

Studies on male reproductive characteristics of feral raccoons  
(*Procyon lotor*) in Kanagawa Prefecture, Japan

abstract

Graduate School of Veterinary Medicine and Life Science Doctoral Course in Veterinary Medicine  
Enrollment 2011

Taiki Uno

(Supervisor Prof. Shin-ichi Hayama)

In Japan, the raccoon (*Procyon lotor*), an omnivorous medium-sized member of the Carnivora, was imported from North America as a pet from 1980s. However, feral raccoons have been growing in number to such an extent that they are becoming a problematic invasive species and therefore are being commonly captured. Until now, feral raccoons were captured a lot at Kinki, Hokkaido and Kanto, but in late years the number of the capture is increasing at Kyushu quickly.

In Hokkaido, it has been proposed that feral raccoons could be effectively captured by shifting capture efforts to spring, which is when the animals are caring for their offspring. However, there are regional differences in the parturition periods of feral raccoons. Because in Kamakura, Kanagawa Prefecture, the parturition periods of raccoons is thought to be from February to October and shows a bimodal distribution, capture efforts cannot be concentrated. In addition, management plan like Hokkaido cannot be adopted simply at Kyushu where the number of the capture is increasing, because the parturition periods of raccoons in Kyushu were expected like Kamakura.

As the cause of the bimodal distribution of parturition period of feral raccoons, the factor of the female side was considered until now, but a study is not performed about the factor of the male side. To assess the cause of the bimodal distribution, the present study proposes following two hypotheses: 1) The yearling males reach sexual maturity after spring and produce offspring; 2) Because the number of adult male raccoons being sexually inactive in summer excessively increased, a part of the original peak became dented.

The objective of this study was to study the reproductive characteristics of male raccoons to understand the role of the male for distribution of parturition periods of raccoons and test the above two hypotheses.

In this study, the parturition period of feral raccoons in Kanagawa were estimated to range from February to December with two peaks, that big in May and small in August, and that in Kyoto were estimated to range from January to November with one big peak in May.

The male raccoons in Kanagawa started spermatogenesis at six months of age by histologically. The growth of the baculum of raccoons was studied for the first time in Japan and similar to North America. The prostate of raccoons mature at six months of age. This is the first report of the world. From the above, the male raccoon in Kanagawa can breed at six months of age, thus yearling male breed in Kanagawa at his first breeding season.

The yearling males of the early born group in Kanagawa are a father of early litters, and that of late born group is a father of late litters. From result of study about seasonal

change of spermatogenesis and various parameters, such as testicular weight, the number of adult male raccoons being sexually active in summer excessively decreased, and in contrast that of juvenile increased. Therefore, the number of male raccoons being sexually active is constant in 50% throughout the year.

From the above, two hypotheses of the cause of the bimodal distribution of parturition period of feral raccoons were supported and the role of male raccoons for the distribution of parturition period was clarified.

In addition, the spermatogenesis of feral male raccoons was evaluated by histologically examining the testis and the tail of the epididymis to establish a simple method of estimating spermatogenesis from external measurements. Then, usefulness of GSI was discovered.