Species-Specific Phonotaxis in Gryllus Females—(Note). Few published data demonstrate the ability of female crickets to discriminate among the calling songs of sympatric species. The experiments of Ulagaraj and Walker (1973, Science 182:1278) with mole crickets (Gryllotalpidae) yielded the only field data for species-specificity. Females flew to speakers broadcasting the songs of conspecific males in preference to the songs of a sympatric species. Laboratory experiments of Walker (1957, Ann. Ent. Soc. Amer. 50:626), Hill, et al. (1972, Austral. J. Zool. 20:153), Popov, et al. (1974, Rheinisch-Westfälische Akad. Wiss., Abhandl. 53), and Paul (1976, Ann. Ent. Soc. Amer. 69:1007) gave similar results for North American tree crickets (Oecanthus), Australian field crickets (Teleogryllus), European field crickets (Gryllus), and North American ground crickets (Allonemobius), respectively. In this note, I present phonotaxis data for North American field crickets (Gryllus).

Individuals of 2 unidentified sympatric species were collected at lights by Dr. R. Hoy at Carlsbad, New Mexico in 1972. The songs of the 2 species are strikingly different, and for this reason, I refer to them as “New Mexico Triller” (NMT), and “New Mexico Chirper” (NMC). Sonograms of both songs are shown in Fig. 1.

Fig. 1. Sonograms of (A) NMT calling song, 26° C, (B) NMC calling song, 28° C.

Phonotaxis experiments were carried out in a low-noise, anechoic chamber at the S.U.N.Y., Stony Brook, using laboratory-reared, virgin female descendants of the field collected crickets. The experimental materials and methods are similar to those used in experiments with Allonemobius and Teleogryllus crickets (Paul, 1976; Hoy, Hahn and Paul, 1977, Science 195:82). Briefly, an individual female was exposed to NMT and NMC songs broadcast over separate speakers. The female was released and allowed 3 min to walk to either speaker. The number of females attracted to NMT or NMC song are given in Table 1. The ratio of these choices was compared statistically to a 1:1 ratio, the expected ratio if the females chose speakers at random. The results of “one-choice” tests, in which one speaker played the heterospecific song and the other was silent are also shown in Table 1.

For both species, the proportion of females that chose the conspecific song differed significantly from 0.5 (P<0.005 in G-tests for goodness of fit). Thus, females of both sympatric, synchronic species distinguished between NMT and NMC songs.
TABLE 1. **The number of females tested and choices made in pho-
notaxis experiments.**

<table>
<thead>
<tr>
<th>Females</th>
<th>N</th>
<th>NMC</th>
<th>NMT</th>
<th>G-tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMC</td>
<td>27</td>
<td>22</td>
<td>3</td>
<td>***</td>
</tr>
<tr>
<td>NMT</td>
<td>16</td>
<td>1</td>
<td>15</td>
<td>***</td>
</tr>
<tr>
<td>NMC</td>
<td>16</td>
<td>*</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>NMT</td>
<td>13</td>
<td>7</td>
<td>*</td>
<td>-</td>
</tr>
</tbody>
</table>

N = sample size.
* = one-choice test.
*** = proportion differs significantly (P < 0.005) from a 1:1 ratio.

Some females of both species walked to the heterospecific song in one-
choice tests. This result is consistent with the findings of Paul (1976) for
ground crickets, and Zaretsky (1972, J. Comp. Physiol. 79:153), Dathe (1974,
Forma Functio 7:7), and Hill, et al. (1972) for field crickets.

NMT and NMC occur in mixed groups in fields near Carlsbad, N. M.
(R. Hoy, pers. comm.). Thus, females are exposed to both calling songs.
The ability of females to distinguish between the 2 songs may be important
in the premating isolation of these species, though, as the one-choice test
data indicate, the acoustic behavior is probably not the only barrier to in-
terspecific mating.—R. C. Paul, Univ. Fla., Gainesville, 32611.