

Teaching evolution without a time machine

Warren Horrod-Wilson and Rob Lachlan

Warren.Horrod-
Wilson.2022@live.rhul.ac.uk



Context – National Curriculum Y6

Evolution and inheritance

Pupils should be taught to:

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

- Source: <https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study>

The Challenge: Evolution (as commonly understood) takes millions of years



- How can we bring this topic to life?
- How can we provide students with an intuitive “feel” for the evolutionary process?
- How can we make this a topic that contributes to building a “science identity”



Our Project: Bird Song Science

- How are bird songs evolving across the UK in response to traffic noise / pollution?
 - Builds on current scientific question (i.e. it's **real science**)
 - Relates to issues that are of immediate importance: how are we changing the environment? (i.e. **extrinsic** as well as **intrinsic** value)
 - Bird song part of our day-to-day life (sustained effect of intervention)

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OF
THE ROYAL
SOCIETY

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Urban noise and the cultural evolution of bird songs

David Luther^{1,2,*} and Luis Baptista³

¹Department of Plant Science and Landscape Architecture, and

²Department of Entomology, University of Maryland, 2116 Plant Sciences Building, College Park, MD 20742-4452, USA

³Department of Ornithology and Mammalogy, California Academy of Sciences, 55 Music Concourse Drive, Golden Gate Park, San Francisco, CA 94118, USA



Noise from traffic stunts growth of baby birds, study finds

Sofia Quaglia



Our Project: Bird Song Science

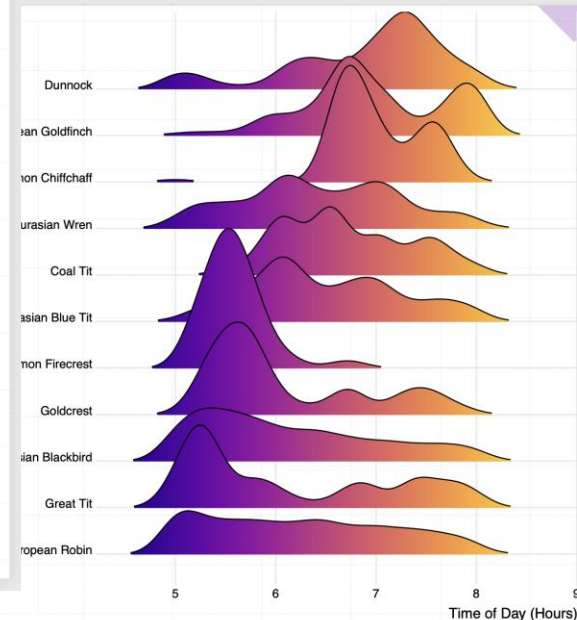
- Components
 - Initial lesson with hands on activities with spectrograms and game
 - Children take our recorder home and leave it in their garden overnight
 - We analyse data and present results in follow-up visit



What did we find?

- We recorded more than 10,700 songs!
- ... thanks to your help

- We had 11 songbird species that were especially common...

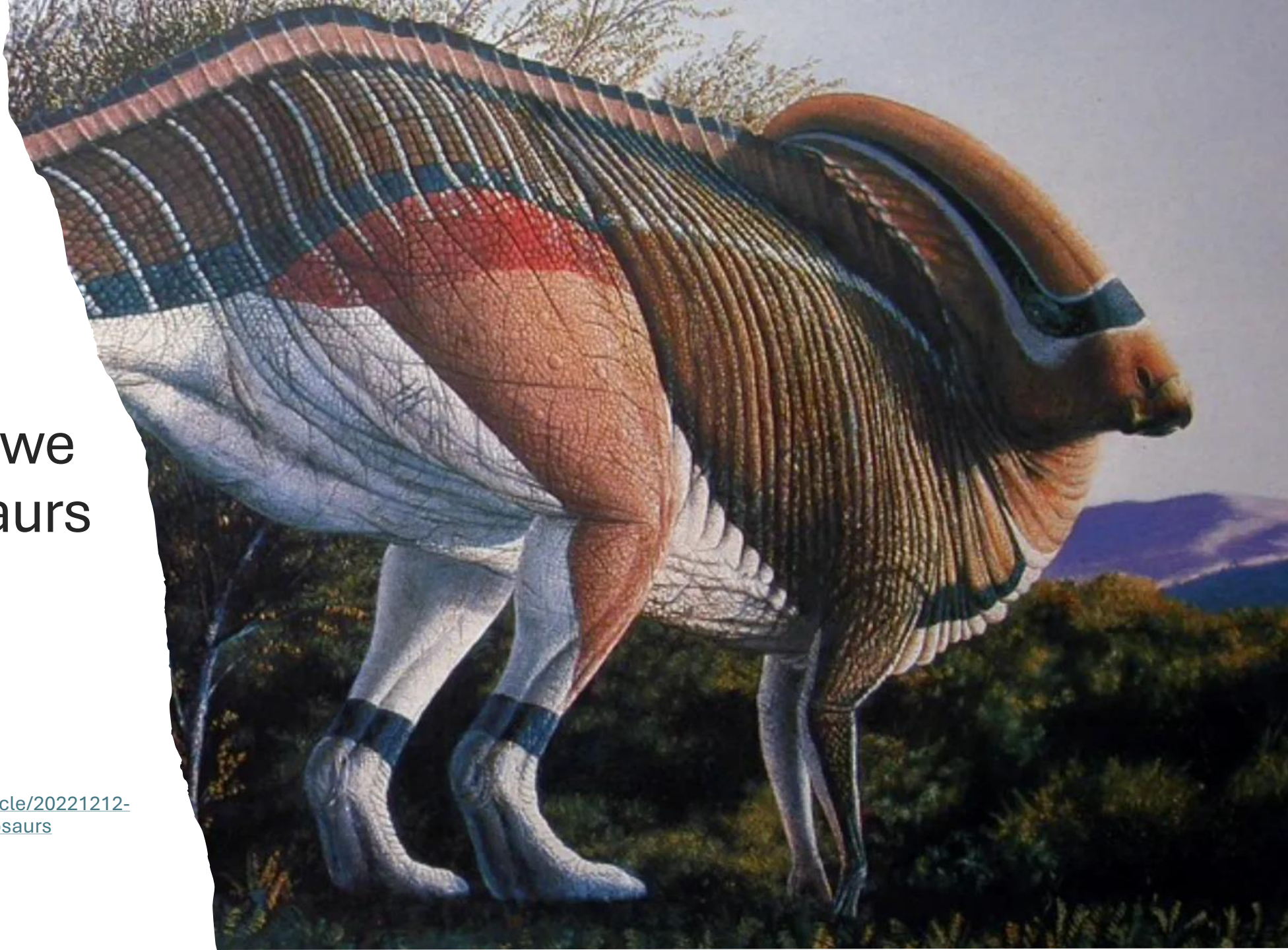


Birds take turns singing their songs

- Each species begins singing at a different time in the morning
- Lets look at when the birds in your gardens begin to sing their songs in the morning!

Here's how we
think dinosaurs
may have
actually
sounded

<https://www.bbc.com/future/article/20221212-the-mysterious-song-of-the-dinosaurs>



Songbirds in the City

- How does noise and human activity affect the evolution of communication?
- Noise from human activity may influence sound transmission
- Do birds in quieter areas sound more similar than birds in noisier areas?
- We need you to help us find out!



Recording Boxes

- Your scientific equipment
- Make sure to set it up in a clear space, pointing in the direction of a bush or tree





Evolution in
action!

Let's play Telephone

Conclusion

- Metaphor in science as an inspiration for metaphor in education:
 - Cultural evolution is an advanced topic by itself but provides ways to introduce children to evolutionary processes
- Electronics and computational development allows low-cost activities that can allow children to play hands-on role in citizen science research

