

# Introduction

In *Birds and Man* (1901), the nature writer W. H. Hudson attacks the preoccupation with specimen collection that had long characterised the natural history tradition, describing preserved bird specimens as 'a falsification and degradation of nature' and presenting the specimen collector as stricken by 'the curious delusion that the lustre which we see and admire [in a living bird] is in the case, the coat, the substance which may be grasped, and not in the spirit of life which is within and the atmosphere and miracle-working sunlight which are without'. In place of this artificial preservation, he recommends the observation of living birds in the wild and speaks of the enduring power of his memories of such sightings, 'this incalculable wealth of images of vanished scenes'.<sup>2</sup>

The opposition that Hudson sets up between the capture of specimens and the observation of living creatures reflects a broad shift in the study of nature that began around the turn of the century, and this shift resonates beyond the study of nature to a change in outlook that characterised Virginia Woolf's literary modernism. Woolf alludes to the study of nature as a means of articulating wider ideas about the perception and description of life. In 'The Lady in the Looking-Glass: A Reflection', two views of a room and its occupant are juxtaposed. The room as it appears reflected in a looking-glass has an 'arranged and composed' quality, as though the reflected forms 'had ceased to breathe and lay still in the trance of immortality' (*CSF* 217, 216). The 'stillness and immortality' conferred by the looking-glass recall the permanence of a preserved specimen, immortal only in death (217). Against the static reflections of the looking-glass, Woolf sets the appearance of the room viewed directly, as if by 'one

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of those naturalists who, covered with grass and leaves, lie watching the shyest animals — badgers, otters, kingfishers — moving about freely' (215). Viewed from this perspective, the room appears full of lights and shadows 'pirouetting across the floor, stepping delicately with high-lifted feet and spread tails and pecking allusive beaks as if they had been cranes or flocks of elegant flamingoes whose pink was faded, or peacocks whose trains were veined with silver' (*ibid.*). Through her description of the deadening vision of the looking-glass, Woolf suggests the error of seeking to fix and preserve the 'eternal truth' of one's subject; however, through her representation of the naturalist's perspective, she maintains that another view of life is possible for the observer who remains attentive to 'the transient and the perishing' (217, 216).

In her writing, Woolf repeatedly draws upon disparate approaches to the study of nature for analogies through which to suggest contrasting methods of seeing and recording life. In an effort to unpack the significance of Woolf's allusions to nature and its study, this book offers an account of the trends that shaped the late nineteenth- and early twentieth-century life sciences, demonstrates Woolf's familiarity with these developments, and outlines the coherent position that she adopted in relation to disciplines ranging from the taxonomic tradition of natural history to the new biology of the laboratory and the emerging disciplines of ethology and ecology. Woolf's engagement with the contemporary life sciences illustrates her sense of a shared outlook linking modern developments across the arts and sciences and her conviction that shifts in focus and approach occurring in one field could provide a means of articulating new aims and strategies in another.

The late nineteenth and early twentieth centuries saw considerable change in the life sciences. Most famously, evolutionary theory was the focus of continuing study and debate, but there were other, concurrent developments. Taxonomic natural history, centred on the collection of specimens and the classification of species, had absorbed the attention of British naturalists for much of the nineteenth century, but in the closing decades of the century the museum-based taxonomic tradition was supplanted by the new biology of the laboratory



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as the predominant approach to the study of nature. The new biology shifted attention from the classification of endless species to subjects such as morphology and physiology, the study of the structure and functioning of organisms. The focus on cataloguing organic forms was replaced by a desire to understand life processes, and taxonomic natural history came to be viewed as an outmoded practice by the new generation of laboratory biologists.

As the nineteenth century gave way to the twentieth, the study of nature underwent further expansion as a result of the growing interest in studying living organisms in action in their natural environment. Ethology, the study of animal behaviour, and ecology, the study of the interrelationships among organisms and between organisms and their environment, both emerged as scientific disciplines around the turn of the century. Ethology developed through work such as Edmund Selous's, H. Eliot Howard's, and Julian Huxley's studies of territorial behaviour and courtship in birds, while ecology had its origins in the plant sciences, with early studies of plant distribution and vegetation dynamics leading to the establishment of the British Ecological Society and the *Journal of Ecology* in 1913.

Woolf was familiar with the developments taking place in the life sciences over the course of her lifetime. She grew up in the closing days of what David Elliston Allen describes as 'the long high summer of Victorian natural history', botanising with her father and collecting and classifying butterflies and moths with her siblings under the direction of the Reverend F. O. Morris's mid-nineteenth-century works of popular natural history.4 As an adult, Woolf was equally familiar with developing trends and perspectives in the modern study of nature through the work of naturalists such as W. H. Hudson and Jean-Henri Fabre, treatments of laboratory biology and applied biology by Marie Stopes and Eleanor Ormerod, and surveys of the biological sciences such as H. G. Wells, Julian Huxley, and G. P. Wells's The Science of Life, which discussed subjects ranging from taxonomy and evolution to ecology and behaviour. Articles on plant and animal life were so common in newspapers and popular periodicals that Woolf, when constructing a representative list of the contents of The Times in 'An Unwritten Novel', included 'the habits of birds' among the

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paper's typical offerings: 'births, deaths, marriages, Court Circular, the habits of birds, Leonardo da Vinci, the Sandhills murder, high wages and the cost of living' (*CSF* 106). Woolf's representations of nature and its study were thus shaped by a cluster of competing and co-operating disciplines within the late nineteenth- and early twentieth-century life sciences made known to the public through works of popular science and nature writing.

All of this suggests that in order to fully understand Woolf's own views of nature it is necessary to consider the study of nature as it was practised in her lifetime. I therefore read Woolf's descriptions of nature and its study in the context of contemporary developments in the life sciences, drawing on late nineteenth- and early twentiethcentury formulations of the life sciences, and in particular on descriptions of nature and its study intended for a popular audience, in order to recover the conception of the life sciences available to an early twentieth-century non-specialist reader. In adopting this approach I emulate scholars such as Gillian Beer, Michael H. Whitworth, Holly Henry, Elizabeth G. Lambert, Donald J. Childs, David Bradshaw, and Craig Gordon, whose work refers to the early twentieth-century scientific context and to popular formulations of science as a means of comprehending modernist responses to disciplines ranging from the new physics and astronomy to evolution, eugenics, and the biomedical sciences.

As part of a wider effort to demonstrate the 'omnivorousness of [Woolf's] appetite for understanding', Beer has asserted the importance of challenging the long-standing assumption that Woolf was 'ignorant of and uninterested in science'. To this end, she has considered Woolf's responses to disciplines ranging from evolutionary theory to the new physics. Building upon this foundation, Whitworth and Henry have examined Woolf's engagement with the new physics and astronomy in the work of popular science writers such as Arthur Eddington and James Jeans; Lambert has analysed Woolf's borrowings from Darwinian arguments; Childs and Bradshaw have considered Woolf's responses to eugenical ideas; and Gordon has demonstrated Woolf's use of language and concepts drawn from a cluster of turn-of-the-century biomedical sciences. Such scholarship



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reveals Woolf's receptivity to a wide range of scientific disciplines and demonstrates the value of reading Woolf in relation to late nine-teenth- and early twentieth-century scientific trends. The current study contributes to this body of work by opening new areas of the life sciences to examination. By considering Woolf's perceptions of the clash between taxonomic natural history and the new biology, and her responses to emerging disciplines such as ethology and ecology, it broadens understanding of Woolf's engagement with modern scientific developments.

Research into the scientific frame of reference available to an early twentieth-century audience can add substance and particularity to the interpretation of nature in Woolf's writing. Woolf's representations of nature were for a long time read in broadly symbolic terms in a continuation of an interpretive tradition stretching back to classical and biblical associations of the butterfly with the soul and the ant with industry. Avrom Fleishman regards the butterflies and moths in Woolf's writing as 'associated with the human soul in an emblem of long tradition'; Judy Larrick Robinson cites the Greek and early Christian view of insect metamorphosis as symbolic of the soul's escape from the body; and Rachel Sarsfield traces the use of insect imagery through Greek literature, scripture, Shakespeare, Milton, the Augustan satirists, and the Romantics as background to her consideration of Woolf's insect symbolism.<sup>6</sup>

Interpretations of Woolf's nature imagery that draw upon this symbolic tradition can result in persuasive readings of her work, but a scientific frame of reference adds rigour and specificity to the understanding of Woolf's nature imagery. In her analysis of Woolf's use of images of insect metamorphosis, Christine Froula initially notes the analogy that Woolf sets up in the short story 'The Introduction' between a butterfly's emergence from its chrysalis, an event that marks its attainment of physical and sexual maturity, and Lily Everit's newfound sense of 'being a woman' as she attends her first evening party (*CSF* 179).<sup>7</sup> However, Froula subsequently dismisses the analogy between emergence and maturation in favour of an interpretation more in keeping with the long-standing symbolic association of metamorphosis with spiritual (re)birth. She argues that 'the chrysalis

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figure' in Woolf's writing 'describes not the sexual maturity of a woman's body but the miraculous births of her own creative imagination, transformations no less wonderful than those of natural procreation', and she suggests that the moth imagery in Woolf's later writing 'figure[s] the artist-self to which Woolf gave birth through the painful labor of her first novel'.8 To thus relate artistic creation to procreation by way of chrysalis imagery is to disregard the fact that the emergence of a butterfly or moth from its chrysalis marks not its birth, biologically speaking, but rather its attainment of adulthood. Froula rejects a purely biological interpretation of Woolf's insect imagery on the grounds of the determinism of a narrowly biological understanding of women's social roles. However, while Woolf critiqued the ways in which biology was used to justify the restriction of women to limited gender identities, she did not abandon the use of biologically accurate imagery as a result. She persisted, for example, in her use of metamorphosis and emergence as an analogy for maturation. In 'Sketch of the Past', she recalls 'thinking; feeling; living' at the age of fifteen 'with the intensity, the muffled intensity, which a butterfly or moth feels when with its sticky tremulous legs and antennae it pushes out of the chrysalis and emerges and sits quivering beside the broken case for a moment; its wings still creased; its eyes dazzled, incapable of flight' (MOB 130) It is through the physical particularity of this description that Woolf conveys the acute sensitivity and vulnerability that she felt as she sought to emerge from the 'unformed' state of adolescence into adulthood (ibid.). Woolf's faithfulness to biological fact, a product of her long acquaintance with the study of nature, lends force to her imagery and suggests the value of reading her representations of nature through the lens of science.

Familiarity with shifting trends in the study of nature can also aid in the interpretation of Woolf's representations of the natural world. Symbolic readings of Woolf's nature imagery that allude to the study of nature tend to treat it as an unchanging practice represented by the taxonomic tradition of specimen collection and classification that Woolf encountered as a child. Harvena Richter presents the moth hunt as a metaphor for '[Woolf's] own creative process': she regards the moth hunter as representative of the writer, 'searching to pin



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down words and ideas that flit in the dark places of the brain', and she equates the moth, dead and "composed" in the poison pot, with the writer's 'completed work'.9 However, Richter also argues that Woolf identified with the moth's 'sense of being pursued, being destroyed by unknown and hostile forces'. There is an element of contradiction inherent in this argument that the moth hunt is at once emblematic of Woolf's writing process and symbolic of threat. Judy Larrick Robinson offers a similarly conflicted argument in her suggestion that the capture of insect specimens 'served as a metaphor for [Woolf's] desire to "net" new forms and meaning in her novels', while the symbol of the moth, 'trapped, hunted, poisoned and exhibited', acted as a warning regarding the fate of women in patriarchal society." Rachel Sarsfield draws attention to the internal contradictions of such readings and seeks to resolve them through the argument that 'Woolf's desire to capture "life" in her writing paradoxically conflicts with her view that to "pin" or define it will inevitably be as destructive an act as the killing and pinning of the butterfly/moth that she consistently associates with life.'12 Sarsfield regards this as a perennial tension in Woolf's work and one that ultimately drove her to despair of the efficacy of writing. Sarsfield contends:

In setting up the associations that she did between lepidoptera, life and writing eventually Woolf backed (or pinned) herself into a corner: seeing language as lepidoptera and vice versa, it was perhaps inevitable that she should ultimately conclude that 'when words are pinned down they fold their wings and die'. This conclusion is a fatal one for a writer to come to, and ... may have been literally fatal to Virginia Woolf.<sup>13</sup>

Sarsfield's conclusion of Woolf's fatal pessimism offers one means of resolving the contradictions of Richter's and Robinson's arguments. However, other interpretations present themselves if one extends the idea of an analogy between the study of nature and the writing of fiction to include approaches other than specimen collection. Sarsfield, like Richter and Robinson, accepts the taxonomic tradition of natural history as the sole scientific frame of reference within which to analyse Woolf's comparison between the pinning of a specimen and the representation of a subject in writing. Yet, if associations with the

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practice of specimen collection suggested to Woolf the drawbacks of treating the capture and pinning of one's subject as one's narrative goal, emergent scientific disciplines that focused on the observation of living organisms in action in their environment offered alternative analogies through which to conceive of the description of life in fiction. To interpret Woolf's allusions to nature without reference to the full range of scientific trends that shaped modernist attitudes towards the natural world is to perceive only a fraction of her meaning.

Another critical perspective relevant to the consideration of Woolf's representations of nature and its study is ecocriticism. Ecocriticism encompasses a wide range of approaches to the study of literature and environment, from place studies and animal studies to ecofeminism and ecophenomenology. Ecocritics such as William Howarth and Glen A. Love advocate the use of scientific explanations of nature as a means of grounding ecocritical interpretation in fact: Howarth asserts the need for greater 'ecological literacy' among ecocritics, while Love argues that ecocritics 'have much more to gain than to fear from the company of the sciences, particularly the life sciences'. 14 Ecocritics working in this vein often draw on current scientific arguments, seeking, as Love states, 'to ground today's ecocriticism in today's best science'. Is I share Love's sense of the value of employing a scientific frame of reference, although in accordance with my interest in modernist exchanges between literature and science, I focus specifically on the life sciences in their late nineteenth- and early twentieth-century form.

Since the rise of ecocriticism as an interpretive framework, Woolf has become a not uncommon subject for ecocritical analysis. Scholars such as Josephine Donovan, Carol H. Cantrell, Louise Westling, and Bonnie Kime Scott have noted Woolf's attention to the natural world and have presented her as a 'proto-ecofeminist' and an author whose work displays an 'ecological humanism' – an awareness of humanity as part of the natural world – that is only now 'beginning to become publicly explicit through ecological thinking'. There is abundant evidence in Woolf's writing of her alertness to the more-than-human world. To repeat two frequently cited examples, in the 'Time Passes' section of *To the Lighthouse*, Woolf decentres the human through her



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description of the slow action of nature upon the Ramsay house, in the midst of which human events are relegated to brief parenthetical asides; and in the village pageant at the centre of *Between the Acts*, 'nature takes her part', filling the gap and continuing the emotion when the energy of Miss La Trobe's play seems in danger of dissipating, in a manner that highlights the constant interaction and exchange between human beings and the natural world (*BTA* 114).<sup>17</sup>

There is clearly a great deal of scope for the ecocritical interpretation of Woolf and much valuable work has already been done in this area. It is worth noting, however, that ecocritical readings of Woolf often take current environmentalist assumptions and ecocritical theories as their starting point and treat Woolf's writing as a prescient anticipation of late twentieth- and early twenty-first-century views. Kelly Sultzbach states that 'Woolf's work predates environmental science' and concludes as a result that Woolf's writing demonstrates a 'prescient awareness of an environmental ethic'.18 L. Elizabeth Waller presents Woolf as all the more remarkable because she had 'no true environmental visionaries with whom to conspire', and Charlotte Zoë Walker likewise suggests that Woolf anticipated the environmental movement of the latter half of the twentieth century, 'express[ing] poetically what Rachel Carson argues scientifically in Silent Spring [1962] and elsewhere, that all life is interrelated, is a "vast web of life, all of which needs to be taken into account".19

However, the argument of Woolf's prescience can be disputed through reference to Woolf's contemporary scientific context. Ecology emerged as a recognised scientific discipline in Britain during Woolf's lifetime and its central tenets were disseminated to the general public by popular science writers: in a chapter on ecology in *Botany; or, The Modern Study of Plants*, published in 1912 as part of the People's Books series, Marie Carmichael Stopes describes ecology as 'a very recent branch of botany ... only taken up in England in the last ten years' that considers the plant in relation to 'its environment and its neighbours'; in popular works of ornithology such as *How Birds Live* (1927) and *The Art of Bird-Watching* (1931), E. M. Nicholson recommends the study of bird ecology to his readers; and in their chapter on 'The Science of Ecology' in *The Science of Life* – a book



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that Woolf mentions reading between December 1931 and February 1932 (L IV: 410, 418; D IV: 68) – H. G. Wells, Julian Huxley, and G. P. Wells describe ecology as 'a fresh way of regarding life, by considering the balances and mutual pressures of species living in the same habitat'. Woolf's attention to the world beyond the human and her awareness of the intricate interrelationships among organisms in a shared environment can thus be understood as a product of her familiarity with the work of contemporary nature and science writers. Furthermore, because early ecology displayed concerns that distinguish it from present-day conceptions of ecology, it is useful to read Woolf in relation to the science of her time.

Of all Woolf's ecocritical interpreters, Louise Westling has gone furthest in grounding Woolf's representations of nature in early twentieth-century science. In 'Virginia Woolf and the Flesh of the World' she offers a compelling ecophenomenological reading of Woolf's work and suggests that Woolf's ecological humanism had a scientific basis. However, Westling does not draw her scientific frame of reference from the life sciences. Instead, she notes Woolf's familiarity with the new physics, judges Einstein's outlook to be 'surprisingly ecological', and by way of 'the epistemological lessons of relativity, wave theory, and the interdependency of observer and phenomenon observed from quantum physics' links Woolf to 'an ecological humanism that parallels physics'.21 Westling's argument draws ecocriticism, Maurice Merleau-Ponty's phenomenology, and the new physics together into a complex web of interconnecting ideas. However, the links between Woolf's ecological thinking and the early twentieth-century emergence of ecology as a scientific discipline in its own right remain to be considered.

There are indications that scholars are beginning to read Woolf's nature imagery with early twentieth-century perspectives on nature and the life sciences in mind. Ian Blyth has noted the frequent appearance of rooks in Woolf's writing and has demonstrated the accuracy of Woolf's observations of these birds through reference to the works of contemporary nature writers such as W. H. Hudson and E. M. Nicholson; Richard Espley, while discussing the trope of animality in Woolf's writing, has considered her familiarity with and responses to