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Multispecies Narratives as Epistemic Method: The Case of *Daphnia*

Многовидовые нарративы
как эпистемический метод: случай *Daphnia*

Abstrakt

В статье рассматривается метод многовидового нарратива в качестве эпистемического инструмента переосмысления практик формирования научного познания. На основе шести рецензируемых публикаций, посвященных поведению и продолжительности жизни водных беспозвоночных в ответ на сигналы присутствия хищников, автор создает шесть литературных нарративов, в которых ключевые результаты исследований представлены с разных повествовательных позиций – от объективированного повествования от третьего лица до прямого обращения ко второму лицу. Эти нарративные стратегии соотносятся с феминистской эпистемологией, постгуманистической этикой и многовидовым нарративом, чтобы переосмыслить традиционные формы научной коммуникации. Вместо того чтобы стремиться к объективности посредством отстраненности в статье утверждаются реляционность, частичность и аффективность как обоснованные пути познания. Результатом является дифрактивная репрезентация межвидовых

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Abstract

This article explores a multispecies narrative method as an epistemic tool for rethinking scientific knowledge practices. Drawing on six peer-reviewed publications on the behaviour and longevity of aquatic invertebrates in response to predator cues, the author develops six literary narratives that reinterpret key findings through distinct narrative perspectives – from third-person objectivity to second-person direct address. These narrative forms engage with feminist epistemology, posthuman ethics, and multispecies storytelling to rethink conventional modes of scientific communication. Rather than seeking objectivity through detachment, the article embraces relationality, partiality, and affect as valid pathways to knowledge. The result is a diffractive representation of interspecies entanglements that foregrounds the epistemic role and vulnerability of nonhuman subjects and the ethical responsibilities of researchers. This work contributes to ongoing discussions in the environmental humanities, animal studies, and qualitative inquiry regarding the place of imagination and empathy in science.

взаимосвязей, позволяющая выявить эпистемическую роль и уязвимость нечеловеческих субъектов и одновременно поставить вопрос об этической ответственности исследователей. Статья вносит вклад в современные дискуссии в области экологических гуманитарных наук, исследований животных и качественных исследований, обращаясь к вопросу о роли воображения и эмпатии в науке.

Ключевые слова: многовидовой нарратив, *Daphnia*, эпистемические методы, больше-чем-человеческое, агентность животных, экспериментальный нарратив, качественные исследования

Keywords: multispecies storytelling, *Daphnia*, epistemic methods, more-than-human, animal agency, experimental narration, qualitative inquiry

Introduction

In an era marked by ecological devastation and the industrial-scale objectification of animals, rethinking the foundations of scientific knowledge production becomes both urgent and ethically imperative. The Anthropocene not only reshapes ecological relations at a planetary scale, but also demands a transformation in how science engages with nonhuman life. How can knowledge be created with other species, rather than simply about them? What happens when animals are not reduced to data points but considered participants in knowledge-making?

Multispecies storytelling offers one possible response. Drawing from feminist theory, indigenous knowledge systems, speculative fiction, and animal studies, scholars such as Donna Haraway,¹ Robin Wall Kimmerer,² and Ursula K. Le Guin³ have proposed storytelling as an epistemological and ethical method. This approach positions storytelling not as a supplement to science, but as a mode of knowing – one attuned to affect, temporality, and relation.

Recent work in intermediality and the environmental humanities reinforces this call. As Bencke and Bruhn argue, multispecies storytelling is a performative and ethically charged practice that draws attention to otherwise marginalised

¹ Donna J. Haraway, *Modest_Witness@Second_Millennium.FemaleMan©_Meets_OncoMouse™: Feminism and Technoscience*, 2nd ed. (New York: Routledge, 2018).

² Robin Wall Kimmerer, *Gathering Moss: A Natural and Cultural History of Mosses* (Corvallis, OR: Oregon State University Press, 2003).

³ Ursula K. Le Guin, *The Carrier Bag Theory of Fiction* (London: Ignota Books, 2019).

agencies.⁴ Through narratological experimentation, researchers can challenge the hegemonic conventions of objectivity and representation, opening space for more inclusive and imaginative forms of engagement.

Scientific knowledge is produced within structured practices that shape not only what can be known, but how relations between observer and observed are configured. These practices include standardised experimental designs, ethical protocols, and also conventional modes of scientific narration. Such conventions enable reliability, comparability, and cumulative insight, yet they also stabilise particular relations of distance, authority, and address oriented toward a scientific readership. Certain aspects of multispecies encounters – situated experience, affective tension, vulnerability, or asymmetry of power – tend to recede from view, not because they are absent, but because they fall outside what scientific communication is designed to foreground.

The aim of this article is to examine how experimental narratives – grounded in empirical research yet attentive to narrative dimensions that are typically constrained or made invisible within canonical scientific writing, such as voice, perspective, temporality, and direct or relational forms of address toward nonhuman beings – can serve as valid epistemic contributions. It investigates how storytelling with nonhuman beings can reconfigure the structure of scientific communication. Specifically, the article asks: How can narrative diversify our understanding of non-human life? What ethical and methodological questions arise when the subject of study becomes a co-narrator? Can multispecies narratives disrupt the objectifying tendencies of traditional science?

Methods

Approach and Epistemic Rationale

This article contributes to multispecies scholarship by treating narrative construction itself as an epistemic practice. It presents six narrative texts that retell the results of biological experiments involving *Daphnia* (water fleas) and rotifers – keystone taxa in freshwater ecology. These narratives are not fictional embellishments but literary reconstructions grounded in peer-reviewed empirical research. Their purpose

⁴ Ida Bencke and Jørgen Bruhn, “Introduction,” in *Multispecies Storytelling in Intermedial Practices*, ed. Ida Bencke and Jørgen Bruhn (Santa Barbara, CA: punctum books, 2022), 13–15, <https://doi.org/10.53288/0324.1.00>.

is not representational accuracy alone, but methodological exploration: to examine how different narrative modes reconfigure relations between researcher, organism, and reader, and to investigate whether storytelling can function as a method of multispecies inquiry.

Empirical Sources

The six narratives presented in this article are derived from the author's habilitation project titled "Behaviour and longevity of a planktonic animal as derivative of the presence of predator." Five of the six studies concern *Daphnia* and address responses to predation pressure, either through chemical predator cues or through ecological contexts characterised by their absence. One article focused on rotifers responding to crustacean predators. The biological questions, methodologies, findings and narration were as follows:

Study A. Biological question: Does genetically based depth-selection behaviour in *Daphnia* correspond to differences in longevity and life-history pace, as predicted by ecological and evolutionary theory? *Experimental system:* Laboratory experiment on multiple clonal lineages of *Daphnia longispina* originating from different depth strata (epilimnion vs hypolimnion) of mesotrophic lakes, maintained under standardised conditions to measure survival and reproductive traits. *Type of predation cue:* No direct chemical predator cues were applied. Predation risk was incorporated indirectly through the ecological origin of clones, reflecting contrasting natural exposure to visually hunting fish predators across depth zones. *Core empirical finding:* Clones associated with surface waters exhibited earlier reproduction, faster ageing, and shorter lifespan than deep-water clones, supporting the hypothesis that higher predation risk selects for a faster life-history strategy. *Mode of scientific narration:* The study is reported in a canonical evolutionary-ecology style: third-person, depersonalised narration organised around hypothesis testing, statistical comparisons, and life-history theory, with predation risk treated as an abstract ecological variable rather than an experienced condition.⁵

Study B. Biological question: How does perceived predation risk shape ageing trajectories in freshwater cladocerans, and does it affect the onset versus the rate of ageing? *Experimental system:* Laboratory life-table experiment on large cohorts of two cladoceran species (*Daphnia longispina* and *Diaphanosoma brachyurum*), reared under standardised conditions and followed across their lifespan to quantify

⁵ Piotr Dawidowicz, Piotr Prędko, and Barbara Pietrzak, "Depth-Selection Behavior and Longevity in *Daphnia*: An Evolutionary Test for the Predation-Avoidance Hypothesis," *Hydrobiologia* 715 (2013): 87–91, <https://doi.org/10.1007/s10750-012-1393-5>.

survival and reproductive schedules. *Type of predation cue*: Chemical cues (kairomones) released by fish predators, inducing a perceived but non-lethal, size-dependent predation risk. *Core empirical finding*: Perceived predation risk shortened lifespan in both species but altered ageing trajectories in different ways: in *Daphnia*, it led primarily to an earlier onset of ageing, whereas in *Diaphanosoma* it accelerated the rate of ageing. In both taxa, reproductive effort was shifted toward earlier life. *Mode of scientific narration*: The study is written in a formal biodemographic and evolutionary framework, using third-person, impersonal narration and parametric mortality models to disentangle components of aging. Predation risk is treated as an abstract extrinsic factor whose effects are inferred through model parameters, rather than explored as an experienced condition of individual organisms.⁶

Study C. Biological question: Does the pattern of perceived predation risk that decreases with prey age and size alter the ageing trajectory (senescence) of *Daphnia*, and if so, in what direction? *Experimental system*: Controlled life-table experiments on two *Daphnia* species (*Daphnia pulex* and *Daphnia magna*), reared in the laboratory under standardised conditions and exposed to cues of predator whose impact declines with prey age/size. *Type of predation cue*: Chemical predator cues (kairomones) from gape-limited invertebrate predators (*Chaoborus* larvae or *Triops*) that simulate a risk environment where younger/smaller prey are more at risk than older/larger individuals. *Core empirical finding*: Contrary to expectations of accelerated senescence under predation pressure that increases with age, when predation risk decreases with age and size, *Daphnia* do not show accelerated ageing. *Mode of scientific narration*: The original article is presented in a formal demography/evolutionary ecology style, framed through age-specific survival and fertility analyses. It uses third-person, impersonal narration with statistical life-table models to interpret the effects of variable predation risk. Predation is treated as an abstract ecological driver rather than as an experienced condition of individual organisms.⁷

Study D. Biological question: How do temperature and fish predator chemical cues influence *Daphnia* escape ability, and how might this behavioural performance contribute to predator avoidance? *Experimental system*: A laboratory bioassay performed on four *Daphnia* taxa (*D. magna*, *D. pulicaria* sensu lato, *D. longispina*, *D. lumholtzi*), where individuals were subjected to controlled transfers through a sequence of containers to estimate escape performance under varying temperature

⁶ Barbara Pietrzak, Piotr Dawidowicz, Piotr Prędko, and Maciej J. Dańko, "How Perceived Predation Risk Shapes Patterns of Aging in Water Fleas," *Experimental Gerontology* 69 (2015): 1–8, <https://doi.org/10.1016/j.exger.2015.05.008>.

⁷ Barbara Pietrzak, Max Rabus, Maciej Religa, Christian Laforsch, and Maciej J. Dańko, "Phenotypic Plasticity of Senescence in *Daphnia* under Predation Impact: No Ageing Acceleration When the Perceived Risk Decreases with Age," *Royal Society Open Science* 7 (2020): 191382, <https://doi.org/10.1098/rsos.191382>.

and kairomone treatments. *Type of predation cue*: Chemical cues (kairomones) released by fish predators, provided as a treatment medium versus control medium, combined factorially with two temperature regimes (20°C and 28°C). *Core empirical finding*: Escape ability varied significantly among species and was enhanced by both higher temperature and exposure to fish kairomones. Temperature increases tended to improve escape performance across taxa, while kairomone exposure increased evasive responses in some species. *Mode of scientific narration*: The article is presented in a standard ecological/behavioural ecology style: third-person, impersonal narration with detailed methodology and quantitative analyses of behavioural responses. Predation risk is operationalised as an abstract variable (presence/absence of kairomone), focusing on statistical contrasts rather than on the lived experience of organisms.⁸

Study E. Biological question: Does a bdelloid rotifer (*Philodina megalotrocha*) alter its swimming behaviour in response to chemical cues from sympatric copepod predators? *Experimental system*: Short-term behavioural assays in controlled laboratory conditions using individual rotifers exposed either to predator-conditioned water (copepod kairomones) or to control water, with subsequent mechanical disturbance to assess behavioural responsiveness. *Type of predation cue*: Waterborne chemical cues (kairomones) from two cyclopoid copepods (*Macrocyclus fuscus* and *Mesocyclops leuckarti*) that co-occur with the rotifer in natural pond habitats. *Core empirical finding*: Exposure to chemical cues of *M. fuscus* resulted in increased swimming activity compared to controls, suggesting some level of predator cue recognition. Cues from *M. leuckarti* did not elicit the same effect, and responses to mechanical disturbance (curling) were largely unaffected by prior cue exposure. This indicates weak or predator-specific behavioural sensitivity to chemical predation signals in this rotifer species. *Mode of scientific narration*: The article is a brief communication in ethology, using third-person objective behavioural description of measured states and transitions, with quantitative comparisons across treatments. Predation cues are treated as experimental conditions triggering shifts in measurable behaviours, rather than as lived experiences or narratives of the organism's perspective.⁹

Study F. Biological question: What behavioural and physiological mechanisms underlie extreme longevity in *Daphnia* observed under ecological conditions characterised by the absence of fish predation? *Experimental system*: Field sampling

⁸ Barbara Pietrzak, Joanna Pijanowska, and Piotr Dawidowicz, "The Effect of Temperature and Kairomone on *Daphnia* Escape Ability: A Simple Bioassay," *Hydrobiologia* 798 (2017): 15–23, <https://doi.org/10.1007/s10750-015-2539-z>.

⁹ Marta Parysek and Barbara Pietrzak, "Weak Swimming Response of a Bdelloid Rotifer to Chemical Cues of a Native Copepod Predator," *Journal of Ethology* 39 (2021): 135–139, <https://doi.org/10.1007/s10164-020-00676-w>.

combined with laboratory assays comparing two coexisting *Daphnia* lineages from a cold, oligotrophic lake: one exhibiting exceptionally long lifespan with delayed reproduction, and another characterised by a shorter, annual life cycle. Behavioural habitat selection and physiological traits were examined. *Type of predation cue*: No predation cues were applied. Instead, the study focuses on a predator-free ecological context: the absence of fish predation in cold, deep-water habitats, which removes size-dependent extrinsic mortality and allows the evolution and expression of extreme longevity. *Core empirical finding*: Extreme longevity was associated with delayed reproduction, occupation of colder and deeper water layers, and distinct physiological profiles. These traits are interpreted as adaptive strategies made possible by low extrinsic mortality. *Mode of scientific narration*: The study is written in a canonical ecological and physiological style, using third-person, impersonal narration and comparative analyses of life-history and metabolic traits. The absence of predation is treated as an enabling ecological condition shaping life-history evolution, rather than as an experienced or narrated presence.¹⁰

All empirical studies discussed here involved aquatic invertebrates. In some experiments, fish were maintained solely as sources of chemical predator cues (kairomones) and were not subjected to experimental manipulation. All laboratory and field procedures were conducted in accordance with the institutional and legal standards applicable at the time of data collection. The field study described in Study F was carried out within a strictly protected area, with all required permits obtained. While the original experiments complied with prevailing ethical and legal regulations, the present article addresses ethics at a different level: by examining how scientific narration distributes agency, responsibility, and vulnerability in multispecies research encounters.

Narrative Construction

Based on this empirical work, six narrative texts were composed. Each was constructed in dialogue with the corresponding scientific publication, not to replace its explanatory framework, but to place it in relief – highlighting what remains constant across forms, and what becomes visible only through narrative reconfiguration. Each adopted a distinct narratological stance: third-person objective, third-person omniscient, third-person limited, first-person protagonist, first-person witness, and second-person address. These narrative categories draw on classical narratological distinctions concerning narrative voice and focalisation, as developed in the work

¹⁰ Barbara Pietrzak et al., “Behavioural and Physiological Mechanisms behind Extreme Longevity in *Daphnia*,” *Hydrobiologia* 715 (2013): 125–134, <https://doi.org/10.1007/s10750-012-1420-6>.

of Gérard Genette¹¹ and subsequent narratological scholarship. They are used here not as rigid analytical tools, but as generative orientations that allow epistemic relations between researcher, organism, and reader to be experimentally reconfigured. Rather than applying all narrative perspectives to each empirical study, this article adopts a sampling approach: each scientific publication is re-narrated through a single, deliberately chosen narrative mode. The aim of this approach is not exhaustiveness, but epistemic sensitivity: to explore how shifts in narrative orientation alter what can be known, felt, and ethically acknowledged in multispecies research.

This method draws inspiration from Donna Haraway's notion of "diffraction"¹² – an approach that resists reflection or representation and instead seeks patterns of difference that matter. Rather than conveying a unified voice, the texts embrace multiplicity and ambiguity. Each narrative foregrounds a different mode of relation: distance, empathy, partial sensory immersion, embodiment, reflexivity, or direct confrontation.

The pairing of empirical studies with narrative modes did not follow a formalised decision rule. Instead, narrative choices emerged through an authorial, practice-based process shaped by prolonged engagement with the empirical material. Two forms of ordering guided this process. First, the sequence of studies (A–F) follows the internal structure of the author's habilitation project, which constitutes a meta-narrative of inquiry. Second, the narratives themselves (1–6) are arranged along a deliberate progression of narrative perspectives – from third-person objective distance, through increasingly situated and embodied viewpoints, to direct second-person address. This sequencing allows narrative variation to function not as a controlled comparison, but as a structured exploration of how epistemic relations shift across perspectives.

Analytical Orientation

The narratives are analysed not as representations of animal experience, but as epistemic interventions that reconfigure relations between empirical findings, narrative form, and ethical responsibility. Rather than asking whether a given narrative is more accurate or more truthful than its scientific counterpart, the analysis attends to what becomes visible, sayable, or ethically salient when the mode of narration shifts.

The analytical focus is therefore relational rather than interpretive. Across the six narratives, attention is paid to how changes in voice, perspective, and address alter:

¹¹ Gérard Genette, *Narrative Discourse: An Essay in Method* (Ithaca, NY: Cornell University Press, 1980).

¹² Haraway, *Modest_Witness*.

(i) the positioning of the researcher in relation to the studied organism, (ii) the status of the animal as object, subject, or interlocutor, and (iii) the distribution of agency, vulnerability, and responsibility within the research encounter.

No formal coding scheme or comparative scoring was applied. Instead, the narratives are read diffractively, following Haraway's notion of difference-making patterns: each narrative is considered in relation to its empirical source and to the other narratives, with emphasis on contrasts rather than synthesis. The aim is not to produce generalisable categories, but to trace how epistemic and ethical tensions emerge differently across narrative configurations.

This analytical orientation treats narrative variation as a methodological probe. Differences between narratives are not evaluated in terms of effectiveness or persuasion, but as sites of epistemic friction – moments where the limits of scientific abstraction, representation, or detachment become perceptible. While each narrative is grounded in a specific empirical study, they are not presented as case-by-case reinterpretations. Instead, they are read together as a sequence of epistemic perspectives that cut across individual experiments.

Results and Discussion

The six narratives below serve not merely as artistic exercises but as methodological interventions. Each story surfaces aspects of *Daphnia* or rotifer life that traditional scientific reporting may obscure: rhythms of movement, immediacy of threat, experience of captivity, and estrangement of laboratory conditions. Simultaneously, they expose the positionality of the human researcher – sometimes empathetic, sometimes violent, often ambivalent.

1. Third-person Objective

Their lives were about to change in one sweep that day. Yet for now, nothing forecasted the events to come. They were busy doing their usual things, that is not much. Moving their legs fast enough to generate water current and capture whatever edible would come within. Irregular strokes of their forelimbs sufficed to keep them where they were and prevented falling below. And so it went. Days and nights filled with short limb spinning and long limb waving, two rhythms, and the heartbeat behind. Once in a while the young would push and kick. That needed more, repeated tight bends and somersaults to let them go. And then continuous vigilance, of course. Twenty-two

lenses all over the ball of the dark eye yielded surround vision. Bristles over the mouth registered even subtle changes in the cocktail of tastes or odours they were floating in. And whatever parts of their bodies sensed the vibrations, that was what a few moments later announced the shift. Yet still for now, minuscule and transparent, they had good reasons to feel safe, if they could. Their tiny shells barely refracted the light coming from above. And below them was the abyss that would hide them even better. Many others spent their days there, circling between dusk and dark, like dust falling down and rising again in the rhythm of day and night. But they didn't. So similar but so different. They followed the ways of their mothers, grandmothers and many previous mothers of theirs. Yes, their male ancestors had their own ways, but they themselves didn't even have fathers. Great-grandfathers maybe, if anyone counted... But here it came. A rising water column, a swirl and a drag. A conical net towed from the surface pulled them up and out of the water. Forelimbs orders of magnitude greater than theirs manipulated them into crowded containers and darkness fell. Now for days there were only the bodies bumping against each other. Food and oxygen dwindled to the limits of endurance. But most of them survived and lived to push out many more young. Yet, though well fed on laboratory grown algae, they never saw sunlight again.

This narrative adopts the stance of a recording device – a seemingly neutral observer detached from interpretation. Its minimalism mirrors the language of behavioural data: dry, factual, rhythmically patterned. And yet, through its sparseness, it draws attention to the overlooked textures of daily existence. Rather than presenting an affect-free account, the narrative adopts the formal conventions of scientific objectivity – minimalism, descriptive restraint, and distance – without resolving description into explanation. In canonical scientific writing, such conventions function to suppress affect as epistemically irrelevant. Here, however, the same formal restraint creates a space in which affect is neither expressed nor resolved, but becomes perceptible through rhythm, repetition, and attention to bodily detail. Objectivity, in this sense, does not eliminate affect but relocates it – from explicit expression to the conditions of perception and reception.

2. Third-person Omniscient

Fear and curiosity drove these events. The fear was of dying eaten by fish. Humans argue whether it is real fear, like the one they feel. They name things and write stories. She felt it, whatever others would decide to name it. She has felt it all her life. The taste of the enemy. The vigilance. The uncertainty. The omnipresent threat. The relief in darkness. The darkness that came and went, on and off. When it was off, the light was everywhere. There was nowhere to hide. And she would hide. Most of all she would let

herself fall down to darkness' safety. But as there was none, she did what she knew to do. She spun her limbs and pumped her fluids. She collected the edibles and stuffed her belly. She squeezed the eggs and held them until it was time, until they pushed and kicked. Releasing them, this felt good. Then shedding the mantle, this was labor. All the hormonal storm that triggered the contractions to help her slip out of the already too tight carapace. Like the snakes do, though they got it later. And then all over again, spinning, pumping, stuffing, squeezing... Each time growing bigger, each time hatching more young. Each time becoming more visible to the enemy. Each time more threatened. Each time more at risk. Spinning, pumping, stuffing. Enough.

The curiosity made humans isolate her and follow her life, and the lives of many others like her, to see if her fear – though they did not call it that – would shorten her life.

Here, the narrator penetrates the inner world of a *Daphnia*, attributing fear, attention, and sensory shifts. This omniscient perspective foregrounds affective and sensorimotor dimensions of cognition that are rarely articulated at the level of lived experience within scientific narration. This perspective invites empathy not by dramatisation but by making vulnerability visible. The affective states invoked here are not reflective or conceptualised mental states, but embodied, pre-reflective orientations toward the environment, continuous with empirically documented sensory and behavioural responses. Through this lens, *Daphnia* appears not only as data, but as an experiencing being.

3. Third-person Limited

She was born to a midge-tasting world. Sooner than she realised, she was alone and that is how it stayed for her life. Her world just tasted of simple food and the midges. The food replenished in each episode of light, same as the disturbing taste of midge. The darkness did not help, as then the midge was a threat even more. Finding nowhere to hide, she bumped against invisible barriers staying in the smell of herself, the food and the midge. But she has never felt the turbulence announcing the hunting enemy. The cues were mixed. The threat was undefined. If anything, being sucked by a current once in a light-time stressed her as if there was yet another threat, each time as if the life was over. But the refreshed tastes of her world testified otherwise. So she kept on clearing the water off the edible particles, shedding skins and growing. This kind of felt good. Each time she felt safer, more out of reach. Soon, bearing young complemented the shedding cycles. But as soon as they were out, with one aspiration they were gone. There was again only the food and the fading threat in the omnipresence of midge - tasted, but never seen or touched.

This perspective narrows the sensory world to a single protagonist's impressions. It illustrates how perception is situated, partial, and often obscured. The *Daphnia* here does not understand what surrounds her, only that her world changes – in taste, in movement, in presence. It is a narrative of adaptation under opacity, and in that sense, mirrors both animal experience and the limits of experimental observation: we often know that something changes, without knowing why or how. Affect is present here not as fear with a recognisable source, but as diffuse unease produced by indeterminate cues.

4. First-person Protagonist

Hop. And sink. Hop. And sink. Hop. Less food. Hop hop. Each time less food. Hop. Keep on. Hop. Hold on. Hop hop. Keep filtering. Hop. And sink. Hop. And light! Freeze and sink. And sink. Ups. The bottom and still the light. There's nowhere to hide. Hop hop. Keep moving on. Hop Hop. Keep filtering. Hop. Less food. Hop hop. Still smells of fish. ...

Hop. And sink. Hop. And sink. Hop hop. The crowd around. Suck! And jump. Suck! Evade. Fish! And sault. Jump. Jump. Jump. Jump. And in. Sucked in. Over. Done. But no. Spit out. The crowd. Around. All swirls. Bump in. The crowd. I am. Alive. Hop hop. Bump in – my kin. Hop. And bump. Hop. And swirl. Hop. And sink. Hop. No food. Hop hop. Safe in – the crowd. Hop. And bump. Hop. And swirl. Suck! Again. Fish! And sault. Jump. Jump. Sault. Jolt. Jump. Jump. Pull. Jump. Hop. Hop. Stopped. And swirl. And bump. To kin. Around. ...

Hop. And sink. Hop hop. Keep filtering. Food. Is good. Hop hop. There's still the light. Light everywhere. Hop. Danger. Hop. But food. Food. Is good. Hop. And sink. Hop. And sink. ...

The first-person voice offers immersion into the bodymind of the *Daphnia*. Rhythmic phrasing – hop, sink, filter – reproduces the physicality of life in suspension. This stream-of-consciousness narration disrupts narrative coherence, evoking the fragmentary, reactive temporality of an aquatic micro-creature. Language becomes rhythm and movement. The repetition reflects both locomotion and existential struggle. This stylised monologue gestures toward what Thomas Nagel called the “unknowable experience” of being another species¹³ – yet insists on trying anyway. It fosters identification not through naïve anthropomorphic projection of human cognition or intentionality, but through a speculative, bodily reconfiguration of language that works at the level of rhythm, sensation, and movement. In this

¹³ Thomas Nagel, “What Is It Like to Be a Bat?,” *The Philosophical Review* 83, no. 4 (1974): 435–450.

sense, anthropomorphism is not rejected as such, but displaced: from attribution of human mental states, to a heuristic exploration of what a nonhuman mode of being might feel like. It is perhaps the most intimate of all narratives, asking: what is it like to be? This approach also implicitly challenges a narrow definition of the human as a purely rational subject. By foregrounding rhythm, sensation, and bodily attunement, the narrative suggests a shared – though asymmetrical – ground of embodied experience, without erasing the epistemic and ethical gap between human author and nonhuman subject, and without projecting specifically human cognition onto the animal.

5. First-person Witness (Human)

I saw it all from above. From where I thought I could see the whole landscape and plan all the movements needed to get from Q to A. I could map the starting location well, that is pinpoint the question. And I could guide the process of inquiry, propose safest routes and omit dead ends. And on the way, I relied on the accounts of the young enthusiast who lived by herself through the journey, myself just glimpsing into the street-view she offered. Hers was the toil, the doubts and the eureka's. This time. I've been through this before. Now I kept my eye on things sitting on the fifth floor. I would walk the staircase down on single occasions. To arrange the space in the lab. To look down the beakers filled with lake water and supplied with an aquatic plant to structure the habitat. This was where they were supposed to dwell. Finally, I looked down the ocular lens to watch them in their far-from-human persons. Wiggling and crawling, they were aliens to me. They were so much different from my usual crustacean subjects. Well, their feeding was somewhat similar. Just instead of spinning the many legs below the transparent shell, they generated the water current more openly. What could be seen were twin coronas rotating on their heads. Micro-u.f.os. And this was what propelled their swimming, too. They just needed to let go of the only foot holding them to the substrate, and whew, they were off through the water. And when I knocked the table unawares, I saw them curling in, retracting the double-crowned head and the single telescoping leg into the trunk. Like a startled snail or tortoise withdrawing to their shell. One, two... six seconds until they would slowly uncurl and sense around. Then the staircase up and blinding myself to who was who I counted and calculated times and actions and mapped them into rainbow spaces of knowledge.

This narrative turns the researcher into a reflective witness. It exposes the asymmetry of power and knowing: the animal is seen but not fully understood, touched but not truly grasped. The human voice here is marked by uncertainty, ambivalence, and awe. This is a story of epistemic humility – of recognising that scientific

methods capture fragments, but the being itself exceeds capture. It enacts a shift from control to companionship.

6. Second-person Address

I grabbed you, I dragged you, I killed you!

I did that to know your ways. To nail down how deep you are, and how many, and when in your lives you go there. I found you in the most pristine and unmatched lake in the country. With lust to decipher your unique life histories. I washed you with formalin, ethanol, or iodine. To count you and measure you, to prove you are amazing. What an irony.

The most ethically confrontational of the six, this narrative addresses the animal directly – as if in confession. “I grabbed you, I dragged you, I killed you” dissects the illusion of neutral detachment in scientific action. It is a reversal of roles: the researcher speaks not about the animal, but to it, implicating the reader in the violence of observation. This is not a narrative of discovery but of accountability, unsettling the foundational tropes of objectivity. Rather than rejecting scientific inquiry, this narrative exposes the ethical residue that persists even when epistemic goals are achieved.

Each narrative foregrounds a specific mode of relating to *Daphnia* and the scientific process. Whether objective or confessional, each voice exposes different ethical and epistemic tensions, pushing the boundary between observer and subject. These perspectives mirror narrative strategies observed in intermedial multispecies practices¹⁴ and engage with critical epistemology to challenge the hegemony of neutral, detached observation.

Epistemic and Ethical Implications

Together, these narratives form a multispecies method that resists reductionism and embraces relationality. Following Deborah Lupton’s notion of poetic inquiry,¹⁵

¹⁴ Bencke and Bruhn, “Introduction,” in *Multispecies Storytelling in Intermedial Practices*.

¹⁵ Deborah Lupton, “‘Things That Matter’: Poetic Inquiry and More-than-Human Health Literacy,” *Qualitative Research in Sport, Exercise and Health* 13, no. 2 (2021): 267–282, <https://doi.org/10.1080/2159676X.2019.1690564>.

this approach suggests that embodied and affective forms of writing can generate insights inaccessible to traditional quantitative methods. Each narrative encourages the reader to inhabit a shifting perspective – one that acknowledges the partiality and vulnerability inherent in all acts of observation. Across the six narratives, diversification does not take the form of additional information, but of altered perceptual and ethical access to already known empirical phenomena. Treating the animal as a co-narrator does not resolve ethical tensions, but brings them to the foreground – particularly questions of voice, responsibility, and the legitimacy of representation. Yet, unlike approaches that conceptualise animals as communicative partners in knowledge-making,¹⁶ multispecies narration as proposed here addresses forms of co-production that emerge in the absence of dialogue, through embodied response, opacity, and ethical exposure.

These stories resonate with recent multispecies ethnographies such as Mutware's memory by MK Speth,¹⁷ vegetal life-writing by John Charles Ryan,¹⁸ and Monica Nadegger's diffractive engagement with alpine ecologies.¹⁹ They also embody what Anna Tsing has called the "arts of noticing,"²⁰ offering fragments of interaction that defy generalisation but honour complexity. The practice of multispecies narration is not merely a narrative device – it is an ethical demand, calling on researchers to take responsibility for the modes through which knowledge is created and communicated.

Conclusion

Multispecies narratives do not abolish objectification, but interrupt its naturalisation by exposing the ethical and relational costs through which objectivity is achieved. They do not reject scientific objectivity, but create narrative conditions in which affect – typically excluded or neutralised – can become perceptible as part

¹⁶ Sue Savage-Rumbaugh and Roger Lewin, *Kanzi: The Ape at the Brink of the Human Mind* (New York: John Wiley & Sons, 1994).

¹⁷ M. K. Speth, "Mutware's Story: (Re)Centring Humanism via Multispecies Storytelling in Post-Genocide Rwanda," *Journal of Genocide Research* 27, no. 2 (2025): 237–255, <https://doi.org/10.1080/14623528.2024.2444039>.

¹⁸ John Charles Ryan, "Writing the Lives of Plants: Phytography and the Botanical Imagination," *a/b: Auto/Biography Studies* 35, no. 1 (2020): 97–122, <https://doi.org/10.1080/08989575.2020.1720181>.

¹⁹ Monica Nadegger, "Carving Lines through Melting Lands: A Diffractive Engagement with Troubled and Troubling Relations of Alpine Skiing in the Anthropocene," *Leisure Sciences* 46, no. 8 (2024): 1106–1128, <https://doi.org/10.1080/01490400.2023.2269159>.

²⁰ Anna Lowenhaupt Tsing, "Arts of Inclusion, or, How to Love a Mushroom," *Mānoa* 22, no. 2 (2010): 191–203.

of knowing, without being reduced to emotion or explanation. They demonstrate that scientific knowledge can be deepened – rather than compromised – by including voice, imagination, and empathy. These narrative methods do not replace traditional science but complement it, offering a different lens through which to view interspecies entanglements. Telling stories with *Daphnia* reveals porous boundaries between observer and observed, between data and life. Taken together, the narratives systematically shift the researcher's position, the animal's narrative status, and the allocation of agency and vulnerability across the research encounter. This project is thus not only a literary or theoretical intervention, but a call for epistemic justice in multispecies research.

These narratives show that storytelling can indeed diversify our understanding of nonhuman life – not by translating it into human terms, but by listening to its rhythms, ruptures, and resistances. As demonstrated across the six narratives – particularly those adopting first-person and second-person address – shifts in narrative voice do not dissolve ethical problems, but make them visible. When the subject of study becomes a co-narrator, ethical and methodological tensions emerge: about voice, about agency, about the right to represent. The experiment presented here suggests that multispecies narratives do not merely supplement science – they interrupt its objectifying tendencies, urging researchers toward slower, more entangled, and more accountable ways of knowing.

Acknowledgments

I want to thank all the nonhuman and human participants of the research that was evoked here, and the anonymous reviewers whose thoughtful engagement helped sharpen the article's arguments.

Author's Note on the Use of AI

This article was developed with the assistance of OpenAI's ChatGPT, which was used for language formulation, stylistic refinement, and cohesion based on content, structure, and source materials provided by the author. All scientific ideas, research narratives, and references were conceived, structured, and critically reviewed by the human author. All six *Daphnia* narratives presented in the Results section were

entirely written by the human author without the use of AI tools. The AI's role was strictly limited to supporting the composition of the surrounding analytical and theoretical sections under the direct and continuous supervision of the author. This disclosure aligns with COPE 2023 international guidelines for responsible use of AI in scholarly publishing.

References

- Bencke, Ida, and Jørgen Bruhn. "Introduction." In *Multispecies Storytelling in Intermedial Practices*, edited by Ida Bencke and Jørgen Bruhn, 9–20. Goleta, CA: punctum books, 2022. <https://doi.org/10.53288/0338.1.00>.
- Dawidowicz, Piotr, Piotr Prędko, and Barbara Pietrzak. "Depth-Selection Behavior and Longevity in *Daphnia*: An Evolutionary Test for the Predation-Avoidance Hypothesis." *Hydrobiologia* 715 (2013): 87–91. <https://doi.org/10.1007/s10750-012-1393-5>.
- Genette, Gérard. *Narrative Discourse: An Essay in Method*. Ithaca, NY: Cornell University Press, 1980.
- Haraway, Donna J. *Modest_Witness@Second_Millennium.FemaleMan©_Meets_Oncomouse™: Feminism and Technoscience*. 2nd ed. New York: Routledge, 2018.
- Kimmerer, Robin Wall. *Gathering Moss: A Natural and Cultural History of Mosses*. Corvallis, OR: Oregon State University Press, 2003.
- Le Guin, Ursula K. *The Carrier Bag Theory of Fiction*. London: Ignota Books, 2019.
- Lupton, Deborah. "'Things That Matter': Poetic Inquiry and More-than-Human Health Literacy." *Qualitative Research in Sport, Exercise and Health* 13, no. 2 (2021): 267–282. <https://doi.org/10.1080/2159676X.2019.1690564>.
- Nadegger, Monica. "Carving Lines through Melting Lands: A Diffractive Engagement with Troubled and Troubling Relations of Alpine Skiing in the Anthropocene." *Leisure Sciences* 46, no. 8 (2024): 1106–1128. <https://doi.org/10.1080/01490400.2023.2269159>.
- Nagel, Thomas. "What Is It Like to Be a Bat?" *The Philosophical Review* 83, no. 4 (1974): 435–450.
- Parysek, Marta, and Barbara Pietrzak. "Weak Swimming Response of a Bdelloid Rotifer to Chemical Cues of a Native Copepod Predator." *Journal of Ethology* 39 (2021): 135–139. <https://doi.org/10.1007/s10164-020-00676-w>.
- Pietrzak, Barbara, Anna Bednarska, Magdalena Markowska, Maciej Rojek, Ewa Szymańska, and Mirosław Ślusarczyk. "Behavioural and Physiological Mechanisms behind Extreme Longevity in *Daphnia*." *Hydrobiologia* 715 (2013): 125–134. <https://doi.org/10.1007/s10750-012-1420-6>.

- Pietrzak, Barbara, Piotr Dawidowicz, Piotr Prędkie, and Maciej J. Dańko. "How Perceived Predation Risk Shapes Patterns of Aging in Water Fleas." *Experimental Gerontology* 69 (2015): 1–8. <https://doi.org/10.1016/j.exger.2015.05.008>.
- Pietrzak, Barbara, Joanna Pijanowska, and Piotr Dawidowicz. "The Effect of Temperature and Kairomone on *Daphnia* Escape Ability: A Simple Bioassay." *Hydrobiologia* 798 (2017): 15–23. <https://doi.org/10.1007/s10750-015-2539-z>.
- Pietrzak, Barbara, Max Rabus, Maciej Religa, Christian Laforsch, and Maciej J. Dańko. "Phenotypic Plasticity of Senescence in *Daphnia* under Predation Impact: No Ageing Acceleration When the Perceived Risk Decreases with Age." *Royal Society Open Science* 7 (2020): 191382. <https://doi.org/10.1098/rsos.191382>.
- Ryan, John Charles. "Writing the Lives of Plants: Phytography and the Botanical Imagination." *a/b: Auto/Biography Studies* 35, no. 1 (2020): 97–122. <https://doi.org/10.1080/08989575.2020.1720181>.
- Savage-Rumbaugh, Sue, and Roger Lewin. *Kanzi: The Ape at the Brink of the Human Mind*. New York: John Wiley & Sons, 1994.
- Speth, M. K. "Mutware's Story: (Re)Centring Humanism via Multispecies Storytelling in Post-Genocide Rwanda." *Journal of Genocide Research* 27, no. 2 (2025): 237–255. <https://doi.org/10.1080/14623528.2024.2444039>.
- Tsing, Anna Lowenhaupt. "Arts of Inclusion, or, How to Love a Mushroom." *Mānoa* 22, no. 2 (2010): 191–203. <https://www.jstor.org/stable/41479491>.

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