The Effect of Ecological Factors on Cats' Weight in Tehran - First Phase

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Research Article

Keywords: Urban Ecology, Urban Ecosystem, Cats Weight, Waste, Tehran

Posted Date: April 5th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-294388/v2>

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Abstract

Urban cats live in cities like humans and humans affect their life intentionally or unintentionally. Waste production is only one of the human effects on the urban cat ecosystem. The waste produced by human supply some of the food needed by urban cats. This descriptive - estimation research is the first study in the world to measure the cats' weight to investigate the effect of the increase or decrease in urban wastes on physical status of cats. In the first phase of the research (Spring 2016-Winter 2017) in Tehran, we found that the average volume of the collected wastes had increased by 14% and the average weight of cats in the mentioned period had increased 1%. The 9.5% decrease in the waste volume in Autumn 2016 had led to the decrease in the average weight of cats in Winter 2017. The male cats were more affected by the decrease in waste volume.

Main Text

Urban people have created changes in their surrounding ecosystem that have affected the ecology of animals^{1 2}. Cats (*Felis catus*)³ are a group of animals living in cities and their life is affected by their coexistence with human. The economic and livelihood conditions of cities significantly affect the content of trash bins. Although cats are hunters, trash bins are a source of food for them^{4 5 6 7}. The effects of economic rises on human societies can be observed in trash bins. So, cats are also affected by these crises. For a better understanding of the extent of this effect, measuring the cats' weight is the best way to become aware of their ecological condition^{8 9 10}.

So, according to what was said above, the raised question is: "What is the relationship between cat weight and the urban waste volume?" to answer this question, the available papers were searched. However, no result was obtained. Therefore, a project was designed by descriptive - estimative method to measure the weight of a group of cats in 13 regions of Tehran from Spring 2016 until Winter 2020. The research was done only on the cats that were older than 18 months. The criterion for determining the age of cats was their teeth. The research has been done in no country so far and so, it is considered a unique project.

In the first phase of this descriptive - estimative research (Spring 2016-Winter 2017), the weight of cats was measured in 13 regions of Tehran. In this period, 466 cats were weighted over four seasons. This population included 353 female cats and 113 male cats. In the spring, 112 cats were weighted including 84 female cats and 28 male cats. As well as in summer, 112 cats were weighted including 84 female cats and 28 male cats. In autumn, 116 cats were weighted including 87 male cats and 29 female cats. In winter, 117 cats were weighted including 88 female cats and 28 male cats.

After field studied and primary data collection in Tehran, the results of the first phase of the research were reported as presented in Table 1, Chart 1¹¹, Chart 2 and Chart 3.

Table 1. The average volume of the collected wastes and the average weight of cats

<i>The average volume of the collected wastes</i>	5432	5699	5157	6155
<i>The average weight of cats</i>	3315	3321	3355	3349
<i>The average weight of Female cats</i>	3269	3284	3309	3312
<i>The average weight of Male cats</i>	3453	3431	3493	3465

The measurement unit of the average waste collected in Tehran is (one thousand/day)

The collected waste volume has increased by 14% in the period of Spring 2016-Winter 2017, and the average weight of cats has increased by about 1% in the same period. The average volume of collected waste during spring and summer was ascending and it was found regarding the increase in the weight of cats. It can be guessed that the average waste volume in Winter 2016 is almost similar to Spring 2016. According to the results reported in Table 1 and Chart 2, the average weight of cats in the period of Spring-Autumn 2016 was ascending. However, with the beginning of winter, this increase has stopped and even tended to reduce. This weight loss can be probably due to the beginning of winter and the decrease in the average volume of urban wastes during the autumn (Chart 1).

According to Table 1 and Chart 3, the average weight of female cats has had a constant increase, while weight loss has been observed in male cats during Summer and Winter. The weight loss of male cats during Summer may not be due to the waste volume. However, as mentioned above, the average weight of cats has decreased during winter with the decrease in waste volume. According to Chart 3, it can be found that the decrease of waste volume during autumn has mainly affected the male cats while causing a decrease in the weight growth flow in female cats.

It should be noted that regarding the biological properties of mammals¹², the increase in the average waste volume in winter 2017 cannot lead to a sudden growth of the average weight of cats in spring 2017.

So, based on the observations, it is predicted that the average weight of cats increases to a limited extent in spring 2017. Meanwhile, there are two hypotheses about the reason for the increase in the average waste volume (about 14%). The first reason is the increase in waste production by citizens, and the second reason is that the waste accumulation systems of the municipality have become more efficient. In conclusion, it can be stated that the change in the average volume of the collected wastes has been effective in the average weight of cats.

It is suggested for other interested researchers to investigate the shares of hunting and waste in supplying the food needed by urban cats.

Declarations

The Ethics Statement: Declaration of Helsinki (1964) was observed in the research process. The researcher has used the "ARRIVE" instruction available at <https://www.equator-network.org/> to observe

the ethical standards. The researcher weighted the cats without hunting, labeling, or keeping them far from their habitat. No drug was used in data collection process. The (direct or indirect) contacts with animals were done by observing the due regulations, instructions, and protocols.

Author Contribution(s): Rahimi, F. Idea maker, data collector, author and editor. The author has read the article and agrees to publish it.

Funding: No funding has been received for this research.

Conflicts of Interest: The author declares that no conflict of interest.

Data Accessibility Statement: Details are available online: <https://doi.org/10.5061/dryad.kpr4xh47>

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Figures

Figure 1

The average volume of the collected wastes (one thousand tons per day).

Figure 2

The average weight of cats (g)

Figure 3

The changes in the average weight of male and female cats

Supplementary Files

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