

What information is currently available on pet rat introductions: a grey literature scoping review protocol

Authors

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Abstract

Objective: The objective of this scoping review is to identify what information is available to owners, and therefore what information is likely to influence the welfare of pet rats.

Introduction: There does not currently appear to be any scientific evidence outlining how to conduct pet rat introductions. In lieu of this information, the welfare implications of different methods are currently unknown. This scoping review will therefore map out the different information and advice currently available as the first step towards identifying potential welfare concerns.

Inclusion criteria: Grey literature (both websites and social media content) will be included if it mentions introducing pet fancy rats (*Rattus norvegicus*) to each other, is in English, and is freely and publicly available. Content will only be included if it appears to be advising or educating others on how to conduct an introduction and video content must explain the process, not just show it.

Methods: A survey was employed to gather information on what rat owners would search to find out information on introductions. The results of this survey informed the search terms for this review. Three search strategies will be employed. Firstly, a targeted search of known small animal charity websites will be conducted. Following this, a broad search of webpages on popular search engines will be conducted using the search terms identified in the survey. Finally, a broad search on social media platforms will be used to further identify relevant information.

Introduction

There are a number of factors that influence the welfare of animals. One such factor is the animal's social environment (Veissier et al., 2012). Making changes to the social groups of animals is one way that captive species are often managed. This has been studied in a number of managed animal species (e.g. farm animals (Desire et al., 2015; Hubbard et al., 2021; O'Malley et al., 2022; Peden et al., 2018), zoo animals (Burks et al., 2004; Jacobs et al., 2014; Martinez et al., 2025; Schmid et al., 2001), research animals (Beisner et al., 2021; Rox et al., 2019; Thurston et al., 2018; Valuska and Mench, 2013)). The impact of the social

environment on companion animals has received less attention to date. What research has been conducted has focussed mainly on dogs (Ottenheimer Carrier et al., 2013; Sonderegger and Turner, 1996), cats (Elzerman et al., 2020; Hoff et al., 2025; Levine et al., 2005), horses (Hartmann et al., 2012, 2011) and rabbits (Bill et al., 2020). With the exception of rabbits, smaller companion animals have received very little attention despite often being housed in groups under confined conditions. Pet rats are one such social species, with multiple wild and laboratory rat studies describing their social behaviours (Barnett, 1958; Davis, 1953; Hakataya et al., 2023; Mauri et al., 2023; Proops et al., 2021; Schweinfurth, 2020; Schweinfurth et al., 2017). More recently, studies have aimed to study the social behaviours of pet rats (Neville et al., 2022; Schneidewind et al., 2024; Walburn et al., 2025). Due to the short lifespan of rats, it is likely that owners will encounter the death of a rat or rats, resulting in a lone rat. As rats are social animals, owners may choose to introduce other rats to avoid the potential detriment to the lone rat's welfare. However, there does not appear to be any scientific guidance on pet rat introductions to date.

Walburn et al., (2025) included the first academic report of pet rat introductions and detailed the 'Carrier Method' where unfamiliar rats are placed together in a small, confined space (e.g. a pet carrier) to bond. The space is then gradually increased over time if the rats remain settled together and do not fight (Walburn et al., 2025). Other methods, as detailed by popular rat care websites (e.g. <http://www.isamurats.co.uk/introducing-rats/>, accessed 16 February 2026) are the 'Neutral Space Method' (where unfamiliar rats are introduced gradually to each other in a neutral location, e.g. a bathtub, with low-level fighting permitted but more serious fighting is interrupted), the 'Heavy Supervision Method' (similar to the neutral space method but where all fighting, including low-level fighting, is interrupted), and the 'Cage Swap Method' (where unfamiliar rats are accustomed to each others' smells by placing their respective cages close together, followed by swapping the rats into each others' cages, before introducing them using the neutral space method).

As noted by Walburn et al., (2025), further research is required to identify which methods of introduction are optimal for the welfare of the rats involved. As little is known about pet rat introductions and their welfare implications, this grey literature scoping review will allow us to map out the different options and advice available to owners. Furthermore, as previous studies have demonstrated the use of the internet by pet owners to obtain health information about their pets (e.g. (Hofmeister et al., 2008; Kogan et al., 2012; Solhjoo et al., 2019; Haase et al., 2025)) as well as the use of social media sites (e.g. (Oxley and Kogan, 2018; Kogan et al., 2021)), it stands to reason that owners will also consult the internet for other advice about their pets. Therefore, a grey literature scoping review seems appropriate in order to identify what information on pet rat introductions is available to owners.

Review question

This scoping review aims to identify what information is available to owners, and therefore what information is likely to influence the welfare of pet rats. The overarching research question in line with this aim is: what information is currently available on pet rat introductions? This scoping review will also aim to find out what methods are presented as introduction options and what factors are believed to affect introductions.

Keywords

Rat introductions, rat bonding, unfamiliar rats, pet rat introductions, pet rat bonding

Eligibility criteria

Online resources (e.g. webpages) will be included if they are freely and publicly available, in English and provide information on pet rat introductions. Video content will only be included where the introduction process is explained during the video. Table 1 details the inclusion and exclusion criteria.

Table 1: Inclusion and exclusion criteria for the scoping review.

Inclusion Criteria	Exclusion Criteria
Content that talks about introducing pet fancy rats (<i>Rattus norvegicus</i>) to each other.	Content that does not talk about introducing pet fancy rats to each other, or talks about introducing other rat species.
Content that is in English.	Content that is not in English.
Content that is freely available.	Content that is not freely available.
Content that is publicly available.	Content that is not publicly available.
Video content where the introduction process is explained.	Video content only showing an introduction but not explaining what is being done.
Content that appears to be advising or educating others on how to conduct an introduction.	Content that talks about how an individual has introduced rats but not in an educational capacity.

Methods

This study will consist of two stages, following the methods of Kuhl et al., (2022). The first stage identified likely search terms by owners and the second stage will use these terms to inform the scoping review search.

Stage One – Identifying Search Terms

A four-question survey was created in Microsoft Forms. Table 2 outlines the questions and answer options available in the survey.

Table 2: Outline of the questions and answer options available in the survey.

Question Number	Question	Answer Options	Response Type
1.	If you were planning to do a rat introduction (i.e. introducing unfamiliar rats to each other) and wanted to search the internet for information, what phrase or words would you use to carry out your search?	Free text	Free text
2.	If you were planning to do a rat introduction and wanted to search the internet for information, where would you look for that information?	Search engine (e.g. Google) / Facebook / Instagram / TikTok / YouTube / Reddit / Online rat forums /	Multiple Choice Option

		Other (with an option to specify)	
3.	Would you consult any animal charity websites for information on rat introductions?	Yes / No	Multiple Choice Option
3.1 (only available if 'Yes' is selected for question 3.)	Which animal charity websites would you consult for information on rat introductions?	Free text	Free text
4.	Is there anywhere else not online you might look for information? (For example, would you ask your vet?)	Your vet / Local animal shelter / Rat breeder / Other (with option to specify)	Multiple Choice Option

The survey call went out on social media and collected responses for a two week period between 19th March 2026 and 1st April 2026.

A total of 163 responses were received from the survey and descriptive information was extracted to inform the search in Stage Two (see Appendix I).

Figure 1 illustrates how the final search expressions for this scoping review were formed. The free text data from the first question were then extracted to create search terms through a coding reliability thematic analysis (Morgan, 2022). A coding reliability thematic analysis was chosen for this as it allows for themes to summarise the data. Unlike with a reflective thematic analysis, in which the positionality of the researcher is a major component, the authors wanted to ensure that any potential bias was reduced in order to ensure that final results were representative of owner responses and therefore increase the chances of the final search expressions capturing the most likely search terms owners will use (Braun et al., 2019; Morgan, 2022; Roberts et al., 2019).

Out of the 163 responses, four were excluded from this analysis as they failed to provide any search terms. From the remaining responses, 294 separate search terms were identified. Author CW initially read through all of the responses to familiarise herself with the data. CW then created a codebook of themes and their definitions (see Appendix II). CW and MM discussed and agreed on the codebook and both researchers then coded the entire dataset independently using NVivo 12 Plus (Lumivero, 2025). The Cohen's kappa score measuring the level of agreement between the two coders was 0.75. As a score of 0.80 or above is usually thought to show a good level of agreement between coders (Braun et al., 2019) CW and MM discussed the areas of disagreement and were able to resolve them.

The strings from the 31 themes outlined in the codebook (see Appendix II) were totalled up and the most common were considered for search term creation (Figure 2). The themes were further refined by CW as part of the descriptive analysis used to inform the search in Stage Two (see Appendix III).

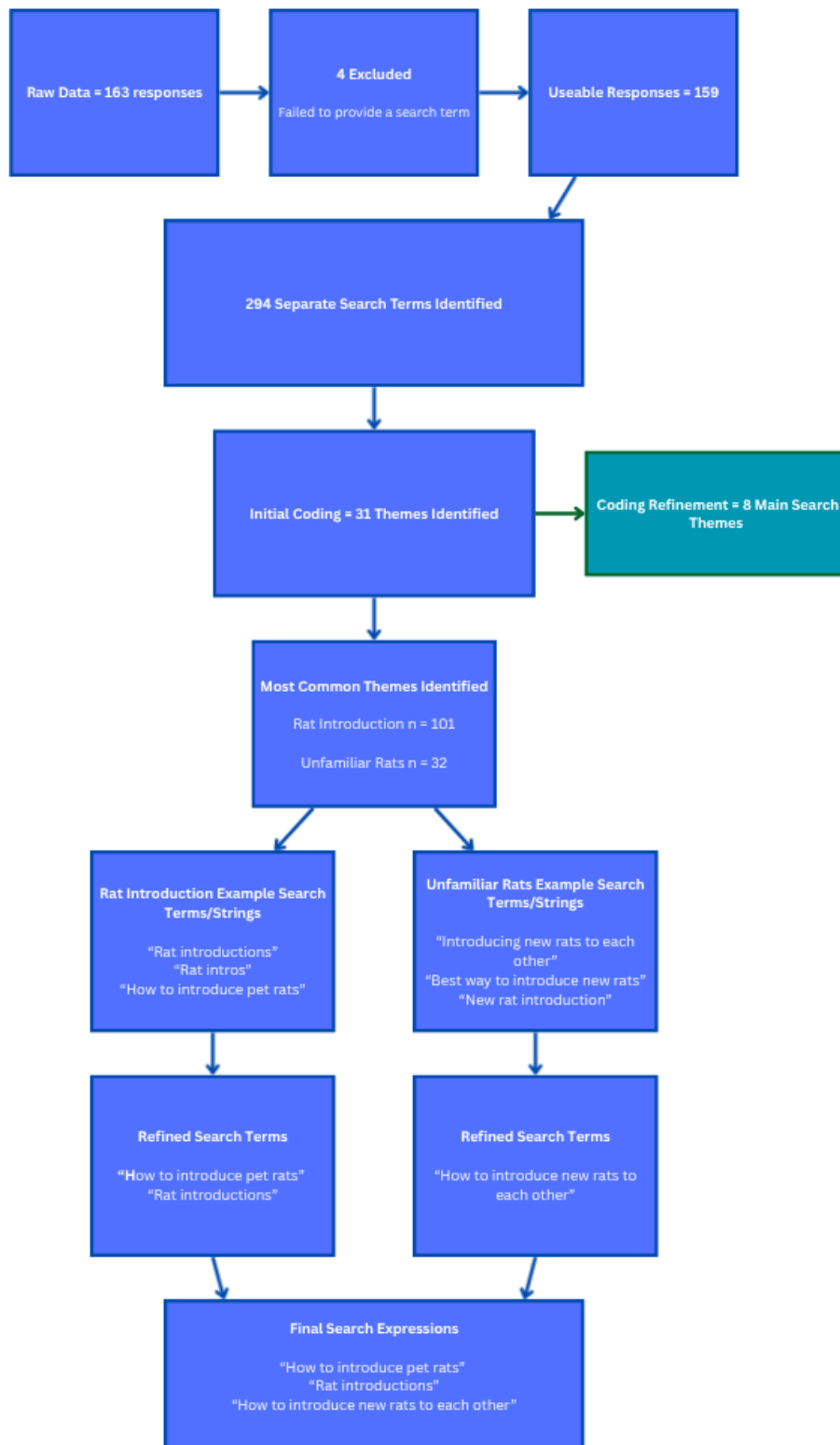


Figure 1: Diagram illustrating how the final search expressions for this scoping review were formed. A total of 163 survey responses were received. Of these, four were excluded as they failed to provide a search term. From the remaining responses, 294 separate search terms were identified. These were analysed using a coding reliability thematic analysis and 31 themes were identified. The most common themes identified ('Rat Introduction' and 'Unfamiliar Rats') were then used to determine the final search expressions for this scoping review.

‘Rat Introduction’ was the most common theme, followed by ‘Unfamiliar Rats’ and then ‘Carrier Method’ (Figure 2).

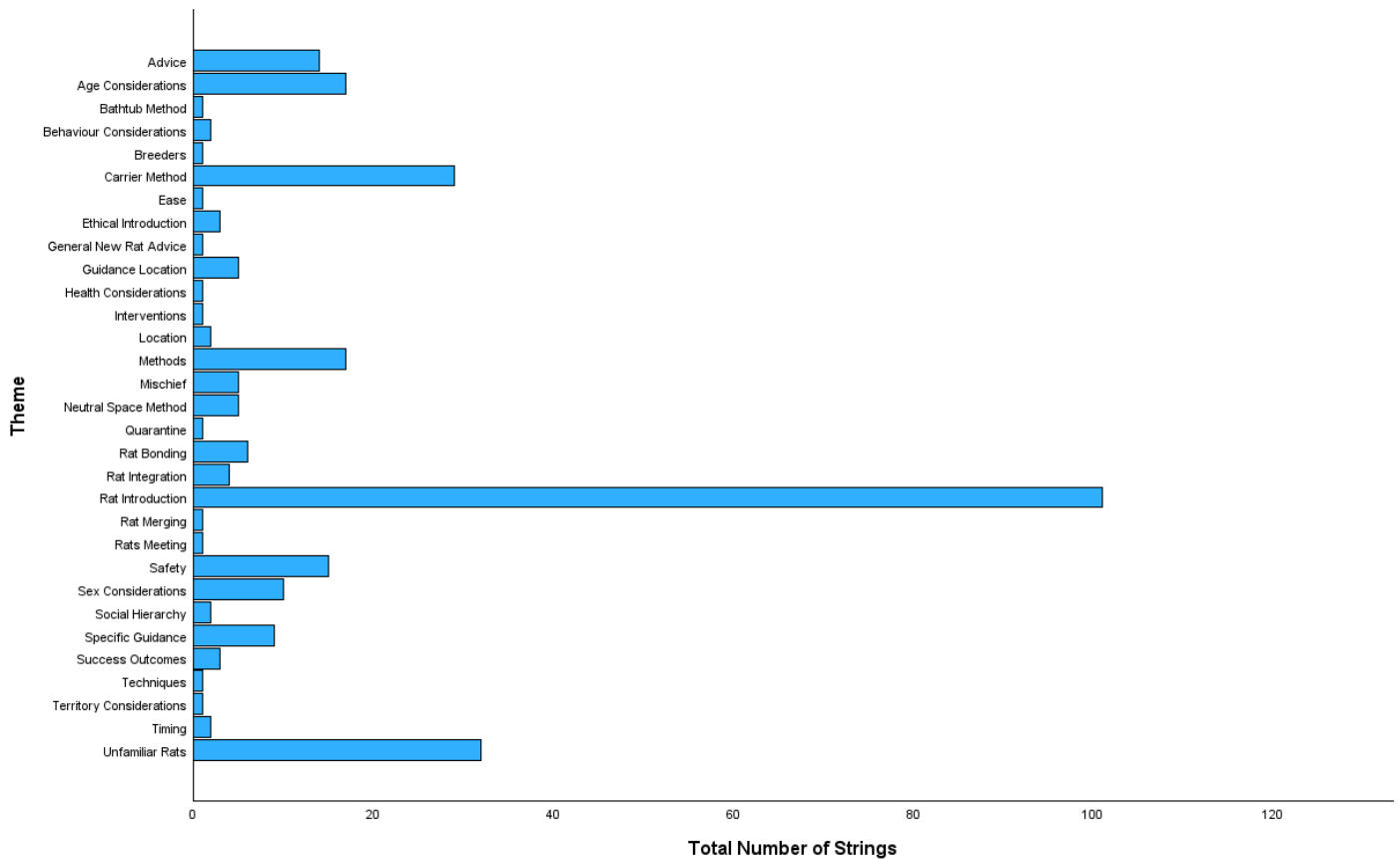


Figure 2: Bar chart showing the total number of strings in each of the 31 themes identified.

As ‘Rat Introduction’, ‘Unfamiliar Rats’ and ‘Carrier Method’ were the most common themes, they were considered for search term creation. Additionally, because ‘Carrier Method’ (a method of doing introductions (Walburn et al., 2025)) was one of the most common themes, the next most common method identified (‘Neutral Space Method’) was also considered (Table 3).

Table 3: Table outlining the themes considered for search term creation and the total number of strings each one had.

Theme	Total Number of Strings
Rat Introduction	101
Unfamiliar Rats	32
Carrier Method	29
Neutral Space Method	5

As identified in previous pet rat research (Neville et al., 2021; Schneidewind et al., 2024; Walburn et al., 2025), participation bias was likely to be present in the survey respondents and that may explain the discrepancy in the total number of strings for ‘Carrier Method’ and ‘Neutral Space Method’. After discussion between the authors, it was decided that narrowing search terms towards particular methods could result in missing the general picture of what information is currently available on pet rat introductions. Therefore, the themes ‘Rat Introduction’ and ‘Unfamiliar Rats’ were taken forward for search term creation.

The most common search string for the theme ‘Rat Introduction’ was “Rat introductions”, followed by “Rat intros” (Figure 3).

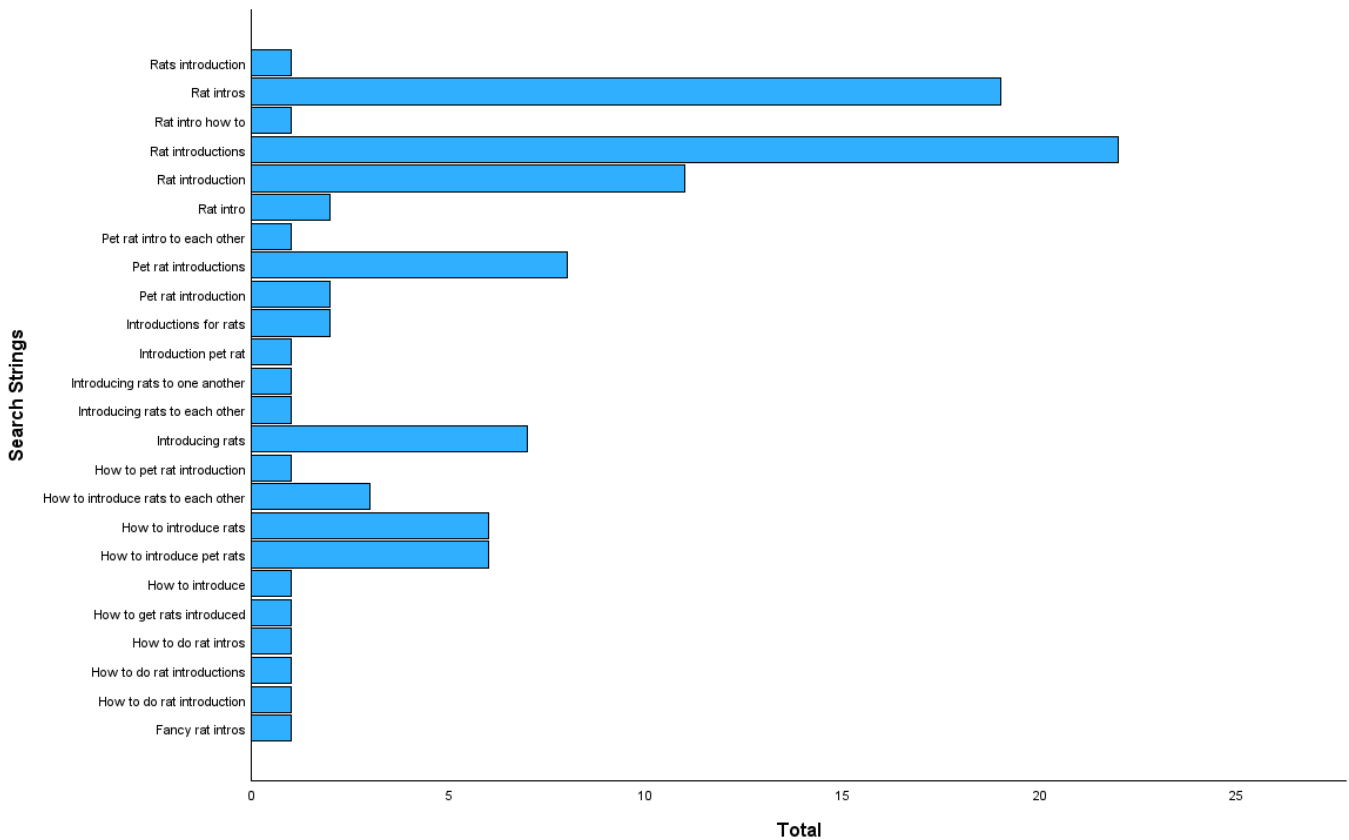


Figure 3: Bar chart showing the total number of each search string in the ‘Rat Introduction’ theme.

When different parts of the search strings were broken down, “rat(s)” was more common than “pet rat(s)” and “introduction(s)” was more common than other inflections of introduction (e.g. introduce/introducing/introduced) or “intro(s)”. The words “How to” were also commonly used (Figure 4). It was also more common for the overall search string to be plural (n = 80) (e.g. “rat introductions”) than singular (n = 21) (e.g. rat introduction).

As the theme ‘Rat Introduction’ had the highest total number of strings (Table 3), it was determined that there should be two search expressions for this theme. The most common elements from the search strings (“rat introductions”, “rat(s)”, “introduction(s)” and “how to”) were merged together to create the final search expressions: “How to introduce pet rats” and “Rat introductions”.

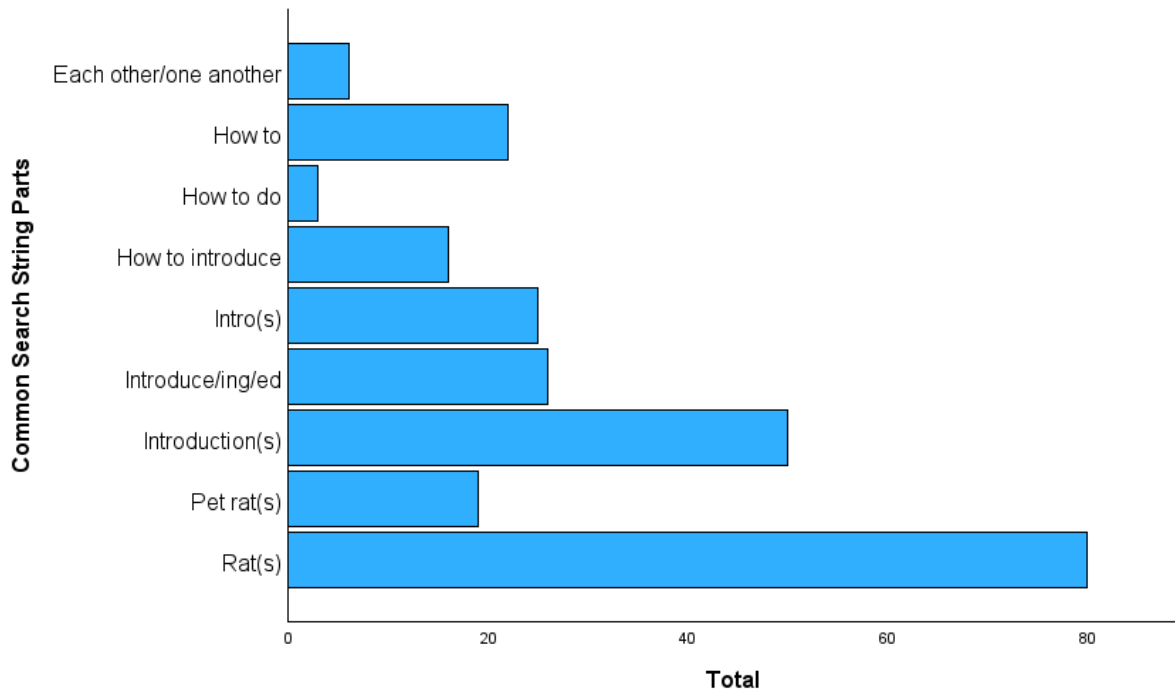


Figure 4: Bar chart showing the total number of different common search string parts used in search strings in the 'Rat Introduction' theme.

The most commonly searched string for the 'Unfamiliar Rats' theme was "Introducing new rats to each other", followed by "Best way to introduce new rats", "New rat introduction" and "New rats" (Figure 5).

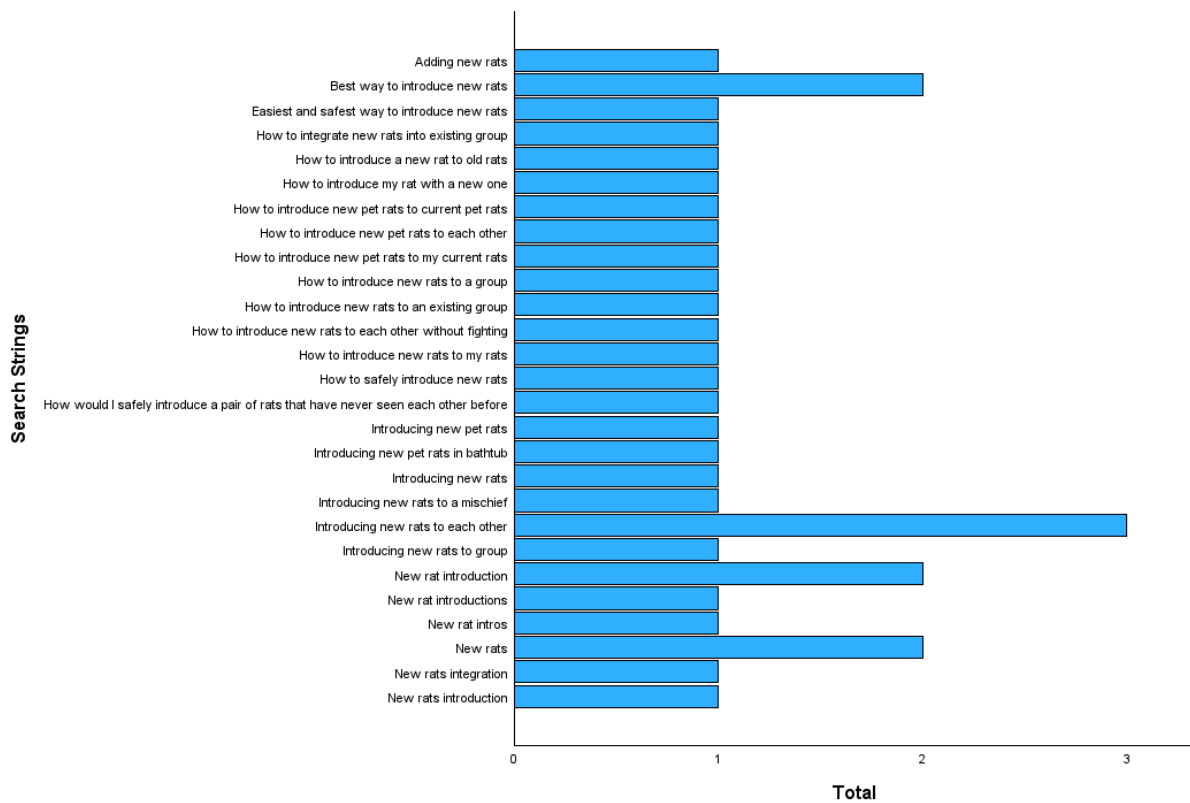


Figure 5: Bar chart showing the total number of each search string in the 'Unfamiliar Rats' theme.

When the different parts of the search strings were broken down, “new” was more common than other terms denoting unfamiliar rats, and “rat(s)” was more common than “pet rat(s)”. The terms “introduction” and “introduce” were more common than other inflections of introduction and the words “how to” were also commonly used. Additionally, the words “to each other” were more commonly used than “old”, “existing” or “current” (Figure 6). It was also much more common for the overall search string to be plural (n = 29) than singular (n = 2).

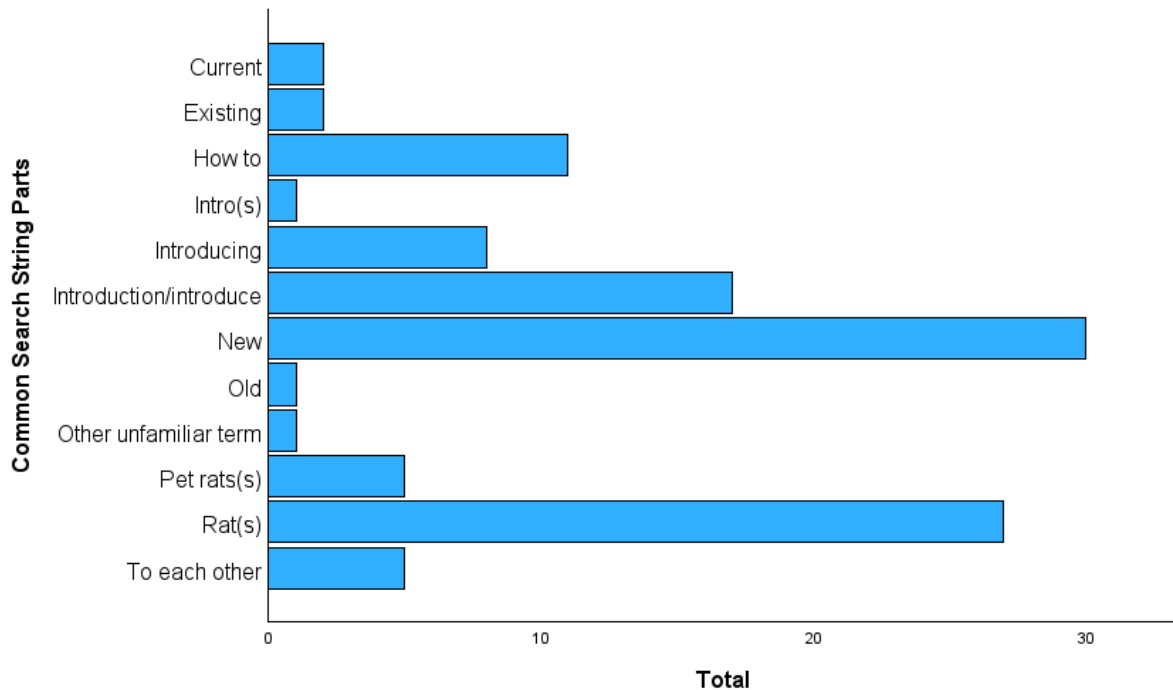


Figure 6: Bar chart showing the total number of different common search string parts used in search strings in the ‘Unfamiliar Rats’ them.

The most common elements from these search strings (“new”, “rat(s)”, “introduction/introduce”, “how to” and “to each other”) were merged together to create the final search expression: “How to introduce new rats to each other”.

Stage Two – Grey Literature Scoping Review

The proposed scoping review will be conducted in accordance with PRISMA guidelines (PRISMA, n.d.) and the JBI methodology for scoping reviews (Peters et al., 2022). The five stage framework outlined by Arksey and O’Malley, (2005) will be followed, and adapted for the use of grey literature. The five stages are (1) identifying the research question, (2) identifying relevant studies (or grey literature in this case), (3) study selection (grey literature selection), (4) charting the data, and (5) collating, summarizing and reporting the results (Arksey and O’Malley, 2005).

The main research question for this study is what information is currently available for owners on pet rat introductions? The focus of this scoping review will therefore be on the grey literature surrounding pet rat introductions. Three concurrent searches will be made: (1) a targeted search of known small animal charity websites (e.g. RSPCA), and (2) a broader search of webpages on popular search engines, and (3) a broad search on social media platforms.

Search strategy

Strategy 1: A targeted search of known small animal charity websites and other rat care websites

To identify relevant information that pet rat owners may seek out, a targeted search of known UK small animal charity websites will be undertaken. To identify relevant websites, the results of the question ‘Would you consult any animal charity websites for information on rat introductions and if so, what ones?’ from the survey in Stage One will be used to identify appropriate organisations (see Appendix I), as well as conducting our own Google search to identify further relevant organisations. Additionally, websites reported in the search terms question (these were placed into the ‘Specific Guidance’ theme, see Appendix IV).

A final list of websites to search was produced (see Appendix V). These sites will be searched for content related to pet rat introductions.

Strategy 2: A broad search of webpages on popular search engines

Searches will be conducted on the top three search engines (Google, Bing and DuckDuckGo, according to <https://seranking.com/blog/top-search-engines/>, accessed 16 February 2026). To avoid previous searcher bias, searches will be conducted using the anonymous function (e.g. incognito mode for Google searches). The first 50 hits for each search term will be searched for each search engine, in line with the number of hits used in a similar study for dog information by Kuhl et al., (2022).

The search terms will be:

- “How to introduce pet rats”
- “Rat introductions”
- “How to introduce new rats to each other”

Strategy 3: A broad search on social media platforms

Searches will be conducted on the top four most popular social media platforms (Facebook, Instagram, YouTube and TikTok, according to <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/?srsltid=AfmBOops8FJVsxHV04MMwXt8MuVaQgdYpeJsDEP4o8yiLb9LDWKPF9Ek>, accessed 19 February 2026. Note, WhatsApp will not be included due to its more private nature).

Although to these authors knowledge social media has not previously been used in grey literature scoping reviews, these searches will be modelled from the methods used by Kühnöhl et al., (2025) to analyse videos of dogs and cats on the social media platforms Instagram, TikTok and YouTube. The search function of these platforms will primarily be used (following the search terms outlined above), but snowball sampling will also be conducted reusing the hashtags and linked sounds of relevant videos, and videos suggested by the platforms’ algorithms based off our initial search will also be considered (Kühnöhl et al., 2025).

To avoid previous searcher bias, new free accounts will be created on the platforms. Searches will only be conducted on public platforms (e.g. public Facebook groups will be included but private (requiring the account to join them in order to view content) will not be). Where a public-facing account (e.g. a Facebook page) recommends an introduction method, this will be included in the review if it meets all of the inclusion criteria. Where comments on that post or on member group posts (e.g. within a public Facebook group) are concerned, links to resources provided there will be included in the review, but not individual comments. Facebook and Instagram reels and TikTok and YouTube videos will be transcribed by Microsoft Stream and the video transcriptions will be included in the review. The first 50 hits for each search term will be searched on all four social media platforms to remain in line with the webpage searches.

As with search strategy 1, a targeted search of the social media sites identified from the survey analysis will also take place (see Appendix VI).

Study/Source of Evidence selection

First author (CW) will independently screen and extract potentially relevant content and a random subset of 5% of the content during the first screening stage will be assessed by a second reviewer (SLM) to ensure there is at least 90% agreement between reviewers, in line with Mak and Thomas, (2022). Any disagreements between reviewers will be resolved through subsequent discussions. Should conflict arise that cannot be resolved through discussion, a third reviewer (EB) will make the final decision on whether to include the content (Mak and Thomas, 2022). To be included, content must meet the inclusion criteria outlined above. For each search strategy, an Excel spreadsheet will be created to document metadata (e.g. title, source organisation, URL) of the identified content. When reviewed, sources will be marked as either 'include', 'exclude' or 'uncertain' on the spreadsheet.

Data Extraction

The data extraction form (Table 4) was created by CW and then jointly confirmed and modified by MM and EB. For each piece of selected content, where possible, information will be collected for each row of the data extraction form. This will cover both information on the resource itself (e.g. title, platform, authors, publication date, etc) and content specific to the research questions (e.g. types of introduction methods described). Many of the content specific information comes from the themes identified in the coding reliability thematic analysis (see Appendix III). Data will be extracted using Excel (for the general resource information and yes/no answers) and NVivo 12 Plus (Lumivero, 2025) (for more detailed analysis of the descriptive questions) and will be carried out by CW.

Table 4: Data Extraction Form

Section 1: General Resource Information	Description of action(s) taken
URL	Record URL
Title	Record title
Platform	Record platform (e.g. YouTube, website, etc)
Origin	Record origin of content (e.g. charity, breeder, etc)
Country	Record country (if identifiable)
Date Published	Record date published (if identifiable)

Date Accessed	Record date accessed	
Author(s) Identified	Yes/No	
Author(s) Credentials	Record credentials of author(s) (if identifiable)	
Format	Record format (e.g. website, video, etc)	
Views (if video content)	Record the total number of times the video was watched by users	
Likes	Record the total number of 'likes' the content received from users (if applicable)	
Comments	Record the total number of comments the content received from users (if applicable)	
Hashtags	Record any hashtags (#) used in the promotion of the content	
Links To Other Resources	Record any links to other resources	
Type Of Evidence	Record what type or types of evidence are included (e.g. anecdotal, scientific references, veterinary sources, etc)	
Section 2: Introduction-Specific Content		
Preparation Before Introduction	Reasons why you may try to do an introduction discussed (e.g. rats are social animals so to avoid ending up with a lone rat when its conspecifics die)	Yes/No
	Quarantine period mentioned?	Yes/No – record what this was
	Health check prior to introduction mentioned?	Yes/No
	Age considerations mentioned?	Yes/No – record what these were
	Sex considerations mentioned?	Yes/No – record what these were
	Other factors to consider mentioned?	Yes/No – record what these were
	Neutering mentioned?	Yes/No
	Description or explanation of how social groups are formed?	Yes/No – record what this was
Introduction Method	Carrier Method?	Yes/No
	Neutral Space Method?	Yes/No
	Cage Swap Method?	Yes/No
	Heavy Supervision Method?	Yes/No

	Other method mentioned?	Yes/No
	Were any opinions on the different methods shared?	Yes/No – record what these were
Method Characteristics – section noting the characteristics of each method described	Confinement – method uses a restricted space	Yes/No
	Neutral territory – method uses an area unfamiliar to all parties	Yes/No
	Familiar territory – method uses an area familiar to one or all parties	Yes/No
	Gradual progression – the method gradually progresses in steps	Yes/No
	Forced proximity – are the rats in a space that means they cannot escape interactions?	Yes/No
	Were any additional methods described? (For example, applying something smelly (e.g. vanilla extract) to the rats before introductions so that they all smelled the same, or limited resources initially)	Yes/No – record what these were
Behaviour and Welfare Indicators	Positive behaviours mentioned	Yes/No – record what these were reported to be
	Negative behaviours mentioned	Yes/No – record what these were reported to be
	Signs of normal dominance behaviours described?	Yes/No – record what these were reported to be
	Signs of aggression described?	Yes/No – record what these were reported to be
	Stress indicators described?	Yes/No – record what these were reported to be
	Injury risk discussed?	Yes/No

	Advice on when to separate?	Yes/No – record what this was
Risk Mitigation	Is supervision of the introduction discussed?	Yes/No
	Separation techniques mentioned?	Yes/No – record what these were
	Emergency vet advice mentioned?	Yes/No
	Guidance on when not to introduce?	Yes/No – record what this was
Post-Introduction Monitoring	Guidance on introduction timeline?	Yes/No – record what this was
	Signs of a successful introduction?	Yes/No – record what these were reported to be
	Signs of an unsuccessful introduction?	Yes/No – record what these were reported to be
Welfare Framing	Is the information centred around what is best for the rats involved?	Yes/No
	Is the information centred around what is best for the owner? (E.g. is it about convenience for the owner?)	Yes/No
	Is forced proximity encouraged?	Yes/No
	Are stress behaviours minimized or dismissed?	Yes/No
	Are potential welfare factors taken into account? (E.g. are space considerations mentioned?)	Yes/No – record what these were

Piloting of the data extraction form was conducted on pet rabbit introductions. These were chosen in order to provide similar content to what we expect to see in pet rat introduction advice, without using up the target sample population, allowing the initial criteria to be adapted to more appropriately suit our needs.

Data Analysis and Presentation

Data analysis will be conducted in R (R Core Team, 2013) (for general descriptive data) and NVivo 12 Plus (Lumivero, 2025) (for detailed analysis of advice on offer). A PRISMA flow diagram will be used to show the screening results. Key Information (e.g. how many resources advised each method) will be presented in either tables or graphs. Descriptive concepts will be coded once per resource (e.g. if the carrier method is mentioned anywhere in the resource, it will be counted as one). As well as presenting the descriptive results, a co-occurrence matrix will be created using matrix multiplication in R. Qualitative synthesis will also take place and the results of this may take the form of thematic maps or word clouds, where appropriate.

Acknowledgements

These authors would like to acknowledge Sara Lawrence-Mills (SLM) for kindly agreeing to assess 5% of the content during the first screening stage.

This scoping review will contribute to the completion of a Doctor of Philosophy degree in Veterinary Science for author CW.

Funding

This is a self-funded project.

Conflicts of interest

There is no conflict of interest in this project.

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Appendices

Appendix I: Descriptive Results from the Survey

A total of 163 responses were received from the survey.

Using a search engine to find information about pet rat introductions was the most commonly used method (84.0%), followed by using online rat forums (63.2%) (Figure 7).

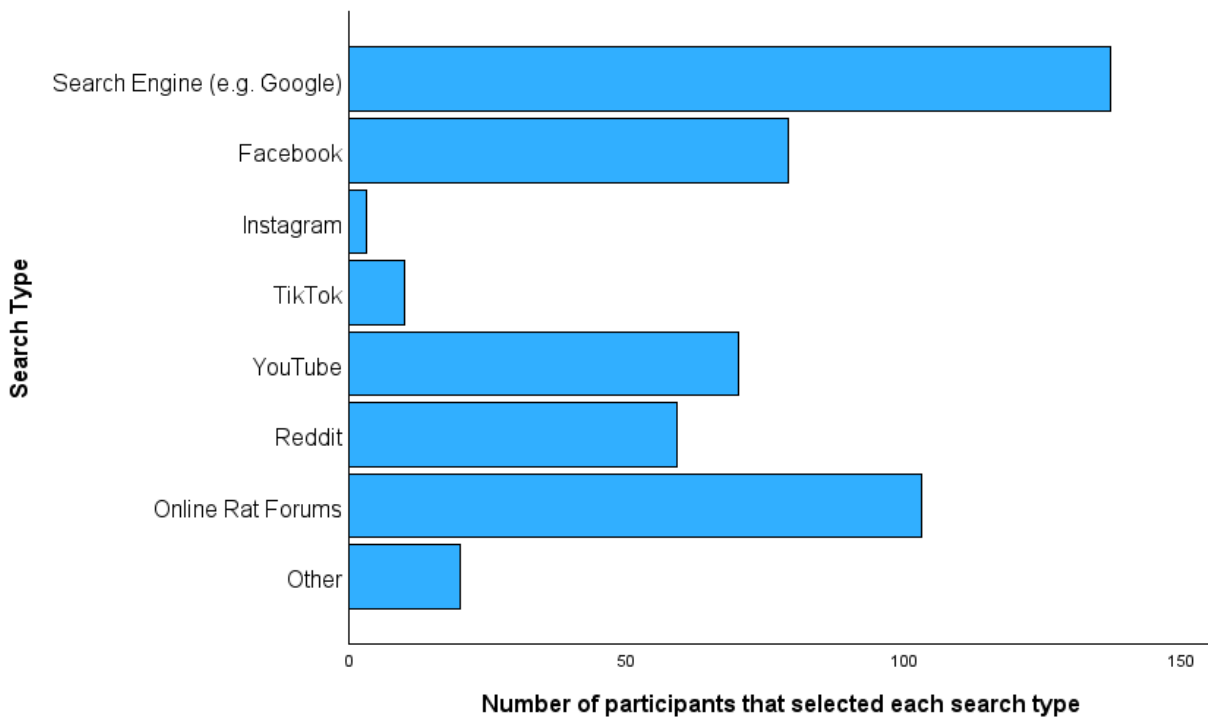


Figure 7: Bar chart showing the number of participants that selected each search type.

AI was the most frequently identified resource in the ‘Other’ category, followed by specific trusted websites (Table 5).

Table 5: Table detailing the other online resources identified as well as the number of participants that identified them.

Other Online Resources	Number of participants that identified the resource
AI	6 (ChatGPT = 5, Gemini = 1)
Rescue/Charity Website	3
Scientific Journals	2
Rat Care Websites	1
Breeder Websites/Breeder Recommended Websites	3
Specific Trusted Websites	4

The specific trusted websites identified were ‘Isamu Rats’ and ‘The Rat Wiki’.

The majority of owners (67.9%) said that they would not consult any animal charity websites for information on rat introductions (Figure 8).

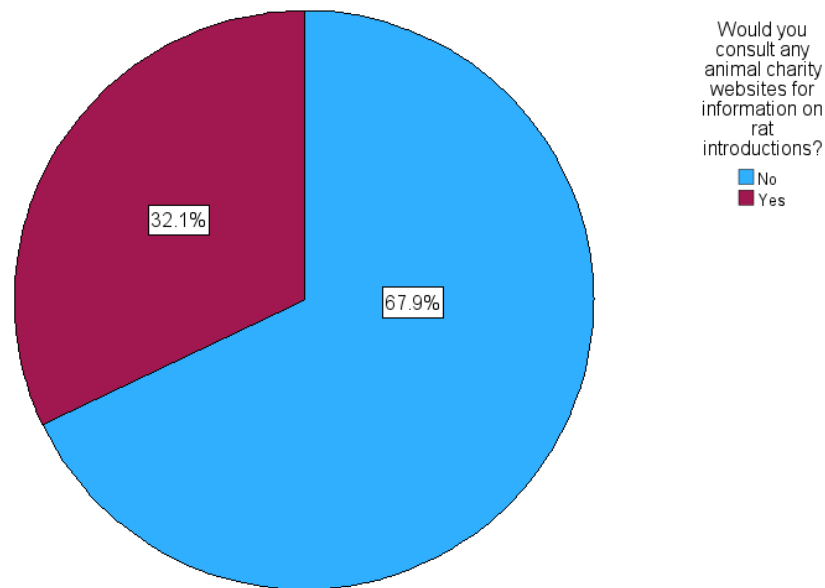


Figure 8: Pie chart illustrating how many owners answered ‘yes’ or ‘no’ to the question ‘Would you consult any animal charity website for information on rat introductions?’. ‘Yes’ is denoted in purple. ‘No’ is denoted in blue.

The 32.1% of owners that said they would consult an animal charity website were asked to identify which website or websites they would consult. Table 6 details this information.

Table 6: Table denoting the websites identified as well as the number of participants that identified them. Top section details charity websites. Bottom section details other websites that were identified in this question.

Charity Websites	
Website	Number of participants that identified the website
Blue Cross	5
National Animal Welfare Trust (NAWT)	1
Scottish Society for the Prevention of Cruelty to Animals (SSPCA)	1
Royal Society for the Prevention of Cruelty to Animals (RSPCA)	9
Mainely Rat Rescue	3
Helping All Little Things	1
Rachie’s Retirement Home	1
People’s Dispensary for Sick Animals (PDSA)	2
Rat Way Sanctuary	1
American Society for the Prevention of Cruelty to Animals (ASPCA)	1
Woodgreen Pets Charity	1
MN Pocket Pet Rescue	1
American Fancy Rat and Mouse Association (AFRMA)	1
Bacchus Residents	1
People for the Ethical Treatment of Animals (PETA)	1
Wee Critters Small Animal Rescue	1
Other Websites Identified	
Website	Number of participants that identified the website
Isamu Rats	4

Rat Guide	1
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The majority of participants (57.1%) identified that they might also consult a rat breeder for information about introductions (Figure 9).

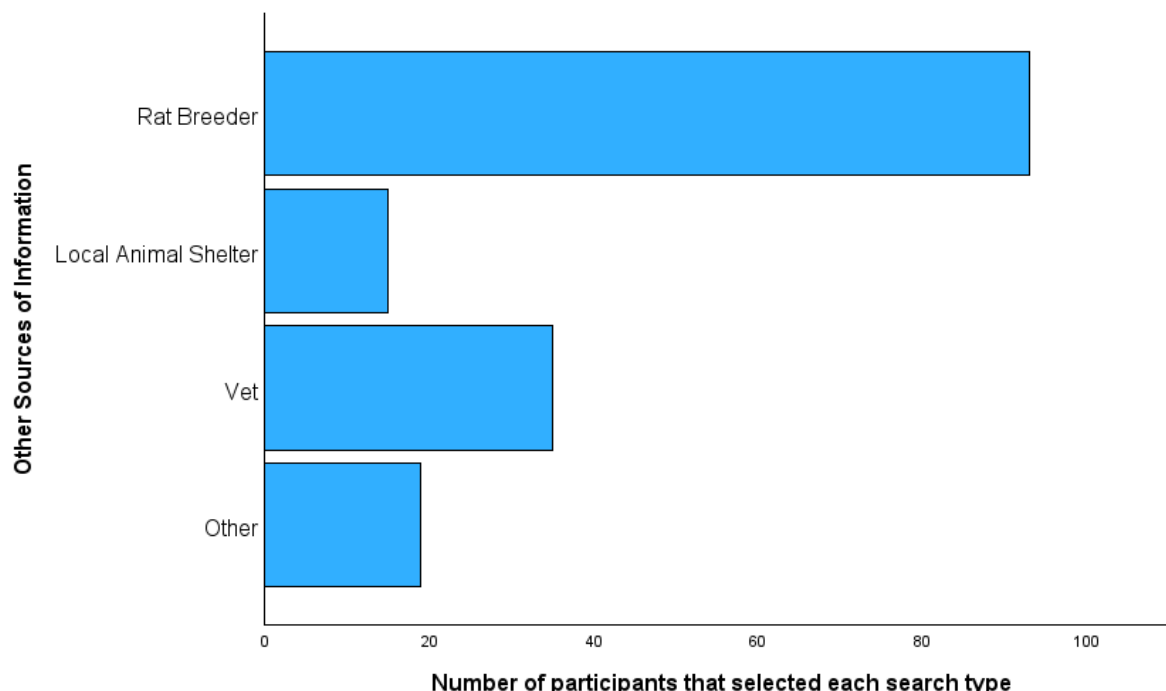


Figure 9: Bar chart showing the number of participants that selected each category of alternative information source.

Within the ‘Other’ category for this question, two participants identified that they would use books, ten identified that they would speak to other people that owned rats, and one identified that they would seek advice from a pet shop. A further source of online information (‘The Rat Wiki’) was also identified in this question.

Appendix II: Codebook of Themes and Their Definitions

Theme	Definition
Age Considerations	Any search term where the age of the rats is considered
Bathtub Method	Where the use of a bathtub as part of an introduction method is used in the search term
Behaviour Considerations	Where the behaviour of the rats is considered in the search term
Breeders	Where breeders are mentioned in the search term
Carrier Method	Where the carrier method is specifically included in the search term
Ease	Where a reference to doing an introduction easily is included in the search term
Ethical Introduction	Where a reference to doing an introduction ethically or properly is included in the search term
Health Considerations	Any search term where the health of the rats is considered

Interventions	Where a reference to doing an intervention (e.g. separating rats) is made in the search term
Advice	Where a reference to advice (e.g. guide, tips, tutorial) is made in the search term
Techniques	Where a reference to introduction techniques is made in the search term
Location	Where a location (e.g. the UK) is made in the search term
Methods	Where a reference to methods (but not a specific type of method) is made in the search term
Neutral Space Method	Where the neutral space method (or similar wording around a neutral area) is specifically included in the search term
General New Rat Advice	Where a reference to getting new rats, but not to actually introducing them, is made in the search term
Quarantine	Where a reference to quarantining rats is made
Rat Bonding	Where the word bonding is specifically used in the search term
Rat Integration	Where the word integration is specifically used in the search term
Rat Introduction	Where the words introduction, introduction, intro or intros (or similar) are specifically used in the search term (e.g. how to introduce pet rats)
Rat Merging	Where a reference to merging rats is used in the search term
Mischief	Where a reference to a rat mischief is used in the search term
Rats Meeting	Where a reference to rats meeting is used in the search term
Safety	Where a reference to safety or doing an introduction safely is made in the search term
Sex Considerations	Any search term where the sex of the rats is considered
Social Hierarchy	Where a reference to the social hierarchy (or similar, e.g. dominance) is made in the search term
Specific Guidance	Where a specific organisation (e.g. a charity) is mentioned in the search term
Guidance Location	Where a specific search location (e.g. a social media site) is mentioned in the search term
Success Outcomes	Where success, or lack of success (e.g. fighting), is mentioned in the search term
Territory Considerations	Where a reference to territory is made in the search term
Timing	Where a reference to timing in the introduction (e.g. when to start or how long it might take) is mentioned in the search term
Unfamiliar Rats	Where a reference is made to the rats being introduced being unfamiliar or new rats

Appendix III: Thematic Maps from the Coding Reliability Thematic Analysis

31 themes were identified in the initial coding of the search terms (Figure 10).

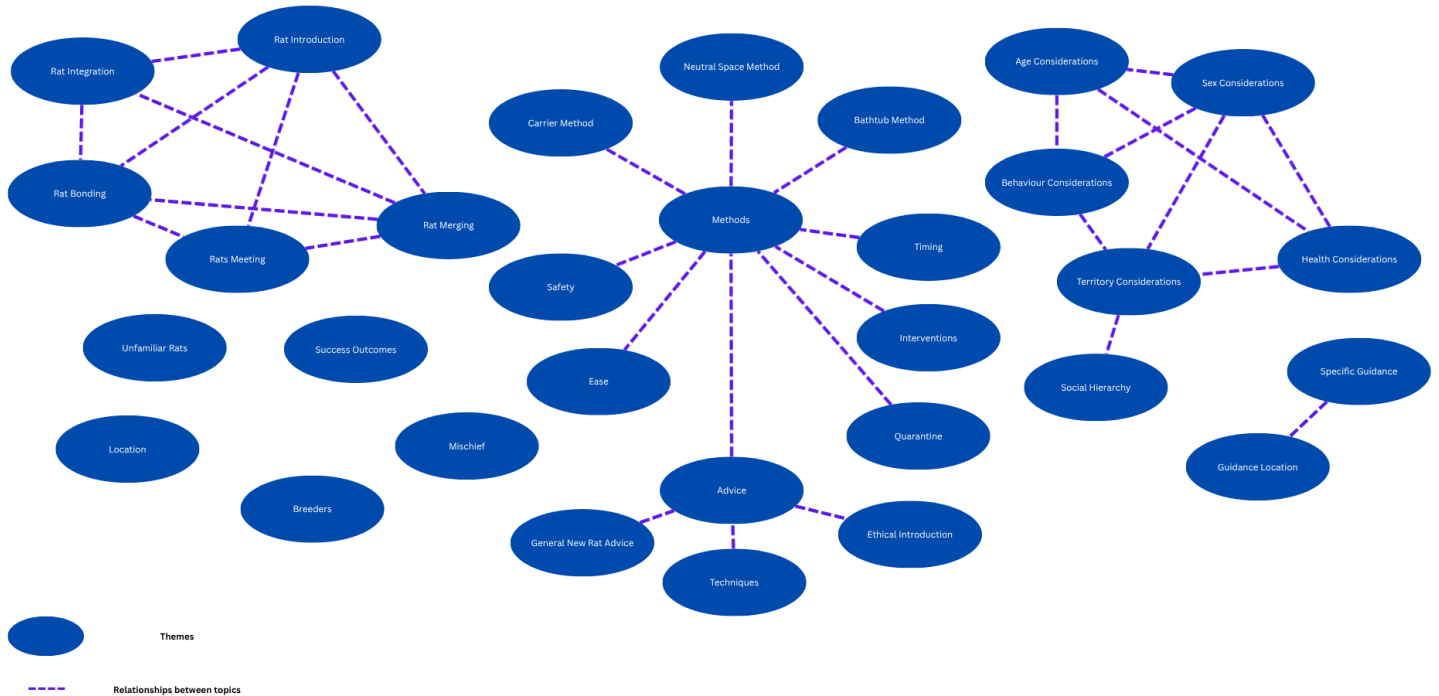


Figure 10: Initial thematic map produced from the coding reliability thematic analysis. Dark blue ovals indicate a theme and broken purple lines show relationships between themes.

Themes were then further refined by combining similar themes together (Table 7).

Table 7: Table outlining where the initial themes produced were placed in the refinement of the final thematic themes.

Refined Themes	Initial Themes Placed as Subthemes	Initial Themes Placed as Subtopics
Rat Introduction Terms	Rat Introduction	
	Rat Integration	
	Rat Merging	
	Rat Bonding	
	Rats Meeting	
Unfamiliar Rats Terms	Unfamiliar Rats	
Advice Terms	Advice	
	Techniques	
Success Outcome Terms	Success Outcomes	
Methods Terms	Timing	
	Ease	
	Safety	
	Quarantine	
	Interventions	
	Methods	
		Carrier Method
	Neutral Space Method	

		Bathtub Method
Consideration Terms	Age Considerations	
	Sex Considerations	
	Health Considerations	
	Behaviour Considerations	
	Social Hierarchy	
	Territory Considerations	
	Ethical Introduction	
Search Area Terms	Specific Guidance	
	Guidance Location	
	Location	
Other Terms	Mischief	
	Breeders	
	General New Rat Advice	

Eight main themes were generated from the analysis: 1. Rat Introduction Terms; 2. Unfamiliar Rats Terms; 3. Advice Terms; 4. Success Outcome Terms; 5. Methods Terms; 6. Consideration Terms; 7. Search Area Terms; and 8. Other Terms (Figure 11).

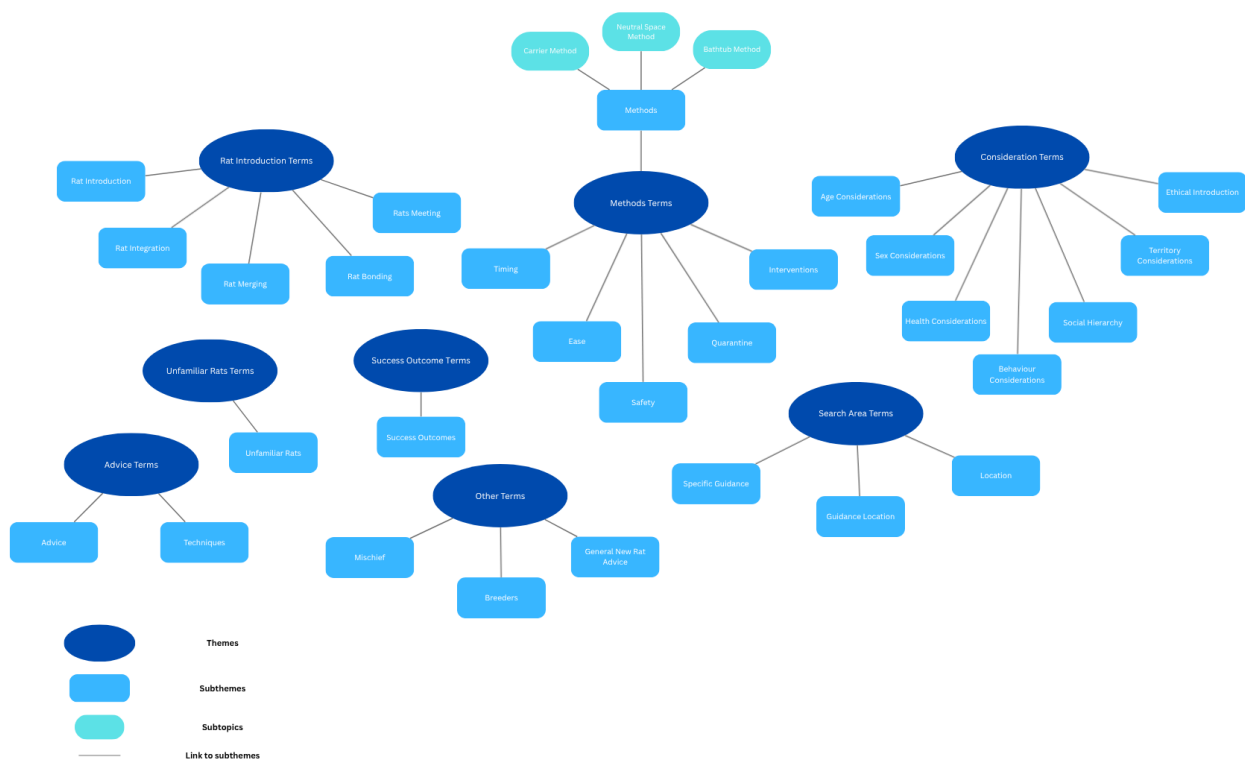


Figure 11: Final thematic map produced from the coding reliability thematic analysis. Dark blue ovals indicate a theme, blue rounded squares indicate subthemes, turquoise ovals indicate subtopics, and grey lines indicate a link to a subtheme.

Appendix IV: Rat Care Websites Placed Within the Specific Guidance Theme

Website	Number of participants that identified the website
Mainly Rat Rescue	1
Rat Guide	1
Helping All Little Things	1
Ratwise	1
Isamu Rats	4
Ratrix (Shadow The Rat)	1
Social Media Site	Number of participants that identified the social media site
Ratrix (Shadow The Rat)	1
Friendly Rat Forecast	1

Appendix V: Final List of Websites Produced for Search Strategy 1

Websites Identified from the Survey Analysis	
Website Name	Website Address
Blue Cross	https://www.bluecross.org.uk/
National Animal Welfare Trust (NAWT)	https://www.nawt.org.uk/
Scottish Society for the Prevention of Cruelty to Animals (SSPCA)	https://www.scottishspca.org/
Royal Society for the Prevention of Cruelty to Animals (RSPCA)	https://www.rspca.org.uk/
Mainly Rat Rescue	https://mainlyratrescue.org/rattieblog2/
Helping All Little Things	https://helpingalllittlethings.org/
Rachie's Retirement Home	https://www.rachiesretirementhome.com/
People's Dispensary for Sick Animals (PDSA)	https://www.pdsa.org.uk/
Rat Way Sanctuary	https://iwantitratway.com/
American Society for the Prevention of Cruelty to Animals (ASPCA)	https://www.asPCA.org/
Woodgreen Pets Charity	https://woodgreen.org.uk/
MN Pocket Pet Rescue	https://www.mnpocketpetrescue.org/
American Fancy Rat and Mouse Association (AFRMA)	https://www.afrma.org/
Bacchus Residents	https://www.bacchusresidents.org/
People for the Ethical Treatment of Animals (PETA)	https://www.peta.org.uk/
Wee Critters Small Animal Rescue	http://www.weecrittersrescue.com/
Isamu Rats	http://www.isamurats.co.uk/
Rat Guide	https://ratguide.com/
The Rat Wiki	https://theratwiki.co.uk/
Additional Websites Identified from Strings Placed within the Specific Guidance Theme	
Website Name	Website Address
Helping All Little Things	https://helpingalllittlethings.org/
Ratwise	https://ratwise.co.uk/
Ratrix	https://ratrix.weebly.com/
Websites Identified from a Targeted Search of Known UK Small Animal Charity Websites	

Website Name	Website Address
Woodside Animal Welfare Trust	https://www.woodsidesanctuary.org.uk/
Cheltenham Animal Shelter	https://gawa.org.uk/
Foal Farm Animal Rescue Centre	https://www.foalfarm.org.uk/
All Creatures Great and Small Animal Sanctuary	https://www.allcreaturesgreatandsmall.org.uk/
St Francis Animal Welfare	https://www.stfrancisanimalwelfare.co.uk/
Bleakholt Animal Sanctuary	https://www.bleakholt.org/
PACT Animal Sanctuary and Wildlife Rescue	https://www.pactsanctuary.org/
Wadars Animal Rescue Charity	https://wadars.co.uk/
Freshfields Animal Rescue	https://www.freshfields.org.uk/
Animal Rescue Charity Bishops Stortford Hertfordshire	https://www.animalrescuecharity.org.uk/
Raystede Centre for Animal Welfare	https://www.raystede.org/
Animals In Need	https://animals-in-need.org/
Margaret Green Animal Rescue	https://www.margaretgreenanimalrescue.org.uk/
The Kit Wilson Trust For Animal Welfare	https://www.kitwilsontrust.org.uk/
Greatfield Small Animal Rescue	https://www.greatfieldsmallanimalrescue.co.uk/
Animal Rescue and Care	https://animalrescueandcare.org.uk/
Ulster Society for the Prevention of Cruelty to Animals (USPCA)	https://uspca.co.uk/
Farplace Animal Rescue	https://www.farplace.org.uk/
Bristol Animal Rescue Centre	https://www.bristolarc.org.uk/
Greenacres Rescue	https://www.greenacresrescue.org.uk/
Friends of the Animals	https://friendsoftheanimals.co.uk/
Thornberry Animal Sanctuary	https://www.thornberryanimalsanctuary.org/
Hay Animal Rescue Team	https://www.hayanimalrescueteam.co.uk/
Happy Landings Animal Rescue and Boarding Somerset	https://happy-landings.org.uk/

The targeted search was conducted in Google using incognito mode and the first 50 hits were considered. Websites found were included if they mentioned either rats specifically or small animals.

Appendix VI: Final List of Social Media Sites Produced for a Targeted Search

Social Media Sites Identified from the Survey Analysis	
Social Media Name	Social Media Site(s)
Ratrix (Shadow The Rat)	YouTube, Facebook, Instagram
Friendly Rat Forecast	YouTube, Facebook, Instagram, TikTok