

RESEARCH ARTICLE

Watching birds: observation, photography and the ‘ethological eye’

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Abstract

The article reflects upon the observational practices and methods developed by the early exponents of ethology committed to naturalistic field study and explores how their approaches and techniques influenced a wider field of popular natural-history filmmaking and photography. In doing so, my focus is upon three aspects of ethological field studies: the socio-technical devices used by ethologists to bring birds closer to them, the distinctive observational and representational practices which they forged, and the analogies they used to codify behaviour. This assemblage of elements included hides or screens from which to watch wild birds without disturbing them, optics to extend human vision, pens and paper to sketch and fix patterns of behaviour, watches to record timings, photography to capture action and freeze movement, and illustration and photographs to visualize behaviour. Carried through natural-history networks, the practices, methods and theories of ethologists like Huxley and Tinbergen influenced popular natural-history filmmaking and photography more broadly from the 1940s, driving a behavioural turn in these cultural practices. This popularization of the ‘ethological eye’ was further facilitated by the convergence of socio-technical devices, forms of observation and dramatization in the work of the early exponents of naturalistic field studies of birds and the popular filmmakers.

In April 1914, Julian Huxley, amateur birdwatcher and biologist, read a paper titled ‘The courtship habits of the great crested grebe’ at the Zoological Society in London. It appeared in print soon afterwards in the proceedings of the society. Based upon field observations undertaken during a ‘strenuous spring fortnight’ at Tring Reservoirs in Hertfordshire in 1912, the paper described the courtship rituals of the great crested grebe, a relatively conspicuous and colourful waterbird.¹ The lakes at Tring held over thirty pairs of the birds and, either watching from the banks of the reservoir or concealed in boathouses or from screened punts, Huxley and his brother Trevenan pieced together the elaborate rituals of the grebes’ spectacular displays. Huxley gave names to these various actions and episodes. They included the ‘search or Dundreary attitude’, the ‘cat display’, the ‘ghost dive’ and the ‘penguin dance’. The last was the culmination of the ritual and involved both birds swimming rapidly towards each other with weed in their beaks before rising vertically out of the water, breast to breast, as if standing on the water and looking like penguins (‘exceptionally graceful ones’, Huxley admitted).²

¹ Julian Huxley *The Courtship Habits of the Great Crested Grebe*, London: Jonathan Cape, 1968 (first published 1914), p. 16; Huxley, *Memories*, London: George Allen and Unwin Ltd, 1970, pp. 84–90.

² Huxley, *The Courtship Habits*, op. cit. (1), pp. 21–31.

Huxley was mesmerized by the performance, especially the ‘penguin dance’, later describing it as the ‘most thrilling sight I have seen while watching birds’.³ But he also sought to explain and understand the purpose of the ritual and the distinctive plumage features used in it. These he conceptualized in evolutionary terms as a form of ‘mutual sexual selection’. This idea represented a revision of Charles Darwin’s account of ‘sexual selection’ in which ‘male competition’ and ‘female choice’ was central to the finding of mates and the creation of progeny.⁴ Unlike the birds discussed by Darwin, in which the males had elaborate plumage structures and were more colourful than the typically drab females, male and female great crested grebes looked alike. This meant that the elaborate plumage and courtship ritual could not be explained, Huxley felt, as a prelude to mating. Rather, it was as an affirmation of the pair bond. Securing strong and stable pair bonds, at least during the breeding season, helped ensure successful (species) reproduction.⁵

Huxley’s study of the courtship rituals of the grebes proved highly influential. In the early 1950s, David Lack, the evolutionary ecologist, told Huxley that his grebe study ‘had to be one of the longest-lived of all papers. It’s still constantly quoted’.⁶ Huxley himself was not slow to assert the significance of his paper, describing it in his memoirs as ‘a turning point in the scientific study of bird courtship, and indeed vertebrate ethology in general’.⁷ His friend and colleague Max Nicholson, writing in 1975 following Huxley’s death, supported this view, suggesting that Huxley’s grebe essay and an earlier one on the courtship of redshanks had ‘played a decisive role in opening up the new science of ethology’.⁸ The two leading European exponents of animal behaviour studies in the interwar and post-war years, Konrad Lorenz and Niko Tinbergen, also acknowledged the importance of Huxley’s essay and his related studies. Both cited his work as an important influence and precursor to their own research, although, like later ethologists, they were less interested in the question of sexual and mutual selection than Huxley was.⁹

The retrospective celebration of Huxley’s essay and his associated studies of the courtship of redshanks and avocets offered, however, a partial account of the development of studies of animal behaviour in Britain and the wider international discipline of ethology. As Richard Burkhardt has shown, Huxley’s early essays owed much to the pioneering work of a group of amateur British field naturalists in the early years of the twentieth century. These included Edmond Selous, Henry Eliot Howard and Frederick B. Kirkham.¹⁰ Each had helped to carve out a path which Huxley later followed. They had all put the living bird and its habits, displays, postures and ceremonies at the centre of their concerted watching.¹¹ Selous had even produced a study of the ‘domestic habits’ of the great crested grebe in 1901, referenced by Huxley in his grebe paper though later erased from Huxley’s recollections of the origins of ethology.

³ Julian Huxley, ‘Bird-watching and biological science: some observations on the study of courtship in birds’, *The Auk* (1916) 3(2), pp. 142–155, 150.

⁴ Richard W. Burkhardt Jr, *Patterns of Behavior: Konrad Lorenz, Niko Tinbergen and the Founding of Ethology*, Chicago and London: The University of Chicago Press, 2005, pp. 74–5.

⁵ For a discussion of how Darwin’s idea of sexual selection was taken up by later biologists see E.L. Milam, ‘Making males aggressive and females coy: gender across the animal–human boundary’, *Signs* (2012) 37(4), pp. 935–59. Milam briefly discusses Huxley’s grebe paper in *Looking for a Few Good Males: Female Choice in Evolutionary Biology*, Baltimore: John Hopkins University Press, 2010, pp. 37–40.

⁶ Cited in Burkhardt, op. cit. (4), p. 117.

⁷ Huxley, *Memories*, op. cit. (1), p. 89.

⁸ E.M. Nicholson ‘Sir Julian Huxley as an ornithologist’, *Bird Study* (1975) 22(2), pp. 113–115, 113.

⁹ Burkhardt, op. cit. (4), p. 123.

¹⁰ Burkhardt, op. cit. (4), Chapter 2.

¹¹ Burkhardt, op. cit. (4), p. 70.

If Selous's field studies were especially important in shaping a British tradition of habit-focused birdwatching, there were parallels between the concerns of the British watchers of birds and the German tradition of animal watching developed by Oskar Heinroth, the assistant director of Berlin's zoological gardens. Heinroth's extensive studies on captive-reared, as opposed to wild, birds had a major impact on German-speaking researchers. John Durant has contended that Heinroth 'laid the methodological and theoretical foundations of classical ethology' in his studies of the 'life habits, manners and customs' of birds. His 'Beitrag zur Biologie' paper was a major influence upon the key shapers of European ethology in the 1920s and 1930s, including Konrad Lorenz and the Dutch school of ethology which included G.F. Makkink and Niko Tinbergen.¹²

In this article, I reflect upon the observational practices and methods developed by these early exponents of ethology and explore how the formation of what I would call an 'ethological eye' influenced a wilder field of popular natural-history filmmaking and photography. In doing so, my focus is upon three aspects of ethological studies: the socio-technical devices used by ethologists to bring birds closer to them, the distinctive observational and representational practices which they forged, and the analogies they used to codify behaviour. In developing this argument, my article draws on the work of Callon, Muniesa and others in understanding a socio-technical device as a material or textual entity that enables and supports certain kinds of calculation, cognition or agency. As Callon, Millo and Muniesa put it, these devices do things: 'they articulate actions; they act or make others act'.¹³ Specifically, for ethologists and other watchers of wild birds, socio-technical devices made possible or engendered certain ways of looking and certain kinds of visualization of bird behaviour. The agency of observing and visualization, in this sense, is a distributed capacity formed between human and non-human entities.

Scientific observation is also the product of collective human endeavour. As Lorraine Daston has shown, expert observation requires the step-by-step building up of a disciplined habit of observation shared by a community of trained observers. Through this rigorous and coordinated practice of observation, order is generated out of an inchoate world. To adapt Daston's phrase, the invisible is made visible, the senses schooled.¹⁴ Scientific observation is also, in this sense, a 'technology of the self' that shapes the senses and the body of the scientific observer. As Daston and Galison suggest, 'observation trains and strains the senses, moulds the body to unnatural postures, taxes patience'.¹⁵

For the early exponents of ethology, developing new ways of observing wild birds required this kind of training and disciplining of observation and bodily dispositions. Their new way of watching birds was dependent upon distinctive socio-technical devices. These included hides or screens from which to watch wild birds without disturbing them, optics to extend human vision (including binoculars), pens and paper to sketch and fix

¹² John Durant, 'Innate character in animals and man: a perspective on the origins of ethology', in C. Webster (ed.), *Biology, Medicine and Society 1840-1940*, Cambridge: Cambridge University Press, 1985, pp. 163-4. See also Burkhardt op. cit. (4), pp. 74-5; Amanda Rees, 'Wildlife agencies: practice, intentionality and history in twentieth-century animal field studies', *BJHS Themes* (2017) 2, pp. 127-49; Hans Kruuk, *Niko's Nature: A Life of Niko Tinbergen and His Science of Animal Behaviour*, Oxford: Oxford University Press, 2004.

¹³ M. Callon, Y. Millo and F. Muniesa (eds.), *Market Devices*, Oxford: Blackwell, 2007, p. 2; M. Callon, C. Meadel and V. Rabeharison, 'The economy of qualities', *Economy & Society* (May 2002) 31(2), pp. 194-217, 209-13; M. Callon, 'Why virtualism paves the way for political impotence: a reply to Daniel Miller's critique of *The Laws of the Market*', *Economic Sociology*, European Electronic Newsletter (2005) 6(2), pp. 3-20, 4.

¹⁴ Lorraine Daston, 'On scientific observation', *Isis* (2008) 99, pp. 97-110, 107-8.

¹⁵ Lorraine Daston and Peter Galison, *Objectivity*, New York: Zone Books, 2010, p. 234. See also Lorraine Daston and Elizabeth Lunbeck, 'Introduction: observation observed', in Daston and Lunbeck, *Histories of Scientific Observation*, Chicago and London: The University of Chicago Press, 2011, pp. 1-6.

patterns of behaviour, watches to record timings, photography to capture action and freeze movement, and illustration and photographs to visualize behaviour.

In emphasizing these socio-technical aspects of the forms of scientific observation developed by ethologists and the collective disciplining of watching and recording, my argument challenges the almost exclusive focus from historians both of both science and of film and television upon the role played by the technology of photography in the methods of ethologists.¹⁶ Gregg Mitman most notably has argued that filmmaking was an integral, constitutive dimension of ethological research. Focusing upon the work of Niko Tinbergen, Mitman has suggested that the use of film guided ethologists towards the most visually compelling and dramatic aspects of bird behaviour.¹⁷ These visual technologies additionally helped to make visible what was ordinarily invisible to the human eye through freezing action and producing close-up views of birds' social lives, opening what Shawn Michelle Smith has called the 'edge of vision'.¹⁸

Later scholars have tended to reaffirm Mitman's arguments. Davies, Kruuk and Macdonald all emphasized the role of the camera in supporting the credibility of field science, with the 'objective eye' of photography able to record behaviour without being coloured by the subjectivity of the observer or disturbed by human intervention. Burkhardt's wide-ranging account of the founding of ethology similarly emphasized the key role played by photography and film in the studies of Heinroth, Lorenz and Tinbergen.¹⁹

Such a reading of the studies of ethologists, however, extracts photography from what was a wider range of socio-technical devices and habits of watching. Sketching and illustration were central and worked with photography to help represent or visualize patterns of bird behaviour. Against the claim made by Mitman and amplified by Davies and Macdonald that the camera allowed observers to free themselves from dependence 'upon the notebook and pencil', sketching and illustration were fundamental to the rigorous, disciplined techniques that formed the scientific habit of ethologists and how they presented their results.²⁰ Such techniques, alongside the use of hides and optics, were central to the observational practices used by Selous, Huxley, Tinbergen and others and in the account that follows I give fuller weight to this other apparatus of observation and recording alongside photography in order to revise and extend Mitman's and others' arguments.²¹

¹⁶ Kruuk op. cit. (12); Burkhardt, op. cit. (4); H. Macdonald, 'Covert naturalists: ethologists hunting objectivity in the field', *Cambridge Literary Review* (2011) 5, pp. 136–52; Gregg Mitman, *Reel Nature: America's Romance with Wildlife on Film*, Seattle: University of Washington Press, 2009 (first published 1999); Gail Davies, 'Science, observation and entertainment: competing visions of post-war British natural history TV, 1946–67', *Cultural Geographies* (2000) 7(4), pp. 432–59; Jean-Baptiste Gouyon, *BBC Wildlife Documentaries in the Age of Attenborough*, London: Palgrave, 2019.

¹⁷ Mitman, op. cit. (16), p. 70.

¹⁸ Shawn Michelle Smith, *At the Edge of Sight: Photography and the Unseen*, Durham, NC and London: Duke University Press, 2013, pp. 4–8.

¹⁹ Macdonald, op. cit. (16); Davies, op. cit. (16); Burkhardt, op. cit. (4), especially Chapters 3, 9. For a broader account of the role of film and photography in the production of scientific records which draws upon John Tagg's influential studies of the evidential power of photography see G. Mitman and K. Wilder (eds.), *Documenting the World: Film, Photography, and the Scientific Record*, Chicago and London: The University of Chicago Press, 2016. On early American wildlife photography as a social practice see M. Brower, *Developing Animals: Wildlife and Early American Photography*, Minneapolis and London: University of Minnesota Press, 2011. For more recent examples of documentary filmmaking and animals see B. Smaill, *Regarding Life: Animals and the Documentary Moving Image*, New York: SUNY Press, 2016.

²⁰ Davies, op. cit. (16), p. 11.

²¹ An older tradition of natural-history observation developed in relation to botany in the eighteenth century used illustration derived from multiple observations and an army of artists to record and make portable records

I also challenge the contention of Mitman that it was the use of film which drew ethologists onto the terrain of entertainment and into a relationship with the narrative forms of drama and storytelling.²² The dramaturgical aspect of bird behaviour foregrounded by ethologists existed independently of the use of film and formed part of the material and discursive assemblage through which they rendered animal behaviour intelligible. Certainly, Selous's and Huxley's pioneering studies, including the latter's great crested grebe paper, did not need film in order to draw out the dramatic aspects of behaviour. Huxley even argued in the preamble to his grebe paper that naturalists should 'drop the camera in favour of the field glass and the notebook' in order to grasp fully the 'possibilities of field observation'.²³ Theatrical or dramatic forms were appropriated by Huxley, Selous and others in order to make sense of birds' actions, guiding them towards the ritualized displays of birds.²⁴ They also informed how Huxley and Tinbergen communicated with lay audiences in their popular books and films.

The focus upon the drama of animal behaviour and the codifying of this within the distinctive conceptual language of ethology had a broader cultural influence upon natural-history filmmaking and photography more generally. Through the popularization of ethological ideas within natural-history networks, bird photography, publishing and television natural history became more and more focused upon animal behaviour. This shift occurred earlier than many scholars of natural-history documentary have suggested. Certainly, the focus on film and television, rather than photography and publishing, in the work of historians of wildlife documentary like Davies and Gouyon has tended to place the influence of behavioural science much later in the post-war period. Or else, as in the work of Bouse, to downplay the role of science and emphasize the impact of Hollywood upon wildlife documentary from the late 1940s.²⁵ As I show, popular natural-history filmmaking and photography underwent a 'behavioural turn' in Britain and Western Europe from the 1940s, extending the scope of the 'ethological eye' beyond the work of professional animal behaviour scientists and into popular culture. In doing so, bird photographers and filmmakers deployed the same socio-technical devices and forms of observation that the innovators of naturalistic field studies of bird behaviour had used.

In the first two sections, the article explores the development of ethology in the first half of the twentieth century. I draw upon examples from the work of Selous, Huxley and Tinbergen. My account reflects upon the distinctive field practices they each evolved for getting close to wild birds in order to understand their habits and behaviour. I draw out how the formation of a rigorous form of scientific observation was developed by these ethologists and the range of socio-technical devices and forms of dramaturgical or theatrical representation they deployed to apprehend and visualize the social lives of birds. In doing so, I largely exclude the studies of Heinroth and Lorenz, who both focused their

of plant species. See D. Bleichmar, 'The geography of observation: distance and visibility in eighteenth-century botanical travel', in Daston and Lunbeck, *Histories of Scientific Observation*, op. cit. (15), pp. 382–6.

²² Mitman, op. cit. (16), Chapter 3.

²³ Huxley, *The Courtship Habits*, op. cit. (1), p. 15.

²⁴ Raymond Williams noted how the popular press of the late nineteenth century drew upon forms of melodrama from theatre and places popular theatre within the cultural milieu from which newspapers developed their journalism. Raymond Williams, 'The press and popular culture: an historical perspective', in G. Boyce and J. Curran (eds.), *Newspaper History: From the Seventeenth Century to the Present*, London: Constable, 1978, pp. 41–50. Other acute observers of wild birds also deployed theatrical metaphors to capture the behaviour of birds and its lure. See, notably, Leopold's discussion of the 'sky dance' of American woodcock in Aldo Leopold, *Sandy County Almanac*, Oxford: Oxford University Press, 1949, p. 30.

²⁵ Davies, op. cit. (16); Gouyon, op. cit. (16); Derek Bouse, *Wildlife Films*, Philadelphia: University of Pennsylvania Press, 2000; Bouse, 'False intimacy: close-ups and viewer involvement in wildlife films', *Visual Studies* (2003) 18(2), pp. 123–32.

research on captive-bred birds, with Lorenz in particular emphatic that establishing close physical and emotional relations with domesticated birds was central to understanding their behaviour. Both Heinroth and Lorenz departed from the tradition of naturalistic field studies and an attention to wild behaviour in natural settings that preoccupied Selous, Huxley and Tinbergen. It is this latter tradition and its wider influence which I chart.

In the third section, the article explores how others working within popular natural-history publishing and television drew upon ethologists' studies to present to a wider public intimate portraits of bird life and some of their most dramatic displays. I focus upon the bird photography of Eric Hosking produced in the 1940s and 1950s and Heinz Sielmann's hugely popular and influential film of woodpeckers screened in Britain as part of the BBC television series *Look* in 1955.

Birdwatching

Of all the amateur naturalists who helped to shape the British tradition of ethology, Edmond Selous was perhaps the most stoical. In watching wild birds, Selous not only devoted his life to their sustained observation in the field but endured great discomfort in the process. The brother of the celebrated big-game hunter Frederick Selous, Edmond Selous defined his own commitment to watching animals against the dominant traditions of sporting naturalism and associated fields sports. 'Killing', he claimed, had 'over-ridden in us the higher [pleasures] of observation and inference'. He claimed that the knowledge of the sportsmen naturalists had been 'scant and bare', 'enlightened curiosity ... drowned in bloodthirstiness'. Zoologists have been, he memorably suggested, 'thanatologists', students of death. 'If only', he concluded, 'we as often stalked animals in order to observe them, as we have in order to kill them, how much richer might be our knowledge'.²⁶ Devoting himself to the observation and study of living birds required, for Selous, different technologies from the sportsmen's gun and the cultivation of a disciplined habit of observation. In books like *Bird Watching* and in essays published in the *Zoologist*, Selous offered minute-by-minute records of bird behaviour and bird ceremonies. His method was simple, if demanding. He would seek or construct some form of cover from which to sit and watch birds in the field. When he visited Holland in 1906 to watch and record the behaviour of breeding ruff, for example, Selous built himself 'a kind of turf-hut'.²⁷ When watching nesting nightjars in Britain he positioned himself behind a small bush three paces from the bird's nest, before adding more cover from which to view the birds at close range.²⁸ And he devoted a chapter of *Bird Watching* to an account of his observing of country birds by concealing himself in a straw stack or haystack.²⁹ If the straw stack offered 'warmth and comfort' even when it was snowing, Selous's experience in Holland was more taxing. Having arrived in position in his turf hut at 4 a.m., by 8 a.m. he was 'almost frozen to death'. This was despite wearing 'a thick motor suit, warm under-clothing, woollen face-protector, sheepskin gloves, two Scottish plaids and a Shetland shawl-comforter'.³⁰

Hidden behind cover or protected by his makeshift hides, Selous would write furious notes on what the birds were doing, either looking through field glasses or with the naked eye. Observations were made as actions occurred in front of him and he logged

²⁶ Edmond Selous, *Bird watching*, London: J. M. Dent & Co., 1901, p. 224.

²⁷ Burkhardt, op. cit. (4), p. 83.

²⁸ Burkhardt, op. cit. (4), p. 83.

²⁹ Selous, op. cit. (26), p. 199–200.

³⁰ Quoted in Burkhardt, op. cit. (4), p. 83.

what he saw in intervals of five minutes or ten to fifteen minutes depending on what the birds were doing.³¹ Like Huxley, Selous was fascinated by bird displays and courtship rituals. As with Huxley this grew partly out of his interest in Darwin's theory of sexual selection.³² It was also shaped by a more general fascination with, as Durant notes, 'the evocative antics' of birds and the 'charged atmosphere of their courtship rites'.³³

Aggressive interaction between birds also fascinated Selous. In the chapter 'Watching gulls and skuas' from *Bird Watching* he devoted a long section to discussing conflicts between what he took to be two male gulls fighting over a female. Selous explicitly represented the interactions between the birds as a 'melodrama', with its 'villain' and 'good hero'. He described the conclusion of the fight between the two male gulls as having had a 'Gilbertian denouement', after the English playwright W.S. Gilbert.³⁴ In looking to popular theatre for analogies through which to understand and give coherence to bird behaviour, Selous deployed a dramaturgical metaphor that would run through the work of later ethologists. Durant noted this aspect of Selous's writings, suggesting that the analogy with drama opened a range of interpretive possibilities, including directing attention to the symbolic significance of bird behaviour.³⁵ Birds, for Selous and other later writers, communicated with each other through their dramatic rituals, expressing emotions or what Lorenz and Tinbergen would later theorize as instinctual patterns of behaviour released through social interaction.³⁶ The dramaturgical metaphor also suggested the scripted nature of bird courtship, its stereotyped poses and the existence of defined social roles amongst birds. Such a metaphor notably anticipated the theatrical or dramaturgical metaphor developed by sociologist Erving Goffman in his 1959 book *The Presentation of the Self in Everyday Life*. Goffman's use of the theatrical metaphor was centrally about understanding everyday human social interactions and emphasized not just the performative nature of everyday life, but the process of impression management. Goffman famously distinguished between the 'frontstage' and 'backstage' aspects of social life. As Fine and Manning have argued, Goffman's theory implied a 'two-selves' version of human social action, with a 'cynical manipulator hidden behind the public performance'.³⁷ For the watchers of wild birds, the drama of animals' social lives was not freighted with these sociological ideas of manipulation and psychological intentionality but was rather driven by the animals' emotions and instinctual impulses.

Huxley, as we have seen, was riveted by the drama of birds' lives. Like Selous he reached for theatrical metaphors. As Burkhardt notes, the term Huxley gave to one of the actions in the courtship ceremony of the great crested grebes, the 'Dundreary attitude', was taken from the name of an English character in the play *Our American Cousin*.³⁸ Elsewhere, in his study of the breeding behaviour of avocets, Huxley compared the post-nuptial run of the birds with that performed by Macheath and Polly in the *Beggars Opera*. And across Huxley's field notes, as Burkhardt suggests, the behaviour of the birds could read like stage directions.³⁹ Durant develops the point, suggesting that

³¹ Selous, op. cit. (26), pp. 196–7.

³² Selous, op. cit. (26), pp. 25, 255.

³³ Durant, op. cit. (12), p. 180.

³⁴ Selous, op. cit. (26), pp. 105–6.

³⁵ Durant, op. cit. (12), pp. 180, 187.

³⁶ See N. Tinbergen, *The Study of Instinct*, Oxford: Clarendon Press, 1951; K. Lorenz, 'The companion in the bird's world', *The Auk* (1937) 54, pp. 245–72.

³⁷ Gary Fine and Philip Manning, 'Erving Goffman', in George Ritzer, ed., *The Blackwell Companion to Major Contemporary Social Theorists*, Oxford: Blackwell, 2003, pp. 44–6.

³⁸ Burkhardt, op. cit. (4), p. 116.

³⁹ Burkhardt, op. cit. (4), p. 116.

Huxley's field notes sought to record what he saw as an 'evolutionary play'. The analysis aimed to reconstruct the plot that the avian actors were playing out.⁴⁰

The dramaturgical analogies used by Huxley, as with Selous, perhaps came so strongly to mind because of the way viewing wild birds from behind cover or screens or hides created a sense of a stage on which the birds played out their behaviour. As we have seen, Huxley watched his grebes from screened punts, from within boathouses or from behind reeds on the banks of the reservoir. Like Selous, he furiously scribbled his notes, bringing the action closer by using field glasses. The grebe essay was also notable for the way Huxley sought to visualize or represent the various aspects of the birds' courtship ritual with sketches. The published version of his paper included thirteen illustrative figures based upon Huxley's own notes and rough sketches.⁴¹ The sketches highlighted the key passages of the bird's ritual, using black-and-white line drawings against a white background stripped of detail, and presented them in the order in which they occurred in a tabular form. The illustrations included full-length images of both birds, as well as details of particular action or plumage features. The drawings sought to simplify and fix into distinctive moments the more fluid and dynamic actions of the birds in the field and to produce a synthesized and generalizable account from what were in life more varied and diverse actions (Figure 1).

This process of condensing the bird's behaviour down into its more recognizable and distinctive actions revealed Huxley's skill as a rigorous and disciplined watcher and his ability to codify complex behaviour. His dedication to watching birds, like Selous's, was made possible by what was almost an obsession with the courtship rituals and 'lovemaking' of birds. We have seen how he was deeply excited by the penguin dance aspects of the grebe ritual. Elsewhere in his writings he described his watching of courting redshanks as 'one of the most entrancing of spectacles'.⁴² There were clearly, for Huxley, strong elements of identification with the birds in his watching. Across his essays on bird behaviour he unashamedly saw birds as playing out human-like roles. In both of his early papers on courtship, Huxley dwelt at length on what he termed the forms of 'marriage' of birds and the feelings expressed between the pair. As he noted in a 1914 essay, 'it was perfectly obvious that [a pair of blue tits calling frequently to each other] simply took pleasure in each other's presence, like the engaged couple they were'.⁴³ In examples like this of the 'marriage-habits' of birds, Huxley drew upon contemporary social debates about the human ordering of private life. As he suggested, 'some birds lay down that "a woman's place is in the home"'. 'Other birds come more near to the ideal of the women's movement of today; in them both sexes share the duties of the pair equally, and in all activities realize themselves equally and to the full'.⁴⁴ For Huxley, 'companionate' marriage was the finest form of pair bonding in both birds and people.⁴⁵

In drawing these analogies with human social life, Huxley was projecting wider social concerns about the sexes in Edwardian Britain onto the courtship of birds. He was also aware that because it was possible to see parallels between birds' domestic lives and those of contemporary Britons, the depiction of bird behaviour could be made to appeal to a wider lay audience beyond professional scientists. Huxley was committed, like fellow 'New Ornithologists' Max Nicholson and James Fisher, to bringing amateur birdwatching closer to biological science.⁴⁶ Studies of bird behaviour and the possibility of amateurs

⁴⁰ Durant, op. cit. (12), p. 181.

⁴¹ Huxley, *The Courtship Habits*, op. cit. (1), p. 10.

⁴² J. Huxley, 'The courtship of birds', *The Listener*, 28 May 1930, pp. 935–7.

⁴³ Huxley, *The Courtship Habits*, op. cit. (1), p. 56.

⁴⁴ Huxley, 'Bird-watching and biological science', op. cit. (3), pp. 142, 155.

⁴⁵ Huxley, 'Bird-watching and biological science', op. cit. (3), p. 147.

⁴⁶ On the democratic science of the 'New Birdwatching' see Sean Nixon, *Passions for Birds: Science, Sentiment and Sport*, Montreal and Kingston, London and Chicago: McGill-Queen's University Press, 2022, Chapter 1.

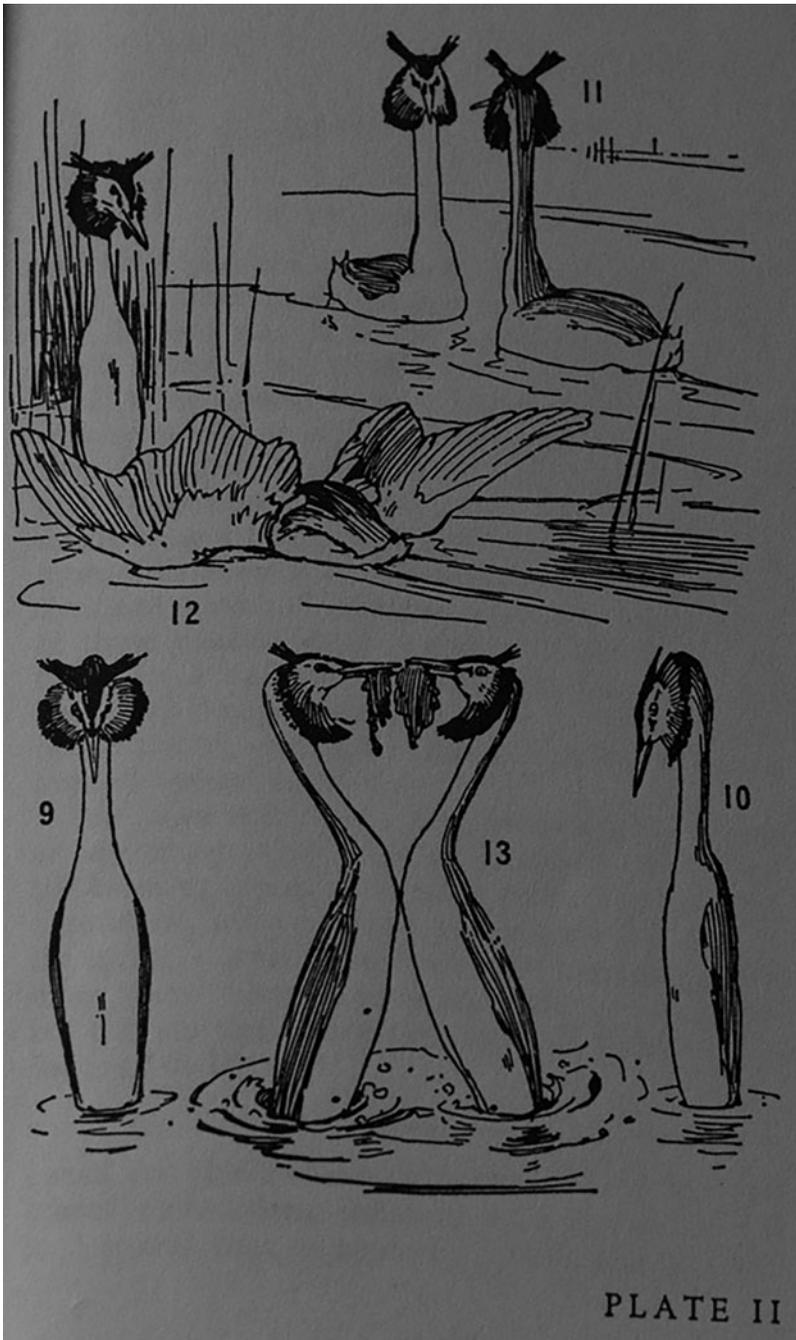


Figure 1. Courtship ceremony of great crested grebe, Julian Huxley.

making new discoveries were one area in which Huxley sought to promote 'properly directed' amateur birdwatching. Developments in optics, alongside the growth of 'a vast army of bird lovers and bird watchers', facilitated a new popular science of bird observation. The availability of prismatic binoculars, he noted, enabled ordinary observers 'to

catch the details of attitude and expression which are so important'.⁴⁷ The technology of the film camera also had the potential for Huxley not only to have 'scientific value in revealing new insights into animal behaviour', but also to engage new audiences through 'the entertainment potential of film'.⁴⁸

Huxley embraced both these aspects of filmmaking in his 1934 documentary *The Private Life of the Gannets*. The film was financed by Alexander Korda, leading figure in the British film industry. Korda had recently produced *The Private Life of Henry VIII* and agreed to fund Huxley's short film on the condition that its title mirrored that of his Henry film.⁴⁹ The documentary was shot in June and August of 1934 on and around the island of Grassholm off the Pembrokeshire coast. Huxley chose the gannets because they were, as he put it, 'spectacular and by nature so tame ... that filming them one runs up against very few of the usual technical difficulties of the bird photographer'.⁵⁰ The breeding colony on Grassholm was itself a natural spectacle seen from a distance, with the breeding birds covering the north-west part of the island. The early passages of the film conveyed this sense of the isolated natural beauty of Grassholm before focusing in on the massed colony of birds. As the camera moved amongst the colony, it offered an intimate portrait of the birds' colonial life, documenting key stages of their life history: from the 'ceremonial billing' between the adults through the hatching of the chick, the feeding of the young and the young bird's first flight. A section filmed from aboard a herring drifter captured the adult birds plunge diving, with a slow-motion sequence filmed by celebrated documentary filmmaker John Grierson of adult birds circling the island in flight.⁵¹ *The Private Life of the Gannets* emphasized Huxley's long-standing interest in the 'domestic' habits of birds, bringing close-up shots of behaviour that emphasized the alienness of the birds, the drama of their social lives and aesthetic beauty of the creatures in flight. Using photography and film to reveal the private life of a bird colony also figured centrally in the research and filmmaking of Niko Tinbergen.

Tinbergen's birds

The life of a bird family is a particularly attractive drama to watch

Niko Tinbergen, *Birdlife*, Oxford: Oxford University Press, 1954, p. 32

Niko Tinbergen had first encountered Julian Huxley's courtship studies of birds at the 7th International Ornithological Congress held in Amsterdam, Holland, in 1930. As Burkhardt notes, the young Dutchman was so taken with Huxley's talk on 'The natural history of bird courtship' that it propelled him into print for the first time. Drawing on his own observations of common terns on the Dutch coast, Tinbergen published an article in the journal *Ardea* engaging with Huxley's studies.⁵² Along with the Austrian researcher Konrad Lorenz, Tinbergen became central to the development of European ethology, playing a key role in both the methodical and the theoretical elaboration of the discipline.⁵³ The two men began their long association through correspondence in the 1930s. This was at a time when Lorenz was establishing a reputation as the foremost theorist of animal behaviour in the German-speaking world. In the spring of 1937, Tinbergen visited Lorenz at his 'research station' based in Altenberg, just outside Vienna, and they began

⁴⁷ Huxley, 'Bird-watching and biological science', op. cit. (3), p. 142.

⁴⁸ J. Huxley 'Making and using nature films', *The Listener*, 10 April 1935, p. 596.

⁴⁹ Mitman, op. cit. (16), p. 78.

⁵⁰ Huxley, 'Making and using nature films', op. cit. (48), pp. 595–6.

⁵¹ Huxley, op. cit. (48), p. 596. See also Mitman, op. cit. (16), pp. 76–8.

⁵² Burkhardt, op. cit. (4), p. 193.

⁵³ See further Tinbergen, op. cit. (36).

to experiment with using film and photography to capture behaviour and to deepen their commitment to observation as the key method for studying animal behaviour.⁵⁴ For both Lorenz and Tinbergen, understanding the causal structures underlying behaviour was dependent upon systematic methods of describing and capturing observable phenomena. The description of observable behaviour required, as Tinbergen later put it, an 'objective recording of movement'. Indispensable to this was the use of 'still and motion pictures'. These allowed 'reactions' to be 'broken down into their components'.⁵⁵ Together, Tinbergen and Lorenz filmed a range of behaviours of captive-bred ducks and geese from Lorenz's extensive collection. Some of this filmed material fed into Lorenz's silent film *The Ethology of the Greylag Goose*.⁵⁶ Lorenz also planned a study of the social courtship of ducks using film. This study, as Burkhardt notes, was to use film to show how most of the social life of birds was devoted to 'releasing ceremonies' of some sort.⁵⁷ For Lorenz, then, like Tinbergen, film was central to the objective study of animal behaviour. As Lorenz pithily observed in 1937, 'Of course, there is only one solution for this problem [the objective study of behaviour]: the photo, possibly the motion picture'.⁵⁸

Lorenz, however, was also a very good artist and draughtsman and he combined illustrations with photography and filmmaking in developing ethograms of families of birds. As Schleidt and Oeser have shown, Lorenz additionally employed Herman Kacher, a professional illustrator and photographer, to produce material for his publications and to act as the curator of his film collection. Kacher's illustrations were used to visualize in a step-by-step fashion different episodes of bird behaviour, often drawing upon filmed footage.⁵⁹ Most of Lorenz's films of bird behaviour were shot in black and white on 16 mm film using a Bolex camera, the standard camera for many amateur and scientific filmmakers in this period. In the 1950s, Lorenz shot as many as two hundred reels of film of ducks and geese, much of it taken at Peter Scott's Severn Wildfowl Trust at Slimbridge, UK.⁶⁰

Tinbergen's field studies also combined the use of still and moving photography with sketching and illustration to record and analyse bird behaviour. Like Lorenz, he was a talented illustrator and had had his artwork published in the journal of the Nederlandse Jeugbond voor Natuurstudie as a teenager.⁶¹ Tinbergen further improved his drawing during the years he was interned during the German occupation of the Netherlands. One of his fellow inmates was the portrait painter Karel van Veen, who offered daily portrait-drawing sessions which Tinbergen attended.⁶² If illustration was central to Tinbergen's research, it was closely allied to filmmaking. As he recalled late in life in a biographical essay,

My special interest in the visible natural world made me turn to the camera as well as sketching ... and still photography and later, cinefilming of animals in their natural setting ... became one of my principal hobbies and soon proved very useful in my work ... as a student of animal behaviour.⁶³

⁵⁴ Burkhardt, op. cit., (4), pp. 205–13; Mitman, op. cit. (16), p. 74.

⁵⁵ Tinbergen, op. cit. (36), p. 7.

⁵⁶ Mitman, op. cit. (16), p. 74.

⁵⁷ Burkhardt, op. cit. (4), p. 177.

⁵⁸ Quoted in W.M. Schleidt and E. Oeser, 'Konrad Lorenz's use of cinematic film for studying dabbling duck courtship behaviour and the availability of historic film material', *Wildfowl* (2011) 61, pp. 45–51, 48.

⁵⁹ Schleidt and Oeser, op. cit. (58), p. 47. See also S. Grafe, 'Red foxes in the filing cabinet: Gunter Tembrock's image collection and media use in mid-century ethology', in *Berichte zur Wissenschaftsgeschichte* (2022) 45, pp. 66–75.

⁶⁰ Schleidt and Oeser, op. cit. (58), p. 47.

⁶¹ R.S. Root-Bernstein, 'Niko Tinbergen's visual arts', *Leonardo* (2007) 40(1), pp. 68–9.

⁶² N. Tinbergen, 'Watching and wondering', in D.A. Dewsbury (ed.), *Studying Animal Behaviour: Autobiographies of the Founders*, Chicago: The University of Chicago Press, 1985, pp. 431–63, 451.

⁶³ Tinbergen, op. cit. (62), p. 438.

Hans Kruuk has shown how Tinbergen always had good, high-quality cameras, including top-of-the-range Swiss-made Rolleiflex and Alpa-Alnea cameras; when he moved to Britain, to taken up a position at Oxford University, he acquired a Nikon camera.⁶⁴ During the 1960s, Tinbergen made greater use of cinefilming, developing film seminars on animal behaviour at Oxford, and he had two films transmitted on BBC television as part of the 1973 series *Their World*.⁶⁵

In his published research on gulls in the late 1950s, Tinbergen gave a vivid illustration of the combined use of film and illustration as key components of the observational and visualization practices of ethology. In an essay titled 'comparative studies in the behaviour of gulls (Laridae): a progress report', Tinbergen analysed two different gull postures frame by frame, counting the number of frames in which the two poses were held and the transition movements between them.⁶⁶ These different poses were illustrated in the article with line drawings. The photographic eye of the camera was further supported in Tinbergen's studies by rigorous techniques of observation and recording. This required the cultivation of self-control and discipline by the observer. Watching, as Tinbergen noted, required 'patience': 'one must persevere and never be discouraged when many hours go by without much of interest happening'.⁶⁷ Watching also required the extension of human vision by field glasses, a tripod to support them and portable hides that allowed undisturbed, close-up views of birds on their breeding grounds. Pens, notebook and diaries were also essential to record and sketch bird behaviour and to capture the timing and duration of actions. Unlike Lorenz, who undertook most of his research on captive-bred birds, Tinbergen was committed to naturalistic field studies. This meant that hides and screens were much more central to his work. In his popular book *Birdlife*, Tinbergen offered plentiful examples of the range of hides and forms of cover that he had used over his career to get close to birds. He sometimes called these 'observation posts' and they could be made from a screen of dead branches and bracken or reeds with a 'peephole' cut within the screen. The book showed a young Tinbergen assembling a seashore hide, made by digging into the ground and using an old basket as cover. In the post-war years, he preferred to use purpose-built collapsible tents.⁶⁸

These hides and the associated technologies and devices constituted the key socio-technical supports for Tinbergen's watching of birds. Like Selous and Huxley, Tinbergen's ways of watching and making sense of bird behaviour also made recourse to dramaturgical analogies. Certainly, Tinbergen's field notes, published research and communication with lay audiences revealed how dramaturgical forms shaped his understanding of bird behaviour. In *A Herring Gull's World*, his best-selling New Naturalist book, Tinbergen cited a diary entry from May 1936 that documented a fight between two herring gulls. The entry concludes, 'A wonderful fight. If the warden had charged us a guilder each we would have gladly paid it'.⁶⁹ In an article in *Country Life*, drawing on the research from *A Herring Gull's World*, Tinbergen gave his readers an insight into the process of studying a gull colony, foregrounding its theatrical dimensions:

⁶⁴ Kruuk, op. cit. (12), pp. 229-230.

⁶⁵ Correspondence and Papers of Nikolaas Tinbergen, Bodleian Archives and Manuscripts, University of Oxford, MSc. Eng.C. 3132/c5.

⁶⁶ Niko Tinbergen, 'Comparative studies of the behavior of gulls (Laridae): a progress report', *Behaviour* (1959) 15(1-2), pp. 1-70, 9.

⁶⁷ N. Tinbergen, *The Herring Gull's World: A Study of the Social Behaviour of Birds*, London: Collins, 1953, p. 47.

⁶⁸ Niko Tinbergen, *Birdlife*, Oxford: Oxford University Press, 1954, pp. 58-61.

⁶⁹ Tinbergen, op. cit. (67), p. 59.

You follow the histories of individual birds, and witness romance, tragedy or comedy on the stage in front of you. At the end you resent intrusion by sightseers just as much as you would resent any disturbance at the theatre.⁷⁰

In his field diary from June 1963, he described going to St Bees Head, Cumbria, where ‘the main event was the social plunge diving by herring gulls’. In his field notes from Ravenglass dated 26 April 1966, he recorded, ‘A pair [of black-headed gulls] flies in ... completely tame, turns over lots of egg shells / I film 200 feet ... Wonderful show’.⁷¹

As with Selous and Huxley, Tinbergen’s observational science was informed by the narrative forms of drama, with its own observational practices organized through these wider cultural forms. Part of Tinbergen’s skill was to transmit to non-specialist, lay audiences the drama that he experienced when watching wild birds and through which he understood their behaviour. He perhaps did this most successfully in his broadcast film ‘Signals for survival’. ‘Signals for survival’ was a fifty-minute documentary broadcast in December 1968 as part of BBC2’s *World about US* series. The film focused on the social life of a lesser black-backed gull colony, birds that were chosen, as Tinbergen confessed, for being more ‘photogenic’ than the drabber herring gull.⁷² Tinbergen undertook the principal photography for the documentary and the narration was written and performed by Hugh Falkus, broadcaster and sportsman. Falkus’s script drew upon the findings of Tinbergen’s gull studies to show how non-verbal communication was central to the lives of a common breeding bird like the lesser black-backed gull. As Falkus described it and as Tinbergen’s shots carefully revealed, each posture and call of the birds within the nesting colony formed part of a language through which they communicated with each other. This language enabled the birds to produce a coherent social structure within the apparently chaotic life of the colony and made it possible for the birds to cooperate so that each could reproduce successfully. The postures and calls were ‘signals’ that enabled the ‘survival’ and reproduction not just of individual birds, but of the colony and ultimately the species.

In emphasizing the system of rules that underpinned the apparently disorderly life of the ‘bird city’, ‘Signals for survival’ alerted viewers to the fact that this was not just a ‘city of friends’, but also a ‘city of thieves and murderers’. Violent duels and territorial disputes, with the birds squaring up, their wings ‘like half-drawn swords’, formed a central theme in the film. Alongside conflict, the film detailed the charged areas of courtship and mating behaviour. The rearing of young was also documented, together with the threats young birds faced from their ‘neighbours’ in the colony, including being attacked and killed by them. By focusing on sex, courtship, fighting, parenting and the killing of young birds – behaviours and actions familiar across Tinbergen’s scientific research on gulls – ‘Signals for survival’ presented a startling dramatic picture of the ‘private life’ of a common breeding bird for a television audience.⁷³

Bird behaviour and natural-history filmmaking and photography

If the unveiling of the ‘private life’ of a gull colony and the drama of the birds’ lives during the breeding season had contributed to the success of ‘Signals for survival’, the film belonged within a tradition of natural-history filmmaking and photography which had already been shaped by the innovations in behavioural science that Tinbergen, Lorenz, Selous, Huxley and others had developed. In Britain the photographic practice of Eric

⁷⁰ Niko Tinbergen, ‘Social life of herring gulls’, *Country Life*, 9 May 1952, pp. 1398–1400, 1399.

⁷¹ Niko Tinbergen, field notes, 1 June 1963, Oxford, MS. Eng. d.2387, my emphases.

⁷² Chris Parsons, *True to Nature*, Cambridge: Patrick Stephens Ltd, 1982, pp. 254–308; Kruuk, op. cit. (12), p. 232.

⁷³ The film won the prestigious Prix d’Italia award.

Hosking and the books he produced with several co-authors exemplified this 'behavioural turn' within popular natural history.

Hosking was a freelance wildlife photographer who specialized in birds. He had developed new techniques for photographing birds in the field, including the use of high-speed flash photography.⁷⁴ His skill brought him to the attention of James Fisher and Julian Huxley in the early 1940s and he became the photographic editor to Collins's New Naturalist series of books. Hosking's approach to bird photography from the early 1940s was increasingly influenced by the ideas of the 'New Naturalists' and their interest in ethology. He worked extensively with one of these, Desmond Nethersole Thompson, taking from Thompson a focus on the behaviour of birds in and around the nest. Thompson's own studies owed much – as he acknowledged – to the 'wader watchers' Huxley, Tinbergen and Makkink.⁷⁵

One aspect of what Hosking learnt from ethology concerned attention to the dramatic displays performed by birds in the periods of pair formation and the rearing of young. This focus in Hosking's work represented a major shift from the established tradition of bird photography developed by leading practitioners in the late nineteenth century and the early twentieth. Influenced by ideas of 'observational realism' and an 'exhibitionist' conception of film, early bird photography and filmmaking foregrounded the novelty of photographic images and their capacity to show rarely seen natural phenomena.⁷⁶ The emphasis in these images was typically upon portraiture of either nest and eggs or birds sitting at the nest. The resulting images had curiosity or aesthetic value and were 'trophies' associated with the sport of collecting records of birds on film.⁷⁷ This was evident in the work of British photographers and filmmakers Cherry and Richard Kearton and Oliver Pike as they sought to record 'animals in action' and the so-called 'home life' of birds (that is, life around the nest). Even for the most behaviour-focused of photographers working in the first years of the twentieth century, like Francis Herrick in the USA, bird behaviour was limited to illustrating characteristic poses around the nest or unusual scenes. It took Herrick's introduction to the work of Konrad Lorenz in the late 1930s to begin to change his understanding of the 'home life' of birds.⁷⁸

Hosking pushed significantly beyond this limited attention to action and characteristic poses. In *Birds Fighting* (1955), co-authored with Stuart Smith, Hosking focused upon the dramatic and visually compelling aspects of bird behaviour, drawing explicitly upon the work of Tinbergen and Lorenz.⁷⁹ Just as Tinbergen had done in *Herring Gulls' World*, Hosking and Smith conducted several experiments with wild birds in order to study their behaviour. In the latter's case, their focus was upon aggressive displays. Deploying new electronic flash photographic equipment to freeze-frame rapid movement, Hosking and Smith recorded the displaying attitudes of birds. They used hides placed close to birds' nest or in front of various experimental props in order to capture in close-up the behaviour of wild birds. The hides were a crucial device for Hosking and Smith. Hides had been first constructed and deployed by the pioneering bird photographers of the late nineteenth century like Richard and Cherry Kearton and by Francis

⁷⁴ Eric Hosking and Cyril Newberry, 'Revolution in bird photography', *Country Life*, 5 November 1948, pp. 930–3.

⁷⁵ D. Nethersole Thompson and M. Thompson, *Waders: Their Breeding, Haunts and Watchers*, London: A. & C. Black, 1986, p. 31.

⁷⁶ J.-B. Gouyon 'Science and film-making', *Public Understanding of Science* (2016) 25(1), pp. 17–30; E. Hosking and Harold Lowes, *Masterpieces of Bird Photography*, London: Collins, 1947, pp. 11–12.

⁷⁷ R. Kearton, *At Home with Wild Nature*, London and New York: Cassel & C., 1922; J. Bevis, *The Keartons: Inventing Nature Photography*, Axminster: Uniform Books, 2016; F. Hobart Herrick, *The Home Life of Wild Birds: A New Method of the Study and Photography of Birds*, New York and London: G.P. Putnam's Son, 1905 (first published 1901).

⁷⁸ Burkhardt, op. cit. (4), p. 215.

⁷⁹ E. Hosking and S. Smith, *Birds Fighting*, London: Faber & Faber, 1955, p. 15.

Herrick.⁸⁰ The Keartons had experimented with camouflaged suits and masks, designed objects like an artificial tree trunk and their celebrated ox and sheep hides, before turning to the use of small tents. Reflecting on the early years of wild-bird photography in a 1947 collection co-edited by Eric Hosking, Ralph Chislett had claimed that the Keartons' use of the hide was an 'epochal discovery' for bird photography.⁸¹

Like their predecessors, Hosking and Smith used a hide to record bird behaviour without disturbing the natural modes of life of wild birds. Central to their study in *Birds Fighting* were a range of experiments with stuffed birds, painted cut-outs, bird sculptures and mirrors. A large part of the book was devoted to detailed studies of how a number of songbirds responded to the presence of a stuffed cuckoo near their nests. The choice of a stuffed cuckoo was not accidental. Cuckoos in Britain and Europe were well known, indeed infamous, as nest parasites, laying their eggs in the nests of a range of host species. The young cuckoo, hatching before the eggs of its host, would eject them from the nest and command the exclusive attention of its new parents. The event had first been recorded on film in the 1920s by oologist Edgar Chance and filmmaker Oliver Pike and published in their book *The Cuckoo's Secret* (1922).⁸² It caused a sensation and reinforced a long-standing dislike of the cuckoo's behaviour. Chance's and Pike's version of their cuckoo film produced for British Pathé news in early 1930s was tellingly titled 'Home wrecker', playing to this popular moralism.⁸³ Hosking and Smith reiterated this antipathy towards the bird, noting how the 'sprawling parasite' (the young cuckoo) committed 'cold-blooded murder' of its hosts' young and subjected its new parents to 'weeks of incessant toil'.⁸⁴

By choosing to focus upon the reaction of songbirds towards a cuckoo in the breeding season, Hosking and Smith, then, were choosing a celebrated subject, one already heavily freighted with human value judgments. In their experiments they found that, especially when their young were still being fed, birds like willow warblers, nightingales and robins responded particularly aggressively to the cuckoo. Confessing themselves to being astonished at 'the violence, persistence and blind ferocity of the attacks', Hosking and Smith recorded a striking set of images showing the songbirds flying at, kicking and pecking the stuffed cuckoo, all the while making unfamiliar calls.⁸⁵

Seeking to investigate further the precise triggers for this behaviour, Hosking and Smith constructed a sectional version of the cuckoo to test whether certain parts of the bird had greater significance in stimulating the attack. In developing this second set of experiments, they drew upon the findings of David Lack's well-known study of robins.⁸⁶ Lack had found that it was the red breast of intruding robins that stimulated aggressive behaviour from paired birds in the breeding season. So strong was the stimulation of the red breast in generating these attacks that birds would react to just a bundle of red feathers or even a red rag.⁸⁷ Hosking and Smith used parts of a cuckoo and model versions to test the reactions of songbirds, discovering that it was the head and breast that provoked the strongest reactions. In a macabre set of images, they recorded small birds seizing upon the head of a cuckoo attached to a stick (Figure 2).

⁸⁰ E. Hosking and Harold Lowes, *Masterpieces of Bird Photography*, London: Collins, 1947, pp. 11–12; Bevis, op. cit. (77); Hobart Herrick, op. cit. (77), pp. xix–xxiv, 58–9, 70.

⁸¹ R. Chislett, 'Outline of bird photography', in Hosking and Lowes, op. cit. (80), p. 12. See also E. Hosking and C. Newberry, *The Art of Bird Photography*, London: Country Life, 1944.

⁸² Mark Cocker and Richard Mabey, *Birds Britannica*, London: Chatto & Windus, 2005, pp. 278–9.

⁸³ Cocker and Mabey, op. cit. (82), p. 278.

⁸⁴ Hosking and Smith, op. cit. (79), p. 65.

⁸⁵ Cocker and Mabey, op. cit. (82), p. 31.

⁸⁶ D. Lack, *The Life of the Robin*, London: H.F. and G. Witherby, 1946.

⁸⁷ Hosking and Smith, op. cit. (79), p. 51.

Hosking and Smith saw the aggressive attacks on the stuffed cuckoo as an innate reaction by the songbirds to a species they understood as a threat to their nest and young. They also drew upon the corroborating evidence provided for them by Ernst Mayr from the New York Museum of Natural History. Mayr had tested the reaction of American songbirds to a stuffed European cuckoo and found that it generated no reaction. In the USA there was no parasitic cuckoo, and so American birds had no innate reaction to it.⁸⁸

Fighting Birds is a striking book in the way it documents previously rarely recorded behaviour, capturing in crisp black-and-white images the violence and aggression of common British birds. In presenting these aspects of bird behaviour, Hosking and Smith not only told a compelling and dramatic story about familiar birds, but also overturned popular perceptions of them. If songbirds were generally known for their sweet voices and gentle appearance, Hosking and Smith showed them to be bundles of aggression and violence. David Lack had already shifted perceptions of the 'friendly', companionable robin in his *The Life of the Robin* (1943), showing how aggressive its behaviour could be. Hosking and Smith did something similar for their subjects, including the willow warbler and nightingale. As they confessed, their pictures of the 'great violence and screeching cries' of the latter bird attacking their stuffed cuckoo 'contrasted with the poet's idea' of the bird with its song 'the epitome of bitter-sweet sorrow'.⁸⁹

Hosking's and Smith's dramatic visual revelations about the 'private lives' of birds were also central to a film first shown on British television in the same year as *Fighting Birds* was published. This was German filmmaker Heinz Sielmann's documentary about black woodpeckers. The film had been first shown at the 11th International Ornithological Congress in Basel in 1954. Julian Huxley had seen it there, describing it as 'one of the half-dozen most remarkable films ever made'.⁹⁰ Another attendee at the conference, Peter Scott, broadcaster, artist and head of the Wildfowl Trust (WT), had also seen it and been hugely impressed. Scott had been a regular contributor to BBC radio's natural-history programmes since the late 1940s and had begun working with Desmond Hawkins of the BBC's office in Bristol on a series of monthly television natural-history programmes. These shows mixed a lecture-style talk by Scott, usually including some illustration, followed by a film. The early films were drawn from Scott's own home movies of his expeditions, including a trip to Iceland to find the breeding grounds of pink-footed geese called *The Pinkfeet of Iceland* (1954). He also screened the films made by his friends and associates within the field of natural history, including footage shot by the chairman of the WT, Lord Alanbrooke.⁹¹

Sielmann's film, however, was of a different order of quality from the other films shown by Scott and he was keen to showcase it. Broadcast on British television on 15 January 1955 and with a new English commentary and narration by James Fisher, it showed footage of a family of black woodpeckers taken inside the nesting hole.⁹² Sielmann had built a film studio around the woodpecker's nest, suspended over twenty feet up a tree. He then carefully removed the back of the nest hole and, using both infrared and normal spotlights to illuminate its interior, filmed the activity within. The film caused a sensation on its broadcast, the BBC audience research revealing viewer appreciation on a par with the coverage of the queen's coronation.⁹³ The film put Scott's show on

⁸⁸ Hosking and Smith, op. cit. (79), pp. 65–6.

⁸⁹ Hosking and Smith, op. cit. (79), p. 50.

⁹⁰ J. Huxley, 'Problems of bird life', *Country Life*, 24 June 1954, 2082–4.

⁹¹ Parsons, op. cit. (72), pp. 21–41; Davies, op. cit. (16), pp. 26–7; Gouyon, op. cit. (16), pp. 20–7.

⁹² J. Fisher, foreword, in H. Sielmann, *My Year with Woodpeckers*, London: Barrie & Rockcliff, 1959 (first published 1958), p. 10.

⁹³ Fisher, op. cit. (92), p. 10.



Figure 2. Willow warblers attacking cuckoo head. E. Hosking and S. Smith, *Birds Fighting*, London: Faber & Faber, 1955.

the map and led to a regular and long-running series on BBC television under the title *Look*.⁹⁴

If Sielmann's film was an immediate sensation, it had a long gestation period. Spending part of his childhood in East Prussia and with access to its coastal marshes and forests, Sielmann had developed a 'special love' for woodpeckers.⁹⁵ As a teenager he devoted many hours to watching birds. Using a camouflaged hide, he strove to gain insights into the life and habits of the local birds. His early subjects were the marshland waders and, like Selous and Huxley before him, he observed and recorded the courtship displays, nesting habits and parenting of the birds.⁹⁶ Sielmann acquired a camera with a telephoto lens and began to record his observation with greater rigour. Whilst still at school, he was invited to a scientific gathering to present the film of his observations.⁹⁷

Sielmann, as he confessed in the late 1950s, was obsessed as a young man by birds' nests and the prospect of 'some special event' taking place around them. Whilst filming the nest of a heron, he had had his first close encounter with a black woodpecker. This fuelled an overwhelming desire to pursue these 'strange birds of the forest and record their remarkable activities on film'.⁹⁸ Sielmann's observation and filming of birds were shaped by the ambition to record new facts about the biology of woodpeckers. Konrad

⁹⁴ Parsons, *op. cit.* (72), p. 34; Gouyon, *op. cit.* (16), p. 27.

⁹⁵ Sielmann, *op. cit.* (92), p. 15.

⁹⁶ Sielmann, *op. cit.* (92), p. 16.

⁹⁷ Sielmann, *op. cit.* (92), p. 16.

⁹⁸ Sielmann, *op. cit.* (92), pp. 117–19.

Lorenz had advised Sielmann to focus upon black woodpeckers since, being large and relatively slow-moving, their behaviour could be studied more effectively.⁹⁹

Sielmann's woodpecker film mixed this formal pursuit of scientific evidence gained by observation and ethological interpretations of behaviour with a more magical, folklorist approach. Just as Lorenz had been influenced as a child by Selma Lagerlof's children's book *The Wonderful Adventures of Nils* and its goose characters, Sielmann described looking into the woodpeckers' nest as the 'chance of visiting the fairy-tale birds of my childhood'.¹⁰⁰ Elsewhere he compared the moment of filming inside the black woodpeckers' nest as being like finding the 'open sesame' to the private life of his birds.¹⁰¹ Certainly for television viewers, the film offered startling images of a previously unseen world, with a sense of wonder combined with insights into breeding biology and behaviour.¹⁰²

An attention to the wonder and strangeness of the natural world understood through the lens of behavioural study became, in the wake of Sielmann's films, an increasingly strong element in natural-history television. It coexisted, as Davies and Gouyon have both shown, with continued use of two established genres, the natural-history lecture focused on British wildlife and the adventure film associated with the spectacle of exotic, typically African, megafauna.¹⁰³ By the late 1960s, however, natural-history filmmaking had become increasingly scientifically focused and influenced heavily by ethology. From this, as Gouyon and Davies argue, looking at animal behaviour undisturbed by the presence of humans emerged as a central preoccupation of natural-history television.

Conclusion

This article has sought to document the range of socio-technical devices and practices of observation which shaped the innovative field studies of ethologists and the influence of this new way of watching birds and conceptualizing their behaviour upon a wider field of natural-history filmmaking and photography. Consequently, I have sought to extend the arguments of a range of scholars of ethology and natural-history filmmaking, including Gregg Mitman's influential account. This has meant attending to the rigorous techniques of observation developed by the advocates of naturalistic field study and their use of a range of technologies for recording and visualizing bird behaviour. In doing so, my account has sought to broaden the historical understanding of how the early exponents of ethology went about assembling new ways of watching birds. As I have shown, they used film together with sketching, descriptive note taking and the use of hides and observation posts, together with the cultivation of disciplined bodily dispositions, to support naturalistic field study. This assemblage of devices and practices had a generative effect. It engendered new ways of looking at and visualizing the behaviour of wild birds and their displays.

The innovative field studies of Selous, Huxley and Tinbergen involved sustained and highly mediated forms of watching. This, as we have seen, was watching with a purpose, one driven by the desire to offer a biological account of animals' social lives and rituals. But it was also watching conditioned by the drama they found in the lives of birds. It led the early exponents of ethology to turn to theatrical metaphors to make sense of the actions which unfolded before them. In drawing out their appropriation of forms of drama and storytelling, my account again deepens and extends the historical understanding of what was new or innovative about naturalistic field studies from the late nineteenth

⁹⁹ Sielmann, op. cit. (92) p. 84.

¹⁰⁰ Burkhardt, op. cit. (4), p. 131; Sielmann, op. cit. (92), p. 92.

¹⁰¹ Sielmann, op. cit. (92), p. 103.

¹⁰² Sielmann, op. cit. (92), p. 98, reflected on the displacement activity of the male bird at one point and how this was the product of inner conflict between the drive to flee and return to the nest.

¹⁰³ Davies, op. cit. (16), pp. 26–9; Gouyon, op. cit. (16), p. 40.

century through to the mid-to late twentieth. As I have argued, it was not so much the use of film which drew ethologists towards the most visually compelling and dramatic types of behaviour, but rather that dramaturgical forms constituted part of the discursive universe from which they made sense of animal behaviour. All the ethologists I have discussed were skilled watchers and theatrical and dramatic forms animated their observations and helped them to fix and codify the fluid actions of birds into synthesized and generalizable accounts of behaviour.

If the assemblage of technical devices and practices of observation, visualization and analysis which formed the science of ethology constituted its distinctive ways of watching animals and understanding their behaviour, as an observational practice ethology had its roots in amateur natural history. These remained important and enduring entanglements. Huxley and Tinbergen certainly saw the boundaries between ethology and natural history as fluid and mutually reinforcing. They both sought to promote new ways of watching and understanding avian social lives amongst lay audiences. Huxley was particularly evangelical about encouraging ‘properly directed’ amateur bird watching to embrace studies of bird behaviour and held out the prospect of amateurs making new discoveries in this area. As we have seen, both he and Tinbergen disseminated their ideas through Collins’s influential New Naturalist series and were regular contributors to the countryside magazine *Country Life*, as well as writing for the BBC’s magazine *The Listener*. They both also appeared on BBC radio and BBC television. These media outlets formed important conduits for Tinbergen and Huxley to reach non-specialist audiences. Through the popular media, these compelling communicators were able to disseminate a new language for understanding and codifying animal behaviour.

The ideas of the early exponents of ethology not only circulated through the mass media but also had a significant influence upon a wider field of natural-history filmmaking and photography, shaping the popular work of filmmaker Heinz Sielmann and photographer Eric Hosking. They both shared with scientific watchers like Selous, Huxley and Tinbergen the use of hides, optics and cameras to get close to and capture the actions of wild birds. But it was not just this convergence of socio-technical devices which drew these practitioners towards ethological thinking. For Hosking and Sielmann, ethological approaches were appealing in part because of the way the dramaturgical analogies found within studies of behaviour could be transformed into entertaining and informative natural-history images for a lay public. As such they allowed advocates of the ‘behavioural turn’ within natural-history filmmaking and photography and its appropriation of an ‘ethological eye’ to capture the lively and structured social worlds of birds. This had consequences for how they invited their readers and viewers to look at wild birds. In their filmmaking and photography, Hosking and Sielmann established a way of apprehending birds that brought the human observer into the ‘unseen’ world of the social lives of birds. If this way of looking was in one sense intimate, bringing the lives of birds close to readers and viewers, it also engendered a detached observational apprehension of wild birds. This was one premised on a phenomenological distance between the human onlooker and the lifeworlds of birds. Readers and viewers were encouraged to watch, to observe behaviour, but at the same time to suppress or marginalize other sensory relations with birds. As such the influence of ethology upon popular filmmaking and photography worked to encourage a visual attention and sense of wonder between people and wild birds, but at the same time to reinforce the boundary between human and non-human animals.

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