

'The toad jumps because he thinks I am lovely': children's relatedness with local animals and opportunities for animal interaction in the school yard

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ABSTRACT

Connecting children with nature is a priority on international policy agendas, yet fostering children's connections with local animals remains challenging for schools. This project aims to support teachers in understanding children's relationship with local animals and how schoolyards can be used to strengthen these relationships. The study characterizes the relationships children (5–11 year-olds) have with local animals and identifies opportunities for animal interactions in the schoolyard. We interviewed Dutch children (N=110) about their favorite animal and observed their strategies for finding animals in the schoolyard. Thematic analysis revealed three types of connections: 'wowed by superpowers,' reflecting fascination with animals' unique abilities; 'friendship,' reflecting emotional bonds; and 'interdependence,' characterized by mutual recognition and response. Analyses further showed that children struggled to find animals in the schoolyard. The study offers recommendations for teachers to support children's naturally developing connections with local animals and to expand opportunities for animal encounters at school.

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Introduction

Connecting children with nature is an important consensus among key international frameworks for sustainability. Global frameworks such as UNESCO's Education for Sustainable Development for 2030 and the Report of the World Commission on Environment and Development (1987), as well as European policies such as the European Green Deal, the EU Biodiversity Strategy for 2030, and the related United Nations Economic Commission for Europe all emphasize the vital role of schools in helping children to be environmentally aware, educated and active (The Council of the European Union, 2022). To prepare students for their future roles in society, sustainability

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competences like systems thinking, responsibility and participation have been formulated (European Commission, 2022). A fundamental element of education for sustainability is engaging students in ecosystem-based experiences, where their interactions with other species foster an understanding of their interconnectedness with others, as part of an ecosystem. Experiences with local wildlife in particular have been highlighted as valuable opportunities for children to discover how diverse the world is and how living beings including humans depend on their natural surroundings, stimulating nature connectedness (Schilhab & Esbensen, 2025).

Primary school curricula are typically designed to promote ecosystemic experiences, aiming to foster children's knowledge and understanding of the world, their role within their environment, and encouraging them to adopt environmentally friendly behaviors (Hall & Ozerk, 2008; PISA, 2015). In schools, children naturally gain ecosystemic experiences through interactions with humans, as well as with plants, animals, natural forces, materials, and technologies (Taylor & Giugni, 2012). These interactions help children ask questions, negotiate their place, resolve conflicts, develop a sense of care, and form meaningful relationships within the system. For instance, children question gravity when standing atop a slide, negotiate with water when waves take up their play space at the beach, learn cooperation and care for others by working with their peers, and experience their relatedness with others when feeling sadness for a dying houseplant. Through these experiences, children have come to understand that they are part of a larger system, a process that Haraway refers to as 'becoming worldly' (Haraway, 2003a; Haraway, 2013). Tipper (2011) has already showed that children form systemic relationships with animals, seeing themselves and animals as part of one system, as friends, and even as family members. But although schools are designed to promote such ecosystemic experiences, schools often face challenges when it comes to fostering children's interactions with animals. Opportunities for children to form direct, lived interactions with local wild animals are frequently lacking. In *lived experiences*, children have a first-hand and direct experience they can gain knowledge from. However, studies show a decline in opportunities for children to explore local wildlife within school settings (Barker et al., 2002; Tilling, 2018). Primary school teachers struggle to take their education outdoors (Dyment, 2005; Edwards-Jones et al., 2018; Miller et al., 2022; Oberle et al., 2021; Skamp & Bergmann, 2001; Tuuling et al., 2019; van Dijk-Wesselius et al., 2020) and fewer and fewer children have daily contact with nature, resulting in an 'extinction of experience' (Soga & Gaston, 2016). Children's interactions with local wildlife have diminished, and nowadays children are introduced to animals mainly through picture books, toys, and media, without a firsthand lived experience as the basis for this knowing (Celis Diez et al., 2016; M. Hooykaas et al., 2022; Shepardson et al., 2007). Research shows that children are unfamiliar with animals that inhabit their own living environments (Ballouard et al., 2011; Celis-Diez et al., 2017; Genovart et al., 2013; Hooykaas et al., 2019; Lindemann-Matthies, 2006). Further complicating this, animals are often portrayed in ways that strip them of their natural characteristics, instead humanizing them, sometimes with biased archetypes and gender roles (Ganea et al., 2008, 2011, 2014; Geerds et al., 2016, 2019; Waxman et al., 2014). Children's loss of interaction with nature and their lack of knowledge about the local environment could ultimately lead to estrangement from the natural world (Soga & Gaston, 2016), which may make it harder for children to connect with wild native animals in addition to pets and exotic animals featured frequently in cultural products.

(M. J. D. Hooykaas, 2022). The reliance on non-lived experiences as the basis for education seems unnecessary, especially since children, even those in urban areas, share their environment with wildlives such as birds and insects, which offer opportunities for connecting with animals too. In fact, it is argued that wild animals from the local environment are well suited in connecting children to nature for example, because they can provide insight in biological diversity and evoke a sense of awe (Schilhab & Esbensen, 2025).

Teachers can play a key role in helping children build meaningful relationships with animals. One promising approach for educators is to focus on appreciating, expanding, and deepening the connection children already have with animals living in the local environment (hereafter: local animals). This requires teachers to be aware of the relationships that children have naturally developed with these animals, understand the nature of these connections and recognize the opportunities available for children to encounter these animals at school. Learning from the interaction children already have with animals can guide us in finding ways to connect them with local animals in the schoolyard. The present study was aimed to answer two research questions: 1) what characterizes the lived relationships that Dutch children (ages 5–11) have with local animals, and 2) what opportunities for firsthand lived interactions with animals do children experience in the school yard? In doing so, the study can support teachers to understand the relationships that children have with animals and help recognize if and how the schoolyards can be used to deepen these relationships. Ultimately, this could help deepen natural connectedness among primary school children.

Method

Design

The study was a qualitative study with interviews and observations. In the interviews children were asked about their favorite local animal (being an animal that lives in their neighborhood, which could be both wild life as well as pets or cattle), their lived experiences with that animal and their connectedness to the animal (see [Appendix](#) for the interview questions). Children were subsequently assigned the task of finding any animal in the schoolyard, and the child's strategies for locating an animal were observed (see [Appendix](#) for the observation task). The data were collected in October and November 2023.

Participants and sampling

Data collection was conducted by first-year teacher-trainees from Leiden University of Applied Sciences during their internships at primary schools in the Netherlands. For the teacher trainees, the data collection was part of their teacher training. Each teacher trainee ($N = 110$) was assigned to one school class for their internship. The respective class teacher subsequently invited parents to give permission for their child to participate in the study, with the aim of securing one interview per trainee. To ensure an unbiased sampling process, the first child on the class list was selected for participation, and if parental consent had not been granted, the next child on the class list was approached. A total of $N = 136$ parents were

approached for participation approval and informed in writing about the study procedure. Ultimately, $N = 110$ parents gave permission for their child to participate in the study and provided written consent. Subsequently, the respective children ($N = 110$, 49% self-identified as female) were verbally asked to participate, and all of them agreed.

Children ranged from third grade to eighth grade, and from 5 to 11 years in age (age $M = 8.3$, $SD = 1.8$).

Context

The study was conducted in 45 municipalities in the densely populated West region of the Netherlands, with population densities of the school areas in this study varying from 123 residents per square kilometer for a school in a small town to 6,729 residents per square kilometer for a school in a large city ($M = 2459.6$, $SD = 1679.1$). The study was conducted in the schoolyards. The size of a Dutch schoolyard is related to the number of students and starts at 300 square meters (359 yr²) for the smallest schools, and at 600 square meters (718 yr²) for an average size school (VNG, 2020). There are no established guidelines regarding the design of schoolyards nor concerning the required amount of greenery. The Netherlands is part of the ecoregion of Atlantic mixed forests (Olson et al., 2001).

Measurements and materials

A total of $N = 110$ teacher trainees conducted semi-structured interviews with the students (Irwin & Johnson, 2005). Each teacher trainee conducted a semi-structured interview during school hours with one child from their respective trainee class. The interview took place in the schoolyard and started with the question: 'What animals live in your neighborhood?' If the child responded with an animal group, such as 'birds,' 'itchy animals' or 'insects,' the teacher trainee asked for specification, for example: 'You mention insects: what insects live near you?' or, 'What insect do you encounter sometimes?' After the child listed all the animals they knew, the teacher trainee read the answers back to assure accuracy and then asked the child to identify their favorite animal to encounter. The trainee further inquired about the animal's appearance, behavior, where the child typically encounters it, how the child responds to meeting the animal, and how the child feels during this encounter. The child's responses were recorded verbatim. The interview concluded with an assignment to find an animal, based on the question: 'Can you find an animal now?' The teacher-student observed the child's strategies for locating an animal and noted the type of animal found, along with the method used to find it. Lastly, the trainee asked the child to specify their age. For the interview questions and observation tasks, see [Appendix](#).

To control the quality of the measurements, each teacher-student was trained in conducting the interview and observation, and in making verbatim transcripts and observation field notes. Training was provided by a university teacher in the weeks before data collection.

Analysis

Interview transcripts and field notes were analyzed as data, using Atlas.ti 23. To answer the first research question, the analyses were focused on characterizing the lived relationships of Dutch children with local animals. The analyses were conducted by a senior researcher with expertise in Environmental Child Psychology, along with a master's student in Parenting and Child Development. Collaboration was deliberately sought to open up perspectives and deepen our understanding of the data (Patton, 2014). The researchers focused on achieving consensus through discussion. First, the children's favorite animals were categorized into animal groups. Next, the team analyzed the children's relationship with their favorite animal, using thematic analysis (Braun et al., 2019). Thematic analysis is a method for identifying patterns of meaning in a data set and illustrates which themes are important in the description of the phenomenon under study in this case, children's relations with local animals (Joffe, 2011). The results of thematic analysis can highlight the most salient constellations of meanings present in a data set. The team explored the data for patterns, marking and coding relevant quotations and grouping them into higher-order themes to identify key concepts.

To answer the second research question, the analyses were focused on identifying children's opportunities for firsthand lived interactions with animals in the school yard. The analyses were conducted by a senior researcher with expertise in Biology Education, in collaboration with a senior researcher in Nature Pedagogies. Also here, the collaboration was deliberately sought to open up perspectives and deepen the understanding of the data. The researchers focused on achieving consensus through discussion. They examined children's opportunities for lived interactions with animals in the schoolyards, which involved 1. categorizing the strategies children used to search for animals, 2. evaluating the accuracy of these strategies, and 3. classifying the animals discovered in the schoolyard in classes (e.g. mammals, birds and insects).

Group meetings were held with a team of analysts to discuss questions (e.g. about validity, interpretation, and meaning) and excerpts that required further exploration. The meetings helped uncover the patterns and identify unique elements and important lines of further inquiry.

The Ethical Research Committee of Leiden University of Applied Sciences has reviewed the study and confirmed that it complies with the standards outlined in the Dutch Code of Conduct for Research Integrity (ref. nr: 20230420_Peters).

Results

The current study was aimed to answer two research questions: 1) what characterizes the lived relationships that Dutch children (ages 5–11) have with local animals?, and 2) what opportunities for firsthand lived interactions with animals children experience in the school yard? To answer the first question, we first provide a classification of children's favorite animals, after which we provide results from our thematic analysis. To answer the second question, we provide a categorization of the strategies children used to search for animals, including an evaluating the accuracy of these strategies and a classification of the animals discovered in the schoolyard in classes (e.g. mammals, birds and insects).

In the results, we refer to original quotes from children with the child’s respondent number (D:n).

Research question 1: what characterizes the lived relationships that Dutch children (ages 5–11) have with local animals?

Children’s favorite animals

When asked about their favorite local animal, children mentioned predominantly vertebrates and mainly mammals as their favorites and cats and dogs in particular (see Figure 1).

Theme 1: Children’s feelings for their favorite animal

An example quote on children’s feelings for their favorite animal:
‘He (dog) often jumps and then he comes running to the door when he is very happy. I like him and he is funny. I also enjoy him and I have peace then. If you cry he comes to lie with you and then he will lick you. I feel relaxed and calm then and it is cozy. He licks then and it’s funny. I come to him when I don’t want to go to someone else.’ (D:69)

Children described a wide range of emotions during their interactions with animals, both positive emotions (subtheme 1) and negative emotions (subtheme 2). When describing their feelings, children mentioned mostly positive emotions, such as happiness, joy, enthusiasm, fascination, relaxation, and reassurance, and described the animal in positive words, such as nice, lovely, cute, funny, cozy and impressive. Alongside these positive emotions, some children also mentioned negative feelings, such as fear and anxiety, typically related to the possibility of the animal attacking them (Quote: ‘Sometimes it’s a bit scary with the nails.’ -D:102). Additionally, children expressed annoyance, particularly

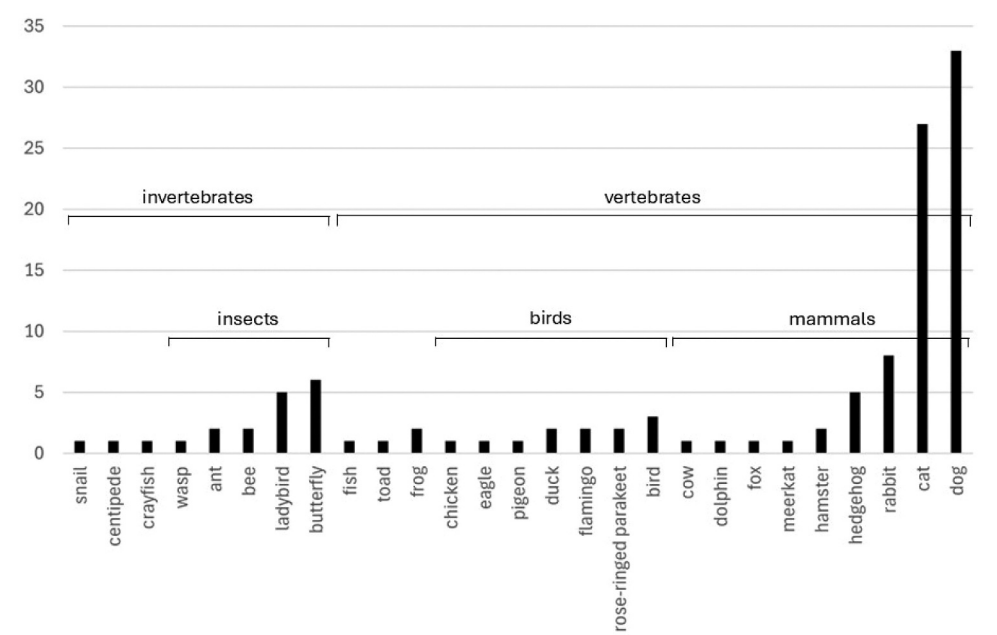


Figure 1. Children’s favorite local animals.

when the animal interfered with the child's own plans ('Sometimes annoying as he is walking across the screen of my iPad' -D:26). Interestingly, the children described encounters that were both scary and intriguing at the same time (Quote: 'Sometimes it's not pleasant to encounter them (bees) because they sting me, but that doesn't happen often. (. . .) They often sting me. I watch them because they are quite cool. They may sting me, but I keep cycling, so I only see them briefly, they are quite fascinating' -D:14). Such 'scary-funny interactions,' where they experience the interaction as both scary and intriguing at the same time, were a recurring theme in their descriptions (Quote: 'Sometimes, it (cat) walks around, and once it almost tried to bite. When I want to pet it, it gets startled. I get scared too. Because I find it cute. I wish I had a kitten too').

Theme 2: Dynamic and engaging interactions between the child and their favorite animal

An example quote on contact between the child and their favorite animal:

He (butterfly) sits on my head, they come here (*points to her nose and forehead*). Sometimes, they also come here (*shows her hand*) and I take a close look at them. They don't fly away, and if they do, they come back. Sometimes, they also sit on my foot. Their wings are often motionless, but sometimes the wings move. When they sit on my hand, I turn them gently so I can see what they have with them. What colors they have. Happy. I enjoy it when they come to me, and I feel like they like me then.' -D:34).

All descriptions of children's favorite animals revealed dynamic interactions, often involving multiple cycles of action (subtheme 1) and reaction (subtheme 2) between the child and the animal. As examples of dynamic contact, children described activities such as petting and hugging (Quote: 'I'm totally gonna pet and hug them.' -D:8), playing together (Quote: 'I like playing hide and seek with the wasp.' -D:7), and feeding (Quote: 'I watch them eat. They eat out of the house and we scatter food and then they eat.' -D:12). In most cases (90%), the contact was physical (subtheme 3), involving stroking, petting, feeding, engaging in rough-and-tumble play or picking the animal up (Quote: 'The animal (centipede) crawls away, and then I try to lure it out by picking it up with my finger, not wanting it to get damaged.' -D:1). In the 10% of the cases where no physical contact was mentioned, children expressed fascination with observing the animal's unique features or behavior (Quote: 'Crayfish and crabs, their claws and knife hands go up when I encounter them, they raise their claws. When I move away, sometimes they follow me. They are special, and you usually see them by the sea. It makes me happy and proud.' -D:63).

Theme 3: Relationships between the child and an animal

An example quote of the relationships between the child and an animal:

'I enjoy seeing him (dog). He always gives kisses with his tongue and wants to play. He is happy to see me. He's always jumping on me and sleeps next to me on the couch. He loves to sleep. I think he's sleeping now. When I come in, he runs to me and gives kisses. His tail also wags because he's happy. He's also very funny because sometimes he rolls over. I think about him before going to sleep, then I'm happy to see him again tomorrow.' (D:19)

Analyses showed that children experienced deep relationships with animals, which fall into three categories: 'wowed by superpowers' (subtheme 1), 'friendship' (subtheme 2) and 'interdependence' (subtheme 3).

The subtheme 'wowed by superpowers' was characterized by children's fascination with animal's unique abilities. This type of connection was evident in children's admiration for the animals' capabilities, such as flying, swimming, speed, strength, appearance, tone of voice or distinct traits like rarity, bravery or beauty. For example, children

expressed amazement at the animal's size, softness, or playful nature (Quote: "We cannot fly, so they (parrots) are special. -D:5).

The subtheme 'friendship' reflected an emotional bond between the child and the animal, with children often viewing the animal as a friend. They described feelings of companionship, emotional closeness (Quote: 'The toad jumped a little bit, but he jumped because he thinks I am lovely and not because he was afraid. I feel a bit calm then and I feel a little bit-like friends with the toad' -D:96), and expressions of them being playing partners and buddies. (Quote: I pretend to be a rabbit too and then the rabbit starts playing with me' -D:31).

The subtheme 'interdependence' was marked by a sense of mutual recognition and response between the child and the animal. Children described how both they and the animal recognized each other's needs and acted accordingly. For example, children recounted taking care of animals (Quote: I always put her (cat) back in her little bed so that she stays warm-D:52), and being mindful of the animal's emotions (Quote: 'I let her (cat) roam freely in the garden and leave her alone because she is scared' -D:95). This interdependence was further highlighted by children's perception that their actions benefited the animal and vice versa (Quote: 'You can pet them and train them. They will lick your wound so that it heals' -D:80). Moreover, children believed they offered something unique to the animal, making the relationship special (Quote: 'They (ladybugs) love fluttering, and when they encounter people, they want to fly away quickly. If they are big people, they want to fly away, and if they are small people, they want to be petted' -D: 61).

Research question 2: what opportunities for firsthand lived interactions with animals do children experience in the school yard?

A categorization of the strategies children used to search for animals (including an evaluation of the accuracy)

When aiming to find an animal in the schoolyards, children searched for animals in a large variety of spots, most often in nature-based elements in the schoolyard (215 search visits in nature-based places, mostly earth, bushes, tree, sky, compared to 73 search visits to manmade places, mostly inside, on a climbing contraption, on a fence, on a bench). Children employed a series of search strategies, such as visiting a specific spot where they expected an animal (Quote: '... looks by the stones and the grass for ants, because she knows they are often there' (D: 52), observing (Quote: 'Looks for birds in the trees' (D: 88), searching in between or under things (Quote: 'Searches also in between branches and leaves' (D: 54) / 'Looking underneath dark things for wood lice and snails' (D: 5), swiping (Quote: 'Swipes with her foot over the earth' (D: 34), digging (Quote: 'Digs with a twig' (D: 27) or stamping (Quote: 'Stamps on the ground' (D: 4). All search strategies were assessed to be as accurate as they could potentially yield an animal. Interestingly, most students ($n=61$, 55%) had to use more than one search strategy to find an animal, and $n=30$ students (25%) did not find any animal.

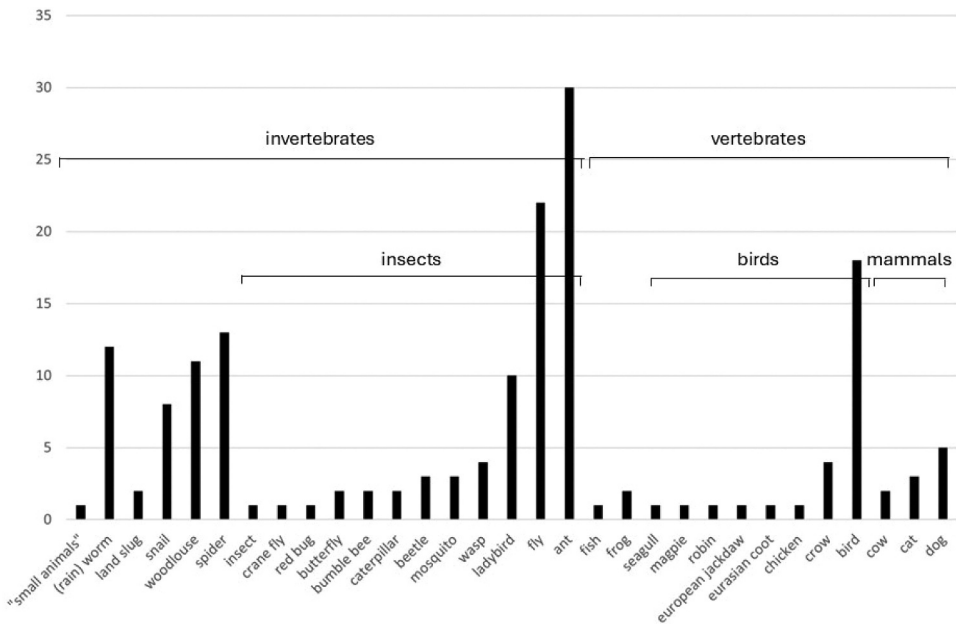


Figure 2. Animals children found in the schoolyards.

Classifying the animals discovered in the schoolyard in classes (e.g. mammals, birds, insects)

Figure 2 shows the animals that the children discovered in the schoolyards, at the level as mentioned by the child (e.g. a child may refer to a magpie as 'a bird' or as 'a magpie'). The most often found animals were insects, mainly ants ($n = 30$).

Discussion

This study aimed to explore the relationships Dutch schoolchildren have with animals from the local environment—local animals—and to identify opportunities for lived interactions with these animals in schoolyards. The goal was to provide teachers with insights into these relationships and to help recognize if and how schoolyards could be utilized to foster and strengthen them. The findings indicate that children develop emotional connections with local animals, which hold significant meaning for them. Interactions between children and their favorite animals are dynamic and engaging, often characterized by a series of reciprocal actions and reactions that create a lively, physical exchange. The connection children describe with their favorite animal can be categorized into three types: being 'wowed by superpowers,' where children are fascinated by animal's unique abilities; 'friendship,' which reflects an emotional bond between the child and the animal; and 'interdependence,' characterized by a sense of mutual recognition and response between the child and the animal. These findings align with the sociological study of Tipper (2011) in the United Kingdom, which explored the ways in which animals are interwoven in children's lives. Conducted over a decade later in a different country, the current study reveals similar results to what Tipper described as subtle, sophisticated,

multi-faceted, and crucially important relationships between children and animals. This insight into the nature of these connections can guide teachers in their efforts to help children appreciate, expand, and deepen their engagement with local animals.

These findings resonate with the notion of ecosystemic experiences as fundamental to education for sustainability (UNESCO, 2030; Haraway, 2003). The observed emotional, physical, and reciprocal interactions between children and local animals can be seen as lived enactments of interconnectedness within an ecosystem, one of the key sustainability competences highlighted in current educational policy frameworks. Moreover, the typology we identified, ranging from fascination to interdependence, demonstrates how children's relationships with animals offer meaningful entry points into systems thinking and participatory learning, as promoted by the European sustainability competence framework (European Commission, 2022). Our findings support the argument that schoolyards can function as places where children develop relational awareness that extends beyond human contexts. Strengthening such lived experiences through school-based practices is therefore not just an educational opportunity, but a contribution to broader ecological literacy and sustainable development goals (Ballouard et al., 2011; Genovart et al., 2013; Shepardson et al., 2007; Soga & Gaston, 2016).

When searching for animals in the schoolyard, children often encountered difficulties, despite using accurate search strategies. Most children had to try several strategies before finding an animal, and over a quarter of the children were unable to find any at all. When animals were found, they were mainly insects, which aligns with the typical environmental characteristics of Dutch schoolyards nowadays (Howlett & Turner, 2023; van Dijk-Wesselius et al., 2018). However, consistent with previous studies on children's species preferences (Bjerke et al., 1998; Borgi & Cirulli, 2015), children most often chose mammals and mainly pets as their favorite animal, and these were rarely found in schoolyards.

This suggests that, as they currently stand, schoolyards do not seem to facilitate experiences that can strengthen, deepen and expand existing child-animal relationships. The results may encourage teachers and school directors to assess how well their schoolyards align with children's preferences for certain animals and certain types of animal interactions and may prompt teachers to consider changes to increase the likelihood of interactions with these preferred species. Additionally, the findings could encourage teachers to help children develop more effective, location-specific search strategies, enabling children to find animals as a prerequisite for engaging in meaningful interactions. Finally, the findings offer encouragement for teachers to expand children's appreciation beyond mammals, fostering a greater appreciation for insects and other invertebrates, which are more abundant in schoolyards. Children's favorite animals could be a good starting point for teachers and curriculum developers to broaden children's interest to other species, providing a promising pathway to familiarize and connect children with other parts of the natural world.

Strengths and limitations

An important strength of the study is that it has been conducted with a randomly selected group of children, which helps generalizability. The study used interviews as a method, which is suitable for a study that aims to reveal emotional dimensions and the social experiences of the children (Lamont & Swidler, 2014). A potential limitation of the

approach was that these interviews were conducted by first-year Bachelor students, who had only little experience in interviewing, which may have limited them in their interviewing techniques. To help overcome this barrier, teacher-trainees were trained to conduct the interviews. Moreover, the interviews were semi-structured to guide teacher students in their interviews and to give respondents room for elaboration and explanations through the use of open-ended questions, which offers ample opportunities for depth and richness of the responses (Alsaawi, 2014). Finally, interviews were conducted by a teacher-trainee that the children already knew, which we expect strengthened their interaction during the interview.

One of the study's strong points were the involvement of multiple analysts from distinct fields of expertise, which enhanced the multi-perspectivity of the analysis (Patton, 2014). Codes and interpretations were shared, discussed, and required to be relevant and understandable to all analysts before being included in the results. A challenge was that the data collection was conducted by individuals other than those who performed the analysis. Consequently, the analysts who worked with the data did not have direct experience themselves with the context that could have informed deeper interpretation.

To gain a more comprehensive understanding of children's experiences and relationships with animals, it would be beneficial to expand the study beyond children describing their experiences to include their active participation, such as through participatory observations (Waller & Bitou, 2011). Future research could focus on more participatory research designs focused on lived experiences, which would offer a deeper insight into children's connectedness with native animals that commonly occur on schoolyards especially.

The study was conducted with students ranging from 5 to 11 years old. Interpretations of experiences with animals and the words children use to describe them, depend on the child's age and previous experiences with animals. This lived knowledge gives us insight into the world of children and provides teachers with tools to bring children into contact with local animals in the schoolyard. Future studies could consider focusing on a narrower age group to allow for more specific and developmentally attuned insights.

An important limitation of the study is its geographical and cultural specificity. The research was conducted in the Netherlands, within a particular cultural, ecological, and educational context. The experiences, opportunities, and meanings that children attribute to animal interactions are shaped by place-specific factors, such as the local biodiversity, cultural norms regarding animals, educational practices, and the design and function of schoolyards within the Dutch school system. Future research would benefit from cross-cultural comparative studies that examine how children's relationships with animals develop within diverse ecological and educational systems, in order to better understand the universality and specificity of the observed patterns.

Recommendations for practice

The study results offer valuable guidance for teachers in two key areas. First, the results can help teachers gain a deeper understanding of children's lived experiences in their relationships with animals. This understanding can help teachers enrich children's experiences of being amazed by the animal's superpowers, feelings of friendship with animals

and a sense of interdependence between humans and animals for example, by selecting matching topics for teaching, books, illustrations, arts and craft projects, stories, and other materials.

Secondly, the study results can inspire teachers to facilitate more direct encounters between children and animals. This can be achieved by creating schoolyard environments that serve as habitats for various species, thus providing children with more opportunities for such interactions (Luís et al., 2020; van den Bogerd & Maas, 2024). Teachers can also integrate educational activities into these outdoor environments, increasing the likelihood of encounters with animals (for examples, see, e.g. (Ballantyne & Packer, 2009; Blair, 2009; Dymont, 2005; Feille & Nettles, 2019; Gilchrist et al., 2016; Largo-Wight et al., 2018; Maynard & Waters, 2007; Song et al., 2017). By taking these steps, teachers can play a crucial role in helping children build meaningful relationships with animals, which would benefit the children's personal development and could help promote a more compassionate and sustainable relationship with their environment and nature as a whole.

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Author contributions

CRedit: **Elise Peters:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Supervision, Writing – original draft; **Mart Ottenheim:** Data curation, Formal analysis, Project administration, Writing – review & editing; **Dieuwke Hovinga:** Formal analysis, Supervision; **Evangelia Marina Konstantakou:** Formal analysis; **Michiel Jan Dirk Hooykaas:** Conceptualization, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix. Interview questions and observation task

Interview Questions:

(write the child's answers down verbatim)

What animals live in your neighborhood?

Of all these animals, which one would you like to encounter the most?

What does it look like?

What is it like to encounter this animal?

Tell me more about it.

What does the animal do, how does it behave?

When do you sometimes encounter him?

Where do you sometimes encounter him?

What happens then?

Then what do you do? What does the animal do then?

Why do you like running into him so much?

How does that make you feel?

Observation task:

(write down precisely where the child is looking and what they find).

Can you find an animal now?
