

Electronic supplementary material

Cayueta et al. Slow life-history strategies are associated with negligible actuarial senescence in Western Palearctic salamanders.

Table S1. Information about age-dependent capture-recapture data in four populations of *Lyciasalamandra fazilae*, *Salamandrina perspicillata*, and *Salamandra salamandra* (two populations). The mean adult lifespan was calculated using the following formulae: $a+(s/(1+s))$ where s is the survival at adult stage and a is the age at sexual maturity. Age at sexual maturity were obtained from the following references: *L. fazilae*, Olgun et al. 2001; *S. perspicillata*, Angelini et al. 2010; and *S. Salamandra*, Reinhard et al. 2015 (in *Salamandra algira*).

Parameter	<i>L. fazilae</i>	<i>S. perspicillata</i>	<i>S. salamandra 1</i>	<i>S. salamandra 2</i>
Number of individuals	133	911	304	376
Number with known birth year	67	55	0	0
Number with known death year	5	0	0	0
Total number of captures	179	1629	609	1474
Earliest detection time	1999	1998	2008	1965
Latest detection time	2009	2006	2015	1985
Earliest recorded birth year	1990	1994	0	0
Latest recorded birth year	1997	2002	0	0
Earliest recorded death year	2000	0	0	0
Latest recorded death year	2003	0	0	0
Total survey length (years)	11	9	8	21
Mean adult lifespan	6	9.5	8.5	8.5

References cited

- Angelini, C., Antonelli, D., & Utzeri, C. (2010). Capture-mark-recapture analysis reveals survival correlates in *Salamandrina perspicillata* (Savi, 1821). *Amphibia-Reptilia*, 31, 21-26.
- Olgun, K., Miaud, C., & Gautier, P. (2001). Age, growth, and survivorship in the viviparous salamander *Mertensiella luschani* from southwestern Turkey. *Canadian Journal of Zoology*, 79, 1559-1567.
- Reinhard, S., Renner, S., & Kupfer, A. (2015). Age and fecundity in *Salamandra algira* (Caudata: Salamandridae). *Salamandra*, 51(1), 19-24.

Table S2. Multievent survival and recruitment models: model selection procedure. r = model rank, k = number of parameters, Dev. = residual deviance, AICc = Akaike Information Criterion adjusted for small sample size, Δ AICc = difference of AICc points with the best-supported model, w = AICc weight.

r	Model	k	Dev.	AICc	Δ AICc	w
Survival models						
1	$\varphi(\cdot), \delta(\cdot), p(t + \text{size})$	14	491.70	522.46	0.00	0.54
2	$\varphi(\cdot), \delta(\cdot), p(t)$	13	495.99	524.37	1.90	0.21
3	$\varphi(\text{size}), \delta(\cdot), p(t + \text{size})$	15	491.34	524.52	2.06	0.19
4	$\varphi(\text{size}), \delta(\cdot), p(t)$	14	495.96	526.73	4.26	0.06
5	$\varphi(\cdot), \delta(\cdot), p(\cdot)$	4	541.93	550.18	27.72	0.00
6	$\varphi(\text{size}), \delta(\cdot), p(\cdot)$	5	541.79	552.16	29.70	0.00
7	$\varphi(\cdot), \delta(\cdot), p(\text{size})$	5	541.93	552.30	29.84	0.00
8	$\varphi(\text{size}), \delta(\cdot), p(\text{size})$	6	541.72	554.25	31.78	0.00
Recruitment models						
1	$\psi(\cdot), \delta(\cdot), p(t + \text{size})$	8	265.89	283.01	0.00	0.63
2	$\psi(\cdot), \delta(\cdot), p(t)$	7	269.27	284.13	1.12	0.36
3	$\psi(\cdot), \delta(\cdot), p(\text{size})$	5	284.16	294.61	11.60	0.00
4	$\psi(\cdot), \delta(\cdot), p(\cdot)$	4	286.32	294.62	11.61	0.00

Table S3. Deviance information criterion (DIC) for each of the mortality function in three salamanders of western Palearctic. We considered the four mortality functions implemented in BaSTA program: exponential (EXP), Gompertz (GOM), Weibull (WEI) and logistic (LOG). For the three last functions, we considered three potential shapes: simple that only uses the basic functions described above (“Simple”); Makeham (“Makeham”); and bathtub (“Bath”).

	<i>Simple</i>	<i>Bath</i>	<i>Makeham</i>
<i>Lyciasalamandra fazilae</i>			
Logistic	Not converged	Not converged	1909.03
Exponential	1593.92	-	-
Gompertz	1626.67	Not converged	1946.88
Weibull	1709.25	Not converged	1701.72
<i>Salamandrina perspicillata</i>			
Logistic	15394.47	14928.48	15382.08
Exponential	Not converged	-	-
Gompertz	Not converged	14881.98	Not converged
Weibull	15530.53	14898.80	15238.54
<i>Salamandra Salamandra (pop1)</i>			
Logistic	6704.18	Not converged	6723.45
Exponential	Not converged	-	-
Gompertz	6479.37	Not converged	Not converged
Weibull	6319.93	Not converged	6711.14
<i>Salamandra Salamandra (pop2)</i>			
Logistic	6099.82	6108.51	6101.58
Exponential	6137.15	-	-
Gompertz	6161.98	6045.60	6151.98
Weibull	6067.80	6111.62	6080.74