Comparison of penile spines and sperm morphology between juvenile and adult feral tom cats
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Background
Hundreds of thousands of dollars and volunteer hours are spent on trapping, neutering, and releasing feral cats with no apparent effect on the size of the population. Therefore, we hypothesized that feral tom cats have reproductively adapted to man-made sterilization efforts by lowering the age at which they enter puberty and by increasing their fertility as compared to domestic cats. The objective of this study was to compare the presence of penile spines and the percentage of normal spermatozoa expressed from the vasa deferentes of juvenile and adult feral tom cats.

Methods
Tom cats were presented for castration at a feral cat neutering clinic. Age was estimated by a single observer. The age ranges were: 2-6 months (juvenile; n=13) and over 6 months (adult; n=16). After inducing general anesthesia, the penis was evaluated to determine if spines were present. Next, a routine open castration was performed. Contents from both vasa deferentes were milked onto a microscope slide, mixed with eosin-nigrosin stain, spread with a spreader slide, and allowed to air dry. The smears were blindly evaluated by the same observer (EB) using bright field microscopy under oil immersion (1000X) and the percentage of sperm with normal morphology was determined after evaluating 100 sperm per slide. The presence of penile spines was compared using a Chi-Square test and the percent morphologically normal sperm was compared using a Student’s t test; where p<0.05 was defined as significant.

Results
More adult toms (16/16) than juvenile toms (4/13) had penile spines (p<0.05). For several toms (8/13 juveniles and 6/16 adults) fewer than 50 sperm were found on the slide. The results from these smears were therefore not included in the evaluation of sperm morphology. The mean ±SD percentage of morphologically normal sperm for the remaining five juvenile and ten adult tom cats was not significantly different (82±6% and 85±9%, respectively).

Discussion
Ives et al. described the eruption of penile spines to occur between 9 and 13 weeks of age. It is not clear why more of the juvenile toms did not have penile spines present at the time of castration, but this may have been related to over-estimation of the age of the animals in our study.
Based on our findings we conclude that feral tom cats in this population do not reach puberty any earlier than toms in populations not subjected to population control measures, however we did find some evidence that the feral cats had better sperm morphology, one possible indicator of fertility, than has been reported for domestic cats (~70%)3. Further studies, comparing toms of known ages and both populations (domestic vs. feral) will have to be conducted to better test our hypothesis.

Keywords: Feline, Neuter, Puberty, Vas Deferens

References