https://doi.org/10.17221/185/2019-VETMED

Missing cat features influencing their returning to owners

Ana Zupcic[1], Marta Surbek[1], Anamaria Ekert Kabalin[2], Jadranka Dragovic[3], Sven Mencik[2], Mario Ostovic[4]*

[1]Student (6th year) at Faculty of Veterinary Medicine, University of Zagreb, Zagreb, Croatia
[2]Department of Animal Breeding and Livestock Production, Faculty of Veterinary Medicine, University of Zagreb, Zagreb, Croatia
[3]SUZA – Alliance of Animal Protection Associations of the City of Zagreb, Zagreb, Croatia
[4]Department of Animal Hygiene, Behaviour and Welfare, Faculty of Veterinary Medicine, University of Zagreb, Zagreb, Croatia

**Corresponding author: akabalin@vef.hr*

Citation: Zupcic A, Surbek M, Ekert Kabalin A, Dragovic J, Mencik S, Ostovic M (2020): Missing cat features influencing their returning to owners. Vet Med-Czech 65, 394–400.

Abstract: In this study, the features influencing finding and returning missing cats to their owners were investigated. The data were collected on the missing and recovered cats in the City of Zagreb, Croatia, during the 2011–2016 period, including the following features: breed, sex, age, colour, hair length, castration and microchipping. A data analysis was performed by use of the Statistica v13.4 software. Out of 946 cats reported to be missing, 372 (39%) were returned to their owners. Purebred ($P < 0.01$), castrated ($P < 0.05$), microchipped ($P < 0.05$) cats, and those with semi-long and long hair ($P < 0.05$) were more frequently returned to their owners, whereas the sex, age and colour had no significant impact on the missing cat recovery. The study results showed particular cat features influencing their finding to be correlated ($P < 0.05$). In conclusion, cat owners should attempt to control their movements, in particular of older and non-castrated cats, to reduce the rate of cats going missing. In addition, microchipping would facilitate finding them. The large-scale implementation of the concepts highlighted in this study can contribute to reducing the number of missing cats and increasing the number of cats being returned to their owners.

Keywords: missing cat; found cat; microchipping; castration; breed; hair length

Pet animals have a very important role in the lives of many people. In the past decades, a steep increase has been recorded in the number of pets in the Western world, with dogs and cats being the most common animals kept as pets. According to Murray et al. (2015), in 2011, 30% of households in the UK owned one or more dogs and 23% of households owned one or more cats, with 7% overlapping in pet ownership. Capello et al. (2015) collected information on the ownership of dogs and cats in the Veneto region in north-east Italy, where 25% and 18% of the households reported having at least one dog and at least one cat, respectively. Downes et al. (2009) investigated the demography of the cat and dog pet populations in Ireland. The results of their study showed 35.6% and 10.4% of households have one or more dogs and have one or more cats, respectively. Furthermore, Toribio et al. (2009) report that dogs and cats were owned by 33.4% and 22.5% of households, respectively, in Sydney, Australia, with 7.8% of households having both dogs and cats. According to Weiss et al. (2012), 39% of households

https://doi.org/10.17221/185/2019-VETMED

in the United States owned a dog or cat in the past five years: 31.6% were households with dogs, 19.6% with cats, and 11.9% had both dogs and cats.

The majority of pet owners consider them friends and/or family members, especially in urban settings. Animals are given names, attributed human characteristics, supplied with toys, offered veterinary medical care, and mourned when they die (Ostovic et al. 2017). Walsh (2009a) reports the amount of money allocated for pets to have doubled over the past decade, even exceeding the GDPs of many developing countries.

The bond established between the owners and their pets is very deep, occasionally deeper than the bond with other people. Pet animals are their companions, offer them protection and unconditional love, stimulate them to walk and be physically active, and facilitate their social contacts (McNicholas et al. 2005; Simec 2012). Living with a pet reduces the owner's stress and depression, has a favourable influence on their blood pressure, and helps reduce the prevalence of heart diseases (Dotson and Hyatt 2008). The study by Allen et al. (2002) revealed that the presence of a pet ameliorated the cardiovascular effects of stress more efficiently than the presence of a friend or even a spouse. Interactions with pet animals also improve the functioning of the immune system (Charnetsky et al. 2004). In addition, cats and dogs have recently been ever more frequently included in the treatment of people in the form of animal-assisted therapy, in particularly in the elderly (Souter and Miller 2007; Vrbanac et al. 2013; Cherniack and Cherniack 2014).

Considering the tendency of modern families to have ever fewer children, many treat pets as their 'children', drawing from them comfort and support in difficult situations such as the loss of a close family member, divorce, getting fired from work, retirement, etc. Children frequently develop emotional bonds with pets, quite similar to the relationship with their siblings (Simec 2012), especially those from single-parent families (Bodsworth and Coleman 2001). Children without siblings develop very close relationships with their pets (Walsh 2009b). Women generally keep pet animals as companions and to help them overcome hard situations, and men generally keep pet animals for making them more active (Staats et al. 2006).

Therefore, the feeling of sadness and pain that occurs in the case of losing a pet is quite understandable (Wrobel and Dye 2003; Hinkert 2013). The intensity of mourning a pet depends on many factors such as the level of the relationship with the pet, the role the pet has in the human's life, the timing and circumstances of a missing pet. In the case of a sudden and unexpected pet loss, family members do not have enough time to emotionally prepare themselves and bid farewell to the pet. When the fate of the missing pet is unknown, discord may frequently occur in the family, with some family members still hoping for the pet's return, while others tend to accept the loss, mourn the pet and move on (Walsh 2009b).

While a missing pet animal is very stressful for the owner, the pets that are missing are generally frightened, hungry and thirsty, physically and mentally exhausted, may be poisoned, be killed in traffic, by other animals or malevolent people. Eventually, missing pets may be accommodated in a stray animal shelter where they can be found by their owners, be adopted to a new home, or euthanised, depending on the local regulations and shelter policy (Surbek et al. 2015; Vucinic et al. 2015).

The features of missing pets are crucial for recognising, locating and returning them to their owners (Surbek et al. 2015; Vucinic et al. 2015), whereas a few of the previous studies on the issue worldwide, on cats in particular, were mostly focused on their identification marks and searching methods, primarily in North America and Australia (Lord et al. 2007; Weiss et al. 2012; Huang et al. 2018).

This study aimed at investigating the impact of missing cat features in the Zagreb area, Croatia, on their identification and recovery.

MATERIAL AND METHODS

In the present study, data on cats missing and found in the Zagreb area during a six-year period (2011–2016) were used. The data were collected from the SUZA Info Centre database (Alliance of Animal Protection Associations of the City of Zagreb) as the central database of missing animals in the Zagreb area based on the owners' registrations.

The following cat features and categories, which were described by the owners on reporting their pet missing, were used in the study: breed (crossbred/purebred), sex (male/female), age (according to the SUZA database: kittens and young cats aged < 2 years/adult and old cats aged ≥ 2 years), co-

https://doi.org/10.17221/185/2019-VETMED

lour (single-coloured light/multicoloured and with marks/single-coloured dark), hair length (short/semi-long to long), castration (yes/no) and microchipping (yes/no).

The Statistica v13.4 software (TIBCO Software Inc. 2017) was used on the data analysis. The significance of the differences in the prevalence of various features/categories observed in the study between the missing cats that were and were not found was assessed by the χ^2-test. Correlations among the features (categories) were analysed by use of Spearman Rank Order Correlations. The level of statistical significance was set at $P < 0.05$.

RESULTS

During the 2011–2016 period, 946 cats were reported as missing by their owners in the Zagreb area. Of these, 372 (39%) cats were found and returned to their owners, whereas 574 (61%) cats were not found. The number of cats found and not found according to study years is shown in Figure 1.

Considering the particular cat features and categories, the highest proportion of cats reported as missing were not microchipped (92%), followed by the crossbred (84%) and short-haired (79%) cats. Among the missing cats, 66% were adult and old cats, 59% were multicoloured and cats with some marks, and 57% were castrated cats, while the percentage of missing female and male cats was almost equal (49% and 51%, respectively) (Figure 2).

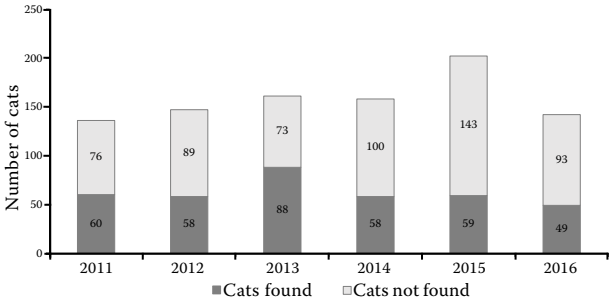

Figure 1. The ratio of missing cats recovered and not recovered in the Zagreb area during the 2011–2016 period

As shown in Table 1, the found and returned cats to their owners was significantly influenced by the breed (a higher percentage of purebred cats were recovered, $P < 0.01$), hair length (a higher percentage of cats with semi-long and long hair were recovered, $P < 0.05$), castration (a higher percentage of castrated cats were recovered, $P < 0.05$) and microchipping (a higher percentage of microchipped cats were recovered, $P < 0.05$). Significant correlations ($P < 0.05$) up to a medium intensity were recorded between the missing cat's recovery and the features listed above, as well as among the particular features.

Longer and multicoloured hair, and microchipping were significantly more frequently reported for purebred cats ($P < 0.05$ all). Castration was significantly more frequently reported for older cats, females in particular, as well as microchipping ($P < 0.05$ all).

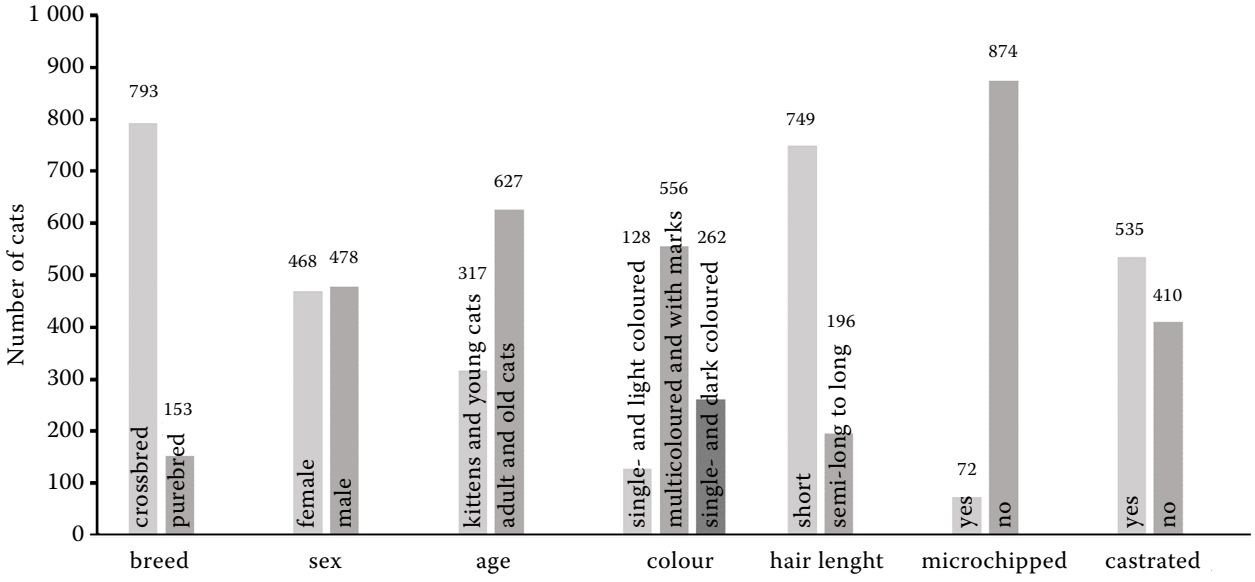

Figure 2. Number of missing cats according to the study features and categories

https://doi.org/10.17221/185/2019-VETMED

Table 1. Number of missing cats recovered and not recovered according to the study features and categories

Feature	Category	Cats found (n_1 = 372)		Cats not found (n_2 = 574)		χ^2	*P*
		n	%	*n*	%		
Breed	crossbred	294	79	499	86.9	10.39	0.001 3
	purebred	78	21	75	13.1		
Sex	female	181	48.7	287	50	0.16	0.686 3
	male	191	51.3	287	50		
Age[A]	kittens and young cats	127	34.1	190	33.2	0.09	0.769 2
	adult and old cats	245	65.9	382	66.8		
Colour	single- and light coloured	53	14.2	75	13.1	0.79	0.673 7
	multicoloured and with marks	94	25.3	168	29.3		
	single- and dark coloured	225	60.5	331	57.6		
Hair length[B]	short	280	75.3	469	81.8	5.94	0.014 8
	semi-long to long	92	24.7	104	18.2		
Castrated[B]	yes	228	61.5	307	53.5	5.83	0.015 8
	no	143	38.5	267	46.5		
Microchipped	yes	37	10	35	6.1	4.75	0.029 2
	no	335	90	539	93.9		

[A]Data on the cat age unavailable in the database (n = 944 cats in total); [B]Data on the hair length and castration unavailable in the database (n = 945 cats in total)

DISCUSSION

In this study, the features of the missing cats that facilitated their finding and being returned to their owners were investigated. According to the Act on Animal Protection in the Republic of Croatia (Animal protection act 2017), a missing animal is one that has strayed away from the owner and the owner has been being looking for it, whereas an abandoned animal is one that has been deliberately abandoned by the owner or abandoned due to some untoward circumstances such as disease, death or loss of freedom, and animal has been disowned by the owner. As reported by Surbek et al. (2015), animals can run away due to the owner's inattention or irresponsibility, for mating, loneliness and boredom, etc. The reason for a missing pet can also be pet theft (Vucinic et al. 2015). In case of a missing pet, the owner is obliged to report it to the stray animal shelter within three days. The finder of an abandoned or missing animal should report it to the animal shelter within three days of finding the animal unless the animal has already been returned to the owner. The animal is not accommodated in the stray animal shelter if its owner is identified upon its recovery (Animal protection act 2017).

The results of this study showed the proportion of cats recovered during the study period to range from 29.2% to 54.7%, an average of 39%, whereas in other studies it was 53% (Lord et al. 2007) and 75% (Weiss et al. 2012).

Huang et al. (2018) reported that 34% of missing cats were found alive within the first 7 days, and 61% within one year, and a few cats were reported to be alive after 90 days. The cats were predominantly found within a 500 m radius of their point of escape.

Weiss et al. (2012) reported on cats are found in a lower percentage than dogs. This can be explained by the differences in their behaviour, as well as the optional microchipping for cats. In comparison to dogs, cats are more unpredictable and distrustful (Serpell 1996), thus, being more reluctant to approach people. Another reason for the lower percentage of missing cats found may be their size and anatomy, allowing them to run away and hide more easily. Cats mostly have no visible identification marks, while their roaming tendency has been generally accepted (Lord et al. 2007; Weiss et al. 2012; Huang et al. 2018). Also, cat owners are less tightly bonded to their pets as compared to dog owners (Smolkovic et al. 2012). According to these

https://doi.org/10.17221/185/2019-VETMED

authors, the tighter bonding between dogs and their owners results from the higher level of individual care and joint activities required by dogs, e.g., walking and training. On the other hand, cats do not show signs of secure attachment to their owners. Adult cats usually are quite autonomous, even in their social relationships, and need not depend on the others for security and safety (Potter and Mills 2015).

More than 90% of the missing cats in this study were not microchipped. It was expected because microchipping of cats is not compulsory by the legal regulations in the Republic of Croatia. Although the microchipping of cats is not legally warranted in many countries, it provides the simplest way of finding the missing pet owner. Studies carried out by Surbek et al. (2015) and Vucinic et al. (2015) on missing dogs revealed the microchipped animals to have a greater likelihood of being found and returned to their owners. The pet owner can be easily identified in the database from the microchip permanently implanted in the dog/cat neck subcutaneous tissue, thus, contributing to the missing pet location and recovery. This was confirmed in this, as well as in other studies (Lord et al. 2009; Dingman et al. 2014).

According to previous studies on dogs, non-castrated animals went missing more frequently than castrated ones (Surbek et al. 2015; Vucinic et al. 2015); the authors explain it by their more pronounced straying instinct. In addition, male dogs were found to be missing more frequently than females (Surbek et al. 2015; Vucinic et al. 2015), which can be ascribed to the higher tendency of straying in male *vs* female dogs (Rugh 2003), as well as to the lower proportion of castrated male *vs* female dogs (Downes et al. 2009). In the present study, a greater percentage of missing cats were castrated, whereas the number of male and female missing cats was nearly equal. These findings could be explained by the fact that a higher percentage of cats are castrated as compared to dogs (Downes et al. 2009; Faver 2009; McKay et al. 2009; Weiss et al. 2012), with a comparable proportion of male and female cats being castrated (Weiss et al. 2012). As castrated animals mark their territory with urination to a lesser extent than non-castrated ones (Breed and Moore 2012), the higher percentage of castration in cats can be explained by their staying indoors more frequently than dogs, while dogs are also taken to walk to urinate/defecate, thus, preventing them urinating and leaving marks at home. In addition, cat urine is a stronger smell than dog urine. Unlike cats, a dog's movement is easier to control and prevent unwanted gravidity. Nevertheless, dog castration is more expensive in comparison to a cat's (Downes et al. 2009). Cat and dog castration frequently help to contribute to their attachment to the owners and they are more easily handled. This operative procedure makes the animal calm, less aggressive (McKenzie 2010; Mills et al. 2010), and is more adaptable to urban life. Castrated animals are found at a higher percentage than non-castrated ones (Lord et al. 2007; Weiss et al. 2012; Surbek et al. 2015; Vucinic et al. 2015), which is consistent with the results of our study, whereas the cat's sex did not influence their finding and recovery.

The number of crossbred cats reported missing was fivefold greater, indicating that on choosing cats as pet animals, owners do not pay much attention to the breed, but also that they do pay more attention to controlling the movements of purebred cats. The study by Toribio et al. (2009) also revealed that the number of crossbred cats was threefold that of pedigree cats in the cat population in Sydney, Australia. In this study, purebred cats were significantly more frequently found, possibly because the people encountering a lost animal are more ready to save it, unlike crossbred ones which they presume to be of lower value. In addition, these people may believe that they will get a greater reward for finding a purebred cat. Studies also reveal that the owners of pedigree pets are more attached to them than owners of crossbred pets (Smolkovic et al. 2012). Pet owners pay greater amounts of money on buying purebred pets, thus, also investing more efforts to find these animals. Pedigree pets frequently represent an additional source of income, as their owners can sell puppies/kittens and semen, depending on the breeding performance. The higher percentage of purebred cats recovered can also be explained by their being more frequently microchipped, which has been demonstrated to facilitate their recovery.

Considering that the people's reaction to the animal depends, among other factors, on the animal's outer features (Blecker et al. 2013), it can be presumed that recognisable features of particular breeds will induce empathy in people, thus, such an animal having a greater probability for its finding being reported to the authorised organisation. In the present study, the proportion of short-haired

https://doi.org/10.17221/185/2019-VETMED

and multicoloured cats with some specific marks reported missing was several-fold greater as compared to other categories. Cats with semi-long and long hair were found more frequently, which was found to be related to the breed, i.e., a significantly greater number of purebred cats were recovered, whereas the hair colour had no impact on their recovery.

The number of missing cats aged ≥ 2 years was almost twofold the number of younger cats reported missing. This finding is consistent with the results reported by Huang et al. (2018) and could be ascribed to the higher proportion of adult and older cats in the total cat population and the fact that the owners probably pay more attention to control the movements of kittens and young cats because of their playfulness and training.

Another reason for the greater number of older cats being reported missing could be their need to "expand their territory", as well as a decline in their cognitive and sensory abilities, which are crucial for their orientation and returning home. Therefore, it can be speculated that adult and old cats (in the present study found to be castrated, female cats in particular, and microchipped in a significantly higher percentage) are frequently found and returned to their owners. More so, the study by Smolkovic et al. (2012) showed that owners having a pet for more than three years are more attached to their pet than those having a pet for less than three years; thus, the former are more likely to invest greater efforts in finding them. However, the results of previous studies (Surbek et al. 2015; Vucinic et al. 2015) and the present study indicated that the age of the pet had no impact on their recovery.

Our study results suggested that the breed, hair length, castration and microchipping have an influence on the missing cat recovery, i.e., purebred, semi-long and long haired, castrated and microchipped cats had a higher likelihood of being found and returned to their owners. In addition, the study results revealed a correlation among particular cat features, which mutually increased the rate of their recovery. Microchipping is strongly advised to make the missing cat's recovery easier and safer. Owners should also pay more attention in controlling the movements of their older and non-castrated cats more closely. The results obtained in the study are expected to contribute to lowering the rate of missing cats and increase the rate of their recovery.

Acknowledgement

The authors are thankful to the SUZA Info Centre staff members for offering them access to their database, as well as for their time and assistance in data collection.

Conflict of interest

The authors declare no conflict of interest.

REFERENCES

Allen K, Blascovich J, Mendes WB. Cardiovascular reactivity and the presence of pets, friends, and spouses: The truth about cats and dogs. Psychosom Med. 2002 Sep-Oct;64(5):727-39.

[Animal protection act]. Official Journal of the Republic of Croatia, No. 102; 2017. Croatian.

Blecker D, Hiebert N, Kuhne F. Preliminary study of the impact of different dog features on humans in public. J Vet Behav. 2013;8(3):170-4.

Bodsworth W, Coleman GJ. Child-companion animal attachment bonds in single and two-parent families. Anthrozoös: A Multidiscip J Interac People Animals. 2001;14(4):216-23.

Breed MD, Moore J. Animal behaviour. Burlington, San Diego, London: Academic Press, Elsevier, Inc; 2012. 475 p.

Capello K, Bortolotti L, Lanari M, Baioni E, Mutinelli F, Vascellari M. Estimate of the size and demographic structure of the owned dog and cat population living in Veneto region (north-eastern Italy). Prev Vet Med. 2015;118(1):142-7.

Charnetsky CJ, Riggers S, Brennan FX. Effect of petting a dog on immune system functioning. Psychol Rep. 2004 Dec 1;95(3 Suppl):1087-91.

Cherniack EP, Cherniack AR. The benefit of pets and animal-assisted therapy to the health of older individuals. Curr Gerontol Geriatr Res. 2014;2014:623203.

Dingman PA, Levy JK, Rockey LE, Crandall MM. Use of visual and permanent identification for pets by veterinary clinics. Vet J. 2014 Jul;201(1):46-50.

Dotson MJ, Hyatt EM. Understanding dog-human companionship. J Bus Res. 2008 May;61(5):457-66.

Downes M, Canty MJ, More SJ. Demography of the pet dog and cat population on the island of Ireland and human factors influencing pet ownership. Prev Vet Med. 2009 Nov 1;92(1-2):140-9.

Faver CA. Sterilization of companion animals: Exploring the attitudes and behaviors of Latino students in south Texas. J Appl Anim Welf Sci. 2009;12(4):314-30.

https://doi.org/10.17221/185/2019-VETMED

Hinkert C. The influence of dogs and cats on the mental health and emotional wellbeing of their owners in the Netherlands [master's thesis]. Utrecht, The Netherlands: Faculty of Veterinary Medicine, Utrecht University; 2013. 29 p.

Huang L, Coradini M, Rand J, Morton J, Albrecht K, Wasson B, Robertson D. Search methods used to locate missing cats and locations where missing cats are found. Animals (Basel). 2018 Jan 2;8(1):1-20.

Lord LK, Wittum TE, Ferketich AK, Funk JA, Rajala-Schultz PJ. Search and identification methods that owners use to find a lost cat. J Am Vet Med Assoc. 2007 Jan 15;230(2): 217-20.

Lord LK, Ingwersen W, Gray JL, Wintz DJ. Characterization of animals with microchips entering animal shelters. J Am Vet Med Assoc. 2009 Jul 15;235(2):160-7.

McKay SA, Farnworth MJ, Waran NK. Current attitudes toward, and incidence of, sterilization of cats and dogs by caregivers (owners) in Auckland, New Zealand. J Appl Anim Welf Sci. 2009;12(4):331-44.

McKenzie B. Evaluating the benefits and risks of neutering dogs and cats. CAB Rev. 2010;5(45):1-18.

McNicholas J, Gilbey A, Rennie A, Ahmedzai S, Dono JA, Ormerod E. Pet ownership and human health: A brief review of evidence and issues. BMJ. 2005 Nov 26;331 (7527):1252-4.

Mills DS, Marchant-Forde JN, McGreevy PD, Morton DB, Nicol CJ, Phillips CJC, Sandoe P, Swaisgood RR. The encyclopaedia of applied animal behaviour and welfare. Cambridge, UK: CAB International, Cambridge University Press; 2010.

Murray JK, Gruffydd-Jones TJ, Roberts MA, Browne WJ. Assessing changes in the UK pet cat and dog populations: Numbers and household ownership. Vet Rec. 2015 Sep 12; 177(10):259.

Ostovic M, Mikus T, Pavicic Z, Matkovic K, Mesic Z. Influence of socio-demographic and experiential factors on the attitudes of Croatian veterinary students towards farm animal welfare. Vet Med-Czech. 2017 Aug;62(8):417-28.

Potter A, Mills DS. Domestic cats (Felis silvestris catus) do not show signs of secure attachment to their owners. PLoS One. 2015 Sep 2;10(9):e0135109.

Rugh K. What about Labrador Retrievers: The joy and realities of living with a Lab. Hoboken, New Jersey: Wiley Publishing, Inc; 2003. 160 p.

Serpell JA. Evidence for an association between pet behavior and owner attachment levels. Appl Anim Behav Sci. 1996;47(1-2):49-60.

Simec Z. Veza čovjeka i životinje te njezin prekid [Animal behaviour: Human to animal bonding and its disruption]. In: Herak-Perkovic V, Grabarevic Z, Kos J, editors. Veterinarski prirucnik [Veterinary manual]. 6th ed. Zagreb, Croatia: Medicinska naklada; 2012. p. 365-82. Croatian.

Smolkovic I, Fajfar M, Mlinaric V. Attachment to pets and interpersonal relationships. J Eur Psychol Stud. 2012; 3(1):15-23.

Souter MA, Miller MD. Do animal-assisted activities effectively treat depression? A meta-analysis. Anthrozoös: A Multidiscip J Interac People Animals. 2007;20(2):167-80.

Staats S, Sears K, Pierfelice L. Teachers' pets and why they have them: An investigation of the human animal bond. J Appl Soc Psychol. 2006;36(8):1881-91.

Surbek M, Zupcic A, Ostovic M, Ekert Kabalin A, Dragovic J, Mikus T, Matkovic K, Pavicic Z. Obilježja koja utječu na pronalazak izgubljenih pasa [Features influencing missing dog recovery]. Hrvat Vet Vjesn. 2015;23(5/6):54-8. Croatian.

Toribio JA, Norris JM, White JD, Dhand NK, Hamilton SA, Malik R. Demographics and husbandry of pet cats living in Sydney, Australia: Results of cross-sectional survey of pet ownership. J Feline Med Surg. 2009 Jun;11(6):449-61.

Vrbanac Z, Zecevic I, Ljubic M, Belic M, Stanin D, Bottegaro NB, Jurkic G, Skrlin B, Bedrica L, Zubcic D. Animal assisted therapy and perception of loneliness in geriatric nursing home residents. Coll Antropol. 2013 Sep;37 (3):973-6.

Vucinic M, Radisavljevic K, Hammond-Seaman A, Ilieski V. Visibly marked and microchipped lost dogs have a higher chance to find their owners in Belgrade. Maced Vet Rev. 2015;38(1):79-83.

Walsh F. Human-animal bonds I: The relational significance of companion animals. Fam Process. 2009a Dec;48(4): 462-80.

Walsh F. Human-animal bonds II: The role of pets in family systems and family therapy. Fam Process. 2009b Dec;48(4):481-99.

Weiss E, Slater M, Lord L. Frequency of lost dogs and cats in the United States and the methods used to locate them. Animals (Basel). 2012 Jun 13;2(2):301-15.

Wrobel TA, Dye AL. Grieving pet death: Normative, gender, and attachment issues. OMEGA – Int J Manage Sci. 2003; 47(4):385-93.

Received: December 30, 2019
Accepted: August 14, 2020