



Rules in Reality

How pet owner competence and Animal Welfare legislation impacts small and exotic pet welfare

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Rules in Reality - *How pet owner competence and Animal welfare legislation impacts small and exotic pet welfare*

Regler i praktiken – Hur djurägares kompetens och djurskyddslagstiftning påverkar mindre och exotiska sällskapsdjurs välfärd

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Abstract

Small and exotic pets (SEP) have grown in popularity in Sweden over the last decades. It has therefore become increasingly important to assess what welfare concerns may or may not exist for these pets. Owner competence has the potential to greatly influence SEP welfare as knowledge regarding their pets' health, nutritional needs, proper housing, and behavioural needs directly informs and impacts their husbandry practices. Previous studies have shown that a lack of owner competence has led to an impaired welfare due to improper husbandry practices for SEP. Animal welfare legislation has the potential to influence SEP husbandry, however it is uncertain what impact current Swedish animal welfare legislation has on SEP husbandry.

This study aimed to assess the competence level of Swedish owners of the SEP: rabbits, guinea pigs, domestic rats, and hamsters regarding their pets' husbandry, welfare, and relevant animal welfare legislation. The study also aimed to investigate SEP owner perceptions and attitudes towards Swedish animal welfare legislation and how it may influence Swedish SEP husbandry and welfare.

To achieve this a survey study was conducted. A separate survey was created for each of the four groups of SEP owners and consisted of three sections: Section 1) Self-evaluation, Section 2) Questions regarding SEP husbandry and welfare, and Section 3) Questions and statements regarding Swedish animal welfare legislation. The surveys were then distributed online in Facebook groups dedicated to the focal SEP.

A total of 272 respondents completed one of the four surveys wherein 66.2% were rabbit owners, 12.1% were guinea pig owners, 9.6% were domestic rat owners, and 12.5% were hamster owners. The SEP owners in this study evaluated their knowledge regarding their pets' husbandry, welfare, and relevant legislation as good overall across all four surveys. From the results for Section 2 SEP owners included in this study were deemed knowledgeable regarding the health, nutritional needs, and housing needs, of their pets but were less knowledgeable regarding their pets' behaviour. Results also showed that SEP owners were less knowledgeable regarding Swedish animal welfare legislation. Overall SEP owners held positive attitudes towards said legislation, however, they also believed that it was insufficiently supervised and/or enforced.

It was concluded that SEP owners were more knowledgeable regarding their pets' husbandry and welfare in this study than found in that of previous studies, however possible knowledge gaps regarding SEP behaviour were found. SEP owner perception was positive overall regarding Swedish animal welfare legislation, however, it was concluded that Swedish SEP owners lacked knowledge regarding said legislation, and it is therefore uncertain to what extent it may influence Swedish SEP husbandry and welfare.

Keywords: Pets, animal welfare, small and exotic pets, pet owner competence, animal welfare legislation

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Abbreviations

Abbreviation	Description
SLU	The Swedish University of Agricultural Sciences
SEP	Small and exotic pets
SBA	The Swedish Board of Agriculture
Swedish Animal welfare Law (2018:1192)	DL
Swedish Animal Welfare Regulation (SFS 2019:66)	DF
The Swedish Board of Agriculture's regulation (SJVFS 2019:15) regarding the terms of keeping, breeding and sale, etc. of animals kept for the purpose of companionship and hobby, Item No. L 80	L 80

1. Introduction

Humans have lived alongside various species of animal since the dawn of domestication, and through time they have become an integral part of human society. Pets, that is to say animals kept for companionship, have become more common throughout the years and in 2024 it was estimated that 34% of Swedish households had some kind of pet (Agria, 2024a). Amongst the most common pets are cats and dogs (Agria, 2024a), however several studies have shown that other small and exotic pets (SEP) have become more and more popular over the last decade (Schuppli *et al.*, 2014; Grant *et al.*, 2017). These SEP, or “Exotics” as they are often referred to as, encompass a wide variety of animals such as rabbits, small rodents, ferrets, birds, reptiles, fish, amphibians, and many more (Schuppli *et al.*, 2014). This study aimed to investigate the welfare state of SEP in Sweden, as well as the various aspects that may impact it.

In this study SEP will be specifically referring to the species the European rabbit (*Oryctolagus cuniculus domesticus*), the Guinea pig (*Cavia porcellus*), the Domestic rat (*Rattus norvegicus domestica*), as well as the several different species of hamster included in the family *Cricetinae*. As these SEP become more common, concerns for their welfare has also risen. A previous study by Sundström (2023) showed that SEP that arrived to Swedish veterinary clinics were often diagnosed with health and welfare issues commonly associated with incorrect husbandry practices. Assessing Swedish SEP owners’ experiences and knowledge regarding their pets’ husbandry and welfare may therefore become an important area of research due to the increasing popularity of SEP. This is because it may aid in identifying what welfare concerns may or may not exist for these pets in Sweden, as well as the potential causes behind them.

Legislation has the possibility to impact animal welfare and husbandry standards. The Swedish Animal Welfare Law (2018:1192) aims to prevent suffering as well as promote good welfare for all animals that are held by humans (2 Chap. 1 §). Sweden also has the the Swedish Board of Agriculture’s regulation (SJVFS 2019:15) regarding the terms of keeping, breeding, and sale, etc. of animals kept for the purpose of companionship and hobby, Item No. L 80 (hereafter referred to as L 80) which contains more species specific requirements for the husbandry of various SEP. Discerning how Swedish animal welfare legislation impacts SEP husbandry may thus provide insight into how inadequate husbandry and poor welfare for SEP may be prevented.

The Five Domains Model can be used to define and assess animal welfare, wherein the five domains entail 1) nutrition, 2) environment, 3) health, 4) behaviour, and 5) mental state (Mellor *et al.*, 2020). By using this model, animal welfare can be defined as the interaction between these five domains and how they impact the biological functioning as well as the affective state of the animal (Mellor *et al.*, 2020). Using the Five Domains Model, poor animal welfare would *e.g.* entail an animal's nutritional, environmental, and behavioural needs not being met and therefore negatively impacting their physiological and mental wellbeing, in addition to negative experiences that may cause the animal stress, pain, and suffering (Mellor *et al.*, 2020). Poor welfare may also result and/or cause negative affective states such as fear, distress, frustration, anger, and so forth (Mellor *et al.*, 2020). Good animal welfare may be defined as the combination of an animal's above mentioned needs being met, the absence of negative experiences, as well as the presence of positive experiences that may induce positive affective states such as comfort, joy, pleasure, and confidence (Mellor *et al.*, 2020). Further mentions of animal welfare in this study will therefore be referring to the above definitions.

Furthermore, poor welfare can result in negative consequences for the animal in question, such as stress, impaired health, lessened cognitive function, and the development of stereotypic behaviours (Rushen & Mason, 2006). A stereotypic behaviour can be defined as a repetitive behaviour which serves the animal no purpose and is most commonly caused by chronic stress (Rushen & Mason, 2006). These behaviours are often a form of coping mechanism for the animal and are typically a clear indicator of prolonged stress and an impaired welfare (Rushen & Mason, 2006). Stereotypic behaviours may also result in physical injury or other forms of harm for the individual displaying the behaviour (Rushen & Mason, 2006). This further highlights the importance of preventing poor animal welfare due to the potential physical and psychological suffering it may cause.

1.1 Small and exotic pet welfare, owner competence, and the potential welfare consequences

In a review paper by Grant *et al.* (2017) the authors concluded that many species of small and exotic pets (SEP) often suffer an impaired welfare due to their owners' misconceptions as well as a lack of knowledge regarding their pet's fundamental needs. Many species of SEP are incorrectly perceived as simple pets that do not require extensive care or research (Grant *et al.*, 2017). This misconception is *e.g.* common regarding rabbits and small rodents, which then often results in negative welfare consequences for these animals due to their owners not providing them with correct care (Grant *et al.*, 2017). Additionally, these pets may be at a higher risk of being surrendered to animal shelters or even abandonment due to SEP owners being unprepared or unwilling to fulfil the husbandry needs of their pets (Díaz-Berciano & Gallego-Agundez, 2022). Owner competence therefore has the potential to greatly impact SEP welfare.

1.1.1 Rabbits

There have been several areas of concern identified regarding pet rabbit welfare in previous studies performed in the United Kingdom (UK) as well as Australia (Rooney *et al.*, 2014; Howell *et al.*, 2015; Rioja-Lang *et al.*, 2019). These studies have mainly found that rabbit owners lack knowledge regarding their pets' dietary, housing, and behavioural needs, as well as being housed individually despite rabbits being a social species (Rooney *et al.*, 2014; Howell *et al.*, 2015; Rioja-Lang *et al.*, 2019). Identifying if these knowledge gaps exist amongst Swedish rabbit owners may therefore be important to prevent pet rabbits in Sweden from facing the same hardships as their brethren do in other countries.

Due to rabbits' teeth growing continuously, they are in need of feed and other materials, *e.g.* twigs and branches, which are capable of wearing them down in an appropriate manner (Jekl & Redrobe, 2013; Meredith *et al.*, 2015). Certain studies have shown that pet rabbits are often not provided with sufficient amounts of roughage in their diet and are instead provided an excess of other types of softer feed (*e.g.* pellets, root vegetables) by their owners (Rooney *et al.*, 2014). A lack of feeds such as hay and other types of roughage has been directly linked to dental issues within rabbits, such as overgrown teeth (Meredith *et al.*, 2015). Inappropriate diets can also lead to gastrointestinal issues for rabbits which in combination with potential dental issues may lead to severe welfare consequences (Meredith *et al.*, 2015; Prebble *et al.*, 2015). These consequences may consist of pain, the refusal or inability to chew and eat, and ultimately the need to be euthanized (Meredith *et al.*, 2015). This is why correct knowledge regarding rabbits' dietary needs is vital to prevent potential suffering and impaired health.

There is also evidence to suggest that inappropriate diets may lead to rabbits developing stereotypical behaviours (Prebble *et al.*, 2015). Such behaviours may include, “*Barbering*” *i.e.* the excessive grooming of both themselves and other rabbits, “*Bar biting*”, and other potentially harmful behaviours (Prebble *et al.*, 2015). This further highlights how inappropriate diets may negatively impact rabbit welfare. Additionally, this demonstrates how rabbit owner incompetence regarding rabbits’ dietary needs may detrimentally impact their pets’ welfare. Another health issue that is considered common amongst pet rabbits is eye issues, and these health problems may arise due to various factors regarding nutrition, housing, grouping, and underlying dental issues (Turner, 2010; Jekl & Redrobe, 2013; Rooney *et al.*, 2014).

Rabbits have a wide array of behavioural and social needs that may be met by providing appropriate feed, enrichments, housing, and companionship. Behavioural needs that may be accommodated by housing factors include rabbits’ need to *e.g.* dig, hide, chew, run, and jump (Rioja-Lang *et al.*, 2019). Housing rabbits in such a manner that does not provide them the ability to perform the above mentioned behaviours may result in chronic stress and other negative consequences for their welfare (Rioja-Lang *et al.*, 2019). A small pen or cage that does not provide the rabbit(s) opportunity to exercise in combination with an inappropriate diet may also result in obesity in addition to the above mentioned welfare concerns (Prebble *et al.*, 2015; Rioja-Lang *et al.*, 2019). Furthermore, as rabbits are social animals they require interaction with conspecifics, despite this studies have shown that many rabbits are housed alone or with heterospecifics such as guinea pigs (Rooney *et al.*, 2014; Rioja-Lang *et al.*, 2019). Rooney *et al.* (2014) found that of the 1 254 rabbits included in their study less than half (41.9%) were housed with other rabbits. This means that rabbits may be at a higher risk of stress and an impaired welfare due to social isolation from conspecifics. Furthermore, this could potentially indicate that rabbit owners are not adequately informed regarding their pets’ social needs and thus may unknowingly impact their pets’ welfare negatively.

1.1.2 Guinea pigs

Previously studies have identified inappropriate diets, health issues related to dental, gastrointestinal, and skin conditions and/or diseases, as well as a lack of companionship with conspecifics to be areas of concern for guinea pig welfare (Harrup & Rooney, 2020). However, these areas may not presently be as much of an issue anymore as found by more recent research (Harrup & Rooney, 2020).

Guinea pigs are a highly social species and therefore are in great need to be housed with other guinea pigs to prevent negative welfare consequences (Harrup & Rooney, 2020). Additionally, housing guinea pigs with inappropriate heterospecifics, such as rabbits, may lead to an increase of stress and thus an impaired welfare (Harrup & Rooney, 2020). Harrup & Rooney (2020) found that, in general, the guinea pig owners included in their study were knowledgeable regarding their pets' behaviour and need for companionship. Approximately 88.2% of the guinea pigs in the same study were acquired with and/or for the purpose of being housed with a conspecific, and 78.6% were currently housed with one or more guinea pigs. It is therefore likely that this is not a major area of concern when it comes to guinea pig owner competence.

Dental issues due to a lack of tooth wear and/or a lack of dietary vitamin C has been regarded as a common health issue for guinea pigs (Müller *et al.*, 2014; Minarikova *et al.*, 2015). These problems are usually attributed to an inappropriate diet in addition to a lack of resources that provide the guinea pig with opportunities to gnaw and chew (Brandão & Mayer, 2011; Müller *et al.*, 2014; Minarikova *et al.*, 2015). A lack of dietary vitamin C is also known to cause and/or exacerbate skin issues in guinea pigs which is also regarded as a common health problem (Minarikova *et al.*, 2015). This highlights the need for guinea pigs to be provided with roughage and dietary vitamin C to prevent negative welfare consequences. Additionally, an excess of dietary vitamin C may result in urological issues, such as kidney stones (Minarikova *et al.*, 2015).

The study by Harrup & Rooney (2020) found that 72.8% of guinea pigs were provided some type of hay *ad libitum*. The same study also found that a majority of guinea pigs were provided both “*Green vegetables*” (69.9%) rich in vitamin C (e.g. kale, broccoli), and concentrates (e.g. pellets) containing vitamin C (95%) at least once daily. This may mean that dental and skin issues due to inappropriate diets may not be as much of a current welfare concern as has been found in previous studies. However, a study by Sundström (2023) found that anorexia was the most common diagnosis given to the guinea pigs included in the study when they arrived at Swedish veterinary clinics. Anorexia in Guinea pigs is often caused by dental issues and inappropriate diets (Minarikova *et al.*, 2015). Furthermore, a lack of dietary vitamin C has been linked to dental issues that are more difficult to detect in guinea pigs (Minarikova *et al.*, 2015). It is therefore possible that dental issues are still a potential welfare concern for guinea pigs, and that these issues may simply go unnoticed due to being harder to detect.

Furthermore, Harrup & Rooney (2020) also found that a majority (59.4%) of guinea pigs were provided with root vegetables daily. While not necessarily detrimental to guinea pig health, an excess of root vegetables in their diet may lead to gastrointestinal issues as well as potential obesity (Harrup & Rooney, 2020), which may therefore be a new potential area of concern for guinea pig welfare.

The study by Sundström (2023) also found skin- and fur conditions to be the most common category of diagnosis for the guinea pigs included in the study, which as mentioned above may be related to vitamin C deficiency. However, these issues may also be correlated with external parasites, which Harrup & Rooney (2020) also found to be a common (22.9%) health concern for the guinea pigs in their study. Owner competence regarding signs of parasites may therefore be important to prevent the development or exacerbation of potential skin- and fur issues.

Which one of these welfare concerns that may be most relevant for pet guinea pigs in Sweden is difficult to say, as the above mentioned studies have presented some conflicting findings. It is therefore important to identify which of these issues may or may not be relevant for Swedish guinea pigs.

1.1.3 Domestic rats

Throughout history domestic rats have mainly been used for laboratory research, and thus studies concerning rat welfare have primarily focused on this type of husbandry (Makowska & Weary, 2016; Neville *et al.*, 2021). Therefore, what potential welfare issues domestic rats may face when kept as pets is not as thoroughly studied. Neville *et al.* (2021), however, conducted such a study which aimed to estimate the current welfare state of pet rats in the UK.

Out of the 677 respondents in the above mentioned study 97.6% reported housing their rats with one or more conspecifics. Additionally, of the rats that were housed alone, 81.3% had previously been housed with other rats that had recently passed away. Domestic rats are a highly social species and thus require interaction with conspecifics, lest their welfare be negatively impacted by social isolation (Neville *et al.*, 2021). The results found by Neville *et al.* (2021) seems to suggest that owners of domestic rats are aware of this fact and therefore rarely, if ever, house their rats alone. Furthermore, all of the owners included in the study reported providing their rats with some form of bedding, wherein 87.0% used substrates suitable for digging and 64.6% used substrates that the rats could use for nest building (Neville *et al.*, 2021).

Furthermore, owners also reported providing their rats with suspended areas (99.0%), climbing structures (96.8%), hides (94.2%), tubes (78.9%), and foraging toys (66.8%). Domestic rats have the behavioural needs to dig, burrow, nest, and climb, and will spend a large portion of their waking time on these behaviours when given the opportunity (Makowska & Weary, 2016; Neville *et al.*, 2021). From the results in the study by Neville *et al.* (2021) it is possible that pet rat owners are knowledgeable regarding such behavioural needs, as a majority provided their rats with environments and/or enrichments that allowed for such behaviours. Housing may therefore potentially not be an area of concern for domestic rat welfare when kept as pets.

However, 38.5% of owners reported using a substrate that is known to potentially irritate rats' eyes and airways (Neville *et al.*, 2021). Additionally, 60.4% reported their rats currently and/or previously having experienced respiratory health issues (Neville *et al.*, 2021). *Mycoplasma pulmonis* is the bacteria that is most commonly responsible for respiratory issues within rats, and rats can carry this bacteria without showing any clinical signs of infection (Graham & Schoeb, 2011). Irritation of the airways is a potential cause behind *M. pulmonis* infections worsening which can cause symptoms such as sneezing, nasal discharge, red discharge from the eyes (Chromodacryorrhea), and head-tilt (Graham & Schoeb, 2011). In their study Neville *et al.*, (2021) also found that 39.7% of the rats were reported having displayed Chromodacryorrhea, and 15.2% reported observing head-tilt in their rats, which may suggest that these rats were potentially displaying symptoms of a worsened *M. pulmonis* infection. A majority of owners (79.0%) reported having taken their rats to a veterinarian at some point, which may suggest that rat owners are generally willing to provide their pets with veterinary care when they display signs of sickness or injury. Furthermore, tumours (36.6%) and abscesses/cysts (31.2%) were also found to be common health issues amongst the rats included in the study (Neville *et al.*, 2021).

Diet and nutrition was also suggested to be a potential area of concern for pet rat welfare by Neville *et al.* (2021). 39.4% of owners in the mentioned study reported providing their rats with feed that was homemade. However, Neville *et al.* (2021) were not able to determine what this homemade feed consisted of and it is therefore unknown whether these rats were having their nutritional needs met. The same study also found that premade nuggets (26.3%) and muesli (24.2%) bought at a pet store were commonly chosen feeds. Feed contents may vary between brands and therefore it is also uncertain if these rats were being provided with nutritionally appropriate diets. Furthermore, owners also reported providing their rats with various types of food as treats, such as fruits (37.9%), vegetables (29.0%), eggs (13.6%), and chicken (11.5%) (Neville *et al.*, 2021).

As foraging omnivores, rats benefit from diets that contain both plant and animal products (Kerrigan, 2015). That the owners in the study by Neville *et al.* (2021) reported providing food treats consisting of both plant and animal products may therefore suggest that owners are generally aware of their pets' dietary needs. However, as relatively few owners in the mentioned study reported providing their rats with animal food products, it may suggest that owners do not prioritise this type of feed; despite their pets' being omnivores.

Considering that which has been discussed above, an impaired health and nutritional deficiencies due to an improper/insufficient diet may be the two most major areas of concern in regards to domestic rat welfare. It is therefore important to investigate whether this is also the case within Swedish domestic rat husbandry.

1.1.4 Hamsters

Pet hamsters belong to the family *Cricetinae*, more commonly referred to as “*Hamsters*”, and encompass several different species (Hedley *et al.*, 2023). Examples of hamsters species commonly kept as pets include the Syrian/Golden hamster (*Mesocricetus auratus*), the Chinese hamster (*Cricetulus griseus*), the Russian Dwarf Campbell hamster (*Phodopus campbelli*), the Russian Dwarf Winter White hamster (*Phodopus sungorus*), and the Roborovski hamster (*Phodopus roborovski*). Of these species, the three mentioned last are commonly discussed as a group that is simply called “*Dwarf hamsters*” (Hedley *et al.*, 2023). What potential welfare issues pet hamsters' face may vary between the different species, thus making it difficult to determine which are most prevalent. Studies by Hedley *et al.* (2023) and Fox & Neville (2024), both conducted in the UK, have identified potential areas of concern for the welfare of dwarf hamsters and Golden hamsters respectively.

In their study Fox & Neville (2024) found that 99.5% of the Golden hamsters were kept individually. Housing Golden hamsters in pairs or groups is known to cause stress and potential conflict between individuals as this species is solitary and highly territorial (Hedley *et al.*, 2023). It is possible that owners of Golden hamsters are generally aware of this fact, which would explain why a vast majority (99.5%) of the hamsters in the above mentioned study were housed without other hamsters, even when the owner owned more than one hamster. Dwarf hamsters are more commonly kept in pairs or groups, with Hedley *et al.* (2023) finding that 10.1% of the dwarf hamsters had always been kept in pairs or groups, while 30.24% had previously been housed in pairs or groups but had later been separated and housed individually. Antagonistic behaviours (*e.g.* biting, scratching, fighting) between conspecifics was cited as the primary reason why owners separated their dwarf hamsters (Hedley *et al.*, 2023).

Levels of aggression between conspecifics has been shown to vary between different species of dwarf hamsters, wherein housing dwarf hamsters in same-sex pairs or groups is a potential risk factor for heightened aggression (Hedley *et al.*, 2023). This may explain why 59.6% of owners in the study by Hedley *et al.* (2023) reported always having kept their dwarf hamster(s) individually.

A majority of owners reported providing their Golden hamster with some form of enrichment such as running wheels (98.2%), chew toys (97.3%), and a digging area (92.1%) (Fox & Neville, 2024). Similarly, all owners in the study by Hedley *et al.* (2023) reported providing their dwarf hamsters with at least one hide and one running wheel per enclosure. In the study by Fox & Neville (2024) 79.3% of owners reported providing their Golden hamsters with ≤ 30 cm of bedding, 13.3% reported providing bedding 31-40 cm deep, and 10.8% reported providing their hamster no bedding at all (Fox & Neville, 2024). Research has shown that Golden hamsters when provided with bedding shallower than 40 cm have an increased chance of developing gastrointestinal issues and displaying stereotypical behaviours such as “*Bar biting*” (Hauzenberger *et al.*, 2006). The development of these gastrointestinal issues have partially been attributed to chronic stress due to the cage/pen not providing the hamster adequate ability to dig and burrow (Hauzenberger *et al.*, 2006). Only 6.7% of owners responded that they provided their hamster with bedding ≥ 40 cm (Fox & Neville, 2024). Furthermore, enteropathy, which describes health issues related to the intestines, are amongst the most common health issues hamsters’ face across several species (O’Neill *et al.*, 2022). This condition may be exacerbated by stress (Hauzenberger *et al.*, 2006), which may mean that pet hamsters face a higher risk of chronic stress and disease due to inadequate housing. Similarly to Hauzenberger *et al.* (2006), Fox & Neville (2024) also found that increased instances of “*Bar biting*” was correlated with shallow bedding, which further highlights how inappropriate housing can greatly impact hamster welfare. It is difficult to say if this is also a welfare concern for other hamster species, however it is a possibility.

In their study, which was also conducted in the UK, O’Neill *et al.* (2022) found traumatic injuries (15.41%), enteropathy (11.26%), disorders of the eye (11.13%), skin disorders (9.05%), neoplasia (6.93%), and dental disorders (4.93%) to be the most common health issues amongst the 3 998 hamsters included. Fox & Neville (2024) also found that 65.9% of owners in their study reported never having taken their hamster to a veterinarian. In the study by Hedley *et al.* (2023) the authors found that out of 248 owners, 74.2% reported that their dwarf hamster had never received veterinary care. This could potentially mean that hamsters may be at a higher risk of enduring health issues for prolonged periods of time if their owners do not notice or are unaware of the potential signs of said issues.

These studies could thus suggest that co-housing, inadequate housing, as well as prolonged suffering due to disease or injury going unnoticed by owners, may be potential welfare concerns for multiple species of hamster when kept as pets.

1.2 Swedish Animal welfare legislation and protection

Sweden has several laws and regulations regarding animal husbandry. The Swedish Animal Welfare Law (2018:1192) (hereafter referred to as DL), as mentioned above, applies to all animals held by humans and is therefore relevant when discussing small and exotic pet (SEP) husbandry. Furthermore, the Swedish Animal Welfare Regulation (SFS 2019:66) (hereafter referred to as DF) also applies to SEP, however, it contains mostly general requirements that apply to several different types of animal husbandry and not just SEP husbandry. The Swedish Board of Agriculture's regulation (SJVFS 2019:15) regarding the terms of keeping, breeding and sale, etc. of animals kept for the purpose of companionship and hobby, Item No. L 80 (hereafter referred to as L 80), as mentioned, is the regulation that contains requirements and recommendations specifically in regards to SEP husbandry. L 80 has been criticised in the past for being insufficient and open to interpretation. Therefore, L 80 may not have the same ability to protect SEP from suffering while also promoting their good welfare that other Swedish animal welfare regulations concerning different animals and husbandries may have.

1.2.1 Application and implementation of Swedish animal welfare legislation for SEP

The Swedish Board of Agriculture (SBA) is the governmental body that is tasked with writing, updating, and distributing regulations regarding animal welfare and husbandry (1 Chap. 2 § DF). Furthermore, the Swedish County Administrative Boards (CAB) are responsible for ensuring that Swedish animal husbandry is in accordance with Swedish animal welfare legislation as well as, when necessary, implementing various enforcing measures if the legislation is not followed (8 Chap. 1 § DL).

The vague requirements in L 80 mean that animal welfare inspectors (AWI) are required to have knowledge regarding all species of SEP included in L 80 to correctly make assessments when conducting animal welfare inspections. Due to this, AWI may not have the prior knowledge required regarding the species of SEP that L 80 encompasses to make correct assessments when carrying out inspections on these animals.

This could mean that SEP are at risk of “falling between the cracks” and therefore not being afforded equal protection to that which Swedish animal welfare legislation offers other species of animal. It is, however, unrealistic to expect an in depth level of expertise on SEP when AWI are obligated to conduct inspections on such a wide variety of species and types of husbandry. Therefore, this instead highlights the necessity for explicit and concise requirements within animal welfare legislation to ensure that AWI can conduct fair and equal assessments during inspections. Furthermore, a lack of resources has been found to limit the amount of animal welfare inspections that can actually be conducted (VeterinärMagasinet, 2023). Less common animals (*e.g.* SEP) and types of husbandry (*e.g.* Zoos, Pet stores, Animal research facilities) typically fall by the wayside as the CAB must prioritise agricultural animal husbandry and the most severe cases of potential animal cruelty that are reported in (VeterinärMagasinet, 2023).

Recently, a remittance (Dnr 5.2.16-02122/2023) was proposed by the SBA that entailing suggestions for new changes and requirements which, if approved, would have replaced the current version of L 80 (SBA, 2025a). However, due to public scrutiny this remittance will not come into effect (SBA, 2025b), despite the current version of L 80 being widely considered insufficient. It is uncertain when a new remittance will be proposed, and it is therefore probable that L 80 will remain in its’ current state for the foreseeable future. Therefore, it is still important to assess how L 80 as it is currently may or may not impact SEP husbandry and welfare.

2. Project aim

The aim of this project was to assess how small and exotic pet (SEP) owner's competence regarding their pets' husbandry, welfare, and relevant animal welfare legislation potentially influences SEP welfare in Sweden. This is due to previous studies having shown that these pets often suffer a worse welfare than more common pets such as cats and dogs (Grant *et al.*, 2017). Furthermore, the study also aimed to investigate the concerns regarding how well Swedish animal welfare legislation and protection actually functions when it comes to protecting SEP welfare in Sweden.

2.1 Research questions

The following research questions were addressed in this project:

- 1) What is the current knowledge level of SEP owners regarding their pets' husbandry and welfare needs?
- 2) How knowledgeable are SEP owners regarding Swedish animal welfare legislation and what are their attitudes towards it?
- 3) How does Swedish animal welfare legislation impact SEP welfare, if at all?

3. Method & Materials

The study utilised online surveys to collect the data relevant for the project. These surveys were distributed online and were open available for SEP owners to fill out between 03-03-2025 and 30-04-2025.

3.1 Online survey

Four separate online surveys regarding rabbits, guinea pigs, domestic rats, and hamsters were created using the online program Netigate and were aimed at Swedish SEP owners. All surveys were prefaced with an introductory text informing the participant of what personal information would be collected by the survey and how it would be used in the study (Appendix. 2). The surveys all consisted of three different sections: Section 1) Self-evaluation of knowledge level regarding SEP husbandry and welfare, as well as Swedish animal welfare legislation, Section 2) Questions regarding SEP husbandry and welfare, and Section 3) Questions and statements regarding Swedish animal welfare legislation. The surveys all consisted of a total of 24 questions (Appendix. 1). Each section was prefaced with a text informing the respondent of the type and amount of questions that the section entailed (Appendix. 1).

Section 1 consisted of five questions where SEP owners could evaluate their knowledge on a Likert scale from ‘*Very good*’ to ‘*Very poor*’ regarding their pets’ health, nutrition, housing, behaviour, and the animal welfare legislation that concerned their pet (Appendix. 1). **Section 2** consisted of six multiple choice questions regarding the health, nutrition, housing, and behaviour of the focal SEP (Appendix. 1). Respondents were able to choose 1-3 answers per question in Section 2 and each of these questions included a disclaimer that stated that more or fewer than three options may or may not be correct. The multiple choice answers for this section were based primarily on previous scientific literature (Hauzenberger *et al.*, 2006; Brandão & Mayer, 2011; Jekl & Redrobe, 2013; Grant *et al.*, 2014; Rooney *et al.*, 2014; Kerrigan, 2015; Minarikova *et al.*, 2015; Prebble *et al.*, 2015; Makowska & Weary, 2016; Harrup & Rooney, 2020; Neville *et al.*, 2021). **Section 3** consisted of 13 questions, wherein owners were asked what Swedish animal welfare legislation concerned the focal SEP, they were then presented seven true or false statements regarding Swedish animal welfare legislation, and lastly owners were asked to describe their own experiences and perceptions of Swedish animal welfare legislation and protection on a Likert scale from “*Completely agree*” to “*Completely disagree*” (Appendix. 1). All questions were formulated in the same way in the four surveys except for some of the statements given in section 3 which were species/group specific (Appendix. 1).

3.1.1 Limitations

Potential respondents were limited to owners of rabbits, guinea pigs, domestic rats, and hamsters. Furthermore, respondents had to be of age 18 or older to participate in the study.

3.1.2 Survey distribution

The surveys were distributed online via posts in Facebook groups. Included in the posts was a link and QR-code as well as a text that gave a brief overview of the surveys' purpose and contents. The surveys were shared in a total of nine groups that were dedicated to one or more of the SEP included in the study.

3.2 Data processing

Data collected from the four surveys was transferred into Microsoft Excel. Open text answers for Question 12 were transcribed into a Microsoft Word document for each respective survey and then categorised into nine separate categories in a Microsoft Excel sheet. The categories consisted of of 1) *The Swedish Animal Welfare Law*, 2) *The Swedish Animal Welfare Regulation*, 3) *L 80*, 4) *The Swedish Board of Agriculture*, 5) *Unspecified regulation*, 6) *Non-existent law and/or regulation*, 7) *Unsure/Don't Know*, 8) *Blank*, and 9) *Miscellaneous/Other*.

4. Results

There was a total of 383 respondents across the four surveys, wherein 272 (71%) respondents completed their respective survey. 180 (66.2%) respondents completed the survey for rabbit owners, 32 (12.1%) completed the survey for guinea pig owners, 26 (9.6%) completed the survey for owners of domestic rats, and 34 (12.5%) completed the survey for hamster owners.

4.1 Section 1: Self-evaluation

4.1.1 Questions 1-5

The answer “*Good*” was chosen the most by rabbit owners throughout all five questions in Section 1 where they were asked to assess their own knowledge regarding their pet’s Q1: Health (49.6%), Q2: Nutrition (51.6%), Q3: Housing (41.3%%), Q4: Behaviour (48.8%), and Q5: Legislation (44.3%) (fig. 1).

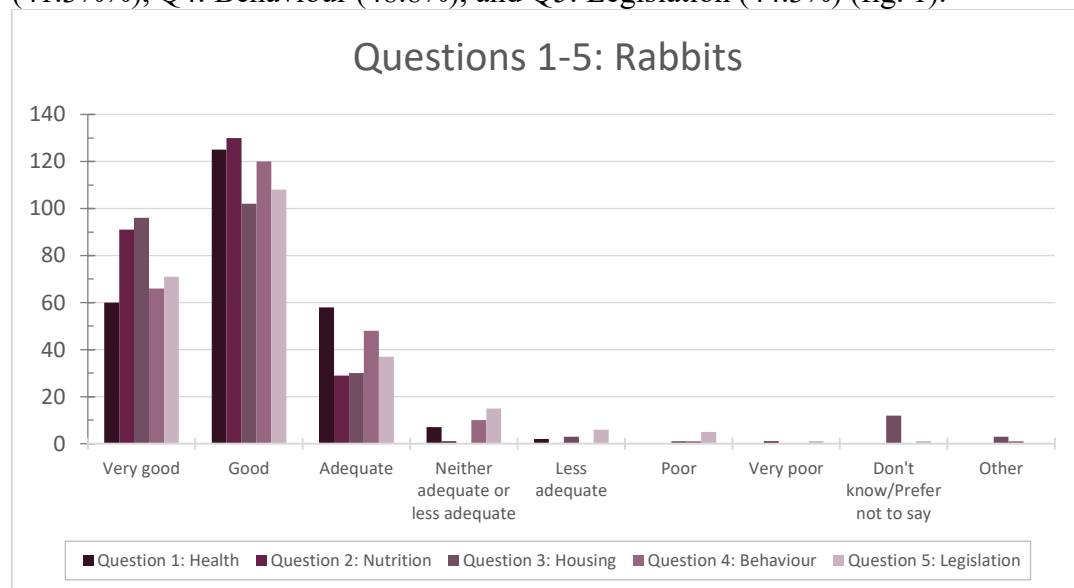


Figure 1. Answers given by rabbit owners for Question 1 (n=252), Question 2 (n=252), Question 3 (n=247), Question 4 (n=246), and Question 5 (n=244).

When asked to evaluate their knowledge guinea pig owners mostly gave the answer “*Good*” for Q1: health (42.8%), Q2: Nutrition (60.9%), and Q4: Behaviour (50%) (fig. 2). “*Very good*” was the most common answer for Q3: Housing (42.5%) (fig. 2). The answers “*Very good*” (37.5%) and “*Good*” (37.5%) were given an equal amount for Q5: Legislation (fig. 2).

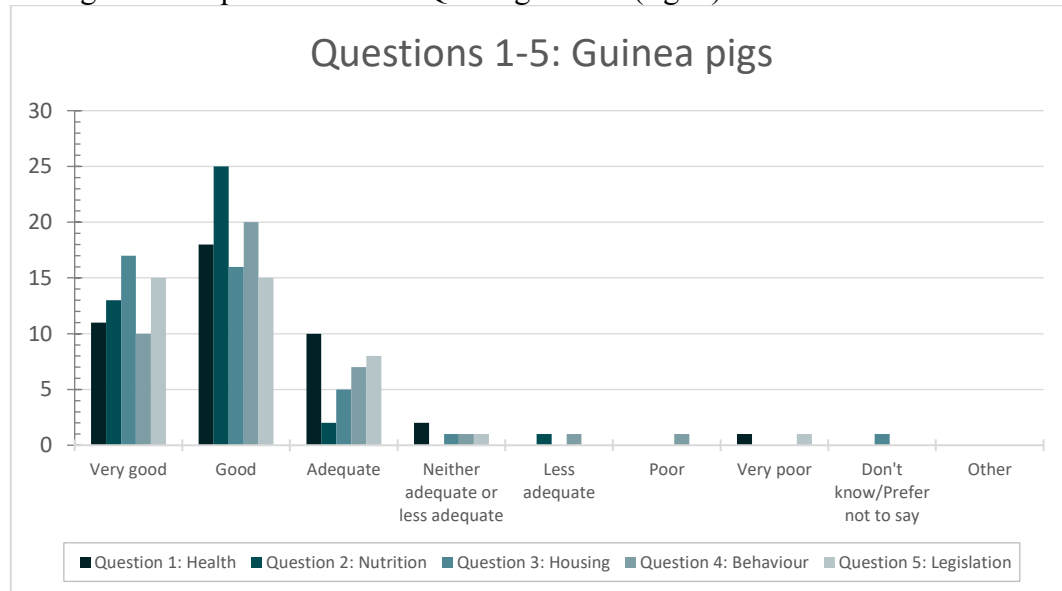


Figure 2. Answers given by guinea pig owners for Question 1 (n=42), Question 2 (n=41), Question 3 (n=40), Question 4 (n=40), and Question 5 (n=40).

Domestic rat owners most commonly gave the answer “*Good*” for all five questions in Section 1 (fig. 3). “*Very poor*” was only given once (2.7%) and only for Q5: Legislation (fig. 3).

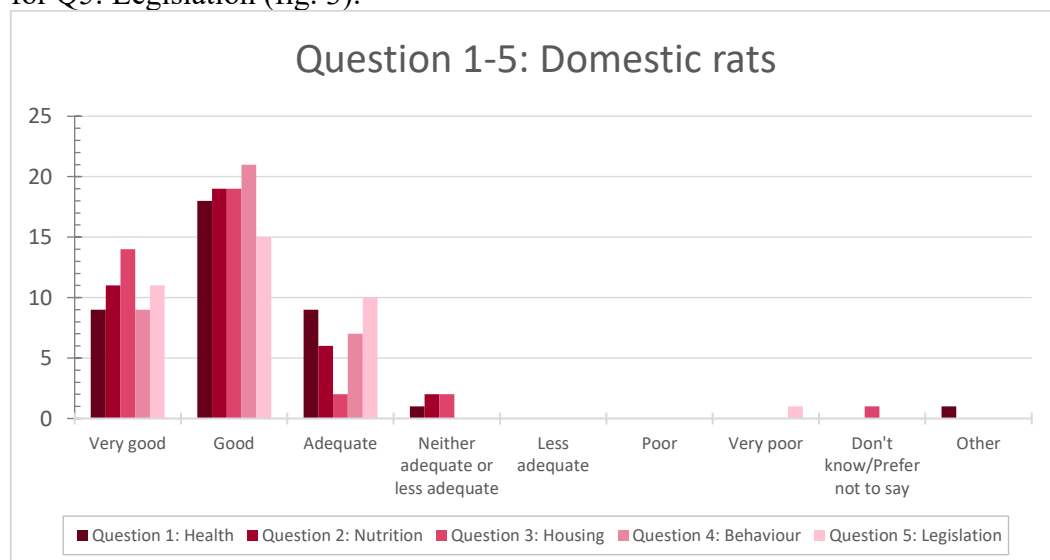


Figure 3. Answers given by domestic rat owners for Question 1 (n=38), Question 2 (n=38), Question 3 (n=38), Question 4 (n=37), and Question 5 (n=37).

Hamster owners gave the answer “Good” most for Q1: Health (33.3%) and Q5: Legislation (41.3%) (fig. 4). “Very Good” was the most common answer for Q2: Nutrition (38.8%), Q3: Housing (37.5%), and Q4: Behaviour (36.2%) (fig. 4).

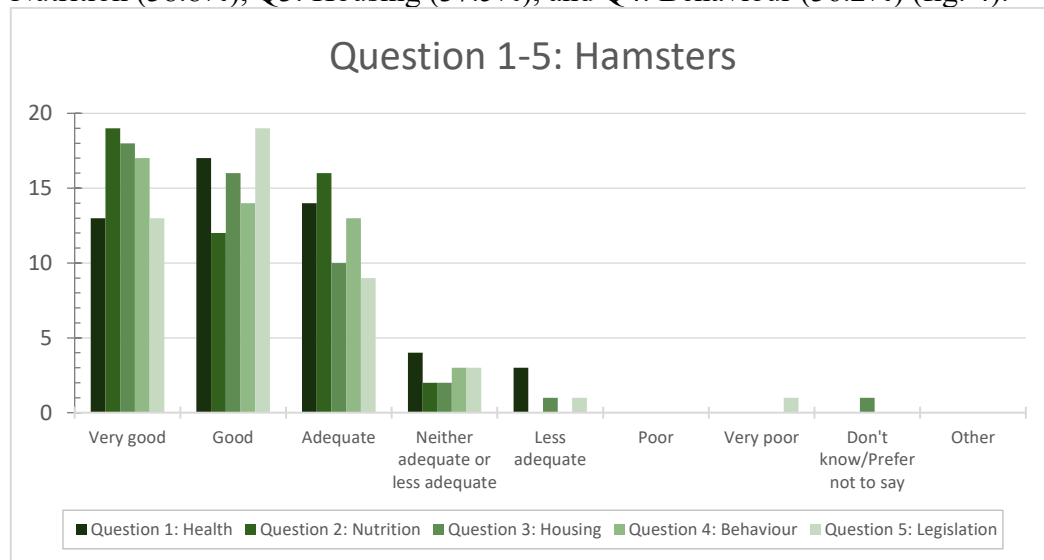


Figure 4. Answers given by hamster owners for Question 1 (n=51), Question 2 (n=49), Question 3 (n=48), Question 4 (n=47), and Question 5 (n=46).

4.2 Section 2: Husbandry and welfare

4.2.1 Questions 6-11: Rabbits

For Question 6 rabbit owners gave the three answers “Gastrointestinal issues” (32.6%), “Dental issues” (30.1%), and “Ear issues” (15.7%) the most (fig. 5).

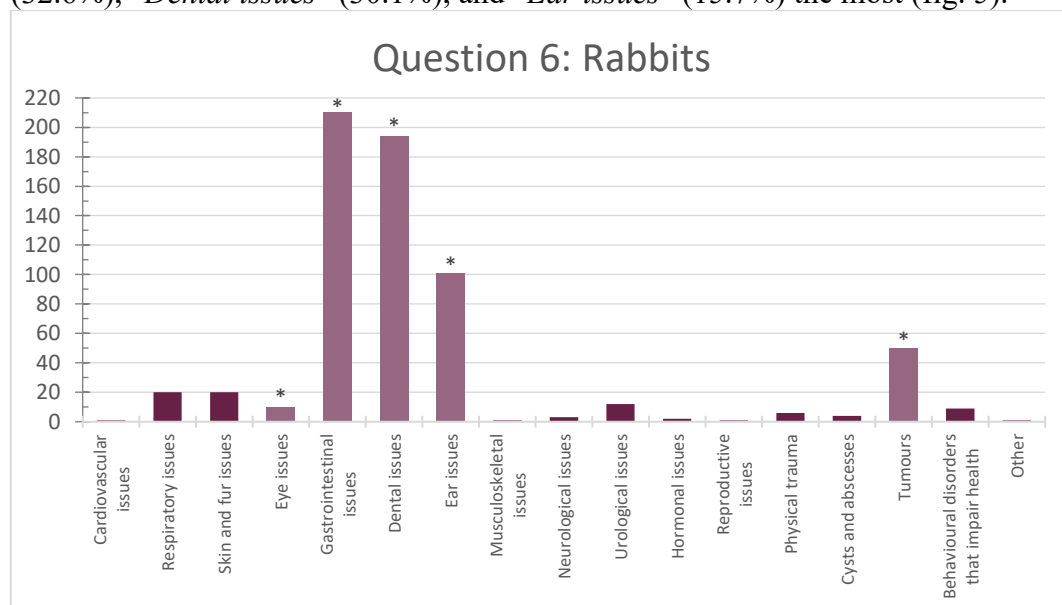


Figure 5. Answers given by rabbit owners (n=645) for Question 6: “Which of the following options are the most common health issues that rabbits face as pets?” Bars marked with * indicate answers that are supported by scientific literature.

“Incorrect/Insufficient diet” (28.9%), “Breeding/Genetics” (15.4%), and “Cage/Pen design” (7.3%) were the most commonly given answers by rabbit owners for Question 7 (fig. 6). The least common answers were “Underweight” (0.2%), “Outdoor access” (0.2%), and “Exposure to pathogens” (0.2%) (fig. 6).

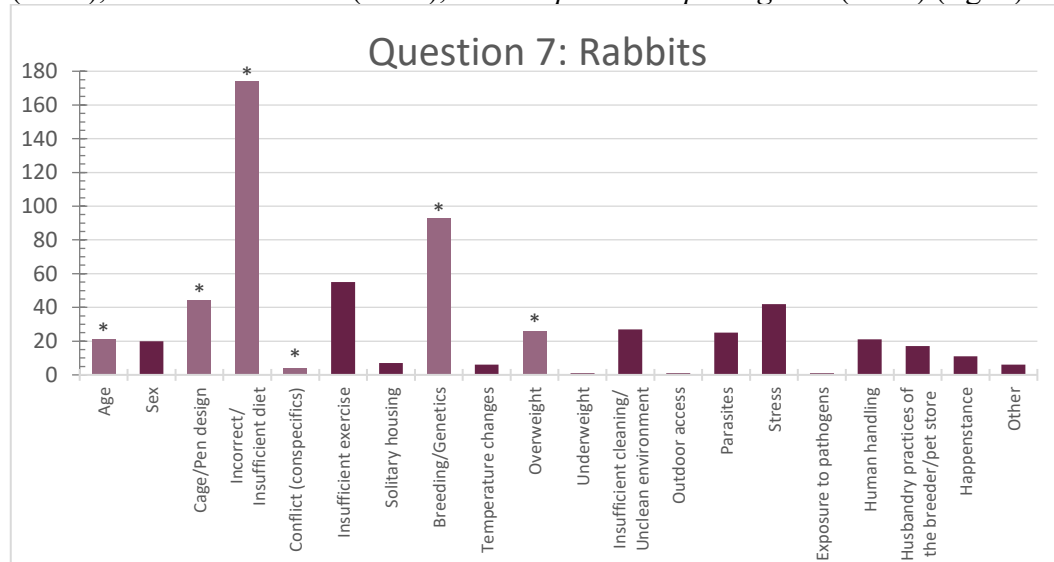


Figure 6. Answers given by rabbit owners (n=602) for Question 7: “Which of the following options are the most common causative factors behind rabbits developing these health issues?” Bars marked with * indicate answers that are supported by scientific literature.

When asked about nutrition and dietary needs rabbit owners gave the answers “Hay” (36.4%), “Twigs/Bark” (20.3%), and “Pellets” (10.7%) the most (fig. 7).

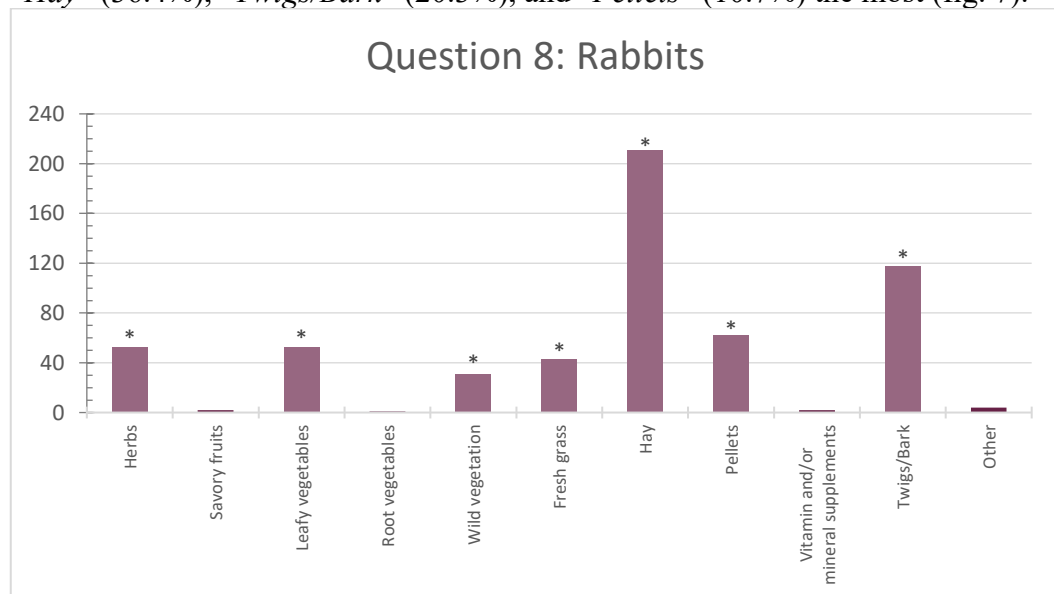


Figure 7. Answers given by rabbit owners (n=580) for Question 8: “What should a rabbit’s daily feed consist of to be considered a healthy diet?” Bars marked with * indicate answers that are supported by scientific literature.

For Question 9 “*Chewing and Gnawing material*” (21%), “*One or more conspecifics*” (19.3%), and “*Hides*” (18.8%) were the answers given most by rabbit owners (fig. 8).

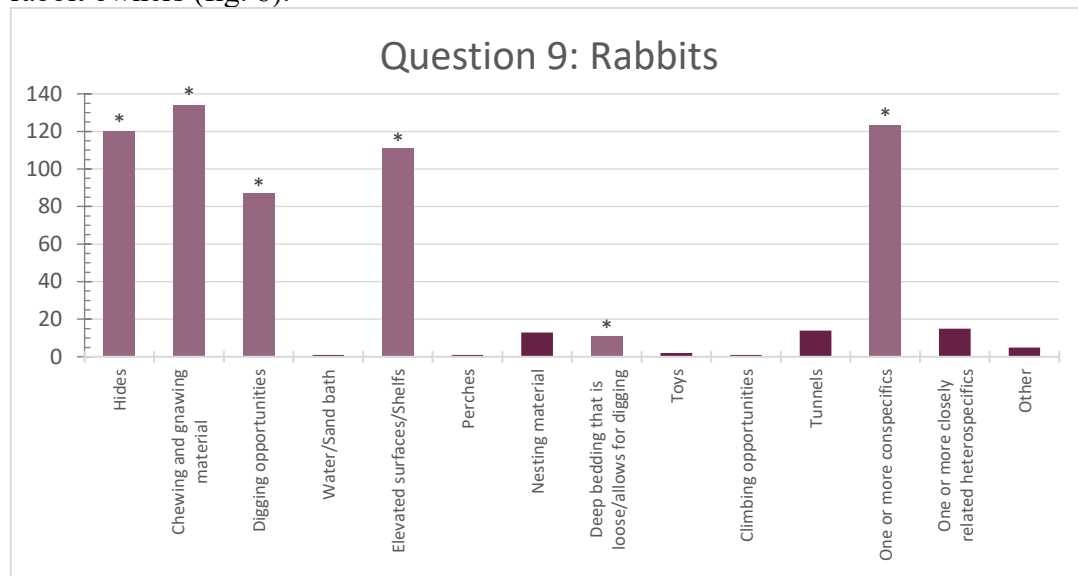


Figure 8. Answers given by rabbit owners (n=638) for Question 9: “What should be present within a cage/pen for a rabbit to feel at home and be content?” Bars marked with * indicate answers that are supported by scientific literature.

For Question 10 rabbit owners gave the answers “*Laying down with all four limbs outstretched*” (20.6%), “*Grooming themselves and/or cage-/pen mates*” (20.3%), and “*Eating/Drinking*” (19.9%) the most (fig. 9).

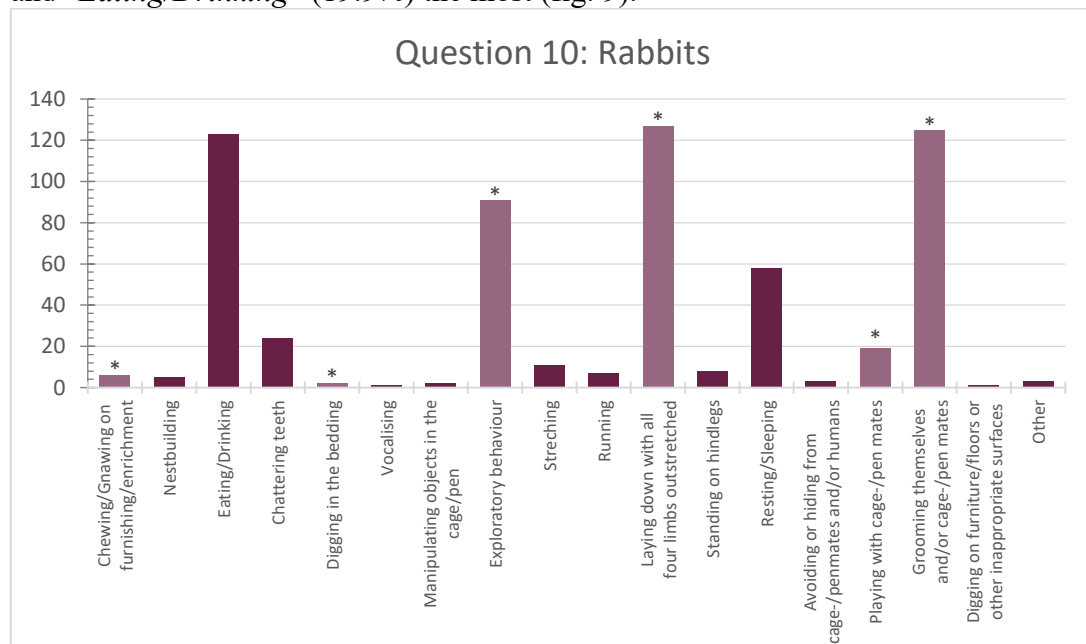


Figure 9. Answers given by rabbit owners (n=616) for Question 10: “Which of the following behaviours could indicate a positive welfare in rabbits?” Bars marked with * indicate answers that are supported by scientific literature.

Rabbit owners gave the answers “*Aggression towards cage-/pen mates and/or humans*” (22.7%), “*Avoiding or hiding from cage-/pen mates and/or humans*” (17.7%), and “*Barbering*” (16.1%) when asked which behaviours may indicate a negative welfare (fig. 10).

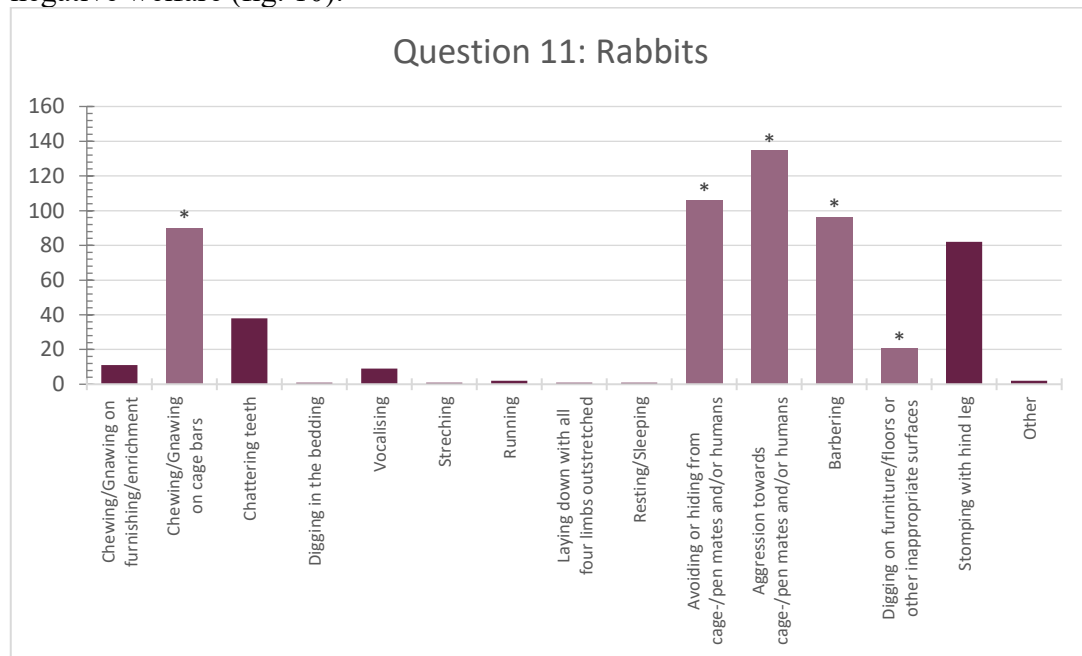


Figure 10. Answers given by rabbit owners (n=596) for Question 11: “Which of the following behaviours could indicate a negative welfare in rabbits?” Bars marked with * indicate answers that are supported by scientific literature.

4.2.2 Question 6-11: Guinea pigs, Domestic rats, & Hamsters

When asked which health issues were most common the answers “*Skin and fur issues*” (16.5%), “*Dental issues*” (16.5%), and “*Urological issues*” (16.5%) were the most common answers given by guinea pig owners (fig. 11). Owners of domestic rats gave the answers “*Respiratory issues*” (33%), “*Tumours*” (32%), as well as “*Cysts and abscesses*” (10%) the most (fig. 11). Hamster owners most commonly chose the answers “*Tumours*” (24.8%), “*Dental issues*” (12.8%), and “*Eye issues*” (11.9%) (fig. 11). Furthermore, the answer “*Other*” was given most by hamster owners wherein all of them mentioned Diabetes as a common health issue (fig. 11; Appendix. 3).

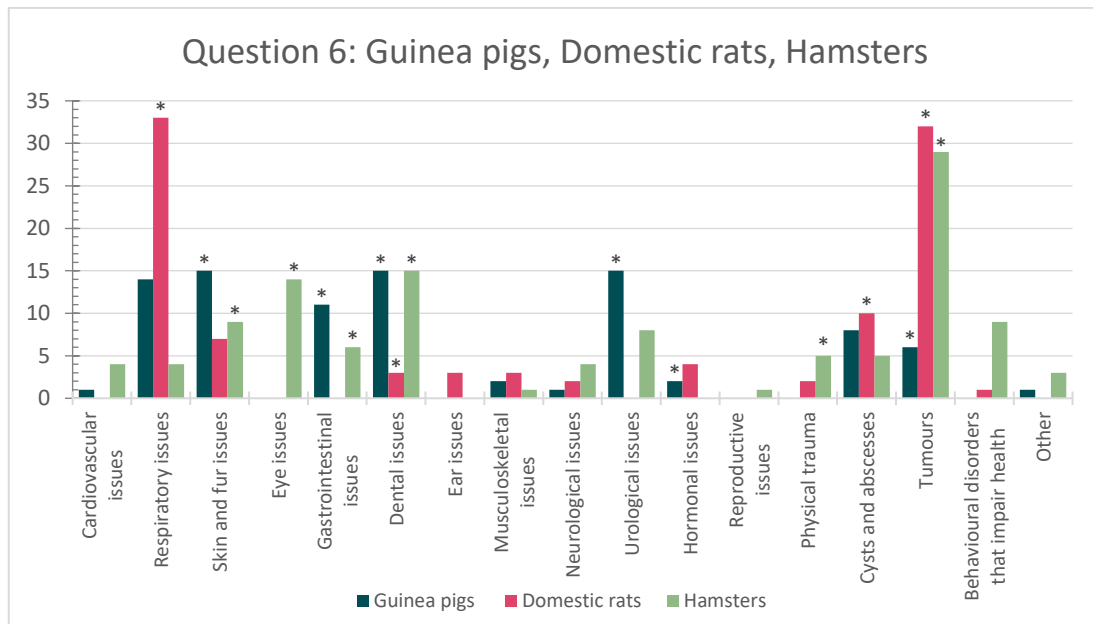


Figure 11. Answers given by Guinea pig owners ($n=91$), owners of Domestic rats ($n=100$), and Hamster owners ($n=117$) for Question 6: “Which of the following options are the most common health issues that (Animal) face as pets?” Bars marked with * indicate answers that are supported by scientific literature.

“Incorrect/Insufficient diet” (20%) was the most common answer given by guinea pig owners for Question 7 (fig. 12). The answer “Breeding/Genetics” was given most by both domestic rat owners (27.9%) and hamster owners (17.9%) (fig. 12).

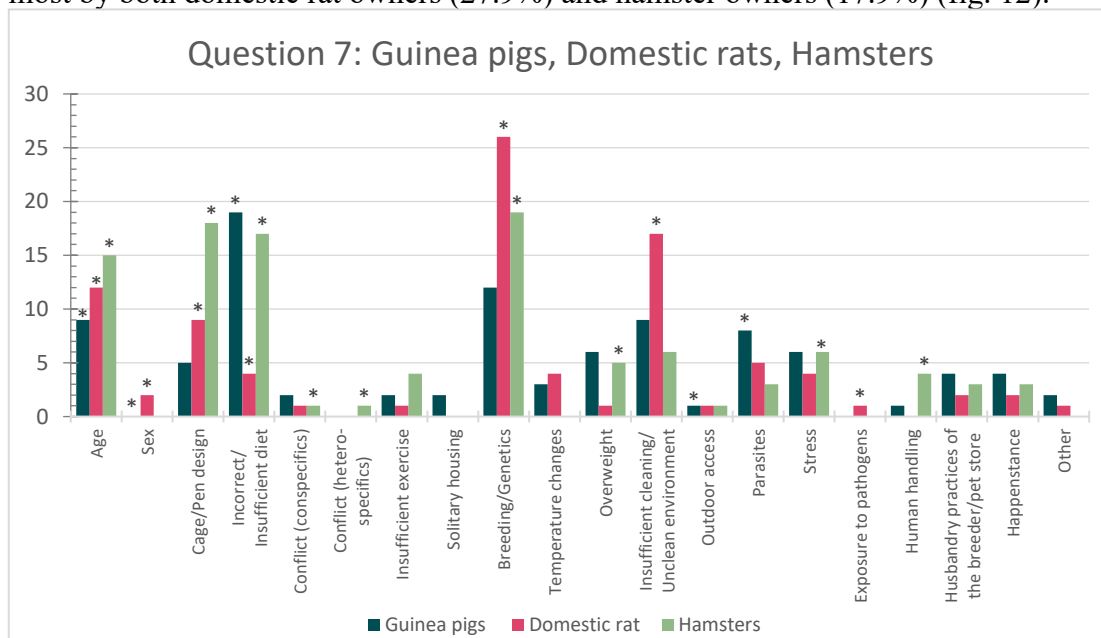


Figure 12. Answers given by Guinea pig owners ($n=95$), owners of Domestic rats ($n=93$), and Hamster owners ($n=106$) for Question 7: “Which of the following options are the most common causative factors behind (Animal) developing these health issues?” Bars marked with * indicate answers that are supported by scientific literature.

When asked about diet, 36.9% guinea pig owners answered “*Hay*” (fig. 13). Hamster owners gave the answers “*Small insects*” (24.8%) and “*Cereal seeds*” (19.1%) most (fig. 13). Domestic rat owners were the only ones to give the answers “*Beans and/or peas*” (8.4%) and “*Müesli*” (3.6%) (fig. 13).

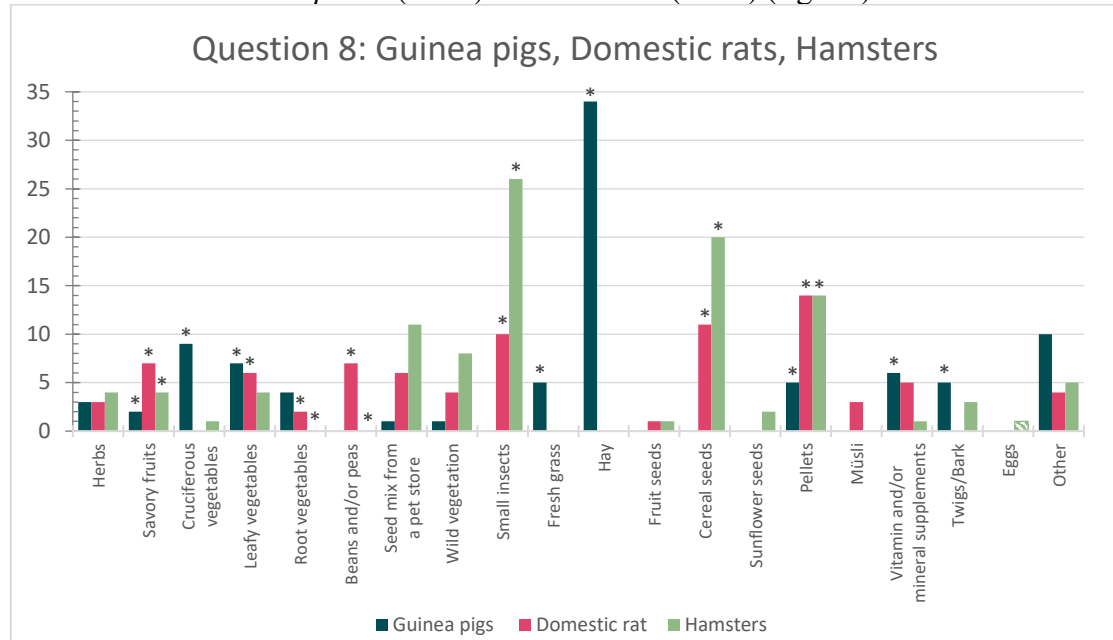


Figure 13. Answers given by Guinea pig owners ($n=92$), owners of Domestic rats ($n=83$), and Hamster owners ($n=105$) for Question 8: “What should a (Animal) daily feed consist of to be considered a healthy diet?” Bars marked with * indicate answers that are supported by scientific literature.

For Question 9 “*One or more conspecifics*” was the most common answer given by both guinea pig owners (29%) and domestic rat owners (30%) (fig. 14). The answer “*Running wheel*” (21.1%) was only given by hamster owners (fig. 14).

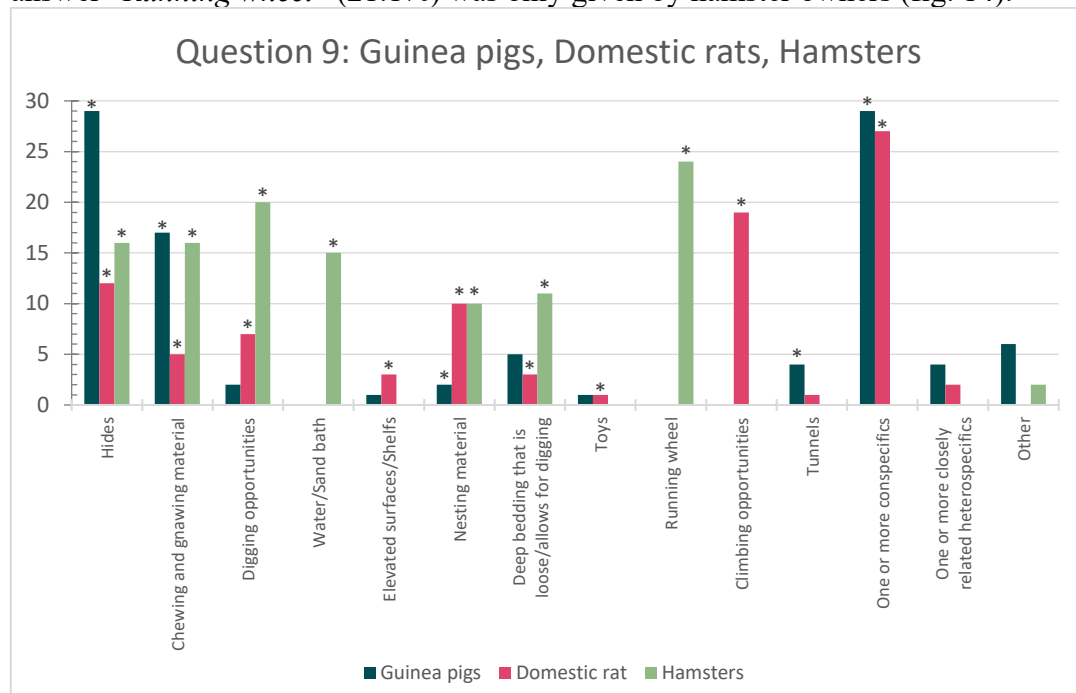


Figure 14. Answers given by Guinea pig owners ($n=100$), owners of Domestic rats ($n=90$), and Hamster owners ($n=114$) for Question 9: What should be present in within a cage/enclosure for a (Animal) to feel at home and be content? Bars marked with * indicate answers that are supported by scientific literature.

When asked which behaviours may indicate a good welfare “*Eating/drinking*” was given most by all three groups (fig. 15), wherein 22.2% of the answers given by guinea pig owners, 21.4% of answers from domestic rat owners, and 23.2% of answer from hamster owners were this answer.

“*Aggression towards cage-/pen mates and/or humans*” was the most common answer for Question 11 given by guinea pig owners (26.4%) and domestic rat owners (26.4%) (fig. 16). “*Chewing/Gnawing on cage bars*” was the most common answer given by hamster owners (30.8%) for Question 11 (fig. 16).

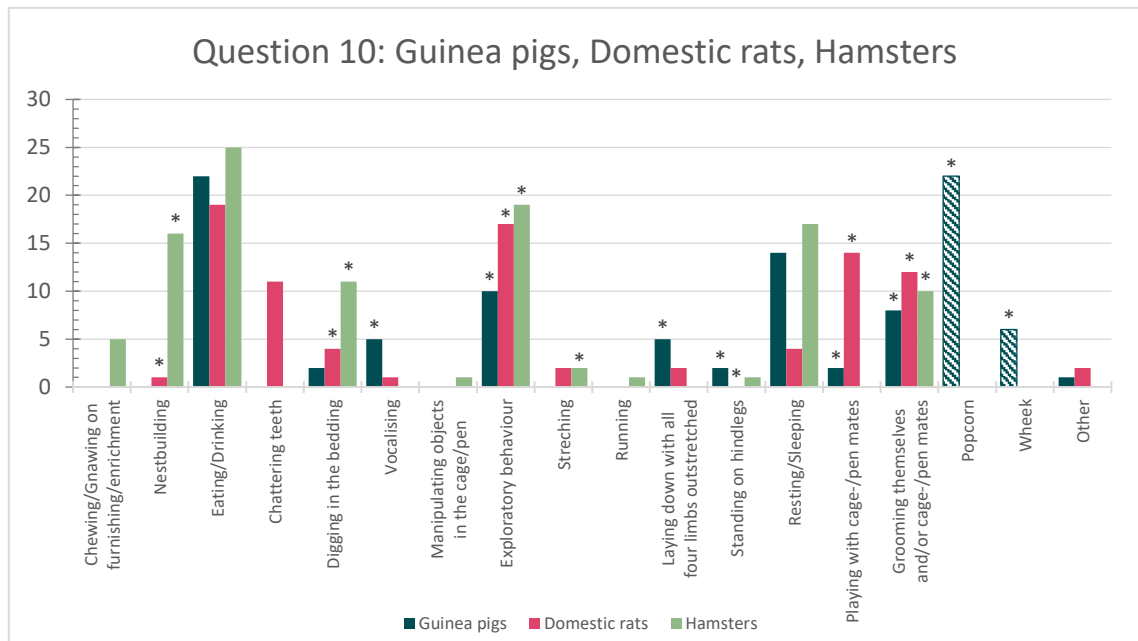


Figure 15. Answers given by Guinea pig owners ($n=99$), owners of Domestic rats ($n=89$), and Hamster owners ($n=108$) for Question 10: “Which of the following behaviours could indicate a positive welfare in (Animal)?” Bars marked with * indicate answers that are supported by scientific literature. Patterned bars indicate species specific behaviours that were only available as potential answers for their respective survey.

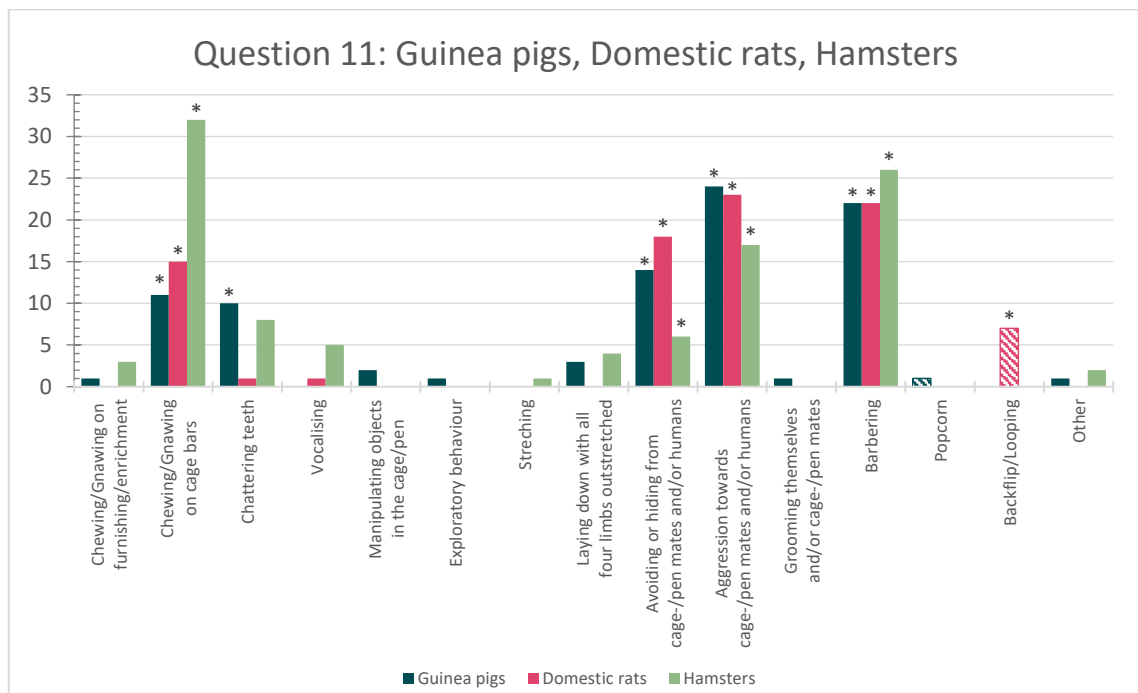


Figure 16. Answers given by Guinea pig owners ($n=91$), owners of Domestic rats ($n=87$), and Hamster owners ($n=104$) for Question 11: “Which of the following behaviours could indicate a negative welfare in (Animal)?” Bars marked with * indicate answers that are supported by scientific literature. Patterned bars indicate species specific behaviours that were only available as potential answers for their respective survey.

4.3 Section 3: Swedish Animal Welfare Legislation

4.3.1 Questions 12-19

When asked in Question 12 “*What Swedish animal welfare legislation concerns the husbandry of (Animal) as pets?*” 35.2% of the answers given by rabbit owners, 36.4% by guinea pig owners, 73.3% by domestic rat owners, and 43.6% by hamster were considered to be correct (tab. 1).

*Table 1. The percentage of answers given for Question 12 by Rabbit owners (n=190), Guinea pig owners (n=33), Domestic rat owners (n=30), and Hamster owners (n=39) in each of the nine answer categories. Categories marked with * are considered correct answers.*

<i>CATEGORY</i>	<i>RABBITS (%)</i>	<i>GUINEA PIGS (%)</i>	<i>DOMESTIC RATS (%)</i>	<i>HAMSTERS (%)</i>
<i>THE SWEDISH ANIMAL WELFARE LAW*</i>	20.0	15.2	33.3	12.8
<i>THE SWEDISH ANIMAL WELFARE REGULATION*</i>	2.6	0	3.3	2.6
<i>L 80*</i>	12.6	21.2	36.7	28.2
<i>THE SWEDISH BOARD OF AGRICULTURE</i>	8.9	12.1	10.0	7.7
<i>UNSPECIFIED LAW/REGULATION</i>	1.1	9.1	3.3	5.1
<i>NON-EXISTENT LAW AND/OR REGULATION</i>	7.9	9.1	3.3	5.1
<i>UNSURE/DON'T KNOW</i>	37.9	24.2	10.0	30.8
<i>BLANK</i>	3.2	3.0	0	2.6
<i>MISCELLANEOUS/OTHER</i>	5.8	6.1	0	5.1
<i>OVERALL CORRECT (%)</i>	35.2	36.4	73.3	43.6

When presented with true or false statements regarding Swedish animal welfare legislation relevant for their respective species' husbandry only rabbit owners and guinea pig owners had a majority of correct overall answers (tab. 2). Hamster owners had the least correct answers overall for Questions 13-19 (tab. 2).

Table 2. The percentage of correct answers given by the four separate groups of SEP owners for the 'True or False' statements presented in Questions 13-19 for each of the four respective surveys.

QUESTION	RABBITS (%)	GUINEA PIGS (%)	DOMESTIC RATS (%)	HAMSTERS (%)
<i>QUESTION. 13</i>	80.3 (n=188)	87.9 (n=33)	85.2 (n=27)	82.9 (n=35)
<i>QUESTION. 14</i>	74.5 (n=188)	87.9 (n=33)	48.2 (n=27)	2.8 (n=35)
<i>QUESTION. 15</i>	20.2 (n=188)	6.1 (n=33)	11.1 (n=27)	2.9 (n=35)
<i>QUESTION. 16</i>	63.6 (n=187)	60.6 (n=33)	48.2 (n=27)	14.3 (n=35)
<i>QUESTION. 17</i>	93.6 (n=187)	96.9 (n=33)	77.8 (n=27)	60.0 (n=35)
<i>QUESTION. 18</i>	49.2 (n=187)	66.7 (n=33)	18.5 (n=27)	8.6 (n=35)
<i>QUESTION. 19</i>	3.2 (n=187)	3.0 (n=33)	0 (n=26)	2.9 (n=35)
OVERALL CORRECT (%)	54.9 (n=1 312)	58.4 (n=231)	40.7 (n=188)	36.7 (n=245)

4.3.2 Questions 20-24

When presented the statement “*I believe that the legislation that concerns the husbandry of (Animal) as pets is easy to understand and clear with what is required for my husbandry to be in accordance with said legislation.*” in Question 20 rabbit owners chose both the answers “Agree” (27.8%) and “Partially agree” (27.8%) the most (fig. 17). In Question 21 when asked if “*I believe that the legislation that concerns my pet is enough to prevent suffering and promote good welfare for (Animal).*” rabbit owners mostly gave the answer “Partially agree” 19.2% (fig. 17). “Completely disagree” (46.4%) was the most common answer given by rabbit owners for Question 22 where they were asked if “*I believe that the legislation that concerns my pet has requirements that are too high and/or unnecessary.*” (fig. 17). For Question 23 “Partially agree” (27.6%) was the most common answer given when shown the statement “*I believe that the legislation that concerns my pet can be used as a good starting point for that type of pet husbandry.*” (fig. 17). When asked if they agreed with “*I believe that the the authorities that are responsible for animal protection supervise/enforce the law enough to protect (Animal) from potential suffering.*” in Question 24 most rabbit owners gave the answer “Disagree” (25.6%) (fig.17).

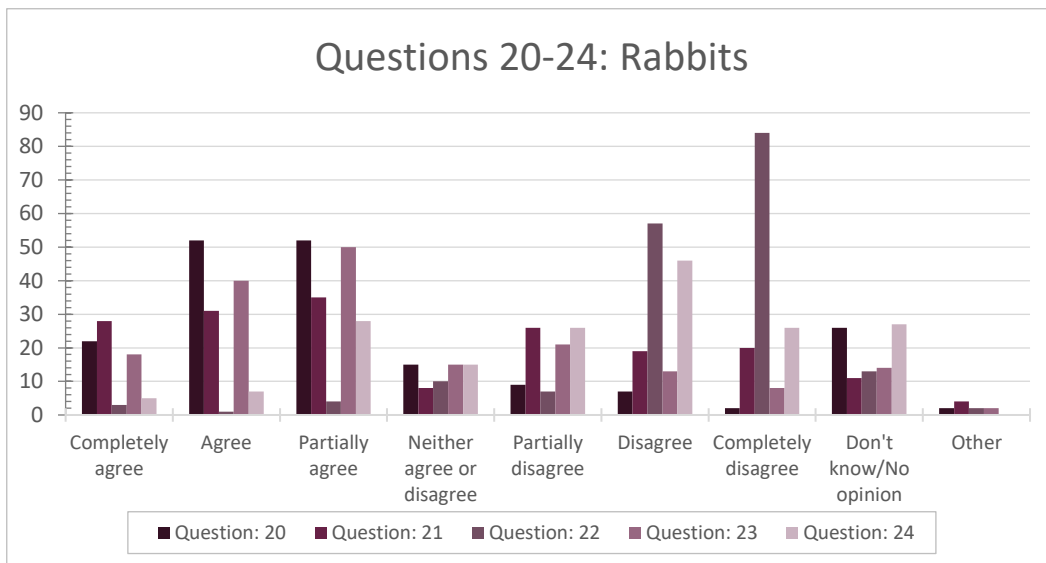


Figure 17. Answers given by rabbit owners for Question 20 (n=187), Question 21 (n=182), Question 22 (n=181), Question 23 (n=181), and Question 24 (n=180).

“Agree” was the answer given most by guinea pig owners for Question 20 (34.4%), Question 21 (40.6%), and Question 23 (31.6%) (fig. 18). “Completely disagree” (46.9%) was the most common answer given for Question 22 (fig. 18). The answers “Disagree” (21.9%) and “Completely disagree” (21.9%) was given equally for Question 24 (fig. 18).

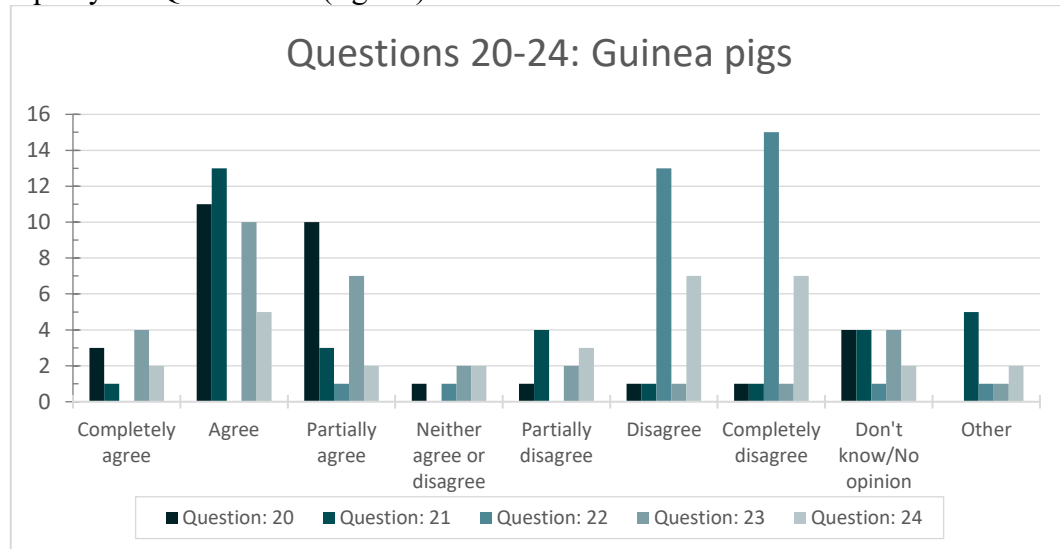


Figure 18. Answers given by guinea pig owners for Question 20 (n=32), Question 21 (n=32), Question 22 (n=32), Question 23 (n=32), and Question 24 (n=32).

“Partially agree” was the most common answer given for Question 20 (38.5%), Question 21 (30.8%), and Question 23 (42.3%) by domestic rat owners (fig. 19). Half (50%) of domestic rat owners gave the answer “Completely disagree” for Question 22 (fig. 19). “Disagree” (26.9%) was the most common answer for Question 24 (fig. 19).

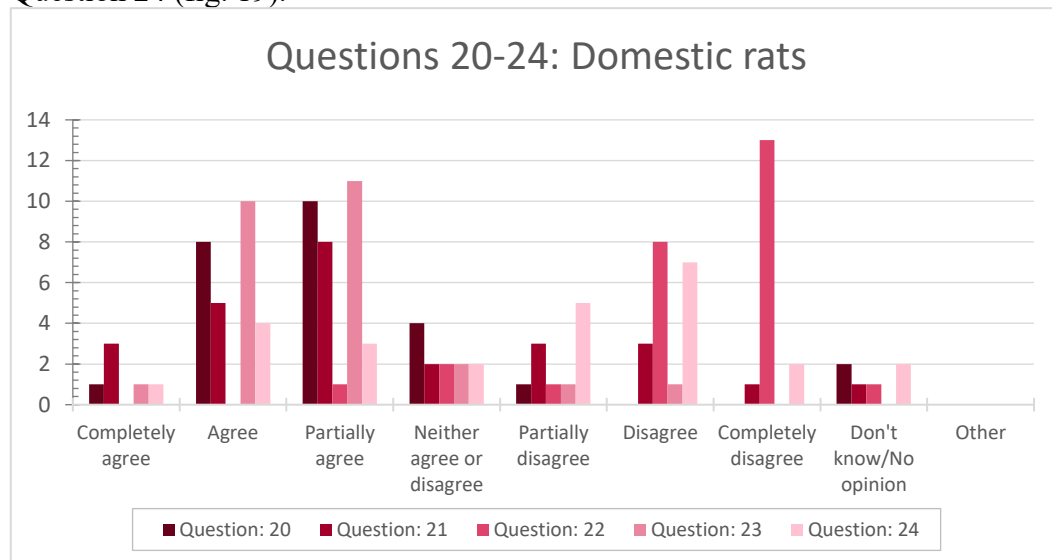


Figure 19. Answers given by domestic rat owners for Question 20 (n=26), Question 21 (n=26), Question 22 (n=26), Question 23 (n=26), and Question 24 (n=26).

A majority (57.1%) of hamster owners chose the answer “*Partially agree*” for Question 20 (fig. 20). “*Agree*” was the most given answer by hamster owners for Question 21 (25.7%) and Question 23 (29.4%). “*Disagree*” was the answer given most for Question 22 (45.7%) (fig. 20) For Question 24 hamster owners mostly gave the answer “*Partially agree*” (26.5%) (fig. 20).

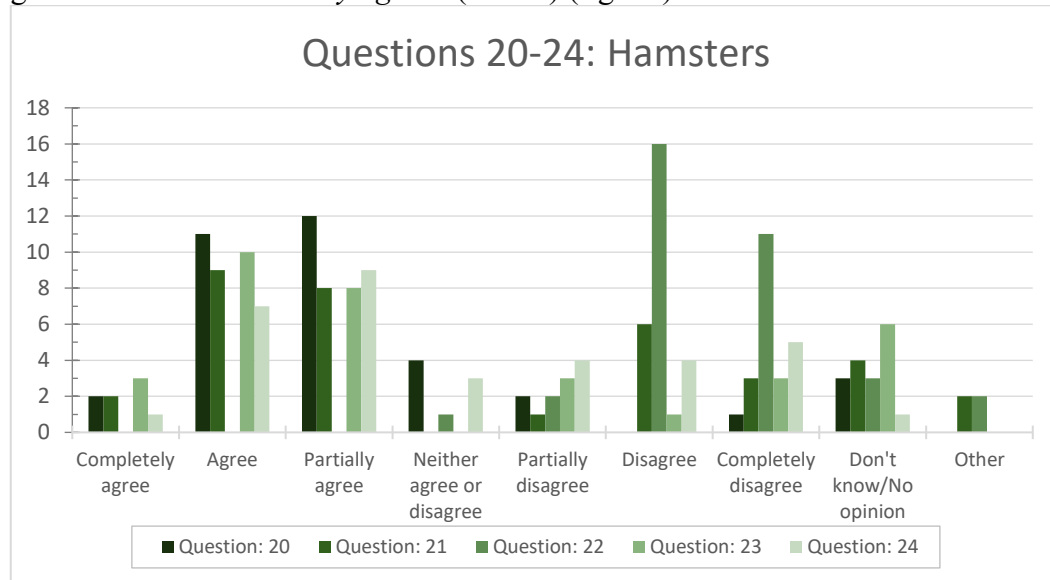


Figure 20. Answers given by hamster owners for Question 20 (n=35), Question 21 (n=35), Question 22 (n=35), Question 23 (n=34), and Question 24 (n=34)

5. Discussion

The respondents in this study consisted of a majority rabbit owners while domestic rat owners were the smallest group. Why the amount of respondents in each group of SEP owner were so different is difficult to say. The most likely explanation is that rabbits are the most popular pet out of these four SEP in Sweden (Agria, 2024b). Therefore the difference in respondents may be due to there simply being fewer Swedish owners of guinea pigs, domestic rats, and hamsters than there are rabbit owners.

5.1 SEP welfare and owner level of knowledge

5.1.1 Self-evaluation

All four groups of SEP owners included in the study considered themselves to be knowledgeable regarding their pet's health, nutrition, housing, behaviour, and legislation as “*Very good*” and “*Good*” were the two most common answer given throughout Questions 1-5 (fig. 1-4). Furthermore, very few owners assessed their knowledge to be less than adequate (fig. 1-4). Previous studies have found knowledge levels amongst these pet owners to vary, wherein some aspects of SEP husbandry and welfare are less of a potential concern than others (Rooney *et al.*, 2014; Grant *et al.*, 2017; Rioja-Lang *et al.*, 2019; Harrup & Rooney, 2020; Neville *et al.*, 2021; Hedley *et al.*, 2023; Fox & Neville, 2024).

Contradictory to these previous studies, the SEP owners in this study generally showed themselves to be knowledgeable regarding their pets' husbandry needs and welfare (fig. 5-16). However, the owners included in this study were all members of online groups dedicated to their respective species/group of SEP and its' husbandry, they may therefore be more educated and/or willing to learn and research about their SEP than the average Swedish SEP owner. Furthermore, members of such groups may learn from and discuss with each other regarding their pets' welfare and husbandry, and may thus have more access to information regarding their pets' than owners who do not engage with such online groups. This may then also explain why the SEP owners in this study were confident in their knowledge regarding their pets.

5.1.2 SEP Husbandry and Welfare

In Section 2 where SEP owners were asked questions regarding their pets' husbandry and welfare the most common answers given were generally supported by previous scientific literature (fig. 5-16). It was only in Question 10 when asked about behaviours that may indicate a positive SEP welfare were an answer not supported by the literature, *i.e.* "Eating/Drinking", was either the most common or amongst the most common answers given by all the four different groups of SEP owners (fig. 9; fig. 15).

Rabbits

The majority of answers given by the rabbit owners in this study for Question 6 regarding common health problems were answers that could be considered correct according to the literature (fig. 5). They were also generally correct when asked about potential causative factors in Question 7 (fig. 6). This would suggest that these owners are knowledgeable regarding their pets' health and what factors may impact the development of common health issues. Therefore, it is possible that Swedish rabbit owners generally are aware of preventative measures to ensure their pets' good health.

Rabbit owners overwhelmingly gave answers supported by scientific literature when asked about what a rabbit's daily feed should consist of (fig. 7). "Hay" was the most common answer, which was also found to be the most common type of feed owners in the study by Rooney *et al.* (2014) provided their rabbits. However, the same study also found that many owners provided their rabbits with root vegetables daily, which was flagged as a potential welfare concern as an excess of this type of feed may result in gastrointestinal health issues and obesity (Rooney *et al.*, 2014). The answer "Root vegetables" was only given once by the rabbit owners in this study (fig. 7). This result may indicate that rabbit owners have become more aware of the fact that root vegetables should be provided sparingly to avoid the above mentioned welfare concerns. Considering this, as well as the other most common answers given in Question 8 (fig. 7), it is plausible that the owners included in this study were indeed as knowledgeable they themselves believed in regards to their pets' nutritional needs (fig. 1). Therefore, rabbits' nutritional needs not being met may thus not be as prevalent of a welfare concern for pet rabbits in Sweden as found previously in studies conducted in different countries.

Housing was also an area wherein the rabbit owners in the study gave majority correct answers (fig. 8). Furthermore, social isolation due to a lack of conspecifics seemed to be less of a concern in this study than in previous ones.

For example, in comparison to the study by Rooney *et al.* (2014) wherein a minority (41.9%) of rabbits reportedly lived with a conspecific, the rabbit owners in this study placed high priority on housing their pets with conspecifics as it was the second most common answer given for Question 9 (fig. 8). This may potentially mean that rabbit owners have become more aware of their pets' husbandry and welfare needs over the past decade since the study by Rooney *et al.* (2014) was conducted. It is also possible that Swedish rabbit owners may generally be more knowledgeable than rabbit owners in the UK, however it is difficult to say what the reason behind this potential explanation would be.

Rabbit owners, however, seemed to have varying degrees of knowledge when it came to their pets' behaviour (fig. 9), and subsequently their mental state, as behaviour may act as an indicator of mental state (Mellor *et al.*, 2020). "*Eating/Drinking*" was the third most common answer given by rabbit owners for Question 10 regarding which behaviours may indicate a positive welfare (fig. 9). This answer was also prioritised over answers such as "*Exploratory behaviour*", and "*Playing with cage-/pen mates*" (fig. 9), which are behaviours associated with positive affective states in rabbits (Rooney *et al.*, 2014; Mellor *et al.*, 2020). It is also interesting that the behaviour "*Digging in the bedding*", which can be considered a natural behaviour for rabbits (Grant *et al.*, 2017), was one of the least chosen behaviours for this question (fig. 9). The answers given by rabbit owners for Question 11 which asked what behaviours may indicate a negative welfare also gave certain contradictory results (fig. 10). Here "*Stomping with hind leg*" was given far more than "*Digging on furniture/floors or other inappropriate surfaces*" *i.e.* stereotypical digging.

Why rabbit owners gave both correct and incorrect answers the most may be explained by how and/or where they have gathered information regarding rabbit behaviour. It is possible that the online groups that these rabbit owners were apart of contain incorrect or misleading information. If these owners then rely on these groups to learn about their pets it is possible that they have internalised both correct and incorrect information, thus explaining the answers given for Questions 10-11. It is also possible that information regarding behaviour is not as widely spread in these groups as information regarding health, nutrition, and housing is. This would perhaps explain why certain stereotypical behaviours (*e.g.* "*Bar biting*") were given more frequently as answers for Question 11 while others were given less frequently (*e.g.* stereotypical digging) (fig. 10).

Anthropomorphising, *i.e.* projecting human emotions and behaviours onto animals, may also be a potential explanation for these results. If a portion of the rabbit owners included in this study potentially assessed the affective states of the behaviours given as answer options via a human perspective, it may explain why some behaviours were chosen more or less frequently than others. This would perhaps explain why certain behaviours, such as aggression, avoidance, and behaviours that could be interpreted as frustration through a human perspective (*e.g.* stomping with hind leg), were chosen over behaviours that would require more in depth knowledge regarding rabbit behaviour and welfare (*e.g.* stereotypical digging) (fig. 10).

Guinea pigs

Similarly to rabbit owners, guinea pig owners mostly gave answers supported by the scientific literature when asked about their about their pets' health, nutrition, and housing (fig. 11-14). This corroborates the results found in the study by Harrup & Rooney (2020), wherein guinea pigs owners generally provided their pets with appropriate diets and housing. Therefore, it is possible that guinea pig owner competence regarding their pets' husbandry and welfare may have increased over time.

Nutrition, which as discussed in the introduction, can greatly impact the health and overall welfare of guinea pigs. It is therefore positive that guinea pig owners prioritised answers such as "*Hay*" when asked about what their pets' daily feed should consist of (fig. 13). Vegetables and greens rich in vitamin C were also common answers (fig. 13; Appendix. 3), which again reinforces the notion that guinea pig owners are generally knowledgeable regarding their pets nutritional needs. These results also align with those found by Harrup & Rooney (2020), wherein a majority of owners provided their pets with daily access to hay and "*Green vegetables*". Therefore, it is possible that guinea pig owners overall are knowledgeable regarding their pets' nutrition and that incorrect/insufficient diets do not pose a large welfare concern for Swedish guinea pigs.

Furthermore, housing was an area wherein guinea pig owners gave a majority answers that are supported by previous research (fig. 14). Specifically, guinea pig owners placed high priority on "*One or more conspecific*", "*Hides*", as well as "*Chewing and gnawing material*" (fig. 14). As mentioned in the introduction, social isolation may greatly impair guinea pig welfare. These results would suggest that guinea pig owners are overall knowledgeable regarding their pets' social needs.

The guinea pig owners in this study also prioritised environmental enrichment that is known to promote guinea pig welfare such as hides, tunnels, and materials appropriate for chewing and gnawing (Brandão & Mayer, 2011; Harrup & Rooney, 2020). This may suggest that social isolation and improper/insufficient housing may not pose a welfare risk for Swedish guinea pigs.

Guinea pig owners, however, also gave contradicting results in regards to their pets' behaviour (fig. 15-16). The answer "*Popcorn*", which is considered to be a behavioural indicator of positive affective states and good welfare in guinea pigs (Harrup & Rooney, 2020), was given equally as frequently as "*Eating/Drinking*" for Question 10 (fig. 15). Why guinea pig owners seemingly deemed these two behaviours to be equally as important indicators of positive welfare is uncertain. Furthermore, it is also interesting that "*Eating/Drinking*" was given more than all other behaviours that, according to the literature, could indicate a positive welfare in guinea pigs (fig. 15). These results would suggest that guinea pig owners are less knowledgeable regarding their pets' behaviour than they themselves believed (fig. 2; fig. 15). This could potentially also be explained by the above mentioned reasons, *i.e.* misinformation and/or anthropomorphising. However, when asked about behaviours that may indicate a negative welfare guinea pig owners overwhelmingly gave answers which were supported by the scientific literature (fig. 16). Guinea pig owners also did not give any incorrect answer more frequently than correct answers for Question 11 (fig. 16), unlike in Question 10 (fig. 15). These results would suggest that guinea pig owners are more knowledgeable regarding certain aspects of their pets' behaviour than others. Why guinea pig competence regarding positive and negative behavioural indicators of welfare seemingly differs is difficult to discern. However, the above mentioned explanations may have influenced this seeming discrepancy as well.

Domestic rats

Health and nutrition were found to be potential areas of concern for domestic rat welfare in the study by Neville *et al.* (2021). However, the domestic rat owners in this study seemed knowledgeable regarding both their pets' health and nutrition (fig. 11-13), as well as housing (fig. 14).

Domestic rats most commonly face respiratory health issues (Graham & Schoeb, 2011; Neville *et al.*, 2021), and the domestic rat owners in this study were seemingly aware of said fact as seen in the answers given by them for Question 6 (fig. 11). Furthermore, they were also knowledgeable regarding common causative factors as "*Breeding/Genetics*" (27.9%), "*Insufficient cleaning/Unclean environment*" (18.3%), and "*Age*" (16.1%) were the answers given most for Question 7 (fig. 12).

There is evidence to suggest that these factors may influence the development of respiratory issues, however nutritional deficiencies and environmental factors are considered to have a greater impact upon the respiratory health of rats (Graham & Schoeb, 2011). That “*Breeding/Genetics*” was the most common answer for Question 7 is therefore interesting. However, “*Breeding/Genetics*” is one of the factors that majorly influences the development of tumours in domestic rats (Neville *et al.*, 2021), and “*Tumours*” was the second most common answer given by domestic rat owners for Question 6 (fig. 11). Tumours were also found to be the second most common health issue reported by the domestic rat owners in the study by Neville *et al.* (2021). This may then explain why “*Breeding/Genetics*” was given so frequently for Question 7. Therefore, it is possible to suggest that the domestic rat owners in this study were generally knowledgeable in regards to their pets’ health.

When asked about their pets’ dietary needs, domestic rat owners gave a majority answers which were supported by the scientific literature (fig. 13). “*Pellets*” was the most common (16.9%) answer given for Question 8 (fig. 13). Pellets’ nutritional contents may vary greatly from product-to-product, this means that pellets may not always be sufficient to fulfil the nutritional needs of domestic rats (Neville *et al.*, 2021). However, when provided in addition to other feeds, pellets can be considered an appropriate feed type. One respondent commented for Question 8 “*A mixed and varied diet is best with both animalistic and vegetarian contents.*” (Appendix. 3), which aligns with what is known in regards to domestic rats’ nutritional needs (Kerrigan, 2015). This need for dietary variation was also seemingly reflected in the varied, but still overall correct, answers given by domestic rat owners for this question (fig. 13). Therefore, it is possible that Swedish domestic rat owners are knowledgeable concerning domestic rat nutrition. However, similarly to Neville *et al.* (2021), owners in this study placed low priority on animal based feed (fig. 13), despite domestic rats being omnivorous (Kerrigan, 2015). This may however be due to an error during survey creation, as certain animal based feed answer options were accidentally not made available to domestic rat owners for this question. Therefore, it is not possible to say if this lower priority on animal based feed was due to owner competence level or the lack of answer options for this type of feed.

Domestic rat owners placed high priority on housing their rats’ with conspecifics, climbing opportunities, hides, and nesting materials in Question 9 (fig. 14), which have all been found to be important housing factors regarding domestic rat welfare (Makowska & Weary, 2016; Neville *et al.*, 2021). However, domestic rat owners placed a lower priority on digging opportunities, despite their pets’ having the behaviour need to dig and burrow (Makowska & Weary, 2016).

This is similar to the results found by Neville *et al.* (2021) wherein less owners provided their rats' with the opportunity to dig than climb. It is possible that being limited to only three answers may explain why this answer was given less frequently. However, it is also possible that owners place a lower priority on fulfilling their pet rats' need to dig than other behaviours, such as climbing and nesting. Perhaps owners find it more difficult to provide their rats with digging opportunities and therefore prioritise other forms of environmental enrichment. It is also possible that domestic rat owners believe that digging is a less important behaviour for rats. Why this would be the case is however uncertain. Considering the above, domestic rat owners may possibly have varying degrees of knowledge regarding their pets housing needs.

When asked about which of their pets' behaviours may indicate a positive welfare in Question 10 domestic rat owners gave "*Eating/Drinking*" the most (fig. 15), thus prioritising this behaviour over behaviours that are associated with positive affective states. However, similarly to guinea pig owners, domestic rat owners gave only correct answers the most for Question 11 when asked which behaviours could indicate a negative welfare in their pets (fig. 16). This discrepancy may also be explained by the previously discussed reasons. However, it is still uncertain as to why the SEP owners in this study showed such varying levels of knowledge regarding SEP behaviour, wherein they seemed more knowledgeable of behavioural indicators of negative welfare than a positive one.

Hamsters

The hamster owners in this study gave a majority correct answers when asked about their pets' health, nutrition, and the housing of hamsters (fig. 11-14). These results would indicate that hamster owners are generally knowledgeable concerning these areas of their pets' welfare.

As mentioned in the introduction, intraspecies conflict is a major welfare concern for all species of hamster when housed with conspecifics. However, none of the hamster owners in this study gave the answer "*One or more conspecifics*" or "*One or more closely related heterospecifics*" when asked about their pets' housing needs (fig. 14). This would suggest that Swedish hamster owners are aware of the potential welfare risk that group housing may pose to their pets. Furthermore, hamster owners overwhelmingly gave correct answers for Question 9 (fig. 14). Interestingly though, "*Running wheel*" was the most common (21.1%) answer by far (fig. 14), and was prioritised over answers such as "*Digging opportunities*" (17.5%), "*Deep bedding that is loose/allows for digging*" (9.7%), and "*Nesting materials*" (8.8%), all which allow for hamsters to perform their behavioural needs to dig, burrow, and nest (Brandão & Mayer, 2011).

While some research suggests that running wheels are a positive form of environmental enrichment (Brandão & Mayer, 2011; Fox & Neville, 2024), other research suggest that repeated use of running wheels may be classified as a stereotypical behaviour for hamsters (Hauzenberger *et al.*, 2006; Rushen & Mason, 2006). Hauzenberger *et al.* (2006) found that when exposed to stressors hamsters increased both the frequency and duration of which they used their running wheel. This may therefore suggest that the hamsters in the above mentioned study used the running wheel as a form of coping mechanism in response to being exposed to said stressor. As mentioned in the introduction, Hauzenberger *et al.* (2006) also found that when deprived the opportunity to dig and burrow, hamsters more often developed the stereotypical behaviour “*Bar biting*”.

If considering that repeated and prolonged running may fit the description of a stereotypical behaviour as defined in the introduction, in addition to the results found by Hauzenberger *et al.* (2006), it is possible to suggest that running wheels may not actually serve as a good form of environmental enrichment for hamsters, but instead allow for the development of a stereotypical behaviour. Considering that running wheels were prioritised over *e.g.* digging opportunities and deep bedding by the hamster owners in this study (fig. 14), it is possible that said owners believe running wheels to be more important for hamster welfare due to having observed their hamster’s repeated use of it. What these owners may then have perceived as their hamsters being greatly motivated to use the running wheel, may actually have been a potential stereotypical behaviour developed due to the hamster’s environment not sufficiently providing them the ability to perform their natural behaviours.

However, excessive use of running wheels has not been officially recognised as a stereotypical behaviour in hamsters (Fox & Neville, 2024), and it is therefore not possible to make this assessment for certain. Thus, the answer of “*Running wheel*” may still be considered correct due to positive effects they have been found to have on hamster welfare in previous research (Brandão & Mayer, 2011; Fox & Neville, 2024). It is still, however, an interesting result that running wheels were prioritised over other environmental enrichments/factors that allow hamsters to perform their natural behaviours (fig. 14). What this implies about hamster owner competence regarding their pets’ housing needs is uncertain. However, due to what is considered correct by most scientific research, it is most likely that hamster owners are overall knowledgeable regarding this area of their pets’ welfare as well.

When asked about behaviour, much like both guinea pig owners and domestic rat owners, hamster owners also showed varying levels of knowledge regarding behaviour as an indicator of their pets' welfare (fig. 15-16). Why this may be the case, is again uncertain, but may be related to that which was discussed above.

Overall assessments of SEP owner competence

To conclude, SEP owners showed themselves to be knowledgeable in several areas within SEP husbandry and welfare. However, as mentioned above, when asked in Question 10 about behavioural indicators of positive welfare “*Eating/Drinking*” was amongst the most common answers given by rabbit and guinea pig owners (fig. 9; fig. 15), and was the most common answer given by domestic rat and hamster owners (fig. 9; fig. 15). Eating and drinking are fundamental behaviours for an animal to maintain its' biological functioning, it does not, however, mean that an animal that does eat and drink has a good welfare (Mellor *et al.*, 2020).

As presented in the introduction, good animal welfare is not achieved simply by fulfilling the animal's nutritional, environmental, and behavioural needs. An absence of negative experiences and the presence of positive experiences that may result in positive affective states are also necessary for good animal welfare to be possible (Mellor *et al.*, 2020). This suggests that while SEP owners may be knowledgeable regarding the welfare domains of nutrition, environment, and health they may lack knowledge regarding the domains of behaviour and mental state. This, due to the SEP owners in this study prioritizing “*Eating/Drinking*” over behaviours associated with positive affective states, and thus also behaviours that could indicate a positive mental state. What this difference in knowledge level may be caused by is uncertain.

The above discussed explanations, such as spread of misinformation and anthropomorphising, are potential reasons as to why the results regarding behaviour in Section 2 were seemingly contradictory. However, it is possible that the SEP owners in this study being restricted to choosing only three options at most may have influenced these results, and therefore may be why some behaviours were chosen less frequently. Owners may thus have prioritised behaviours that are more overt indicators of certain welfare and affective states. Although, this would not explain why certain incorrect answers were chosen more frequently than certain correct answers for Questions 10-11 (fig. 9-10; fig. 15-16).

Therefore it is reasonable to suggest that Swedish SEP owners are competent regarding their pets' health, nutrition, and housing, while being less competent regarding their pets' behaviour. This variation in owner competence could potentially impact SEP welfare if owners are unaware and/or may misinterpret their pets' behaviours, resulting in potential negative welfare indicators being missed or disregarded.

5.2 Swedish animal welfare legislation and its' impact on SEP husbandry and welfare

5.2.1 SEP owner knowledge regarding animal welfare legislation

Owners of domestic rats were the only group of SEP owners in this study which gave a majority (73.3%) correct answers when asked what Swedish animal welfare legislation concerned their pet husbandry (tab. 1). Additionally they were also the group of SEP owner that gave the answer "*L 80*" the most (tab. 1), which as mentioned in the introduction is the regulation that contains species and/or group specific requirements in regards to SEP husbandry.

However, domestic rat owners were also the group with the least respondents (n=28) for Question 12, and can therefore not be deemed representative of Swedish domestic rat owners as a whole. Furthermore, unlike the domestic rat owners included in this study, only a minority of rabbit owners (35.2%), guinea pig owners (36.4%), and hamster owners (43.6%) gave answers considered to be correct for Question 12 (tab. 1). "*Unsure/Don't know*" was also the most common category of answer given by these three groups of owners (tab. 1). Interestingly though, rabbit owners, guinea pig owners, and hamster owners all gave the answers "*Very good*" and/or "*Good*" the most when asked to evaluate their knowledge regarding Swedish animal welfare legislation in Question 5 (fig. 1-2; fig. 4).

A potential explanation for this seeming discrepancy is that owners may access the relevant legislation by other means than searching for the legislation by its' specific name and/or Item No. For example, SEP owners may search for relevant animal welfare legislation via the Swedish Board of Agriculture's (SBA) website, as it is the governmental body responsible for writing and distributing animal welfare regulations in Sweden (1 Chap. 2 § DF). The SBA's website also has several webpages which summarize multiple regulations that concern the focal animal and specific types of husbandry, as well as linking to the relevant regulations at the bottom of the page.

In fact, these pages are typically the first search result when one searches online for “*(Species) animal welfare legislation*” in Swedish. This could then mean that SEP owners have not needed to memorise or even know the exact names of relevant legislation in order to access it, and may therefore still have read and be moderately knowledgeable on its’ contents via these pages on the SBA’s website instead. However, these pages function more as overviews and thus does not provide the reader with information regarding all of the requirements present in the regulation(s) relevant for that type of animal husbandry. Additionally, these pages also include recommendations for the specific type of husbandry which are not legal requirements. For example, there is no legal requirement to keep pet rabbits together with conspecifics in L 80 or any other animal welfare legislation relevant to pet rabbit husbandry, despite this, the SBA’s webpage still recommends to keep pet rabbits in pairs or groups (SBA, 2023a). This may mean that if SEP owners use this method of accessing information regarding animal welfare legislation they may be under the impression that certain recommendations are legal requirements when they are not.

This line of reasoning could also explain the varying degree of correct answers given by SEP owners in Questions 13-19. When presented the statement “*According to law (Animal) must be supervised at least once daily. True or false, and are there exceptions?*” in Question 13, a majority of owners across all four groups gave the correct answer (tab. 2). It is in fact a legal requirement for all species included in L 80 to be supervised at least once daily according to 4 Chap. 21 § L 80, and it is therefore not unlikely that SEP owners would be aware of, or at least have heard of, this requirement previously. That these webpages are potentially the SEP owners included in this study’s main source of information in regards to Swedish animal welfare legislation could also explain why SEP owners gave more incorrect answers when presented with more specific statements in Section 3. For example, in Question 15 wherein all four groups of SEP owners were presented the statement “*It is legal to keep (Animal) in cages with wire flooring. True or false, and are there exceptions?*” a vast minority gave the correct answer “*False, with exceptions*” across all the four groups of SEP owner (tab. 2). According to 8 Chap. 8 § L 80 “*Rabbits and rodents may not be kept on wire floors. This does not apply, however, when the animals are kept in grazing cages or other cages/pens that have direct contact with the ground*”. However, on the SBA’s webpages regarding pet rabbits, and pet rodents the prohibition of wire floors is not stated as explicitly (SBA, 2023a; SBA 2023b). The difference in phrasing between the actual legislation and these webpages may therefore be a possible explanation why this question was more difficult to answer correctly for the SEP owners in this study.

This could also suggest that perhaps the SEP owners in this study are not as familiar with the actual Swedish animal welfare legislation that these webpages refer to as they themselves believed (fig. 1-4; tab. 1-2), as when given statements that required knowing the correct phrasing of the corresponding paragraph(s) in L 80 owners were less likely to answer correctly.

Furthermore, the percentage of correct answers varied greatly between the different statements in Questions 13-19 as well as between the four separate groups of SEP owners (tab. 2). In Question 14 all four groups were presented a statement regarding a legal requirement concerning housing for each respective species/group based upon 8 Chap. 12, 14 & 21 §§ L 80 (Appendix. 2). A majority of rabbit owners (74.5%), which were presented the statement “*According to law rabbits must be provided with access to elevated surfaces, e.g. a shelf*”, answered Question 14 correctly (tab. 2). Guinea pig owners, which were presented the statement “*According to law guinea pigs must be provided access to hides/shelters*” also gave a majority (87.9%) correct answers (tab. 2). This result is interesting as these two groups of owners were also the two groups which gave the least percentage of correct answers for Question 12 (tab. 1). One possibility is that these owners may have answered based upon their knowledge regarding their pets’ husbandry and welfare instead of knowledge regarding relevant animal welfare legislation. Access to elevated surfaces and hides have been proven to positively impact the respective species’ welfare (Rooney *et al.*, 2014; Harrup & Rooney, 2020). Therefore, it is plausible that these owners assumed that the statements must be true due to the positive impact these requirements have upon the welfare of their respective pets.

Both domestic rat owners and hamster owners were presented the statement “*According to law the floor of cages meant for the keeping of (Animal) must be covered by substrate*” wherein only 48.2% and 2.8% respectively gave the correct answer “*True, with exceptions*” (tab. 2). According to 8 Chap. 12 § L 80 cages wherein rabbits and/or rodents are kept must have the cage floor covered by substrate, with an exception for grazing cages. However, on the SBA’s webpage “*Rodents as pets*” (2023b) it is stated that cages wherein rodents are kept must have the cage floor covered by substrate, with no mention of the exception for grazing cages. This, in combination with the answers given by domestic rat owners and hamster owners for Question 14, further supports the prospect that SEP owners mostly rely on the overviews presented on the SBA’s website for information regarding Swedish animal welfare legislation rather than the legislation itself.

It is also possible that these owners guessed that this requirement could be true when answering this question, as it is important for the welfare of both domestic rats and hamsters that they are provided substrates of appropriate materials and depth (Hauzenberger *et al.*, 2006; Neville *et al.*, 2021). Therefore, it would not be unreasonable to suggest that these owners may also have answered based upon their knowledge regarding their pets' husbandry and welfare instead of knowledge regarding relevant animal welfare legislation.

The amount of correct answers also varied depending on which Swedish animal welfare legislation the statement was based upon in Question 13-19. Question 19 contained the only statement that was not based upon L 80. This statement was based upon 7 § The Swedish Board of Agriculture's regulation (SJVFS 2019:27) regarding permits for certain types of husbandry of pets, horses, and animals with fur, Item No. L 120 (Hereafter referred to as L 120), and read as follows: "*Keeping ten or more (Animal) always requires a permit to be considered legal*". Only 3.2% of rabbit owners 3% of guinea pig owners, none of the domestic rat owners, and 2.9% of hamster owners gave the correct answer when presented this statement (tab. 2). This may then suggest that the knowledge level amongst SEP owners regarding Swedish animal welfare legislation varies depending on which aspects of their husbandry the legislation addresses. This result also further supports the theory that the SEP owners in this study based their answers upon what they have potentially read on the SBA's website and/or on their knowledge regarding their pet's husbandry and welfare needs.

Considering this, as well as that which has been discussed above, it could be argued that the SEP owners in this study may have overestimated their knowledge regarding Swedish animal welfare legislation. Thus, it is also reasonable to suggest that Swedish animal welfare legislation may not have a large influence on SEP husbandry if SEP owners are themselves unaware of what said legislation entails.

5.2.2 SEP owner perception of animal welfare legislation and protection

In order to evaluate SEP owner perceptions of Swedish animal welfare legislation and protection, owners were presented five statements regarding this topic and asked to state if they agreed or disagreed with said statement. In Question 20 where SEP owners were asked if they agreed with the statement "*I believe that the legislation that concerns the husbandry of (Animal) as pets is easy to understand and clear with what is required for my husbandry to be in accordance with said legislation.*" a majority across all four groups of SEP owners chose answers between "*Completely agree*" and "*Partially agree*" (fig. 17-20).

This would potentially suggest that difficult language and/or phrasing is not a hindrance for SEP owners in regards to reading and comprehending Swedish animal welfare legislation. That legislation is easy to understand by the intended recipients is fundamental to ensure that said legislation can actually be followed. Therefore, it is positive that SEP owners included in this study found this to be the case regarding Swedish animal welfare legislation. However, as discussed above, it is uncertain how many of the SEP owners in this study have read the actual legislation relevant to their husbandry. This result is therefore interesting as it would suggest that a majority of these owners have read and are familiar with said animal welfare legislation, despite other result suggesting the opposite (tab. 1-2; fig. 17-20). It is therefore difficult to discern what the respondents based their assessment upon, and if this actually reflects SEP owners attitude towards actual legislation.

A majority of SEP owners also agreed, to varying extents, that the legislation relevant to their husbandry was sufficient to prevent suffering and promote good welfare for their respective pets in Question 21 (fig. 17-20). Rabbit owners, however, gave more varied answers than the other SEP owners for this question (fig. 17-20). It is possible that the rabbit owners in this study generally found Swedish animal welfare legislation to be sufficient but found certain aspects to be lacking. For example, despite rabbits being a social species, there is no legal requirement to house rabbits with other conspecifics in L 80. The rabbit owners in this study placed high priority on housing their rabbits with conspecifics in Question 9 (fig. 8). Additionally, when presented the statement that it is legal to keep rabbits alone some owners chose to comment that they are strongly recommended to be housed with conspecifics and/or that it should not be legally allowed (Appendix. 3). That something so essential for rabbit welfare is not a legal requirement may therefore explain why the answers given by rabbit owners for this question were more spread. However, as mentioned in the introduction it can be argued that L 80 does not prevent suffering or promote good welfare for any of the species it encompasses. That SEP owners generally agreed to the statement in Question 21 is therefore interesting, and again brings into question how familiar these owners are with the actual legislation. Further examples of discrepancies in L 80 include there being no specific requirement to provide rabbits, domestic rats, or hamsters with digging opportunities when scientific research has shown how important the ability to dig and burrow is for the welfare of these animals (Hauzenberger *et al.*, 2006; Makowska & Weary, 2016; Grant *et al.*, 2017). That rabbit and hamster owners especially generally agreed to this statement is intriguing as both groups placed a high priority on digging opportunities in Question 9 (fig. 8; fig 14).

Another noteworthy discrepancy in L 80 includes the requirement for all species of hamster, except for the Golden hamster, to be housed with conspecifics (8 Chap. 1 § L 80), when all hamsters species are regarded to be solitary and thus may have their welfare negatively impacted if they are housed with conspecifics (Hedley *et al.*, 2023).

Question 22 was the only question wherein all four groups of SEP owners gave the answer “*Completely disagree*” the most (fig. 17-20). That most owners disagreed to the statement “*I believe that the legislation that concerns my pet has requirements that are too high/unnecessary.*” partially supports the results regarding SEP owners own evaluation regarding their knowledge on animal welfare legislation (fig. 1-4). This is because, as discussed, L 80 is both lacking in what is required by it while also containing several requirements that are directly detrimental to SEP welfare. That SEP owners believe that L 80 does not entail any unnecessary and/or too high requirements would suggest that they are aware of this fact and are thus also knowledgeable on its’ contents. However, as many of the other results in this study suggest otherwise, it is uncertain what this assessment was based upon and where the true knowledge level lies.

All four groups of SEP owners included in this study also generally agreed that the animal welfare legislation relevant for their pet husbandry could be used as a good starting point for their respective pet husbandry when asked this in Question 23 (fig. 17-20). However, as discussed above, this can hardly be considered the case, due to the many discrepancies found in L 80. If a new SEP owner that is less knowledgeable regarding their pets’ husbandry and welfare needs were to rely on L 80 to inform their husbandry practices, it is very likely that that pet may suffer an impaired welfare due to improper practices. Furthermore, many requirements in L 80 relies on the SEP owner to already be very knowledgeable in order to actually fulfil the requirement. An example of this is 8 Chap. 13 § L 80 which states “*Rabbits and rodents must be kept in an enriched environment*”. This requirement is paired with a recommendation that suggests some forms of environmental enrichment, however, as these recommendations are not legally required, a SEP owner that is ill- and/or misinformed may still not provide their pets with proper enrichments. The SEP owners in this study were overall competent regarding their pets housing needs, and this may have informed their answers for this question. This, because these owners may believe that their pets’ *e.g.* housing needs are “common sense” and thus believe such vague requirements to be sufficient.

Lastly, when presented the statement “*I believe that the authorities that are responsible for animal protection supervise/enforce the law enough to protect (Animal) from potential suffering*” in Question 24 SEP owners gave more dispersed answers (fig. 17-20). However, rabbit owners, guinea pig owners, and domestic rat owners generally disagreed with this statement (fig. 17-19), while hamster owners generally agreed (fig. 20). As mentioned in the introduction, the County Administrative Boards often lack the resources to sufficiently supervise these animals (VeterinärMagasinet, 2023). Therefore, it is less common for animal welfare inspections to be carried out on SEP. This is one of the potential explanations as to why most SEP owners disagreed to this statement. Furthermore, it is also possible that when these inspections do occur, SEP owners may have encountered animal welfare inspectors that they deemed to be less knowledgeable than themselves and/or made incorrect assessments. This theory is reinforced by two “*Other*” answers given for Questions 21 and 22 in the survey for guinea pig owners, wherein one respondent stated: “*Animal welfare inspectors are behind us guinea pig-enthusiasts regarding animal welfare questions regarding most animals, including guinea pigs.*” and another stated: “*Animal welfare inspectors rarely have the right answers, instead they need to seek information before they make an assessment, that’s usually still incorrect, guinea pig owners are often more knowledgeable.*” (Appendix. 3). However, as it is not possible to know how many of the respondents have had personal experience(s) with animal protection, the reasoning behind why three groups of the SEP owners in this study disagreed with this statement remains uncertain. That hamster owners in general agreed to this statement, however, is interesting. What this more positive attitude towards animal protection may be based upon is difficult to discern. Perhaps the hamster owners in this study have had personal experience(s) with animal protection and/or are acquainted with those who have. If these experiences were positive it is possible that these hamster owners mainly based their answers upon their own anecdotal evidence. It is not, however, possible to say for certain that this is the case, and the reason behind why there is a difference in attitude between the four groups of SEP owners cannot be said for certain.

Overall, SEP owners in this study generally held positive perceptions and attitudes towards Swedish animal welfare legislation. However, it is uncertain what these assessments were based upon, as some results suggest that SEP owners are possibly not very knowledgeable regarding said legislation. Furthermore, SEP owners generally found animal protection to be lacking, as is in accordance with discussed flaws and hindrances that impact animal protection in Sweden. Conversely, hamster owners generally held positive attitudes towards animal protection, the reason behind this difference in attitude is however uncertain.

5.3 Ethical, societal, and environmental aspects

Improper husbandry of animals that leads to an impaired welfare is an ethical dilemma within all types of animal husbandry. What we, as humans, deem to be a necessary or justifiable animal suffering differs vastly between when considering both species and the type of animal husbandry. Suffering of laboratory animals within scientific research is generally accepted due to the potential good it can lead to. However, when discussing animals kept simply for human pleasure, such as pets, the good can hardly ethically justify the real suffering that improper husbandry can cause SEP. According to Care ethics, we as humans have a moral obligation to provide Care to those which depend on us (Engster, 2006; Dunn & Burton, 2023). Care can be defined as providing an individual with that which promotes the wellbeing of said individual (Dunn & Burton, 2023). Care must also be given from the perspective of the cared for in mind (Dunn & Burton, 2023), therefore good intention is not enough to deem any care provided as ethical if the care does not consider the cared for's needs and perspective. Pets are completely dependent on their owners for their needs to be fulfilled, and thus the owners in question have a moral obligation to provide their pets' proper care (Engster, 2006; Dunn & Burton, 2023). Therefore, improper SEP husbandry and the subpar requirements in L 80 cannot be ethically justifiable. It is thus our moral responsibility to ensure the wellbeing of these pets, which entails both making education and information regarding proper SEP husbandry more available, as well as creating and enforcing an animal welfare legislation that actually protects these animals from suffering.

Improper SEP husbandry can also lead to societal consequences. The study by Díaz-Berciano & Gallego-Agundez (2022) found that as the amount of pets such as rabbits, guinea pigs, domestic rats, and hamsters increase, so does the amount of these pets that are surrendered to animal shelters, or possibly even abandoned. The same study found that lack of owner competence was one of the main reasons these pets were surrendered and/or abandoned. An influx of animals surrendered to animal shelters means an increased economic burden upon these shelters, which are often run by non-profit organisations. These organisations typically do not have the resources to care for an ever increasing amount of animals, which means that shelters may not be able to accept SEP as they simply do not have the capacity. If SEP owners cannot surrender their pets they may instead resort to euthanasia or abandonment. Managing feral pet populations is already a burdensome task. If these populations continue to increase it would entail an even larger burden upon society as a whole, as more resources would have to be delegated to managing these populations.

Feral pet populations also have the capacity to cause environmental harm (Schuppli *et al.*, 2014). When released into non-native environments SEP may act as invasive species, causing great environmental consequences by damaging the pre-existing ecosystems and contributing to a decrease in biodiversity (Schuppli *et al.*, 2014). If SEP owners most typically abandon their pets due to lack of knowledge, it only further emphasises the importance of SEP owners being competent regarding their pets' husbandry and welfare, as a lack of owner competence may lead to environmental damages that are often difficult to mitigate and/or reverse (Schuppli *et al.*, 2014).

Considering these aspects, inadequate SEP owner competence does not only negatively impact SEP welfare, but may also result in negative societal and environmental consequences. Therefore, it is vital that SEP owners are competent in regards to their pets and that influencing factors, such as animal welfare legislation, are based upon correct information, and provide these owners support via entailing evidence based requirements and recommendations for SEP husbandry.

5.4 Limitations of the study and chosen method

While it is one of the most effective ways to reach and collect data regarding a large demographic, survey studies are prone to certain weaknesses and biases as a scientific method. One such weakness is that respondents may not be representative for the chosen demographic at large, as those who chose to participate in such a study typically already have a vested interest in the survey's topic. This means that the collected data must be analysed more critically as it is possible that the sample is skewed towards a certain sub-section of the demographic. Furthermore, distribution of the survey also impacts the validity of the results. In this study the surveys were distributed in Facebook groups dedicated to either rabbits, guinea pigs, domestic rats, or hamsters. This means that the surveys possibly only reached SEP owners that were more invested in the husbandry and welfare of their pet than the average Swedish SEP owner. This means that the results regarding owner competence may not be representative of Swedish SEP owners as a whole.

Survey structure and phrasing of questions may also skew results. For example, in Section 2 wherein owners were only able to choose up to three multiple choice options, many SEP owners expressed confusion as there were often more than three correct answers available (Appendix. 3). However, the question did state that more or less than three options could be correct, but due to the phrasing some SEP still chose the "Other" option so that they could express confusion and/or provide more than three of the available options as an answer (Appendix. 3).

Additionally, the phrasing of the available answers may also have affected the results. This seemed to be especially detrimental in the survey for guinea pig owners where in Question 8 nine out of the ten owners that chose the option “*Other*” wrote an answer that was available as a multiple choice options, however, phrased differently (Appendix. 3). This answer option was “*Cruciferous vegetables*”, guinea pig owners instead chose the “*Other*” option to state “*Vegetables rich in vitamin C*” and similar (Appendix. 3), despite cruciferous vegetables being vegetables that are vitamin C rich (Harrup & Rooney, 2020). The terminology used therefore impacted the way these owners answered this question, and partially skewed this result. Lastly, choosing multiple choice as the answer format for the questions in Section 2 could also have affected the results. When provided a list of answers respondents may provide correct answers more frequently, even if they were unsure or not knowledgeable on what the question was asking through the process of elimination or even simply by guessing and choosing options that seem most reasonable to them. While this type of answer option made data processing simpler, it could also have skewed the results, meaning that this is also a potential flaw with the chosen method.

Human error was also a potential flaw in this study. As the data was transferred manually from the survey program Netigate into Microsoft Excel sheets and Microsoft Word incorrect transcriptions may have gone unnoticed. This could also have affected the categorisation of the open text answers for Question 12, as they may have been interpreted or otherwise processed incorrectly. A concrete example of where human error did impact the results is during the creation of the survey aimed at domestic rat owners. For the survey aimed at domestic rat owners some multiple choice answers that were meant to be included for Question 8 were not added. This may then have influenced the results for this question and therefore is a methodical flaw that occurred due to human in this study.

6. Conclusions

To conclude, the SEP owners included in this study showed a higher knowledge level regarding their pets' welfare and husbandry needs than in that of previous studies. SEP owners were especially competent regarding their pets' health, nutrition, and housing. However, SEP owners showed a lower level of knowledge regarding their pets' behaviour. Why a seeming difference in knowledge level was found in this study is uncertain. However, misinformation and anthropomorphising were two possible factors that may have influenced these results.

The apparent knowledge level of SEP owners regarding Swedish animal welfare legislation varied throughout the survey. Some results would suggest that SEP owners are not very knowledgeable regarding the legislation relevant for their pet husbandry. This, because a majority of owners included in this study could not even name said legislation. Despite this, SEP owners were able to answer certain questions regarding Swedish animal welfare legislation correctly. A potential explanation presented was that a majority of the SEP owners in this study may use the Swedish Board of Agriculture's website as their main source of information regarding the legislation that concerns their pets, instead of the actual regulations that are relevant for SEP husbandry. This would explain why SEP owners were aware of certain requirements while being unaware of others. Due to the conflicting results found in this study, it is uncertain where the actual knowledge level regarding Swedish animal welfare legislation actually lies amongst Swedish SEP owners. Overall, SEP owners held positive attitudes towards Swedish animal welfare legislation wherein they believed it was easy to understand, sufficient to prevent suffering and promote good welfare, and could be used as good a starting point for their type husbandry.

Lastly, it is uncertain what impact Swedish animal welfare legislation actually has on Swedish SEP welfare. Owners in this study partially lacked knowledge regarding what is legally required for their pet husbandry. Therefore, if SEP owners are unaware of what the legislation actually entails it is possible that animal welfare legislation has very little impact on SEP welfare. This is because legislation cannot influence the husbandry practices of SEP owners if they are not aware of its' contents. Furthermore, three out the four groups of SEP owner in this study deemed supervision and enforcement of Swedish animal welfare legislation to be insufficient. The responsible authorities often do not have the resources to perform animal welfare inspections on these animals, which supports the SEP owners' perceptions regarding animal protection. For Swedish animal welfare legislation to actually protect these pets better legislation must be enacted and more resources must be diverted towards animal protection.

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Popular science summary

Small and exotic pets (SEP), that is to say small pets besides cat and dogs, have become more common to keep in Sweden over the years. Therefore, it has also become more important to investigate what potential welfare problems might exist for these pets in Sweden. Previous studies have found that a lack of owner competence may result in worse health and welfare for SEP. This means that it is important to find out where the competence level lies amongst Swedish SEP owners. Animal welfare legislation could impact SEP husbandry, however, it is unknown how much Swedish animal welfare legislation currently impacts SEP husbandry and welfare.

This study aimed to investigate the current competence level of Swedish owners of rabbits, guinea pigs, domestic rats, and hamsters regarding their pets' husbandry, welfare and relevant animal welfare legislation. The study also aimed to gather information about SEP owners' perceptions and attitudes towards Swedish Animal welfare legislation and how it could influence SEP husbandry and welfare.

Four surveys, one for each of the four groups of SEP owner, were made and sent out online via Facebook groups. The surveys consisted of three parts: 1) Self-evaluation, 2) Questions about SEP husbandry and welfare, and 3) Questions and statements about Swedish animal welfare legislation.

272 SEP owners completed the survey, wherein 66.2% were rabbit owners, 12.1% were guinea pig owners, 9.6% were domestic rat owners, and 12.5% were hamster owners. The owners in this study were overall confident in their competence regarding the husbandry, welfare, and relevant legislation of their pets. Results showed that owners had good competence about their pets' health, diets, and housing. However, results also showed that SEP owners were less competent about their pets' behaviour, and relevant legislation. Further results showed that SEP owners had a positive attitude towards Swedish animal welfare legislation, but believed that it was not supervised and/or enforced well enough.

It was concluded that SEP owners were competent about their pets' health, diets, and housing, but were less competent about their pets' behaviour and the legislation relevant to their pet husbandry. Even though SEP owners had positive attitudes towards Swedish animal welfare legislation, because results showed that they were not very knowledgeable about it, it was still concluded that it is uncertain how much Swedish animal welfare legislation actually impacts SEP husbandry and welfare, if at all.

Appendix 1

The Swedish University of Agricultural Sciences (SLU) is responsible for processing your personal data. Your contact person for this processing is student Caitlin Sundström, who can be reached via cnom0003@stud.slu.se or 076-142 43 82. Supervisor for this project is Maria Andersson (SLU) and can be reached via maria.andersson@slu.se. The Data Protection ombud at SLU can be contacted via dataskydd@slu.se or 018-67 20 90.

This study intends to gather information regarding the knowledge level small and exotic pet owners (SEP) have concerning their animal husbandry and welfare as well as gauge their perceptions and attitudes towards relevant animal welfare legislation. The aim of this survey is to evaluate the knowledge level of Swedish SEP owners and what knowledge gaps may or may not exist. The study also aims to create an understanding of how animal welfare legislation impacts the husbandry of these animals and how it is perceived by SEP owners.

The survey is anonymous and **only intended for individuals above the age of 18**. SLU will process your personal data in accordance of what is required for SLU to abide by the rules regarding public documents and governmental archives. Your personal data will be stored by the party responsible for processing said data until the 30 June 2025. Your personal data will also be stored for as long that is required by the legislation concerning public documents and governmental archives.

SLU is a governmental body and is obligated to follow the rules regarding public documents, governmental archives, and public statistics. The University will therefore process your personal data according to in such a manner that is required to follow relevant legislation. In accordance with the rules regarding public documents SLU may give your personal data if they are part of a public document that someone requests access to. This applies provided that the data is not classified. You always have the right to revoke your consent. If SLU's processing of your personal data is based upon your consent you have the right to revoke this consent.

If you have any questions regarding SLU's processing of personal data you may contact dataskydd@slu.se or 018-67 20 90.

If you are dissatisfied with SLU's response you may contact Integritetsskyddsmyndigheten with your complaints with SLU's processing of your personal data, imy@imy.se or 08-657 61 00.

Appendix 2

Survey structure and questions for the four surveys.

Section 1: Self-evaluation		
<i>Introductory text</i>	This section consists of five questions wherein you will evaluate your own knowledge regarding your pet's husbandry and welfare.	
Specie/Group	Question	Response type
<i>All</i>	How would you describe your knowledge regarding (Animal)'s health? (e.g. common health issues and preventative measures, etc.)	Likert scale: From 'Very good' to 'Very poor'
<i>All</i>	How would you describe your knowledge regarding (Animal)'s diet and nutritional needs?	Likert scale: From 'Very good' to 'Very poor'
<i>All</i>	How would you describe your knowledge regarding housing (Animal)?	Likert scale: From 'Very good' to 'Very poor'
<i>All</i>	How would you describe your knowledge regarding (Animal)'s behaviour and behavioural needs?	Likert scale: From 'Very good' to 'Very poor'
<i>All</i>	How would you describe your knowledge regarding the animal welfare legislation that concerns (Animal) as pets?	Likert scale: From 'Very good' to 'Very poor'
Section 2: Questions regarding SEP husbandry and welfare		
<i>Introductory text</i>	This section consists of six questions wherein you will answer 1-2 questions each regarding your pet's health, nutrition, housing, and behaviour.	
Specie/Group	Question	Response type
<i>All</i>	Which of the following options are the most common health issues that (Animal) face as pets? Choose 1-3 options (<i>more than or fewer than 3 options may be correct</i>)	Multiple choice
<i>All</i>	Which of the following options are the most common causative factors behind (Animal) developing these health issues? Choose 1-3 options (<i>more than or fewer than 3 options may be correct</i>)	Multiple choice
<i>All</i>	What should a (Animal) daily feed consist of to be considered a healthy diet? Choose 1-3 options (<i>more than or fewer than 3 options may be correct</i>)	Multiple choice
<i>All</i>	What should be present in within a cage/enclosure for a (Animal) to feel at home and be content? Choose 1-3 options (<i>more than or fewer than 3 options may be correct</i>)	Multiple choice
<i>All</i>	Which of the following behaviours could indicate a positive welfare in (Animal)? Choose 1-3 options (<i>more than or fewer than 3 options may be correct</i>)	Multiple choice

<i>All</i>	Which of the following behaviours could indicate a negative welfare in (Animal)? Choose 1-3 options	Multiple choice
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Section 3: Questions regarding Swedish animal welfare legislation

<i>Introductory text</i>	<p>The final section consists of 13 questions about Swedish animal welfare legislation.</p> <p>In this section you will answer questions regarding which animal welfare legislation is relevant for your animal's husbandry.</p> <p>You will then be presented with several statements and answer whether they are correct according to relevant animal welfare legislation. You can assume that there are always exceptions to these statements for veterinary and medical reasons and may therefore disregard this aspect when answering these questions.</p> <p>Lastly, you will answer question wherein you may describe how you feel regarding Swedish animal welfare legislation and its' implementation, as well as how you think it does or does not impact your animal husbandry.</p>	
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<i>Specie/Group</i>	<i>Question</i>	<i>Response type</i>
<i>All</i>	What Swedish animal welfare legislation concerns the husbandry of (Animal) as pets?	Open text answer
<i>All</i>	According to law (Animal) must be supervised at least once daily. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Guinea pig</i>	According to law Guinea pigs must be provided access to hides/shelters. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Guinea pig</i>	According to law Guinea pigs must be provided vitamin C daily. True or false, and are there exceptions?	Multiple choice: <i>True or false with and without exceptions</i>
<i>Rabbit</i>	According to law rabbits must be provided with access to elevated surfaces, <i>e.g.</i> a shelf. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Rabbit</i>	According to law rabbits of breeds with hanging ears (<i>e.g.</i> Holland lop) must have their ears cleaned regularly. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Hamster</i>	According to law hamsters, except Golden hamsters, must be kept in pairs or groups. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>

<i>All</i>	It is legal to keep (Animal) in cages with wire flooring. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Guinea pig, Rabbit, Domestic rat</i>	It is legal to keep (Animal) on their own <i>i.e.</i> without other (Animal). True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Guinea pig, Rabbit</i>	According to law (Animal) must always have free access to roughage (<i>e.g.</i> hay). True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Domestic rat, Hamster</i>	According to law the floor of cages meant for the keeping of (Animal) must be covered by substrate. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Domestic rat, Hamster</i>	According to law (Animal) must have free access to feed (<i>e.g.</i> pellets). True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>Domestic rat, Hamster</i>	According to law (Animal) must be provided with the opportunity to dig. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>All</i>	Keeping ten or more (Animal) always requires a permit to be considered legal. True or false, and are there exceptions?	Multiple choice: <i>True or false with or without exceptions</i>
<i>All</i>	I believe that the legislation that concerns the husbandry of (Animal) as pets is easy to understand and clear with what is required for my husbandry to be in accordance with said legislation.	Likert scale: <i>From 'Completely agree' to 'Completely disagree'</i>
<i>All</i>	I believe that the legislation that concerns my pet is enough to prevent suffering and promote good welfare for (Animal).	Likert scale: <i>From 'Completely agree' to 'Completely disagree'</i>
<i>All</i>	I believe that the legislation that concerns my pet has requirements that are too high and/or unnecessary.	Likert scale: <i>From 'Completely agree' to 'Completely disagree'</i>
<i>All</i>	I believe that the legislation that concerns my pet can be used as a good starting point for that type of pet husbandry.	Likert scale: <i>From 'Completely agree' to 'Completely disagree'</i>
<i>All</i>	I believe that the the authorities that are responsible for animal protection supervise/enforce the law enough to protect (Animal) from potential suffering.	Likert scale: <i>From 'Completely agree' to 'Completely disagree'</i>

Appendix 3

The written open text answers given by SEP owners in their respective surveys and for the respective questions when they choose the answer “Other”.

Survey for rabbit owners:

<i>Section 1: Self-evaluation</i>	
<i>Question 3: How would you describe your knowledge regarding housing rabbits?</i>	
<i>Respondent 1</i>	I don't take in rabbits from different herds due to a fear of potential disease spreading to my herd
<i>Respondent 2</i>	Don't know what it means (referring to the Swedish word for “housing”)
<i>Respondent 3</i>	What is (Swedish word for housing) [emoticon]
<i>Question 4: How would you describe your knowledge regarding rabbit's behaviour and behavioural needs?</i>	
<i>Respondent 1</i>	I learn all the time
<i>Section 2: Questions regarding SEP husbandry and welfare</i>	
<i>Question 6: Which of the following options are the most common health issues that rabbits face as pets? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
<i>Respondent 1</i>	Cervical cancer
<i>Question 7: Which of the following options are the most common causative factors behind rabbits developing these health issues? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
<i>Respondent 1</i>	I see it mostly in rabbits that live indoors
<i>Respondent 2</i>	Non-castrated females
<i>Respondent 3</i>	Common with constipation during shedding
<i>Respondent 4</i>	Incorrect breeding
<i>Respondent 5</i>	Cervical cancer
<i>Respondent 6</i>	Exposure to contagion

Question 8: <i>What should a rabbit's daily feed consist of to be considered a healthy diet? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Hay at least 85% then that which complements that individual's needs
Respondent 2	Vegetables, pellets depending on the breed
Respondent 3	Base feed hay/grass and twigs complemented with wild vegetation herbs leafy greens for a healthy diet
Respondent 4	Majority should be hay, but it is also good if they also receive a small amount of pellets of good quality (for vitamins etc) as well as greens in the form of fresh herbs etc (for hydration and vitamins)
Question 9: <i>What should be present in within a cage/enclosure for a rabbit to feel at home and be content? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	I believe they absolutely should have both hides and elevated surfaces/shelves (requirement) and digging opportunities... hence this answer option ..
Respondent 2	A friend
Respondent 3	More than 3 of these choices should be available as the question is difficult to answer because it is formulated as if only 1-3 options are correct
Respondent 4	Rabbits should not live shut-in to be well but dig also
Respondent 5	Digging opportunities, elevated surfaces, hides, tunnels, chewing/gnawing material, a conspecific as well as the possibility for females to nest
Question 10: <i>Which of the following behaviours could indicate a positive welfare in rabbits? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Binkies/happy hops as well as well as resting comfortably
Respondent 2	Same as the previous question, more than 3 of these could indicate a good welfare
Respondent 3	Happy hops
Question 11: <i>Which of the following behaviours could indicate a negative welfare in (Animal)? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Reluctance to eat and move
Respondent 2	Should be able to choose more than 3

<i>Section 3: Questions regarding Swedish animal welfare legislation</i>	
<i>Question 13: According to law rabbits must be supervised at least once daily. True or false, and are there exceptions?</i>	
<i>Respondent 1</i>	2 times per day, once every 12 hours
<i>Respondent 2</i>	More times than 1
<i>Respondent 3</i>	Supervision 2 times/per day
<i>Respondent 4</i>	Would never
<i>Respondent 5</i>	Recommendation is two times per day
<i>Respondent 6</i>	1 time day at least according to the Swedish Board of Agriculture
<i>Question 14: According to law rabbits must be provided with access to elevated surfaces e.g. a shelf. True or false, and are there exceptions?</i>	
<i>Respondent 1</i>	Yes, unless the rabbit is injured and shouldn't make such jumps at the moment
<i>Respondent 2</i>	Sadly not true
<i>Respondent 3</i>	Hide box can function as a shelf as well
<i>Question 15: It is legal to keep rabbits in cages with wire flooring. True or false, and are there exceptions?</i>	
<i>Respondent 1</i>	Outdoor pens should have wire flooring if then preferably buried to protect the paws.
<i>Respondent 2</i>	Yes, if the wire is flush with the ground
<i>Respondent 3</i>	Wire flooring is only allowed if the wire lays flat on the ground not elevated
<i>Respondent 4</i>	Only allowed in grazing cages outside
<i>Respondent 5</i>	I believe it is legal BUT the net should be covered as to not injure the rabbits
<i>Respondent 6</i>	Legal but should be avoided
<i>Respondent 7</i>	Wire flooring is only allowed if the animals are kept outside in grazing cages

Question 16: <i>It is legal to keep rabbits on their own i.e. without other conspecifics. True or false, and are there exceptions?</i>	
Respondent 1	The recommendation though is a conspecific
Respondent 2	Legal yes but the recommendation is conspecifics
Respondent 3	True, but a recommendation.
Respondent 4	Don't know, but it should be law to have at least 2 rabbits
Respondent 5	Legal, but it's recommended to at least have one conspecific
Respondent 6	They should have a friend, but some don't work to keep together w others
Respondent 7	I believe it is formulated as a strong recommendation on the Swedish Country Board's/the Swedish Board of Agriculture's website
Question 17: <i>According to law rabbits must always have free access to roughage (e.g. hay). True or false, and are there exceptions?</i>	
Respondent 1	I hope it's true
Respondent 2	They should have it but don't know if it's a legal requirement
Question 18: <i>According to law rabbits of breeds with hanging ears (e.g. Holland lop) must have their ears cleaned regularly. True or false, and are there exceptions?</i>	
Respondent 1	You're responsible for keeping the animal in good health/without suffering, and that then means you have to keep an eye on it and clean when necessary
Respondent 2	It's not a legal requirement but it should be
Respondent 3	It should be taken care of when necessary
Respondent 4	If it falls under the owner's responsibility to keep your pet healthy then the answer is yes but I have never found anything explicit regarding the cleaning of ears as a its' own requirement
Question 19: <i>Keeping ten or more pet rabbits always requires a permit to be considered legal. True or false, and are there exceptions?</i>	
Respondent 1	Housing other's animals more than six per year yes

Question 20: <i>I think that the legislation that concerns the husbandry of rabbits as pets is easy to understand and clear with what is required for my husbandry to be in accordance with said legislation.</i>	
Respondent 1	Fairly clear, however some of the lowest requirements are substandard (cage size), as the lowest requirements are so low that they entail plain animal cruelty.
Respondent 2	No the law has many recommendations that some owners don't abide by
Question 21: <i>I believe that the legislation that concerns my pet is enough to prevent suffering and promote good welfare pet rabbits.</i>	
Respondent 1	Disagree, needs to be updated for good husbandry with minimum cage size etc.
Respondent 2	I interpret the question as that the laws regarding rabbit husbandry are sufficient? Then the answer is no (Completely disagree)
Respondent 3	I have a poor grasp on what's required I now realise
Respondent 4	I don't think the law is sufficient to promote rabbits wellbeing as it's allowed to keep them in cages. Mine are free 24/7
Question 22: <i>I believe that the legislation that concerns my pet has requirements that are too high/unnecessary.</i>	
Respondent 1	I believe they are too few... should be stricter
Respondent 2	The larger the cage the better
Question 23: <i>I believe that the legislation that concerns my pet can be used as a good starting point for that type of pet husbandry.</i>	
Respondent 1	No it should be made more clear
Respondent 2	The law is far too weak, rabbits are social animals and need company. A lone rabbit in a cage is unwell but it's legal.

Survey for guinea pig owners:

Section 2: <i>Questions regarding SEP husbandry and welfare</i>	
Question 6: <i>Which of the following options are the most common health issues that guinea pigs face as pets? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Eye injuries
Question 7: <i>Which of the following options are the most common causative factors behind guinea pigs developing these health issues? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	

Respondent 1	Bad luck
Respondent 2	Eye injuries are usually due to being poked by hay
Question 8: <i>What should a guinea pigs' daily feed consist of to be considered a healthy diet? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Vitamin c enriched vegetables, broccoli bell pepper for example
Respondent 2	White cabbage, kale, bell peppers, grass during the right season
Respondent 3	A variation of vegetables with C-vitamin. Too much of this or that can contribute to different health risks but considering how many different vegetables and herbs exists it's difficult not to vary between them.
Respondent 4	Vegetables rich in vitamin C
Respondent 5	Vegetables rich in vitamin C
Respondent 6	Vegetables but in variety. Not too much of e.g. cabbage, cucumber, fruits etc.
Respondent 7	Bell peppers, vegetables rich in vitamin C
Respondent 8	Bell peppers or other vegetables rich in vitamin C
Respondent 9	Vegetables that contain vitamin C
Respondent 10	Vegetables rich in vitamin C
Question 9: <i>What should be present in within a cage/enclosure for a guinea pig to feel at home and be content? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Soft beds/cushions
Respondent 2	The ability to sit underneath something, cover over the guinea pig.
Respondent 3	Hides, tunnels, chew toys, fresh water, hay, clean cage
Respondent 4	Hay

Respondent 5	At least one other guinea pig, water and hay
Respondent 6	Wood chip substrate
Question 10: Which of the following behaviours could indicate a positive welfare in guinea pigs? Choose 1-3 options (more than or fewer than 3 options may be correct)	
Respondent 1	Eats, drinks, approaches in the cage, grooming friend(s), running around and jumping like popcorn
Question 11: Which of the following behaviours could indicate a negative welfare in guinea pigs? Choose 1-3 options (more than or fewer than 3 options may be correct)	
Respondent 1	Sitting with its' fur raised and apathetic in a corner
Section 3: Questions regarding Swedish animal welfare legislation	
Question 13: According to law guinea pigs must be supervised at least once daily. True or false, and are there exceptions?	
Respondent 1	Thought it was 2 times
Question 15: It is legal to keep guinea pigs in cages with wire flooring. True or false, and are there exceptions?	
Respondent 1	The wire floor must be covered
Respondent 2	True if the cage floor is in direct contact with grass or floor
Question 16: It is legal to keep guinea pigs on their own i.e. without other guinea pigs. True or false, and are there exceptions?	
Respondent 1	They must have at least one friend but I assume you need to shelter/isolate them if problems arise
Respondent 2	It's legal if the animal shows aggression towards conspecifics, if it's temporarily sick or is waiting for a new friend if the old one has died for example
Question 18: According to law guinea pigs must be provided vitamin C daily. True or false, and are there exceptions?	
Respondent 1	Not in vitamin form. Only in vegetables.
Respondent 2	Doesn't have to be soluble vitamins but can instead be in the form of fruit/vegetables
Respondent 3	They should have vegetables rich in vitamin C, not soluble vitamins.

Question 21: <i>I believe that the legislation that concerns my pet is enough to prevent suffering and promote good welfare for guinea pigs</i>	
Respondent 1	No, many have adopted the more American style with fleece blankets in the cages. It should be stated in the law that guinea pigs should never have hay “bags” hanging on the cage. De should have a lot of hay on the floor.
Respondent 2	Disagree. It’s scandalous that it’s okay to keep guinea pigs within such small surface areas.
Respondent 3	L80 as of today has insufficient area requirements- lager cage sizes are necessary
Respondent 4	In my experience it’s difficult to find trustworthy concrete information regarding how guinea pigs best thrive, but perhaps this doesn’t need to be provided in the form of laws.
Respondent 5	Animal welfare inspectors are behind us guinea pig-enthusiasts regarding animal welfare questions regarding most animals, including guinea pigs.
Question 22: <i>I believe that the legislation that concerns my pet has requirements that are too high/unnecessary.</i>	
Respondent 1	Animal welfare inspectors rarely have the right answers, instead they need to seek information before they make an assessment, that’s usually still incorrect, guinea pig owners are often more knowledgeable.
Question 23: <i>I believe that the legislation that concerns my pet can be used as a good starting point for that type of pet husbandry.</i>	
Respondent 1	They shouldn’t recommend hay racks as guinea pigs have seriously injured themselves on these. They should search for information from guinea pig associations.
Question 24: <i>I believe that the the authorities that are responsible for animal protection supervise/enforce the law enough to protect guinea pigs from potential suffering.</i>	
Respondent 1	I’ve seen very questionable cages with barely any hay & substrate in advertisements on Blocket etc, so maybe not?
Respondent 2	Something’s clearly not working.

Survey for domestic rat owners:

Section 1: Self-evaluation	
Question 1: <i>How would you describe your knowledge regarding domestic rat health?</i>	
Respondent 1	I would say I have good knowledge regarding disease and injury prevention overall. I can recognise the most common health problems but concerning the more rare stuff I have most knowledge regarding what I’ve personally

	experienced. I do however have a pretty good grasp on signs of disease and when to seek veterinary care vs treat it myself.
Question 3: <i>How would you describe your knowledge regarding housing domestic rats?</i>	
Respondent 1	Don't understand the question
Section 2: Questions regarding SEP husbandry and welfare	
Question 7: <i>Which of the following options are the most common causative factors behind domestic rats developing these health issues? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	The transfer risk of virus and bacteria that cause respiratory problems increases in limited spaces.
Question 8: <i>What should a domestic rat's daily feed consist of to be considered a healthy diet? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Adequate whole feed as a base is the easiest way to make sure the rat gets the nutrition they need. It's difficult to provide a sufficient diet without pellets and dietary supplements. It can be pellets of high quality, or a feed mixture including pellets, grain, herbs, seeds and vegetables. It is good to give fresh vegetables and fruit as a supplement a couple times a week.
Respondent 2	A well-mixed feed that's carefully calculated for the most stimuli and to fulfil their needs. The Swedish market is however missing a 100% option. A complete pellet. Or a mix and pellets.
Respondent 3	A mixed and varied diet is best with both animalistic and vegetarian contents.
Respondent 4	A mix containing everything from seeds, insects, dried leafy greens etc, that's beneficial for both stimuli and their needs. There is however not a 100% enforcement of dietary supplements on the Swedish market yet. Otherwise to fulfil all their needs pellets are always a good alternative. Using a mix always comes with the risk that they exclude some elements.
Question 10: <i>Which of the following behaviours could indicate a positive welfare in domestic rats? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Boggling (I can't find a Swedish name for it, but when they "plop" their eyes out)
Respondent 2	Boggling (Don't know what it's called in Swedish, but when they "plop" their eyes out)
Section 3: Questions regarding Swedish animal welfare legislation	
Question 14: <i>According to law the floor of cages meant for the keeping of domestic rats must be covered by substrate. True or false, and are there exceptions?</i>	

Respondent 1	I've had carpets as a soft cover, I'm assuming that's ok,,
Respondent 2	I'm under the impression that an area equal in size to the minimum dimensions have to be covered in substrate if the area they live in is bigger than that.
Question 18: <i>According to law domestic rats must be provided with the opportunity to dig. True or false, and are there exceptions?</i>	
Respondent 1	It says "should have digging opportunities" but not that it's a must. So it's a question open to interpretation.
Respondent 2	They "should" have access to it..? But it's only a "recommendation" since the law says something along the lines of "they should have an environment that fulfils the animals behavioural needs" or something, which is digging for rats.
Respondent 3	According to law I'm under the impression that it's unclear. Like that the law says "they should have the opportunity to perform natural behaviours" or something and that the recommendation is that animals that do dig SHOULD to have access to it.

Survey for hamster owners:

Section 2: Questions regarding SEP husbandry and welfare	
Question 6: <i>Which of the following options are the most common health issues that hamsters face as pets? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Diabetes (usually the dwarf species campbells and winter white, but especially within hybrids of the two species)
Respondent 2	Diabetes
Respondent 3	For example how Campbells lack the diabetes and eye problems should instead be specified. For example, RFE was a huge problem during 2022 for Campbells. Neurological problems such as star gazing was a problem specifically for Roborovskis, and an increase in crooked sternums in Golden hamsters during 2021 etc. etc.
Question 8: <i>What should a hamster's daily feed consist of to be considered a healthy diet? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Seed- and insect mixes with accurate nutritional value, alternatively pellets with those nutritional values (not rabbit pellets!!)
Respondent 2	They should have been clear and distinct about whether the first musli option mean the mix feed form, or musli from ICA. Diet should be species specific dry feed in musli form for best variation or pellet form to make sure the hamster is getting everything they need including the "boring" parts. If the musli form is inadequate there's a need to add extra on top of the dry feed that often vitamins/minerals.

Respondent 3	A composition of the multiple mentioned feed forms. 1 one thing can never constitute a healthy diet, it largely depends on what you give them. Pellets vary depending on content, you have to give a moderate amount of different things in order to resemble their diet in the wild.
Respondent 4	Once again depending on the specific hamster species. Golden hamsters should be provided with fresh feed 2-3 times/week whereas dwarf hamsters should have it less frequently. If their feed base is the popular spays, you need to compensate by providing protein rich feed. Dwarf hamsters should not be fed with fruits, corn etc in large quantities. Other vegetables are more suitable in amounts depending on the hamster and species.
Respondent 5	Beef
Question 9: <i>What should be present in within a cage/enclosure for a hamster to feel at home and be content? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	It's difficult to choose since several components are needed that weren't mentioned in the same answer. Hamster species that are able to live together should be given the opportunity of conspecifics but be separated if they start fighting. Access to dig for the individuals that show interest in it, far from all choose to dig even when they have access to it, the same applies to dust baths. Far from everyone is interested, but all should be repeatedly be given opportunity to see if it's utilised or always offered it when outside of their cages in for example pens. Some use sand solely as a litter box and sand absorbs the smell quickly. Appropriate hiding/burrow spots should be provided due to hamsters being prey animals and wanting opportunity to tuck in undisturbed. Should have little furnishings that are buildable, climbable, most of my own have preferred tunnels to digging them themselves but gladly build nest in the tunnels. Should have an appropriate material to chew on or multiple. Wood furnishings, sticks etc. Should have a form of softer burrow material that don't have the risk of injuring their cheek pouches like hard hay. Not all use running wheels but if the hamster shows desire to run it should always have access to a wheel. Multiple of mine use the wheels whereas others use the wheels to build burrows, as food pantries or dig into place in order to climb on them. In these instances the wheel should instead be removed so they don't injure themselves from the spins. Even with caution regarding wheels in relation to hamsters that live in groups so they don't injure themselves. Sometimes you're able to have multiple wheels but if they all use the same wheel it's risky.
Respondent 2	Never water baths but always dust baths. Preferably digging opportunities but most important is the running wheel. Preferably digging opportunities, but it's important to remember that in the wild they don't dig their own burrows but instead move into already dug ones. Thereafter, activation is essential. You can have a very large cage that is well furnished, but your hamster still needs natural activation.
Question 11: <i>Which of the following behaviours could indicate a negative welfare in (Animal)? Choose 1-3 options (more than or fewer than 3 options may be correct)</i>	
Respondent 1	Wandering restlessly back and forth the cage perimeter.

Respondent 2	Oddly phrased answers. Aggression towards cage/pen mates can depend on different things as well as species. Avoidance towards humans depends on how tame they are.
Section 3: Questions regarding Swedish animal welfare legislation	
Question 13: <i>According to law hamsters must be supervised at least once daily. True or false, and are there exceptions?</i>	
Respondent 1	I believe it's 2 times per day
Respondent 2	Supervision over the cage yes. Supervision over the hamster is impossible without the risk of stress and destroying the hamsters nest. They are nocturnal. Some wake up so late that it's not feasible to sit and wait when you yourself have to sleep. It's also possible that the hamster sleeps until a little past midnight and then you don't correctly supervise them every day. Supervision of the cage daily with new water, check the feed, occasionally clean the litter corner and tidy up. Only wake and destroy a hamster's nest if there is a justifiable reason for more than daily supervision.
Question 14: <i>According to law the floor of cages meant for the keeping of hamsters must be covered by substrate. True or false, and are there exceptions?</i>	
Respondent 1	It's only mentioned that substrate should be present and be in a suitable amount according to species. Not that the cage needs to be covered in bottom substrate.
Respondent 2	There needs to be enough substrate so that the hamster can dig in it, make tunnels etc
Question 15: <i>It is legal to keep hamster in cages with wire flooring. True or false, and are there exceptions?</i>	
Respondent 1	I think there's some exceptions but I don't recall. But generally no
Question 16: <i>According to law hamsters, except Golden hamsters, must be kept in pairs or groups. True or false, and are there exceptions?</i>	
Respondent 1	Chinese hamsters should also be housed alone
Respondent 2	Animals besides golden are to be held together with conspecifics for as long as possible. Sadly not uncommon that other species begin to fight. Then they must be separated. According to me you should try again to see if they can be housed together and even then check the cage in case that is the potential reason for conflict due to furnishing. Such as them not having several spots suitable for building nests in case they want a break from their cage mate. It's also common that zoo animals that are often called hybrid rarely can be housed with conspecifics their whole life. But you should also think about if you have both females and males in case the scent of e.g. the opposite sex can trigger conflict during heats etc.

<i>Question x: W</i>	
Respondent 1	I don't remember what it says explicitly, but digging opportunities definitely falls under "be able to perform their natural behaviours" which is required by law
Respondent 2	I don't recall if the law says that. For me that it doesn't state specifically that they should be able to dig. But since substrate in the cage is required digging is always possible. However there's nothing that says how much digging material there should be. Every hamster also differs in how much they want to dig. In my opinion, but not the law, hamsters should at least have enough substrate somewhere in the cage so that they can fully burrow themselves.
Question 19: <i>Keeping ten or more hamsters always requires a permit to be considered legal. True or false, and are there exceptions?</i>	
Respondent 1	I think so, if it's for commercial purposes or similar
Question 21: <i>I believe that the legislation that concerns my pet is enough to prevent suffering and promote good welfare for hamsters.</i>	
Respondent 1	Minimum size requirements are the barest minimum according to the law currently, but there's a remittance in the works.
Respondent 2	Partially agree. It would be good if the current minimum size requirements were doubled. That size requirements for running wheels are included. That bared cages should be allowed but still need to provide a reasonable amount of digging opportunities such as a digging box as well as hamsters repeatedly displaying bar biting need to immediately be moved to different housing or cover the cage bars. More species specific requirements are also necessary instead of having them all grouped together. For example that hamsters should have more surface area but not be allowed too high heights entailing risks for fall related injuries. The law needs certain updates and be adapted to the recommendations of reasonable breeders and associations given from knowledge regarding the different species.
Question 22: <i>I believe that the legislation that concerns my pet has requirements that are too high/unnecessary.</i>	
Respondent 1	I disagree, with one exception: Chinese hamsters are solitary or semi-solitary (a little uncertain), so the requirement on being housed with conspecifics is silly specifically for this more rare species, even if it of course should be interpreted as "exempting circumstances"
Respondent 2	The law overall is pretty easy to follow as it is today. There seems to be a risk that it instead flips to having far too high demands if SBA gets their way. Furthermore all individuals are so different. Like with daily supervision is impossible without disturbing a hamster unnecessarily if they're sleeping for long periods and you yourself want to go to sleep before you see the hamster. In my opinion it's not the daily supervision of the actual animal. Instead it's supervision of the hamsters housing. The same with an outdoor cat. If the cat's away for two days then daily supervision is impossible.

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