
Years after pressure	20	712.34	1	<0.001*
Years after pressure	15	678.98	1	<0.001*
Years after pressure	10	767.38	1	<0.001*
Years after pressure	5	630.44	1	<0.001*
Years before pressure	20	857.48	1	<0.001*
Years before pressure	15	795.66	1	<0.001*
Years before pressure	10	792.10	1	<0.001*
Years before pressure	5	872.36	1	<0.001*
Years before pressure	2	788.54	1	<0.001*
Years between monitoring	1	705.60	1	<0.001*
Years between monitoring	2	719.10	1	<0.001*
Years between monitoring	3	602.18	1	<0.001*
Years between monitoring	5	608.40	1	<0.001*
Years between monitoring	8	702.24	1	<0.001*
Increase in observation error	1	756.90	1	<0.001*
Increase in observation error	1.5	770.88	1	<0.001*
Increase in observation error	2	795.66	1	<0.001*
Increase in observation error	2.5	972.20	1	<0.001*