KARYOTYPIC VARIATION IN SPOTTED SKUNKS
(CARNIVORA: MUSTELIDAE: SPILOGALE)
FROM TEXAS, MEXICO AND EL SALVADOR

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Abstract.—The karyotypes of two specimens of *Spilogale putorius interrupta* from Texas and Mexico and two specimens of *Spilogale putorius tropicalis* from El Salvador are examined. Karyotypic variation within the genus *Spilogale* is also reviewed.

The spotted skunks, genus *Spilogale*, comprise one of three genera in the subfamily Mephitinae. This genus was last reviewed by Van Gelder (1959) who recognized two species, *Spilogale pygmaea* and *S. putorius*. The pygmy spotted skunk is monotypic and restricted in distribution to the Pacific coastal plains of Mexico and Guatemala. Van Gelder (1959) considered *S. putorius* to be polytypic with 15 subspecies ranging from British Columbia southward through much of the United States, Mexico, and Central America. Jones et al. (1992) recognized the western form of *S. putorius* as a distinct species, *S. gracilis*. This study follows the nomenclature proposed by Jones et al. (1992), but recognizes that the specific and subspecific distributional boundaries of the *Spilogale putorius*/*S. gracilis* complex are in need of further clarification.

Four specimens of *Spilogale* were karyotyped during the course of this study. This report provides a description of karyotypes from these specimens, data on karyotypes of other specimens provided by Mead (pers. comm.) and a summary of karyotypic data from the literature. One of these karyotypes corrects an error in the literature, and two document previously undescribed variation. Collectively this information provides new insight relative to chromosomal evolution in this mustelid complex.

**Methods and Materials**

Mitotic metaphase chromosomes were prepared from bone marrow following the techniques of Robbins & Baker (1983). Voucher specimens are deposited in the Museum of Texas Tech University (TTU) and the Carnegie Museum of Natural History (CM). Based on Hall
Table 1. Karyological variation within the genus Spilogale (AN = autosomal arm number; M = metacentric; SM = submetacentric; m = minute).

<table>
<thead>
<tr>
<th>Taxon</th>
<th>2N</th>
<th>AN</th>
<th>Acrocentric pairs</th>
<th>Biarmed pairs</th>
<th>X</th>
<th>Y</th>
<th>Literature Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. pygmaea pygmaea</td>
<td>48</td>
<td>86</td>
<td>3</td>
<td>20 M</td>
<td>m</td>
<td></td>
<td>Lee &amp; Modi (1983)</td>
</tr>
<tr>
<td>S. gracilis leucoparia</td>
<td>58</td>
<td>70</td>
<td>21</td>
<td>7 M</td>
<td>m</td>
<td></td>
<td>Lee &amp; Modi (1983)</td>
</tr>
<tr>
<td>S. gracilis leucoparia</td>
<td>60</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Mead (pers. comm.)</td>
</tr>
<tr>
<td>S. gracilis latifrons</td>
<td>60</td>
<td>70</td>
<td>23</td>
<td>6 M</td>
<td>m</td>
<td></td>
<td>Hsu &amp; Mead (1969)</td>
</tr>
<tr>
<td>S. gracilis phenax</td>
<td>60</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td></td>
<td>Mead (pers. comm.)</td>
</tr>
<tr>
<td>S. putorius anharvalis</td>
<td>64</td>
<td>70</td>
<td>27</td>
<td>4 M</td>
<td>m</td>
<td></td>
<td>Hsu &amp; Mead (1969)</td>
</tr>
<tr>
<td>S. putorius interrupta</td>
<td>64</td>
<td>70</td>
<td>27</td>
<td>4 M</td>
<td>m</td>
<td></td>
<td>Hsu &amp; Mead (1969)</td>
</tr>
<tr>
<td>S. putorius interrupta</td>
<td>62</td>
<td>70</td>
<td>25</td>
<td>5 SM</td>
<td>m</td>
<td></td>
<td>this study</td>
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<tr>
<td>S. putorius interrupta</td>
<td>64</td>
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<td>27</td>
<td>4 M</td>
<td>m</td>
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<td>this study</td>
</tr>
<tr>
<td>S. putorius tropicalis</td>
<td>58</td>
<td>68</td>
<td>22</td>
<td>6 SM</td>
<td>m</td>
<td></td>
<td>this study</td>
</tr>
</tbody>
</table>

(1981), this study examined two specimens each of *S. putorius interrupta* and *S. putorius tropicalis* collected from natural occurring populations in Texas, Mexico and El Salvador.

*Material examined.*—1 mi SE of Post, Garza County, Texas, one specimen of *Spilogale putorius interrupta* (TTU 17491). 2.5 mi SE of Altamira, Tamaulipas, México, one specimen of *Spilogale putorius interrupta* (TTU 14334). Los Marranitos, Departamento de La Paz, El Salvador, one specimen of *Spilogale putorius tropicalis* (CM 111000). Deiningner Park near Amayo R., Departamento de La Libertad, El Salvador, one specimen of *Spilogale putorius tropicalis* (TTU 64152).

**RESULTS AND DISCUSSION**

The data reveal extensive karyological variation within the *S. putorius/S. gracilis* complex (Table 1). Within the complex, *S. putorius tropicalis* had a diploid number of 58 with 68 autosomal arms (Fig. 1), whereas *S. putorius interrupta* from Texas and Tamaulipas had diploid numbers of 64 and 62, respectively (not figured). This means that at least six different karyotypes are known for the complex. Perhaps there would be even more if complete data were available for *S. gracilis phenax* and the 2n=60 form of *S. gracilis leucoparia*. The diploid number of *S. gracilis phenax* was erroneously published by Hsu & Mead (1969) and subsequently cited by Lee & Modi (1983) as 64, rather than 60 (Table 1: Mead, pers. comm.).

Five of the karyotypes of the *S. putorius/S. gracilis* complex (Table 1) appear to be interconvertable by centric fusions/fissions (= Robert-
sonian events). The number of arms in the autosomal complement of the specimens from El Salvador is lower than the value characteristic of northern spotted skunks, thus cannot be described solely as Robertsonian variation. It is noteworthy that specimens with diploid numbers of both 58 and 60 have been found in *S. gracilis leucoparia*. As currently recognized, this subspecies appears to be a composite of two diploid numbers.

Geographic distribution of karyotypic variation observed in *Spilogale* does not fit the pattern expected of a Rassenkreis (Mayr 1970:423). Furthermore, strong differences in reproductive characteristics have been shown for karyotypes with only Robertsonian differences. Also, variation in the number of arms of the autosomes, such as observed in the material from El Salvador, often signals specific differences. Based on karyotypic and reproductive data (Mead 1967; 1968a; 1968b), it is worth examining geographical distributions and boundaries of chromosomal races to determine if the different cytotypes are behaving like biological species. Definitive answers must await further comparative studies, especially in zones of presumptive intergradation.
ACKNOWLEDGEMENTS

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LITERATURE CITED


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