# Social networks in the wild

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Social network analyses provide a powerful tool that links individual behaviours to population-level structures, ecological processes and evolutionary outcomes. Network approaches have been applied with great success to provide insights into behavioural and disease ecology of wildlife populations. However, there are some major challenges that have limited their applicability in these contexts, especially in linking social behaviour with demography and population dynamics. These challenges are predominantly associated with a) imperfect detection (of both individuals and their social interactions); b) sampling strategies; and c) open populations (in which individuals are born/die or can immigrate/emigrate). These issues are then exacerbated by the fact that social data are inherently relational, amplifying the impact of missing data. I will introduce how social networks have been used in wildlife ecology and then provide a series of case studies to illustrate the types of challenges that ecologists face when applying these approaches in the wild. These problems range from model design for key biological questions through to practical tools that can help optimise data use in long-term studies. Throughout I will draw on recent advances elsewhere in network science to demonstrate potential pre-existing tools that can help address these issues, but also to highlight the uniqueness of various issues to (non-human) animal social network research. My hope is to inspire new approaches that can provide cross-disciplinary advances in social network analysis, but also to encourage the development of practical tools of value to empirical researchers.