

Markow, T.A. and N. Maveety. Arizona State University, Tempe, Arizona USNA. More character displacement for reproductive isolation in the Mulleri complex.

*D. mojavensis* is the cause of reproductive isolation between the two geographic races of *D. mojavensis* (race A in Sonora and race B in Baja California).

Wasserman & Koepfer (1977) described character displacement for reproductive isolation between two sibling species, *D. mojavensis* and *D. arizonensis* of the mulleri complex of the repleta group. Zouros & d'Entremont (1980) demonstrated that the presence of *D. arizonensis* in the Sonoran part of the range of

The discovery of the third, undescribed sibling species, *D. "species N"* ("from Navojoa", Mexico) raises the question of additional character displacement for sexual behavior in areas where this species is sympatric with the others. Figure 1 shows the distribution of the three species in Mexico and the United States; *D. "species N"* is sympatric with *D. mojavensis* in southern Sonora and northern Sinaloa. There is no gene flow between peninsular and mainland *D. mojavensis*. We tested for intensity of sexual isolation between *D. mojavensis* and *D. "species N"* from sympatric and allopatric strains of both species. Experiments were conducted using procedures reported by Markow (1981) and Markow et al. (1983) in which 10 pairs from 2 different species are placed in an observation chamber for 1 hr. Results are shown in Table 1. When either *D. mojavensis* or *D. "species N"* is from a sympatric collection, complete or nearly complete isolation is observed. In fact, the same degree of isolation is observed with *D. mojavensis* strains from allopatric strains in Sonora. This is probably best explained by gene flow among mainland populations of *D. mojavensis*. When both are allopatric, isolation indices are between .50 and .60. These data show that character displacement for sexual isolation exists in sympatric populations of these two species. The pattern is similar to that described above for *D. mojavensis* and *D. arizonensis*. There is evidently enough genetic variability in mate recognition systems to allow a degree of "fine-tuning" to evolve in areas where two species coexist. This variability should be very useful in studying the evolution of new mate recognition systems during speciation.

Figure 1. Distribution of *D. mojavensis* and *D. "species N"* in Mexico and southwestern United States (after Heed 1982).

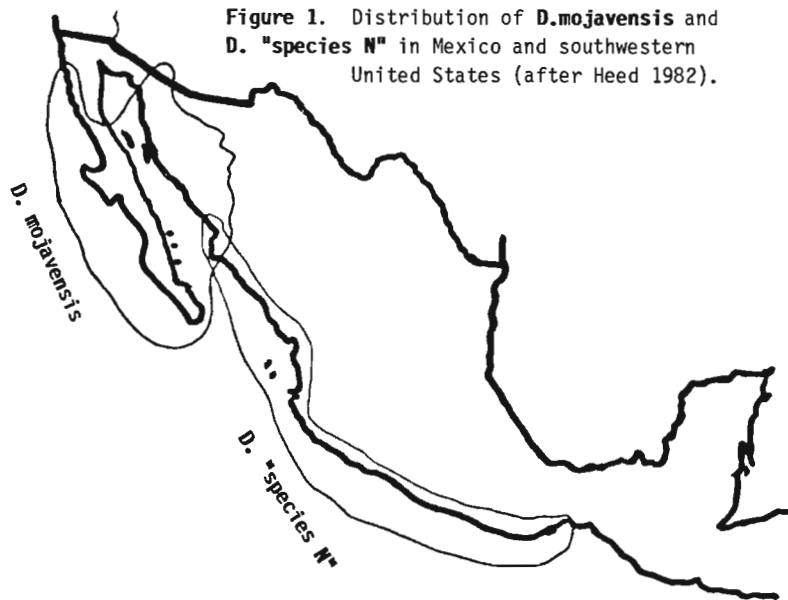


Table 1. Indices of reproductive isolation for sympatric and allopatric populations of *D. "species N"* and *D. mojavensis*.

Localities*			
<i>D. "species N"</i>	X	<i>D. mojavensis</i>	I ± SE (n)
ALLOPATRIC	X	ALLOPATRIC	
1. Nahuapa	X	Vallecito (California)	0.567 ± 0.075 (120)
2. Nahuapa	X	San Telmo (Baja)	0.591 ± 0.086 (88)
3. Nahuapa	X	Catavina (Baja)	0.571 ± 0.109 (56)
4. Nahuapa	X	Pt. Onah (Sonora)	0.960 ± 0.033 (60)
5. Nahuapa	X	San Carlos (Sonora)	1.0 (56)
ALLOPATRIC	X	SYMPATRIC	
1. Nahuapa	X	So. of Navajoa	0.92 ± 0.003 (55)
SYMPATRIC	X	ALLOPATRIC	
1. Navojoa(E2.1)	X	Vallecito (California)	0.790 ± 0.09 (48)
2. Navojoa(E2.1)	X	San Telmo (Baja)	0.944 ± 0.039 (72)
3. Navojoa(E2.1)	X	Pt. Onah (Sonora)	1.0 (49)
4. Navojoa(E2.1)	X	San Carlos (Sonora)	0.967 ± 0.033 (61)
SYMPATRIC	X	SYMPATRIC	
1. Navojoa(E2.1)	X	So. of Navajoa	1.0 (51)

\**D. "species N"* from Navojoa, Sonora, was obtained from the *Drosophila* species stock center. All others were provided by the University of Arizona.

References: Wasserman, M. & H.R. Koepfer 1977, Evolution 31: 812-823; Zouros, E. & C.J. d'Entremont 1980, Evolution 34: 421-430; Markow, T.A. 1981, Evolution 35: 1022-1027; Markow, T.A. et al. 1983, Evolution 37: 699-652.