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Obituary: Mark A. Elgar (1957–2025)

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Professor Emeritus Mark Elgar, a leading figure in behavioural and evolutionary ecology, died on 9th August 2025 from cancer, three years after its first diagnosis. Mark's career spanned over 40 years and encompassed a huge range of research interests and study organisms, including topics as diverse as foraging behaviour, sexual cannibalism, sexual selection, chemical communication, antennal morphology and wildlife conservation.

As a proud Australian, it often puzzled people to hear Mark's urbane British accent – the result of being raised in early childhood in the UK by British parents. Mark, however, spent his teenage years in Mossman, North Queensland, Australia before completing his undergraduate degree at Griffith University in Brisbane. It was here that he produced his first paper, from an undergraduate project, on flocking behaviour and predator surveillance in house sparrows (Elgar and Catterell, 1981). However, he also had a strong interest in spider biology, which led him to the University of Cambridge, where he completed his PhD under the supervision of Prof. Nick Davies. Initially conceived as a project on the behaviour of social spiders, Mark was forced to pivot back to working on vigilance in sparrow flocks after two years of fruitless attempts to find spider specimens on the remote Norfolk coastline. The pragmatic decision to work more locally proved an excellent one, allowing him to collect a large amount of “field” data on the roof of the Zoology Department in Cambridge. It resulted in several important publications on vigilance, including his most highly cited paper (Elgar, 1989), which to this day remains the go-to reference on the topic.

Following his PhD, Mark commenced a post-doc at the University of Oxford, under the mentorship of Prof. Paul Harvey, where he was one of the early adopters and advocates for “The Comparative Method” in evolutionary biology, the need to consider phylogenetic relationships in the analysis of cross-species patterns, applying this to foundational studies of the evolution of metabolic rates and sleep in mammals (Elgar and Harvey, 1987; Elgar et al., 1988).

A return to Australia, in the late 1980s, saw Mark hold a fellowship at the University of New South Wales, before obtaining a permanent tenured position at the University of Melbourne in 1991, notionally as a vertebrate zoologist but with interests that were much better described as evolutionary ecology. He devoted much of his subsequent career to his core love of spiders, with a particular focus on sexual cannibalism, the subject of his most major book volume (Elgar and Crespi, 1992) and key reviews (e.g. Elgar and Schneider, 2004), and also web structure and characteristics (Herberstein et al., 2000). His work on



Mark Elgar observing a vigilant Australian magpie.

spiders stimulated another key research theme, on sexual selection and sperm competition (Elgar, 1998), which expanded into other invertebrate taxa (Jones and Elgar, 2004).

Spiders were also the starting point for a major focus in the latter half of his career, chemical communication. Starting with the observation that spiders can eavesdrop on ant alarm signals (Allan et al., 1996) and that salticid spiders employ chemical mimicry to prey on ants (Allan et al., 2002), Mark expanded his interests to examine the evolution of pheromones and other chemical cues more generally across a wide range of taxa (including ants, beetles, flies and moths) and in particular focussing on the ecological factors that drive diversity in these signals (Symonds and Elgar, 2008; Henneken et al., 2017).

Having focussed on the evolution of the signal, it was perhaps a natural progression that Mark subsequently became equally interested in the receiver component of the communication system. His work in this late stage of his career concerned how environmental and behavioural factors can shape the evolution of insect antennal morphology (Elgar et al., 2018, 2019; Elgar and Freelance, 2025), and the interplay between anthropogenic stressors, antennal function and insect declines. With potential applications for biodiversity and threatened species conservation (Freelance et al., 2022; Wang et al., 2023), Mark would sometimes describe his later projects, with characteristic self-deprecation, as his “last desperate attempt at doing something useful”. Yet he was fully

aware of the enduring worth of blue-sky research, work he considered himself deeply fortunate to have undertaken.

Mark himself was always brimming with ideas and theories, which came to him like (to quote Camille Saint-Saëns) “an apple tree produces apples”. He enjoyed applying those ideas to topics that might seem remote from his core research, such as his work on human leadership (Elgar, 2016). In the final years of his career, Mark renewed his interest in nature as a source of inspiration for design to solve problems, both co-chairing a bio-inspired design initiative at the University of Melbourne and advocating for greater interest in the field from biologists (Ng et al., 2021; Stuart-Fox et al., 2023).

In addition to his own research, Mark played for many years a significant role in the field through his service as editor-in-chief of three journals: *Behavioral Ecology*, *Australian Journal of Zoology* and, in more recent times, *Frontiers in Ecology and Evolution*. He was also a long-serving member of the board of *Behavioral Ecology and Sociobiology*. He took his roles as an editor seriously, with a great desire to improve the review process for authors, even helping to coordinate the editors-in-chief of most of the major journals in evolution, ecology and behaviour into producing an aspirational manifesto on how reviewers should behave (McPeck et al., 2009). Many of his ex-students have gone on to hold editorial roles themselves, citing Mark’s collaborative and uplifting mindset as the yardstick against which they compare themselves.

His concern for improving scientific culture also extended into issues of sex and gender, both in terms of how pejoratively gendered language was used in descriptions of animal sexual behaviour (Elgar et al., 2013), to debunking the myths around gender (Fine and Elgar, 2017) and calling for a more equitable assessment of the publication records of women scientists (Symonds et al., 2006). His service to university governance was equally exemplary. He served two terms on the council of the University of Melbourne, and contributed to almost every senior university committee imaginable, leading reform on subjects ranging from teaching and learning quality to research integrity and publications.

Mark was a passionate and innovative teacher, known for his generosity and commitment to student learning. He coordinated and developed numerous undergraduate and graduate subjects, and taught a Massively Open Online Course on Animal Behaviour that reached over 100,000 learners globally. Here too he was a tireless advocate for equity, particularly for students from rural and disadvantaged backgrounds.

Mark was genuinely fascinated by and convinced of the excellence of the work everyone did under his guidance. As one ex-PhD student put it “he always made you feel that your research was more interesting than it actually was.” Although he was not a seasoned field biologist, he was convinced that careful observation of nature was the key to generating ideas, and he was not at all prescriptive about what might emerge. He famously encouraged his students to go out and observe until they saw something interesting, an approach one described as “both a privilege and terrifying”. In this way, he entrusted his students with an exceptional degree of ownership of their ideas and confidence in their own capacity to test those ideas.

It would be wrong, though, to create the impression that his students were left to sink or swim. His intellectual and emotional support for them was powerful. He cared deeply for his students and took their setbacks to heart. A rejected paper would almost always spark instant indignation, swiftly followed by calm, strategic resolve. With his editor’s instinct for tone and argument, he helped turn disappointments into opportunities for sharper thinking and stronger writing.

While obviously enjoying seeing his students achieve highly, Mark developed a strong reputation for taking on PhD students who were enthusiastic and talented but perhaps lacked confidence or, like himself, were not inclined to perform well on recall-based written examinations in their undergraduate studies. There was no hierarchy within his group – the ideas and perspectives of all members from the Honours student on their first day through to himself were afforded equal consideration and respect, and all were encouraged to be extremely open and collaborative with their research. Many an Elgar lab Christmas party was held in Mark’s backyard fully at his own expense, and this epitomises his commitment to fostering a sense of genuine camaraderie and belonging amongst his students. His kindness and collegiality are the first things many of his ex-students recall when reminiscing about their time working with him.

Mark was a talented raconteur, who loved nothing better than holding court in a lab meeting or the tearoom, often punctuating his

opinions with entertaining insouciance. It’s a cliché to say that his door was always open, but in his case it was literally true, and he never seemed unhappy for students and colleagues to drop in for a chat. In the second half of his career, when Mark became a father, his dedication to his family was also transparent every single day, serving as a role-model and reminding younger academics that it was possible to prioritise family commitments and yet still have a successful academic career.

As Mark dealt with his cancer, in the last few years, he was more inclined to reflect on his own career, and so it was a pleasure for many of his former colleagues, post-docs, and students to be able to celebrate that career with him at his retirement function in June 2025. It gave him the opportunity to hear the appreciation for the huge and positive influence he had on those of us whose careers he had shaped, guided and championed.

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References

- Allan, R. A., Capon, R. J., Brown, W. V., and Elgar, M. A. (2002). Mimicry of host cuticular hydrocarbons by salticid spider *Cosmophasis bitaeniata* that preys on larvae of tree ants *Oecophylla smaragdina*. *J. Chem. Ecol.* 28, 835–848. doi: 10.1023/A:1015249012493
- Allan, R. A., Elgar, M. A., and Capon, R. J. (1996). Exploitation of an ant chemical alarm signal by the zodariid spider *Habronestes bradleyi* Walckenaer. *Proc. R. Soc. B.* 263, 69–73. doi: 10.1098/rspb.1996.0012
- Elgar, M. A. (1989). Predator vigilance and group size in mammals and birds: a critical review of the empirical evidence. *Biol. Rev.* 64, 13–33. doi: 10.1111/j.1469-185X.1989.tb00636.x
- Elgar, M. A. (1998). “Sperm competition and sexual selection in spiders and other arachnids,” in *Sperm competition and sexual selection*. Eds. T. R. Birkhead and A. P. Möller (Academic Press, San Diego), 307–339.
- Elgar, M. A. (2016). Leader selection and leadership outcomes: height and age in a sporting model. *Leadership Q.* 27, 588–601. doi: 10.1016/j.leaqua.2015.12.005
- Elgar, M. A., and Catterell, C. P. (1981). Flocking and predator surveillance in house sparrows: test of an hypothesis. *Anim. Behav.* 29, 868–872. doi: 10.1016/S0003-3472(81)80022-X
- Elgar, M. A., and Crespi, B. J. (Eds.) (1992). *Cannibalism: Ecology and evolution among diverse taxa*. Oxford Science Publications (Oxford: Oxford University Press).
- Elgar, M. A., and Freelance, C. B. (2025). “Insect antennal sensilla: nomenclature, function, and abundance,” in *Insect anatomy: structure and function*. Ed. B. Moussian (Academic Press, Massachusetts), 287–356.
- Elgar, M. A., and Harvey, P. H. (1987). Basal metabolic rates in mammals: allometry, phylogeny and ecology. *Funct. Ecol.* 1, 25–36. doi: 10.2307/2389354
- Elgar, M. A., Johnson, T. L., and Symonds, M. R. E. (2019). Sexual selection and organs of sense: Darwin’s neglected insight. *Anim. Biol.* 69, 63–82. doi: 10.1163/15707563-00001046
- Elgar, M. A., Jones, T. M., and McNamara, K. B. (2013). Promiscuous words. *Front. Zool.* 10, 66. doi: 10.1186/1742-9994-10-66
- Elgar, M. A., Pagel, M. D., and Harvey, P. H. (1988). Sleep in mammals. *Anim. Behav.* 36, 1407–1419. doi: 10.1016/S0003-3472(88)80211-2
- Elgar, M. A., and Schneider, J. M. (2004). Evolutionary significance of sexual cannibalism. *Adv. Study. Behav.* 34, 135–163. doi: 10.1016/S0065-3454(04)34004-0
- Elgar, M. A., Zhang, D., Wang, Q., Wittwer, B., Pham, H. T., Johnson, T. L., et al. (2018). Insect antennal morphology: the evolution of diverse solutions to odorant perception. *Yale J. Biol. Med.* 91, 457–469.
- Fine, C., and Elgar, M. A. (2017). Promiscuous men, chaste women and other gender myths. *Sci. Am.* 317, 32–37. doi: 10.1038/scientificamerican0917-32
- Freelance, C. B., Magrath, M. J. L., Elgar, M. A., and Wong, B. B. M. (2022). Long-term captivity is associated with changes to sensory organ morphology in a critically endangered insect. *J. Appl. Ecol.* 59, 204–513. doi: 10.1111/1365-2664.14069
- Henneken, J., Goodger, J. Q. D., Jones, T. M., and Elgar, M. A. (2017). Diet-mediated pheromones and signature mixtures can enforce signal reliability. *Front. Ecol. Evol.* 4. doi: 10.3389/fevo.2016.00145
- Herberstein, M. E., Craig, C. L., Coddington, J. A., and Elgar, M. A. (2000). The functional significance of silk decoration of orb-web spiders: a critical review of the empirical evidence. *Biol. Rev.* 75, 649–669. doi: 10.1111/j.1469-185X.2000.tb00056.x
- Jones, T. M., and Elgar, M. A. (2004). The role of male age, sperm age and mating history on fecundity and fertilization success in the hide beetle. *Proc. R. Soc. B* 271, 1311–1318. doi: 10.1098/rspb.2004.2723
- McPeck, M. A., DeAngelis, D. L., Shaw, R. G., Moore, A. J., Rausher, M. D., Strong, D. R., et al. (2009). The golden rule of reviewing. *Am. Nat.* 173, E155–E158. doi: 10.1086/598847
- Ng, L., Elgar, M. A., and Stuart-Fox, D. (2021). From bioinspired to bioinformed: benefits of greater engagement from biologists. *Front. Ecol. Evol.* 9. doi: 10.3389/fevo.2021.790270
- Stuart-Fox, D., Ng, L., Elgar, M. A., Hölttä-Otto, K., Schröder-Turk, G. E., Voelcker, N. H., et al. (2023). Bio-informed materials: three guiding principles for innovation informed by biology. *Nat. Rev. Mater.* 8, 565–567. doi: 10.1038/s41578-023-00590-w
- Symonds, M. R. E., and Elgar, M. A. (2008). The evolution of pheromone diversity. *Trends Ecol. Evol.* 23, 220–228. doi: 10.1016/j.tree.2007.11.009
- Symonds, M. R. E., Gemmell, N. J., Braisher, T. L., Gorringer, K. L., and Elgar, M. A. (2006). Gender differences in publication output: towards an unbiased metric of research performance. *PLoS One* 1, e127. doi: 10.1371/journal.pone.0000127
- Wang, Q., Liu, G., Yan, L., Xu, W., Hilton, D. J., Liu, X., et al. (2023). Short-term particulate matter contamination severely compromises antennal olfactory perception. *Nat. Commun.* 14, 4112. doi: 10.1038/s41467-023-39469-3