

PERSPECTIVES IN

Animal Health and Welfare

VOLUME 2 / ISSUE 1 / 2023

Published ahead of issue
Received: 29 August 2023
Accepted: 2 November 2023
Published: December 2023

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Dr Janet Sayers
Dr Leena Awawdeh
Dr Rachel Forrest

<https://doi.org/10.34074/piahw.002105>

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This publication may be cited as:

Sayers, J., Awawdeh, L., & Forrest, R. (2023). Case Study: Wildlife Foxton Trust and One Welfare. *Perspectives in Animal Health and Welfare*, 2(1), 63–76. <https://doi.org/10.34074/piahw.002105>

Contact:

epress@unitec.ac.nz

www.unitec.ac.nz/epress/

Unitec | Te Pūkenga

Private Bag 92025

Victoria Street West, Auckland 1010

Aotearoa / New Zealand



ISSN 2816-0290

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Dr Janet Sayers*, Dr Leena Awawdeh* and Dr Rachel Forrest

*co-first authors

Introduction

The aim of this participatory research was to assist the Wildlife Foxton Trust to achieve its primary mission: to contribute to the wellbeing and flourishing of wildlife in the Foxton area and Aotearoa / New Zealand. The Trust believes in “Education by Example” (Wildlife Foxton Trust, 2023) and engages with local schools to develop and foster an ongoing commitment to the flourishing of native species in the Foxton area and in all of Aotearoa / New Zealand. To facilitate this, the Trust maintains populations of the less ‘glamorous’ native species such as skinks, geckos, fish and insects, which children can observe and learn about. The Trust is also home to several introduced species, such as sulphur-crested cockatoos (*Cacatua galerita*), a brushtail possum (*Trichosurus vulpecula*) and a few non-native lizards, such as an Australian blue-tongued skink (*Tiliqua scincoides*) and a bearded dragon (*Pogona barbata*). Education is provided about these exotic animals with an emphasis on those which pose a threat to Aotearoa / New Zealand’s native animals. The objective of this project was to facilitate co-development of educational resources and approaches with the Wildlife Foxton Trust staff and visiting schools, which have a focus on promoting care of wildlife in the area. An important aspect of the project was identifying the need for education about the impact of family pets on native wildlife species, and the need for responsible pet ownership to ensure the wellbeing and flourishing of wildlife in the Foxton area and Aotearoa / New Zealand.

Background

One Welfare

The OIE World Organisation for Animal Health issued its Global Animal Welfare Strategy in 2017 with the vision of “A world where animal welfare is respected, promoted, and advanced in ways that support the pursuit of animal health, human well-being, socio-economic development, and environmental sustainability” (OIE World Organisation for Animal Health, 2017). This vision aligns with the One Welfare approach that integrates animal

health and welfare with human and environmental health and welfare (Garcia, 2017). One Welfare acknowledges the inextricable connections between animal and human health and welfare, social and mental health, and environmental conservation and sustainability (Bourque, 2017; Fawcett et al., 2018). These concepts are especially relevant in Aotearoa / New Zealand due to the country’s relatively isolated and vulnerable island ecology, combined with industrialisation along with agricultural and horticultural intensification, which threatens Aotearoa / New Zealand’s diverse and distinctive biodiversity (Ministry for the Environment, 2019). Unfortunately, many Aotearoa / New Zealand endemic flora and fauna are susceptible to extinction due to human actions, such as introducing animal species (Birdsall & Kelly, 2022; Thomas et al., 2019). One Welfare also aligns with an Indigenous worldview, inclusive of te ao Māori (Māori worldview – Māori are the Indigenous people of Aotearoa / New Zealand) (Sayers & Forrest, 2022) that emphasises holism and interconnectedness among people, animals and the environment. This concept provides an appropriate foundation upon which Aotearoa / New Zealand-specific educational resources can be built.

Wildlife Foxton Trust

Wildlife Foxton Trust is a registered charity that educates the public about Aotearoa / New Zealand’s “Forgotten Fauna” species that tend to be excluded from media promotion (Wildlife Foxton Trust, 2023). The Trust also educates their community about the significant and, unfortunately, negative role that introduced species play on wild ecosystems in Aotearoa / New Zealand, and how damage to existing environment will affect future generations. The Trust promotes ecological sustainability and participation in activities that will help restore and safeguard Aotearoa / New Zealand’s natural heritage.

The role of education

In Aotearoa / New Zealand, schools have a key role to play in educating young people about environmental challenges and native species, and to do so they

need to collaborate with environmental organisations. Since its inception in 1993, the Enviroschools project has expanded to include over 1403 educational centres across Aotearoa / New Zealand, emphasising environmental learning and action relevant to each school's location (Enviroschools, n.d.). In response to the objective of repairing and preserving Aotearoa / New Zealand's distinctive ecosystems, many school-age children participate in conservation education as part of their curriculum. Conservation learning is a subset of environmental education that emphasises protecting the environment via action (Birdsall & Kelly, 2022; Thomas et al., 2019). This emphasis on conservation action means there is potential for schools to co-operate with community organisations such as Wildlife Foxton Trust, to help maintain and restore Aotearoa / New Zealand's distinctive ecosystems by educating and involving children.

As well as being an important part of Aotearoa / New Zealand's biodiversity and ecosystem, animals play an integral part in the lives of many children worldwide in the role of household pets. Although these relationships can be complex (Bryant, 1985; Melson, 2001), many youngsters consider their pet (companion animal) one of their closest and most essential connections (Fawcett et al., 2018; Melson, 2001; Muldoon et al., 2015; 2016). Research has found that children are innately driven to treat and respect animals properly (Fonseca et al., 2011) and this needs to be reinforced and fostered, as all humans have ethical obligations towards animals. Intimate contact with animals is advantageous for both animals and children. Pet ownership can provide social support and reduce anxiety (Melson & Schwarz, 1994), and facilitate the development of sympathetic behaviour (Melson et al., 1991). Animals benefit through improved welfare and wellbeing (Paul & Serpell, 1993). Furthermore, children with greater involvement in caring for their pets are more likely to be concerned about animal welfare and hold more humane attitudes (Hawkins et al., 2017; Paul & Serpell, 1993). Thus, learning to care for pets can have wider implications for wildlife in general.

Animal welfare education for school children is essential. Programmes need to foster healthy interactions between children and animals to prevent animal cruelty, as many incidents of animal cruelty, including neglect and abandonment, are because of a lack of understanding about adequate care and species-specific welfare requirements (Glanville et al., 2019; Tiplady et al., 2018). Young children may lack the cognitive capacity to comprehend that their actions may

be detrimental to the welfare of animals, and may cause damage to an animal as a result of natural curiosity or a lack of information about animal behaviour and proper care (Ascione, 2005). Therefore, educating children about animal welfare should decrease inadvertent animal cruelty, with advantages for the safety of children, such as reducing injuries, and result in better human–animal relationships (Shen et al., 2016), translating into positive One Welfare outcomes. These can be enhanced by also including education about the impact that pets, other domestic animals and introduced wild animals can have on native wildlife and Aotearoa / New Zealand ecosystems.

Understanding the link between children and animals is essential for creating and assessing animal welfare education programmes. Children's connections with animals are influenced by three psychological factors: knowledge and accurate understanding of specific animal welfare requirements; attitudes towards animals; empathy and compassion toward animals (Coleman et al., 2008; Muldoon et al., 2009; Muldoon et al., 2016). There is a direct relationship between proximity to animals (Kahn Jr & Kellert, 2002) and attachment to and feelings of responsibility towards them (Muldoon et al., 2015). The purpose of our case study was to better understand the nexus between schools, wildlife education (as represented by the Wildlife Foxton Trust), and the role One Welfare education could play as a link between wildlife education and animal welfare in the context of Aotearoa / New Zealand (Woodhouse et al., 2021). To do this we explored local schoolchildren's experiences and interpretations of their educational visits to the Trust and their previous experiences with pet animals.

Data collection methods

This study used a participatory action case-study approach. Researchers visited the Wildlife Foxton Trust (Foxton 4814, Aotearoa / New Zealand) multiple times over a two-year period, conversed several times with the Director of the Trust, and met other members of the Trust and volunteers. From these conversations, a study was designed that collected information from several different sources to inform the development of One Welfare educational resources with a focus on promoting wildlife conservation actions in the area, with an emphasis on how responsible pet care plays an important part.

This project was approved by the Massey University Human Ethics Committee (4000024575 15/06/2021). Anonymity of the wildlife facility was not considered an ethical risk, so the Trust's name and the name of its director were permitted to be disclosed. However, the names of volunteers and the names of the participating schools were to remain anonymous to ensure confidentiality.

The sources of information used to inform the design of the educational resources included: secondary research data, staff interviews, surveys of school staff and students, and observations of the school children's behaviours and attitudes during their visit.

1. Secondary research data

Initially, the researchers collected secondary research data about the local area and the associated ecological challenges. There was a considerable amount of historical, policy and planning information available through the Horowhenua District Council and stakeholders in the area. A large number of documents was also supplied by the Trust representatives and gathered through web-based searches conducted with the assistance of a specialist information manager. Relevant documents were chosen to provide background information for the study and are cited where they informed this case.

2. Expert interviews

Expert interviews with two of the Wildlife Foxton Trust personnel were conducted. The primary purpose of the interviews was to gather the staff's perspective and experiences about the Trust's educational purpose and their educational strategies and techniques, respectively, when engaging with the children. Each interview took about 45 minutes and they were conducted either in person or via Zoom. The questions that guided the semi-structured interviews are in Appendix 1.

3. Observations and surveys of school groups

For each school group, a researcher accompanied them on their tour, taking notes about the children's reactions and interactions with the resources provided by the Trust. After each tour, a group survey was conducted with the school children by the teacher (Appendix 2). The questions focused on collecting information the children's feedback regarding the visitor experience and regarding the children's pet ownership. The teacher asked the questions verbally, and the various answers were captured by both the teacher and the researchers. Where the question had answer options, the teacher

told the children what the options were going to be and explained to the children they needed to put their hand up (only once) to indicate their answer. The teachers also provided further explanation in age-appropriate language for any question as they saw fit for their class. The teacher also explained to the children they did not have to answer any question they did not want to answer. The children were asked about what types of pets they had, who was responsible for looking after the pets, and what the visit taught them about looking after pets. They were also asked to identify their favourite animals at the Trust and why, which part they liked the most and why, which part they liked the least and why, and to indicate if they strongly agreed, agreed, were unsure, disagreed or strongly disagreed with several statements about their visit (Table 1). The teachers and observing researcher counted the number of raised hands for the various answer options offered to the children for each question.

The survey data were collected from 118 local school students from four different classes (years 1–2, 3–4, 5–6 and 6–7) that visited the Trust's wildlife centre between June and July 2022.

Teachers were also asked what aspects of the visit best engaged their students, and for their ideas about what types of resources would help the students become more engaged with conservation actions associated with the native species showcased by the Trust, and for their ideas about encouraging animal welfare.

Description of a typical tour

Foxton Wildlife Trust facilities comprised of two sections at the time when the study was conducted. An internal section with two rooms housed an Australian blue-tongued skink (*Tiliqua scincoides*) and a bearded dragon (*Pogona barbata*), along with native stick insects of various species, and native fishes – inanga (*Galaxias maculatus*), kōaro (*Galaxias brevipinnis*) and kōkopu (*Galaxias fasciatus*). A second section outside the building housed many native skinks and geckos, along with several introduced species such as the brushtail possum (*Trichosurus vulpecula*), the cockatoos (*Cacatua galerita*), the cockatiel (*Nymphicus hollandicus*) and several turtles.

On arrival, educational tour guides talked with students and teachers about how to behave around the animals to minimise their stress (e.g., not yelling and rapping on cages). The children were split into two groups to facilitate engagement, so two Trust staff were

generally engaged in each tour. One group began inside, and the second group outside. The tour educators were volunteers, highly engaging and knowledgeable young scientists with university degrees, who were passionate about animals, native wildlife and education.

The inside tour started with the fish tanks, where the students learned the difference between introduced and endemic fish species. The students were then acquainted with the introduced reptiles, which are often kept as pets, and were told about their potential to impact negatively on Aotearoa / New Zealand native wildlife if they are set free or escape captivity. Educators explained different reptiles' adaptations (e.g., being able to hold their breath underwater) and how those can make them challenging to manage if they get out in the wild. Children were tightly managed inside, as the space was small. During the outside tour, educators explained the difference between geckos and skinks. Children had a little more freedom to find their own discovery pathways, but they still needed to stay in a group. Educators responded to questions and engaged with the group in 'teachable moments'. Educators had props they could use to engage the children, such as fossilised faeces and dinosaur teeth.

Findings

The children were observed to be generally excited to visit the Trust, asking many questions, and freely offering their understanding and experiences. For instance, a group of girls engaged one researcher with their experiences with spiders and shared their knowledge with her. A few children hung back because of shyness, but were forthcoming with their own experiences when given the opportunity. Most of the results from the group surveys indicated that most of the students from all year levels found the Wildlife Foxton Trust centre fun, and they especially liked engaging with the cockatoos and cockatiels, and touching the lizards. Both the observations and survey data suggested that the children favoured the inside section, where they could touch and view the animals up close. It was observed that most students were intensely interested in the stick insects, even though this did not come out in the survey about which animals they liked best. Highlights from each year group are listed below:

- Year 6–7 students favoured the introduced lizards because they could touch them. This was followed

Table 1. Perceptions of Wildlife Foxton Trust experience expressed as the percentage of all students (n = 118) and the percentage of those who chose to answer (in italics).

Statement ¹	Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Chose not to answer
The Wildlife Foxton Trust improves my knowledge of introduced species. ²	52.5% (62) <i>73.8%</i>	14.4% (17) <i>20.2%</i>	4.2% (5) <i>6.0%</i>	0.0% (0) <i>0.0%</i>	0.0% (0) <i>0.0%</i>	28.9% (34)
The Wildlife Foxton Trust help me to know the difference between introduced and native species. ²	11.0% (13) <i>26.5%</i>	25.4% (30) <i>61.2%</i>	5.1% (6) <i>12.2%</i>	0.0% (0) <i>0.0%</i>	0.0% (0) <i>0.0%</i>	58.5% (69)
The Wildlife Foxton Trust experience will change the way I look after my pets. ²	5.9% (7) <i>14.6%</i>	0.0% (0) <i>0.0%</i>	28.0% (33) <i>68.8%</i>	6.8% (8) <i>16.7%</i>	0.0% (0) <i>0.0%</i>	56.8% (67)
Because of Wildlife Foxton Trust, I am more likely to read about introduced and native animals. ³	32.2% (38) <i>47.5%</i>	5.1% (6) <i>7.5%</i>	5.1% (6) <i>7.5%</i>	23.7% (28) <i>35.0%</i>	1.7% (2) <i>2.5%</i>	32.2% (38)

¹ Number of students that responded or chose not to answer are in brackets.

² All year groups were represented in each response.

³ The 'Agree' and 'Strongly agree' responses were mostly from the older year groups (years 5–6, 6–7), while the remaining response options were primarily the other year groups.

by the stick insect, then the rockfish.

- Year 5–6 students indicated that the brushtail possums were their favourite animals, followed by the cockatiel, and the lizards.
- Year 3–4 students liked the lizards, followed by the fish. Two students didn't like the tour because they felt scared. Several students mentioned the empty fish tank was disappointing.
- Years 1–2 reported that they couldn't see the turtle and it was hard to find the rockfish. Many children in this age group said they liked everything on the Wildlife Foxtton Trust tour.

Regarding their experience with Wildlife Foxtton Trust, Table 1 provides a summary of the students' perceptions. Analysis of the group survey data was limited, given the small data set and considerable number of students who chose not to answer every question. Nevertheless, collectively across the year groups the data indicates that the Wildlife Foxtton Trust tour helped students know the difference between introduced and native species, and improved their knowledge. However, the data also indicated that the connection to pets was not clear to the students. This is not surprising, as the tour did not talk specifically about the students' pets, just overall information about the exhibited species and animal welfare principles. Just over half of all students (56%) said they had pets, with most helping to take care of them. When asked what resources engaged the students more, the teachers reported hands-on experiences and providing brief, memorable information. One teacher suggested expanding the premises so there would be more room.

Discussion and recommendations

The One Welfare concept emphasises the crucial role of environmental welfare in the overall wellbeing of animals, humans and the planet, and it underscores the moral and ethical dimensions of human–animal interactions, thereby contributing to the overall welfare of all parties involved (OIE World Organisation for Animal Health, 2017). An effective way to promote One Welfare is by developing educational programmes that focus on biodiversity and conservation that target children, as they represent the stewards of our planet now and into the future (Chawla, 1999; Dickinson et al., 2012; Dominguez Contreras & Krasny, 2022). By instilling an early appreciation for the interconnectedness of humans,

animals and the environment, we develop a generation that understands the importance of protecting wildlife and its habitats. Research has shown that early education on these topics can lead to more ecologically responsible behaviour, and engaging children in hands-on activities, such as visits to wildlife sanctuaries or participation in conservation projects, can make these lessons more impactful and memorable (Chawla, 1999; Dominguez Contreras & Krasny, 2022). The findings from this study were viewed through a One Welfare lens to identify educational opportunities that promote the primary mission of the Wildlife Foxtton Trust.

The findings indicate there is an opportunity for the Trust to:

1. **Promote learning about the care of native species through reading and writing-based activities.**

The Trust can establish a dedicated resource centre that encourages reading and learning about animal care and conservation within the context of One Welfare. This can be used to enhance children's understanding of the interconnection between native species and household pets. Along with providing a wildlife experience, providing access to books, reading materials, and online resources can facilitate a deeper understanding of responsible pet ownership and the impact of human actions on both native wildlife and domestic animals (Reynolds & Braithwaite, 2001). This approach also supports the development of empathy and ethical behaviour towards animals contributing to the overall welfare of humans and animals.

2. **Further address the impact of introduced species (both wild and domestic) on native wildlife.**

The findings indicate that children did not understand the link between pets and native species. Connecting with existing knowledge and experiences and linking everyday actions with conservation goals have been identified as facilitating positive behaviour changes (Ballantyne et al., 2007). The Trust could use existing relationships children have with their companion animals as a way to engage in conversations about how introduced species have negatively impacted on native species, and how animal welfare can include management strategies such as cat and dog containment. One Welfare emphasises that the wellbeing of one component (in this case, native species or household pets) can have a direct impact on the wellbeing of the other. For example, household pets, such as cats and dogs, can have adverse effects on native wildlife through predation, potentially leading to declines

in local populations (Loss & Marra, 2017). Encouraging children to connect with nature and teaching children about the responsible care of household pets and the importance of keeping them from wandering and hunting wildlife is, therefore, an essential part of promoting One Welfare. By developing their connection to nature and understanding the impact their pets can have on native species, children learn about the interconnectedness of all living beings, fostering a sense of empathy and responsibility for the welfare of both domestic and wild animals (Ballantyne et al., 2007; Cheng & Monroe, 2012).

3. Provide hands-on educational material that ensures animals welfare. Engaging children with tactile educational materials can be a valuable strategy for raising awareness about nature and native animal conservation (Lindemann-Matthies & Kamer, 2006). However, hands-on experiences with living native animals are not always within the best interests of the animal's welfare (Ballantyne et al., 2007; Fernandez et al., 2009). Providing interactive, safe materials like models, specimens, or touchable exhibits can foster a stronger connection to the natural environment and, thereby, positively influence environmental conservation behaviours (Lindemann-Matthies & Kamer, 2006). This approach recognises the children's natural preference for tangible engagement while ensuring the wellbeing of the animals and role modelling positive animal-welfare practices. This approach also aligns with One Welfare by role modelling the importance of animal welfare and environmental conservation, and fostering a sense of responsibility for the welfare of animals, both wild and domestic.

4. Encouraging discovery projects and involvement. Several volunteers expressed their wish to see young people become engaged in conservation actions and their hope that the Trust would inspire young people to become scientists. By facilitating age-appropriate project-based activities and partnering with schools, conservation and young science groups, the Trust can inspire the next generation to become scientists and conservationists. The engagement of school children in project-based activities that encourage practical action (e.g., planting, backyard animal observation and counting exercises), and promote critical thinking and problem solving around conservation issues equips them with the skills and opportunities to take sustainable environmental actions and advocate for change (Cheng & Monroe, 2012; Dickinson et al., 2012; Dominguez

Contreras & Krasny, 2022). This activities-based approach fits within the One Welfare concept, in that it requires children to acquire and integrate knowledge of how the wellbeing and welfare of humans, animals and the environment are interconnected and fosters a sense of agency in addressing conservation challenges, thereby contributing to the wellbeing of native species, ecosystems and society as a whole.

Developments

Since this research has been conducted, the Trust has grown its physical footprint and increased its animal collection. Consistent with the recommendations, there is now more signage providing interesting facts about the animals and more hands-on material and activities. Any empty tanks have been removed. The Trust is intending to expand further and become a destination attraction for Foxton, with an entrance fee for visitors. At the time the research was being conducted, funds were mainly being acquired through the sale of native plants, with supplementary support from funders for projects and a small contribution from groups undertaking educational tours.

The willingness to engage in research and the resulting developments show the commitment of passionate volunteers. The growth of the Trust is promising for Foxton and the community more generally, as the area undergoes a revival through the creation of the Te Awahou Nieuwe Stroom Cultural Park, the redevelopment of the river loop, and creation of pathways to and from Foxton Beach and the Manawatu Estuary, which is an official Ramsar Wetland of International Importance. This revival creates many opportunities for the development of conservational science project-based activities for school children.

Conclusion

Overall, the Wildlife Foxton Trust provides an effective and interesting educational experience for local students. The Trust is run by experienced, knowledgeable, committed volunteers and funded mainly by sales of native plants, and grants. Further engagement with local schools could help make a more significant impact on the wellbeing and environmental sustainability of the community. The initial purpose of the research was to co-develop an understanding of the educational function of the Trust through the paradigm of One Welfare. The findings of this project reveal a disconnect in the

children's understanding of the interconnections between pets and animals in the wild (native or introduced), and that a deeper understanding of the negative impact introduced species have had on native species needs to be developed. Further, co-research endeavours of a participatory nature could help schools, community groups and the Trust create innovative, engaged educational co-projects to involve children in a life-long passion for nature and wildlife in the area.

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Appendix 1: Interview questions

- Please briefly tell us about how you came to be engaged with the Trust.
- Do you feel the Trust is making a difference? Why or why not?
- Based on your experience, what works best to engage children with Wildlife Foxton? What doesn't work?
- Have you any thoughts on how to better engage local schools and teachers? What is it schools want from the Trust?
- Based on your experiences, what type of resource will be most useful to reinforce and engage children on responsible ownership of introduced species?
- Based on your experience, what do you think will help the Trust develop long-term relationships with schools and their communities?
- Is there anything else you would like to add?

Appendix 2: School survey questions [filled in by the teacher]

School Class Level:

What do you think of Foxton Wildlife? [Indicate the number of students in the appropriate box]

5 = It was really fun

4 = It was fun

3 = It was OK

2 = I didn't like it

1 = I really didn't like it

What was your favourite animal at Wildlife Foxton and why?

Animal	Number of students	Reason/s
<i>Six rows were provided</i>		

Which part of the wildlife tour did you like the most and why?

Most enjoyable experience	Number of students	Reason/s
<i>Six rows were provided</i>		

Which part of the wildlife tour did you like the least and why?

Least enjoyable experience	Number of students	Reason/s
<i>Six rows were provided</i>		

Statement	Scores	No. students	Reason/s
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The Wildlife Foxton experience improved my pet's knowledge of exotic species in NZ.	5
	4
	3
	2
	1
The Wildlife Foxton experience helped me to know the difference between exotic and native species.	5
	4
	3
	2
	1
The Wildlife Foxton experience will change the way I look after my pets.	5
	4
	3
	2
	1
Because of Wildlife Foxton, I am more likely to read about exotic and native animals.	5
	4
	3
	2
	1

Children's pet ownership

Do you have any pets? [Write the number of students in the box]

Yes	No

If yes, what are they? Do you think your pet is native or exotic?

Type of pet	Number of students	Native/Exotic
Dog		Native Exotic
Cat		Native Exotic
Rabbit		Native Exotic
Fish		Native Exotic
Reptile		Native Exotic
Bird		Native Exotic

Guinea pig	Native	Exotic
Chicken	Native	Exotic
Other	Native	Exotic

Who is responsible for looking after your pets at home?

Yourself	Brother/sister	Parent/caregiver	Someone else	Everyone in the family
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What has the Wildlife Foxtton experience taught you about looking after pets? [Space for an answer was provided]

Teacher feedback [Space for each answer was provided]

What sorts of resources engage your students the most?

Do you have any ideas about resources that would help the students appreciate the less loved species on display in the centre?

What do you think is the best way to teach the students the dangers posed by poor welfare practices of exotic and native animals?

Authors

Dr Janet Sayers critiques business challenges in novel and engaging ways to help shift practice towards more sustainable and ethical relations with each other and the larger ecology. Janet has a particular interest in animal and organisational studies, which she has previously looked at using a One Welfare lens. She is working with others around the world to forward a multispecies agenda in organisational studies that includes animals in conceptual frameworks for the purpose of enhancing sustainable relations with others. She has published widely in ethics, on gender studies, and on new technologies, and is currently researching ecosystems approaches to entrepreneurship. <https://orcid.org/0000-0002-6289-3436>

Dr Leena Awawdeh earned her Bachelor of Veterinary Science and pursued a PhD after practising veterinary medicine for several years, focused on investigating avian pathogenic *Escherichia coli* in commercial broiler chickens in South East Queensland. Her extensive research, which spans veterinary microbiology and molecular biology, has significantly advanced our understanding of these critical fields. Her research primarily centres on zoonotic and animal bacterial diseases, specifically emphasising population genetics, molecular epidemiology, microbial pathogenesis and antimicrobial resistance. Currently, she is actively researching animal welfare and the concept of One Welfare, which recognises the interconnectedness of human wellbeing, animal welfare and the environment. <https://orcid.org/0000-0001-6236-4772>

Dr Rachel Forrest (BSc Zoology, Postgraduate Diploma in Laboratory Technology, PhD Molecular Genetics) was born and raised in Tūtaenui / Marton, Aotearoa / New Zealand. Paternally, she is of Ngāti Maniapoto descent, while maternally she has strong European roots. Rachel's research focuses on improving the health and wellbeing of both animals and humans; requiring both qualitative and quantitative approaches and data analysis. As an EIT | Te Pūkenga researcher, Rachel has been involved in the development, implementation and evaluation of various community-based health interventions and initiatives to reach under-served communities. More recently, she has been exploring human–animal interactions and their impacts on wellbeing under the umbrella of One Welfare. This concept recognises that human wellbeing, animal welfare and the environment are all interconnected, and aligns with te ao Māori (the Māori worldview). <https://orcid.org/0000-0002-5086-0493>