

biomechanics, anatomy, ecology and taxonomy in order to reconsider the evolution of dental adaptations for generating fractures in food for animals that eat insects, grasses, leaves, fruit and other animals. Primates, especially humans, get special attention. In general, we chew our food like other mammals, but the invention of cooking and other forms of food processing have drastically decreased the particle size and toughness of the food we eat. Palaeoanthropologists are still arguing about when cooking first evolved, but Lucas provides new reasons to suggest that the first species of the genus *Homo*, which had small teeth, was the first true chef of the animal world. Lucas calculates that your molars can be between 56% and 82% smaller to eat a cooked potato rather than a raw one, depending on whether you eat the skin and whether you roast or boil it.

Teeth often appear messy, confusing and dull to non-specialists, but Lucas succeeds in conveying his enthusiasm for the challenges of learning about the biology and ecology of organisms from such a small and humble organ. Although the book contains plenty of mechanics, the equations are presented clearly and well explained.

Lucas has filled the text with fascinating observations, humorous asides and wonderfully detailed footnotes. One particularly fun bonus is a flick-art animation running on the bottom corner of the book's pages that depicts the evolutionary transformation of a primitive single-cusped tooth into a human molar. Flicking through this cartoon will give your copy a thumb-worn look that Aristotle might have envied. ■

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## The geography of life

### Foundations of Biogeography: Classic Papers with Commentaries

edited by Mark V. Lomolino, Dov F. Sax & James H. Brown

University of Chicago Press: 2004. 1,291 pp. \$135, £94.50 (hbk); \$45, £31.50 (pbk)

Mark Williamson

Collections of papers are useful both to undergraduates and their lecturers. Here is a set of 72 pieces on biogeography, 30 of which are excerpts from books. They were chosen and edited by a committee of 19 biologists, 13 of whom have contributed to the commentaries that precede the eight sections. Except for the first section, on early (mostly nineteenth century) classics, these are arranged by topic, which is helpful. In much the same way that a camel is a horse designed by a committee, the selection of topics has some strange bumps and depressions, but the resulting animal is nevertheless useful in the appropriate circumstances.

The editors suggest that biogeography is a recent discipline and that nine of the authors would not have called themselves biogeographers. But biogeography is a nineteenth-century term. Darwin wrote of the geographical distribution of organic beings, and Alfred Russel Wallace wrote of geographical zoology. And in the twentieth century, Robert MacArthur and Edward O. Wilson are in print saying "we both call ourselves biogeographers" and are "unable to see any real distinction between biogeography and ecology". Biogeography might appear to be an

interdisciplinary subject between biology and geography. It is certainly taught in both sets of departments, which once caused me a little difficulty as an external examiner because students had been taught essentially the same course twice. But biogeography is a branch of biology, of population and community ecology, and covers genetical and evolutionary topics as well as pure ecological ones. It is certainly an important branch, although the editors exaggerate its importance to Darwin and Wallace in discovering natural selection. It is nevertheless a branch with unusually fuzzy edges, differing from the related bits of biology largely by an emphasis on maps and geology.

With so many editors involved, the standards of the commentaries and the editing are both a bit variable, though it is mildly amusing to be told about "Louis Carroll's *Through the Looking Glass*" (two errors there) or that the muskrat "was introduced in 1905 into what was then Czechoslovakia". More seriously, in my view, the editorial board (who are all biologists) would have been well advised to seek the opinions of historians of science on the works from before 1950. Using facsimiles that have been standardized to a fixed page size means that some of the text is hard to read and some half-tones would have been better omitted. The cross-referencing is a bit weak, too. Some of the commentaries are excellent.

If your class reading list calls for something on Linnaeus, Buffon, de Candolle, von Humboldt and Hooker at one end of the time span, along with MacArthur and Wilson's theory and developments in the 1970s, this 2-kg set will be very useful. ■

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### Science in culture

## Awash with art

Zeger Reyers saturates the senses with his installation *Aqua Boogie*.

Colin Martin

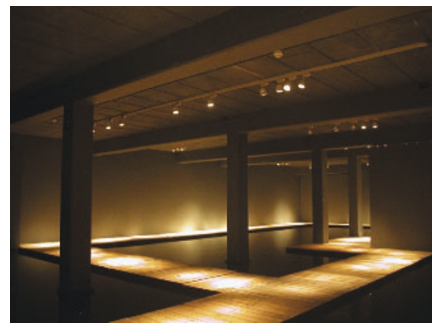
The installation by Dutch artist Zeger Reyers in the basement of the GEM Museum of Contemporary Art in the Hague, the Netherlands, acknowledges the prior claim of water on the museum's site. The land was drained by previous generations.

Reyers' work frequently creates new biotopes, which display the vagaries of biological processes. At the 2003 Havana Biennial he released 200 white laboratory mice onto a 15-metre-long white tabletop covered with 5,000 kg of white porcelain. Their colouring made them difficult to spot, creating an installation that referenced protective adaptation in nature. Other previous installations covered interior spaces with living fungi.

To reach *Aqua Boogie*, visitors descend a staircase that has a view across a large pond

outside, conveying a feeling of being below water level. They enter an irregular, 220-square-metre space, flooded with dark, non-reflecting water and criss-crossed with pine duckboards (right). As well as allowing viewers to explore the aqueous biotope more closely, this grid recalls *Victory Boogie Woogie*, a painting by Piet Mondrian, as the installation's title suggests.

The biotope affects many of the senses. "It has the thin fragrance of living water, like you smell when entering a canal," says Reyers. "The water also dampens sounds, making it a quiet, serene place." Beneath the surface, 35 leather carp, selected by Reyers because their dark colouring makes them practically invisible, go about unseen business. Like all Reyers' work, *Aqua Boogie* is accessible, but offers multiple levels of interpretation. It can disconcert viewers by challenging their perceptions of



a familiar environment, experienced out of context.

On two occasions during the installation, which can be seen until 7 November, Reyers will recreate a 2001 work, *Mussel Chair*. A Parisian pavement café chair, encrusted with mussels after having been submerged in the Eastern Scheldt estuary for two years, will be brought to the museum, cleaned up and steamed. The cooked shellfish will be offered to visitors to eat, adding taste to the other sensory experiences offered by *Aqua Boogie*.

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