

Early life telomere dynamics

Lewis Spurgin


December 2014

Late life consequences of early life experiences

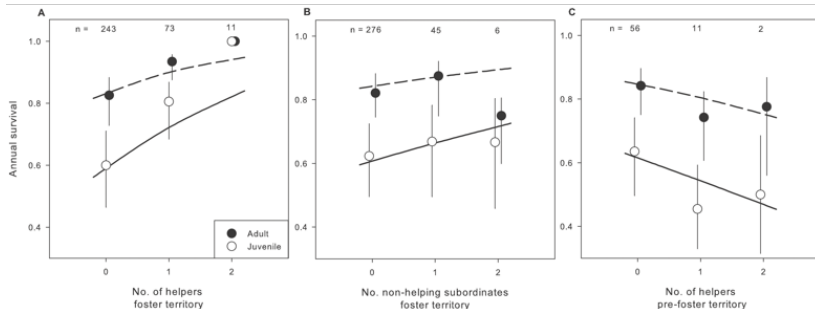
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RESEARCH ARTICLE

Helpers at the Nest Improve Late-Life Offspring Performance: Evidence from a Long-Term Study and a Cross-Foster Experiment

Lyanne Brouwer  David S. Richardson, Jan Komdeur

Published: April 04, 2012 • DOI: [10.1371/journal.pone.0033167](https://doi.org/10.1371/journal.pone.0033167)



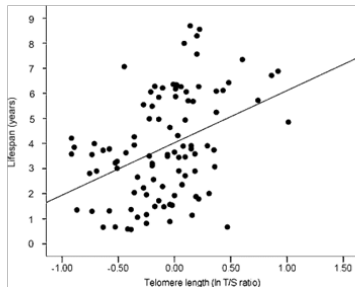
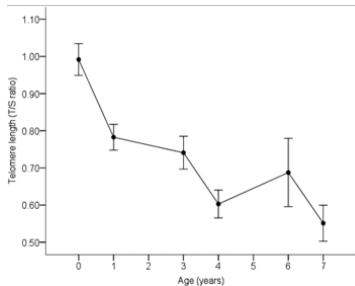
Telomeres as biomarkers of early life costs

Telomere length in early life predicts lifespan

Britt J. Heidinger^a, Jonathan D. Blount^{a,b}, Winnie Boner^a, Kate Griffiths^a, Neil B. Metcalfe^a, and Pat Monaghan^{a,1}

^aCollege of Medical, Veterinary, and Life Sciences, Institute of Biodiversity, Animal Health, and Comparative Medicine, University of Glasgow, Glasgow G12 8QQ, United Kingdom; and ^bCentre for Ecology and Conservation, College of Life and Environmental Sciences, University of Exeter, Cornwall Campus, Penryn TR10 9EZ, United Kingdom

Edited by Cynthia Kenyon, University of California, San Francisco, CA, and approved November 29, 2011 (received for review August 15, 2011)



Questions

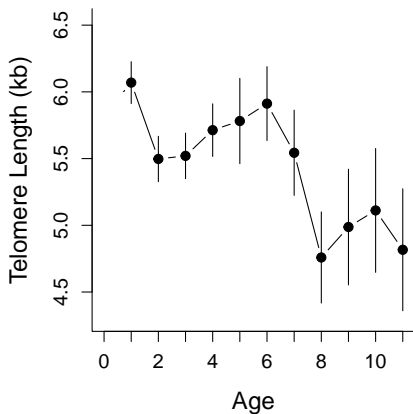
1. Is telomere loss greatest in the first year of life?
2. What factors affect telomere length in early life?
3. What are the consequences of early life telomere dynamics?



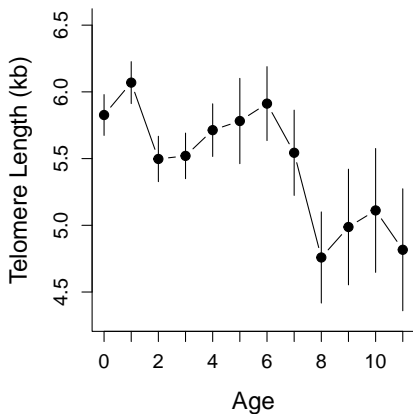
Data

- ▶ Juvenile birds caught between 1997-2000 (plus a few later ones)
- ▶ Mostly Dead
- ▶ $N = 198$

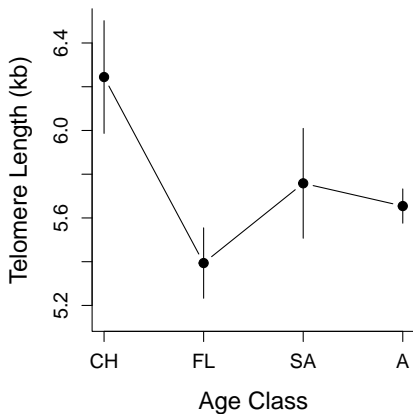
Is telomere loss greatest in the first year of life?



Is telomere loss greatest in the first year of life?



Is telomere loss greatest in the first year of life?



Questions

1. Is telomere loss greatest in the first year of life?

Yes, but it's lost at a very early stage

2. What factors affect telomere length in early life?

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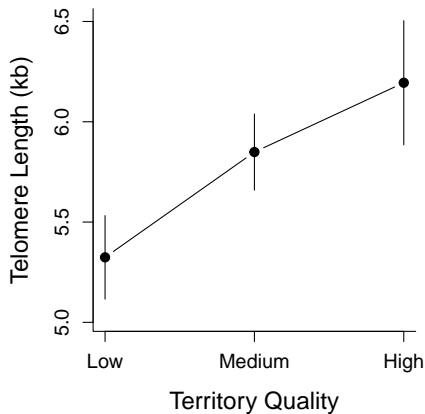
What factors affect telomere length in early life?

Key factors:

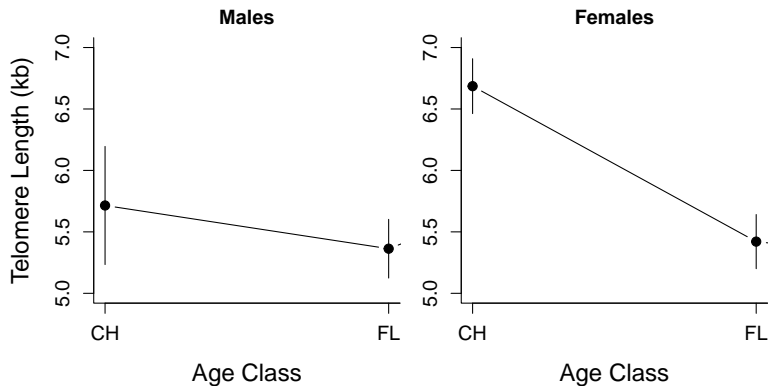
- ▶ Territory Quality
- ▶ Age class x Sex
- ▶ EPP



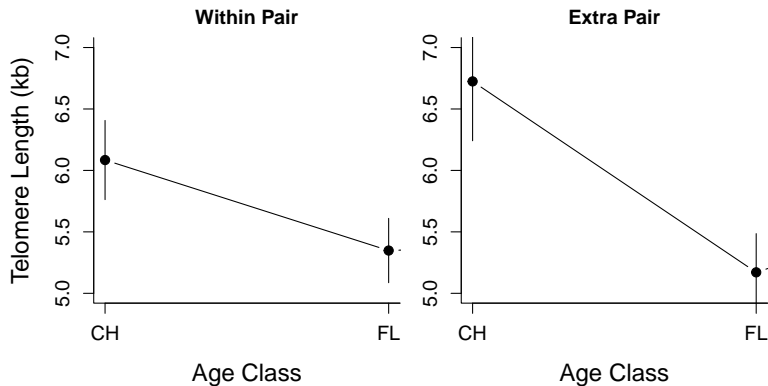
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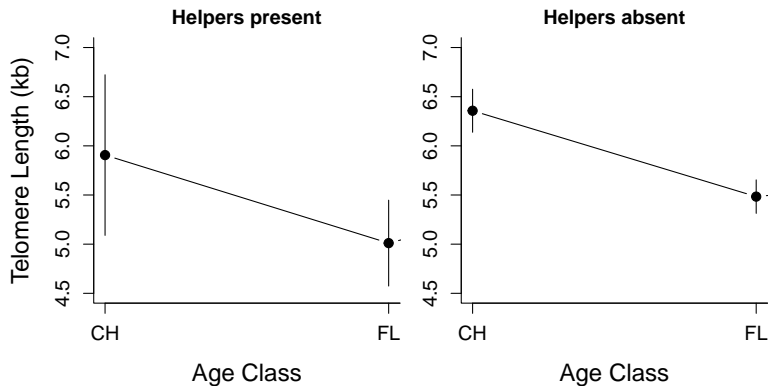
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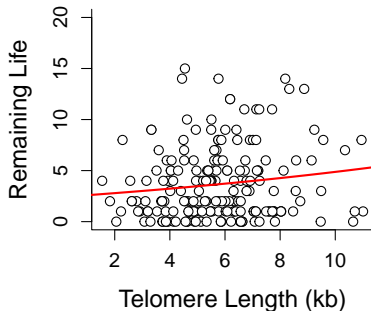
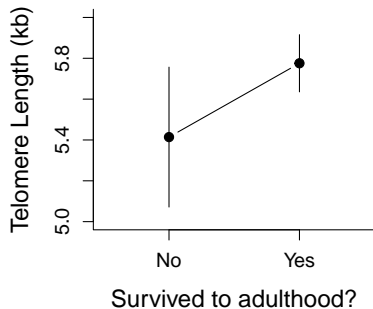
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Age, Sex, Territory Quality and EPP

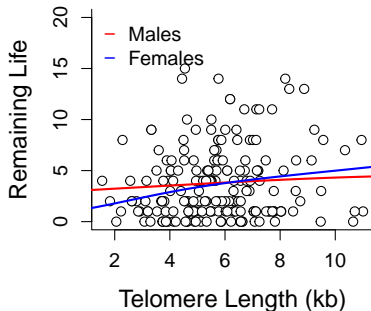
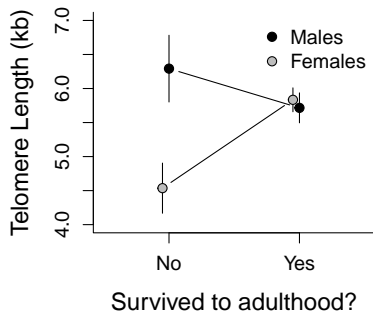
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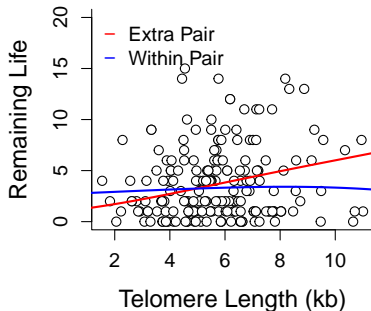
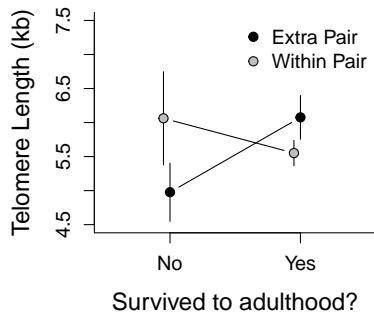
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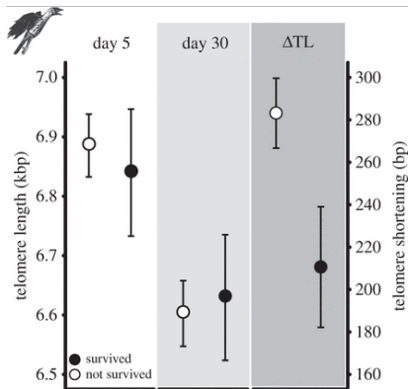
What are the consequences of early life telomere length?



Telomeres as biomarkers of early life costs

Nestling telomere shortening, but not telomere length, reflects developmental stress and predicts survival in wild birds

Jelle J. Boonekamp, G. A. Mulder, H. Martijn Salomons, Cor Dijkstra and Simon Verhulst



Questions

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3. What are the consequences of early life telomere dynamics?

Important for survival but dependent on early life conditions

