Dr. Becky Presents…
Custom Presentation Services

Graphs, Figures, And Tables Formatted for Publication

These are samples of a variety of graphs and charts that are formatted for publication. They are not intended to be part of a single presentation, but rather a sampling of professional graphs, figures and tables.

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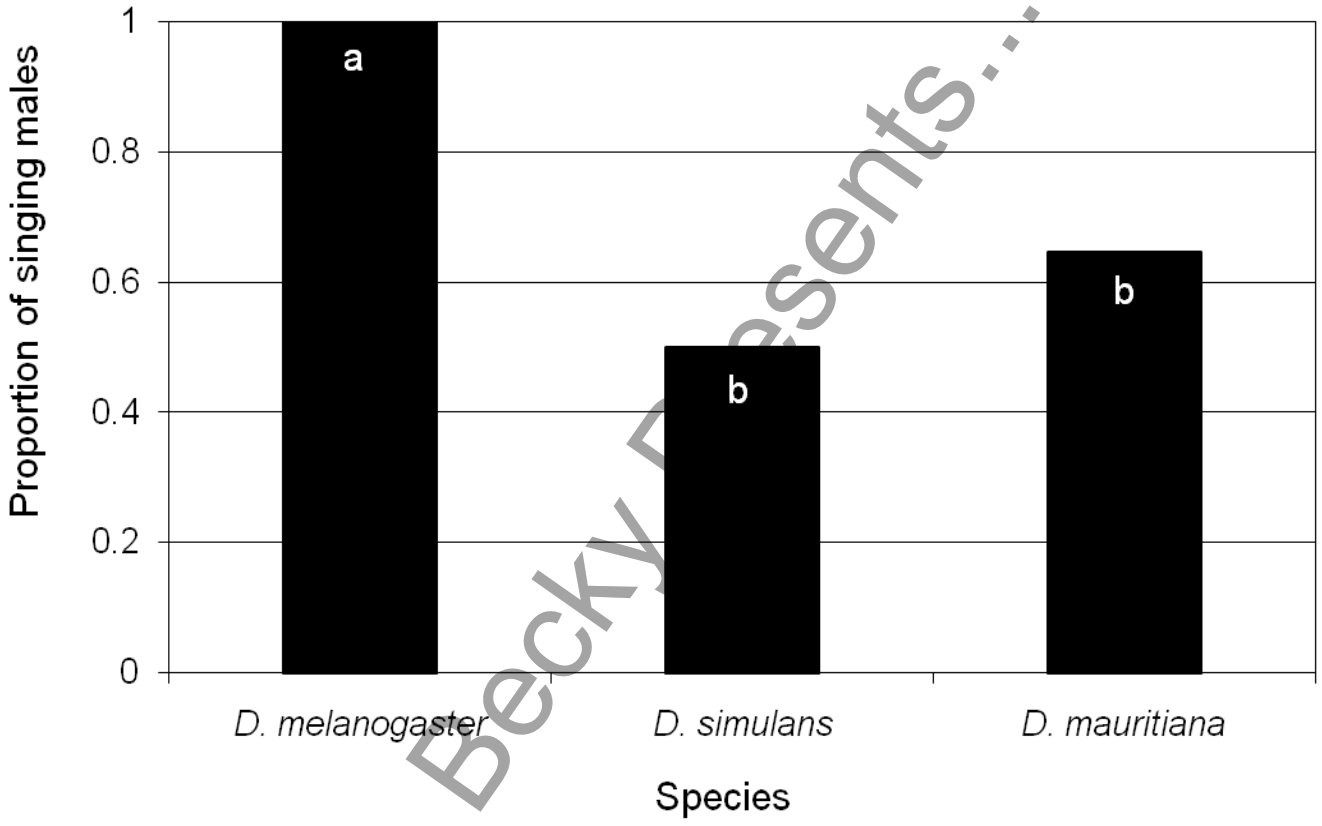
Categorical Data: Bar Graphs



Graph 1: Courtship song production differs among three species of *Drosophila*. Male *D. melanogaster* produce courtship song more often than males of the other two species.

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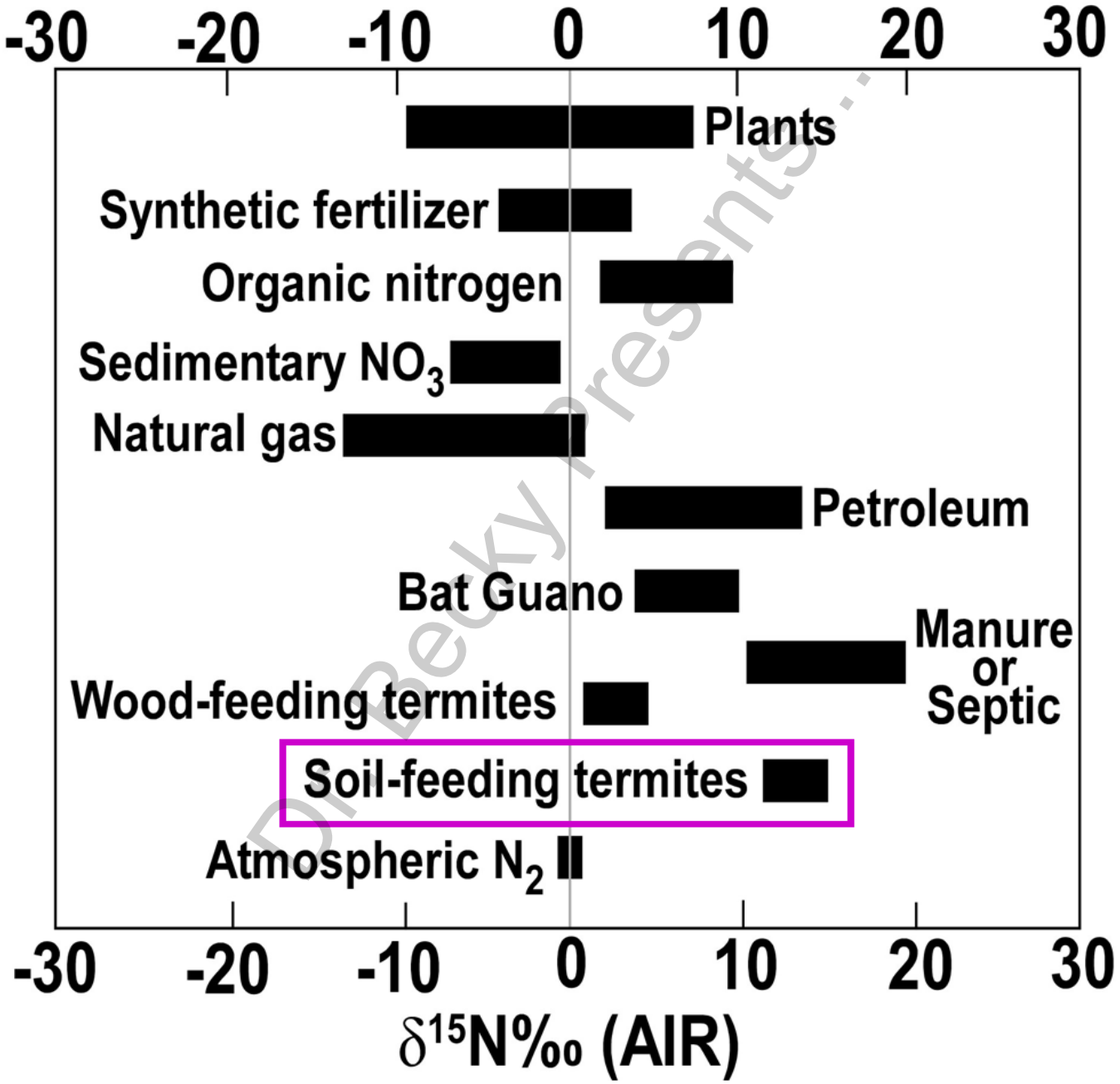
Categorical Data: Bar Graphs



Graph 2: The nitrogen isotope value for soil-feeding termites is distinct from other nitrogen sources, overlapping only with manure and septic discharge.

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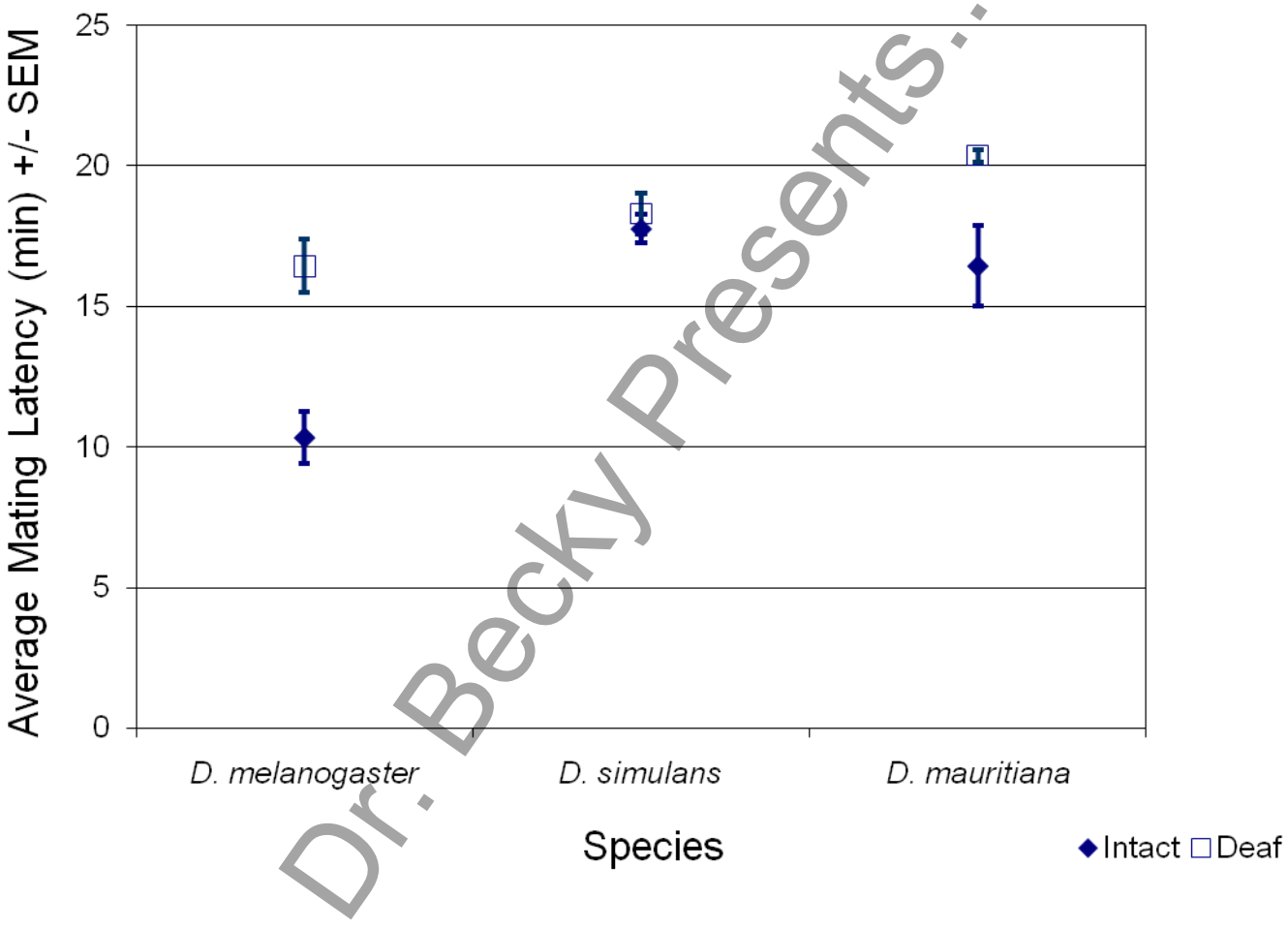
Categorical Data: Other Graphs



Graph 3: Courtship song is more important to females of some species than others. Deaf *D. simulans* females mate as readily as intact females, whereas *D. melanogaster* and *D. mauritiana* mate less often if their aristae have been removed, rendering them deaf.

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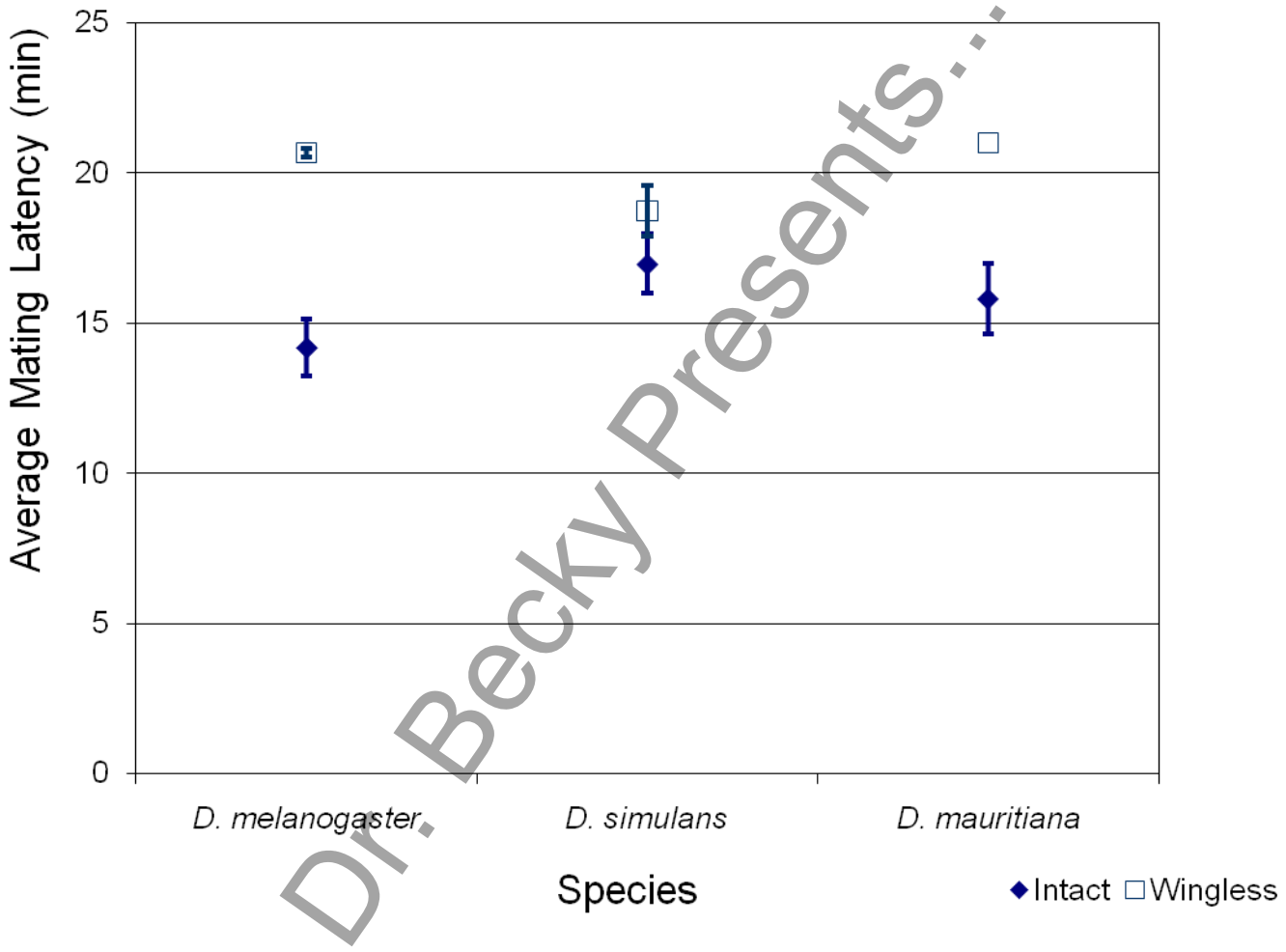
Categorical Data: Other Graphs



Graph 4: Courtship song is more important to females of some species than others. *Drosophila melanogaster* and *D. mauritiana* females mate more with often when males have wings and are able to sing. This is not true for female *D. simulans*, who mate at equal rates regardless of male wing treatment.

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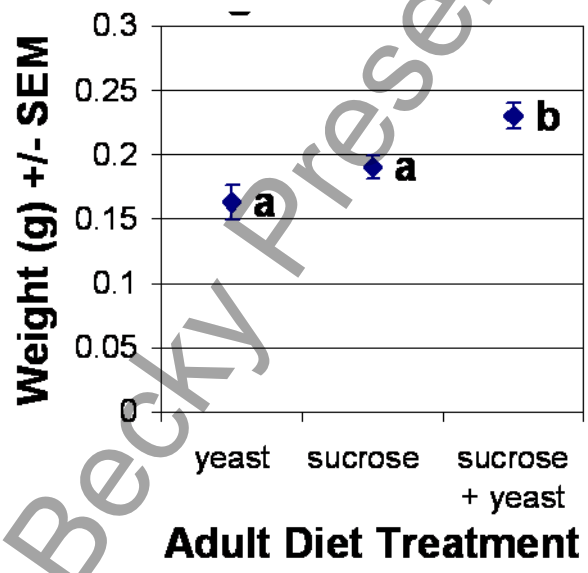
Categorical Data: Other Graphs



Graph 5: Our preliminary data indicate that adult diet treatments affect adult condition. When males are matched for size (size difference among treatments: sucrose: F = 0.713, P = 0.498), those reared for seven days on low quality, nutrient deficient diets (sucrose only or yeast only) weighed less than those reared on more complete, high quality diets (sucrose + yeast; Fig. 4; ANCOVA: main effect diet treatment, F=14.114, P<0.0005; covariate size, F=7.46, P=0.011).

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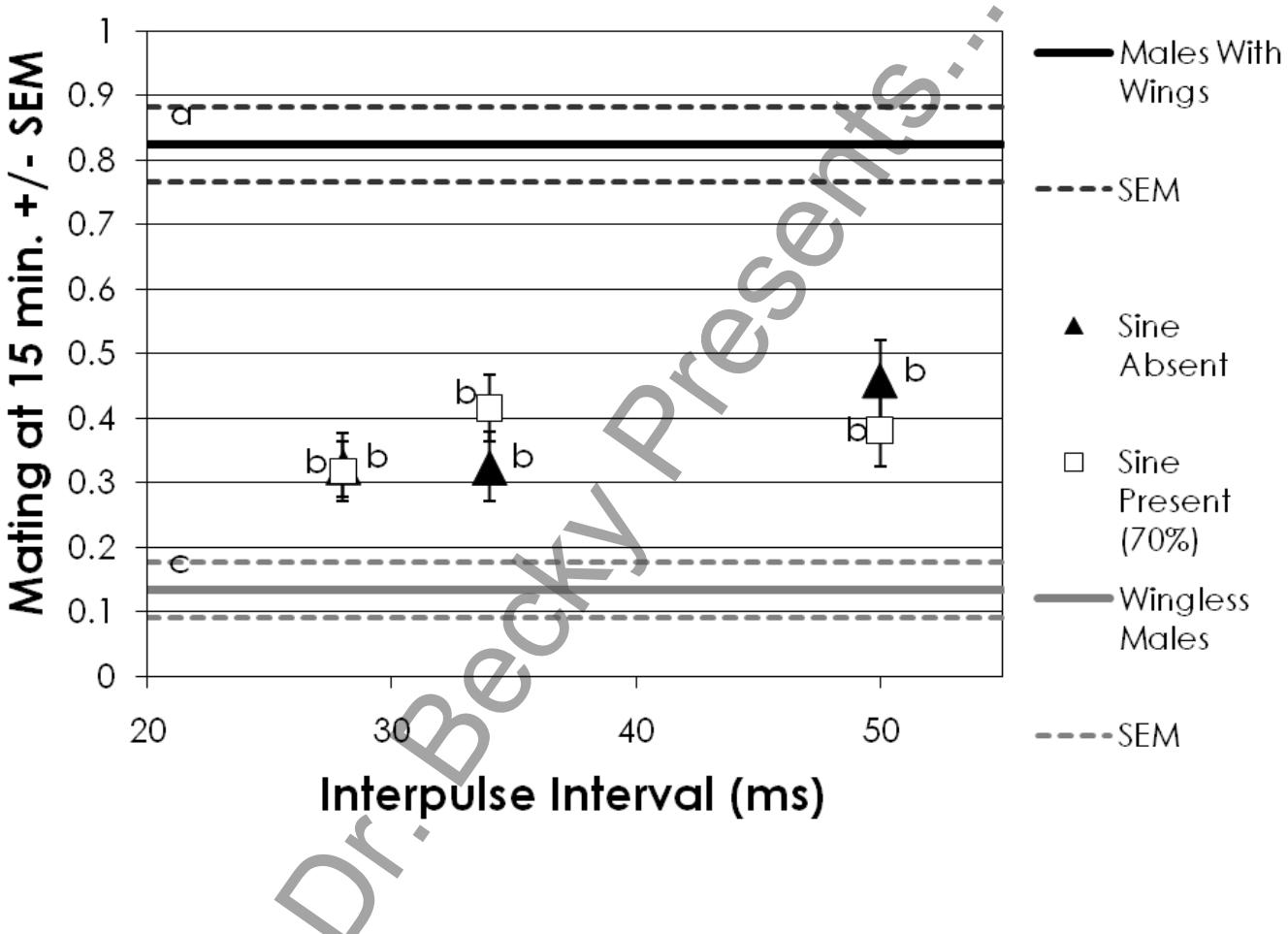
Numerical Data: Graphs



Graph 6: The value used for IPI has no effect on CM whether or not sine song was offered in addition. The amount of pulse was held constant at 12% while either 70% sine was added or not. IPI varied with values typical of three species as follows: *D. melanogaster* IPI=34, *D. mauritiana* IPI=28, *D. simulans* IPI=50). Neither IPI nor sine song affected the proportion of flies mating, nor was there any interaction between sine and IPI. Statistics: see Table 1. Markers with the same letter are not significantly different from each other.

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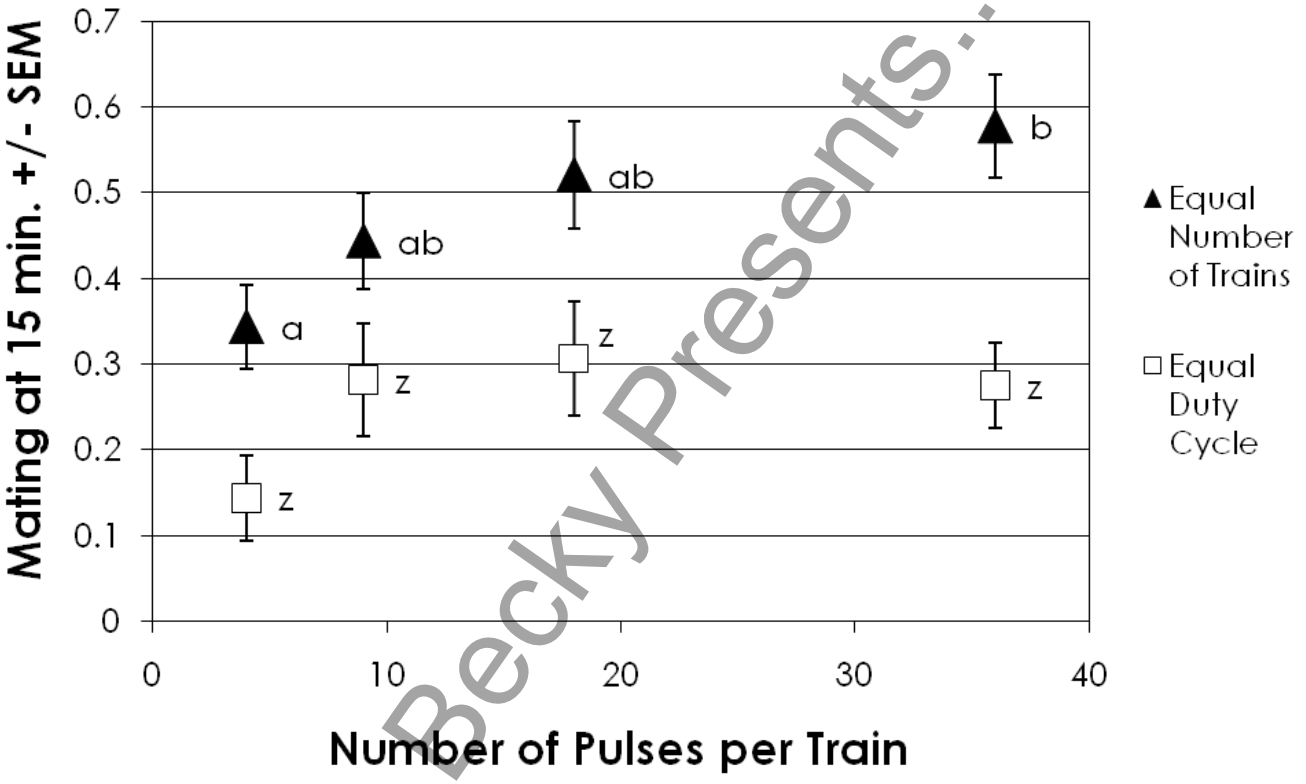
Numerical Data: Graphs



Graph 7: Duty cycle of pulse song affects attractiveness. Equal number of trains: number of pulses per train affected CM if the number of pulse trains per minute was constant, and therefore duty cycle (total effort) increased with number of pulses. A higher proportion of flies mated when songs were composed of 36-pulse trains rather than four pulses per train. The relationship between train length and proportion of pairs mating is linear (Regression:$F_{1,62}$=8.061, p=0.006, R^2=0.115). Equal duty cycle: when the number of trains was altered inversely to the number of pulses per train, such that the total number of pulses delivered during the 15-minute experiment was equal for all treatments, the duty cycle remained constant and CM did not differ significantly among treatments. Statistics: equal number of trains – overall $F_{6,118}$=1.709, p=0.125; courtship $F_{3,60}$=0.322, p=0.810; mating $F_{3,60}$=3.123, p=0.032; equal duty cycle – overall $F_{6,118}$=2.264, p=0.042; courtship $F_{3,60}$=2.131, p=0.106; mating $F_{3,60}$=1.564, p=0.207. Markers with the same letter are not significantly different from each other.

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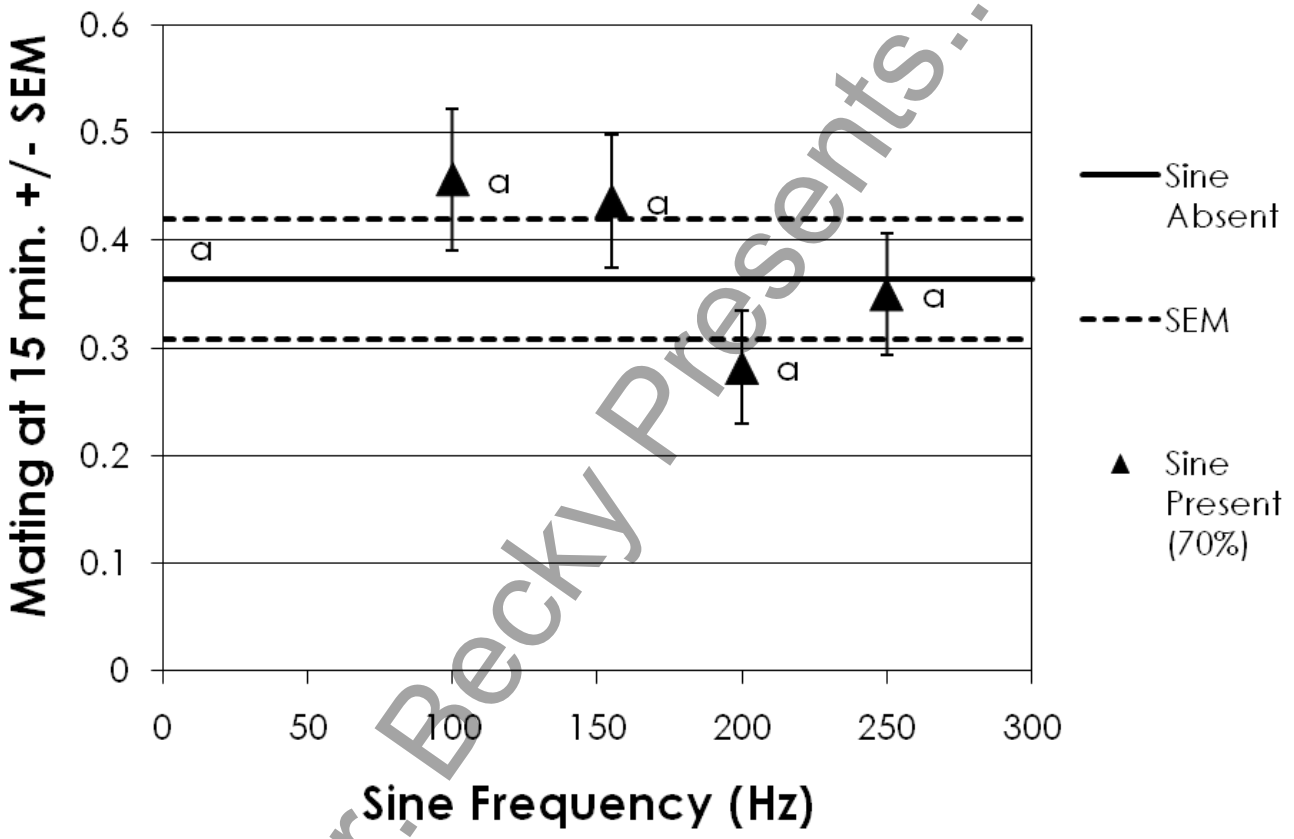
Numerical Data: Graphs



Graph 8: Sine song frequency does not affect mating behavior. Treatments without sine song (long dashed line; short dashed lines show error), with species-typical sine song (155 Hz), with sine song typical of *D. simulans* (200 Hz) or with sine song composed of higher or lower frequencies, elicit equivalent proportion of pairs mating. Statistics: overall $F_{6,118}$=1.136, p=0.346; courtship $F_{3,60}$=0.830, p=0.483; mating $F_{3,60}$=1.834, p=0.151. Markers with the same letter are not significantly different from each other.

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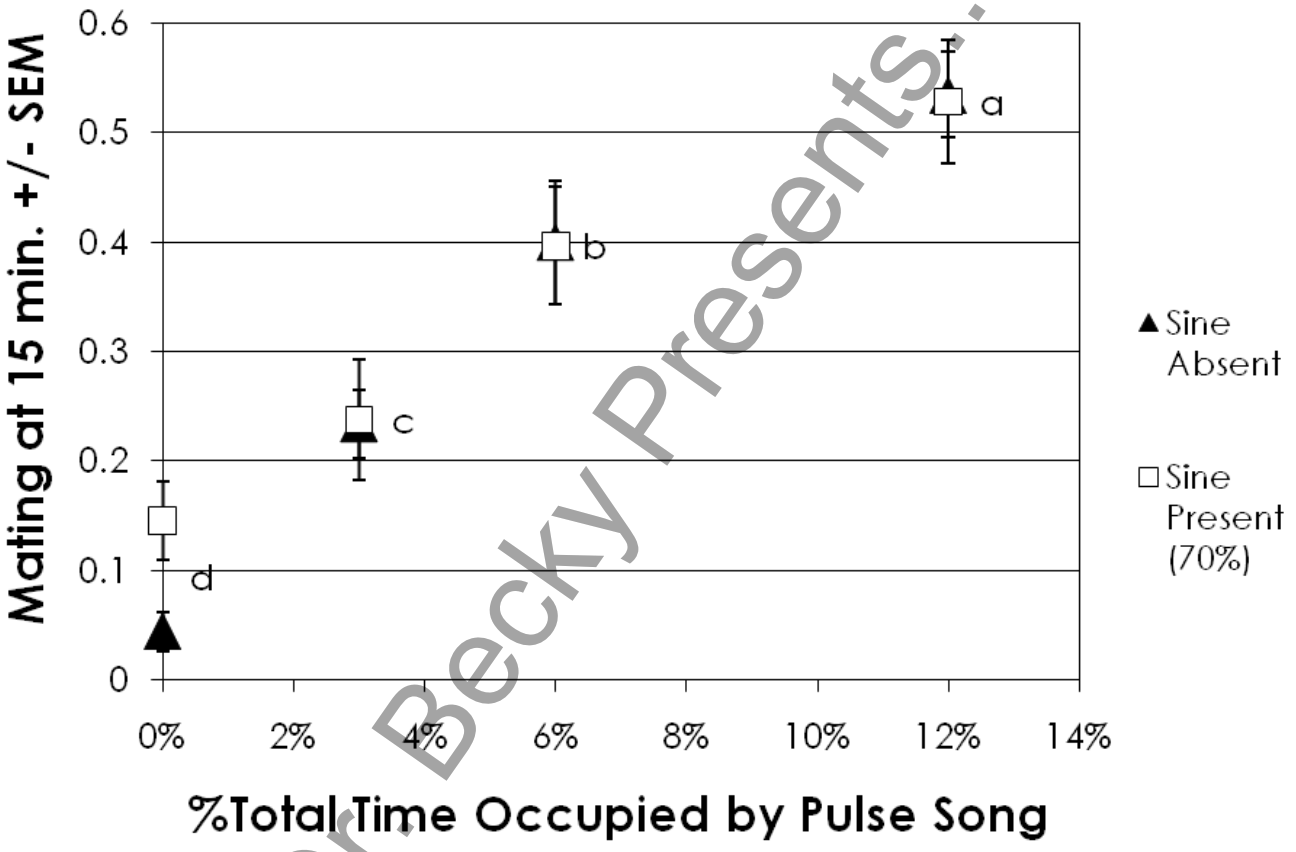
Numerical Data: Graphs



Graph 9: Results show that the relationship between amount of pulse song (IPI=50) and proportion of pairs mating is linear in the region below 12% pulse (Regression: $F_{1,126}$=99.035, p<0.0005, R^2=0.440). The presence or absence of sine makes no difference, except possibly at the unnatural point of all sine and no pulse. Statistics: Pulse – overall $F_{6,238}$=14.795, p=<0.0005; courtship $F_{3,120}$=1.184, p=0.319; mating $F_{3,120}$=34.414, p<0.0005; Sine – overall $F_{2,119}$=2.491, p=0.087; courtship $F_{1,120}$=3.468, p=0.065; mating $F_{1,120}$=0.552, p=0.459; Interaction – overall $F_{6,238}$=0.839, p=0.541; courtship $F_{3,120}$=0.951; p=0.418; mating $F_{3,120}$=0.626, p=0.599. Markers with the same letter are not significantly different from each other.

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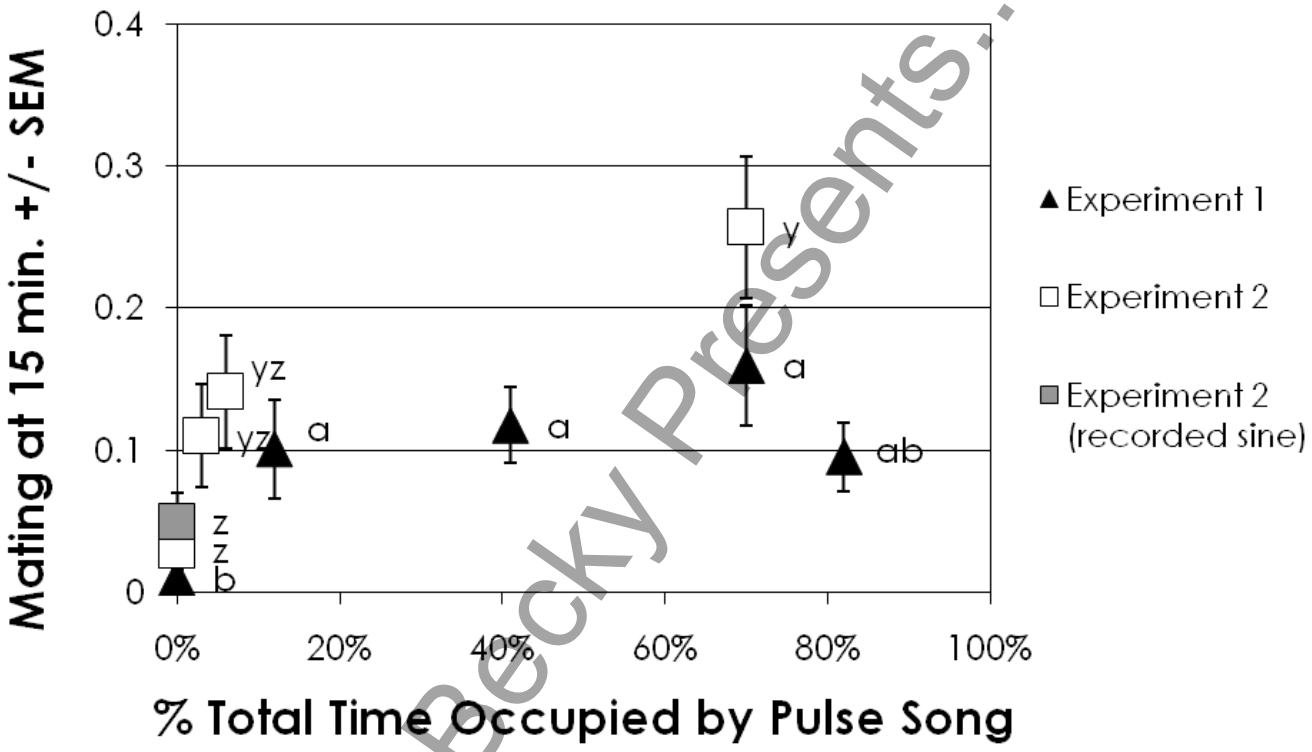
Numerical Data: Graphs



Graph 10: Songs contain the same total percentage of time during which song is played. 82% of the duration consists of either pulse or sine or a mixture of both, always with 18% silence. Songs differed in the ratio of pulse song vs. sine song. The proportion of flies mating after 15 minutes is unchanged for pulse set at 12% or above, thus the amount of pulse song emerges as more important. This effect has a threshold such that songs with 82% sine song and no pulse trains at all have very low mating. Statistics: experiment 1 – overall $F_{8,196}$=3.045, p=0.003; courtship $F_{4,99}$=6.281, p=<0.0005; mating $F_{4,99}$=3.280, p=0.014; experiment 2 – overall $F_{6,190}$=4.879, p=<0.0005; courtship $F_{3,96}$=0.731, p=0.536; mating $F_{3,96}$=9.004, p=<0.0005. Markers with the same letter are not significantly different from each other.

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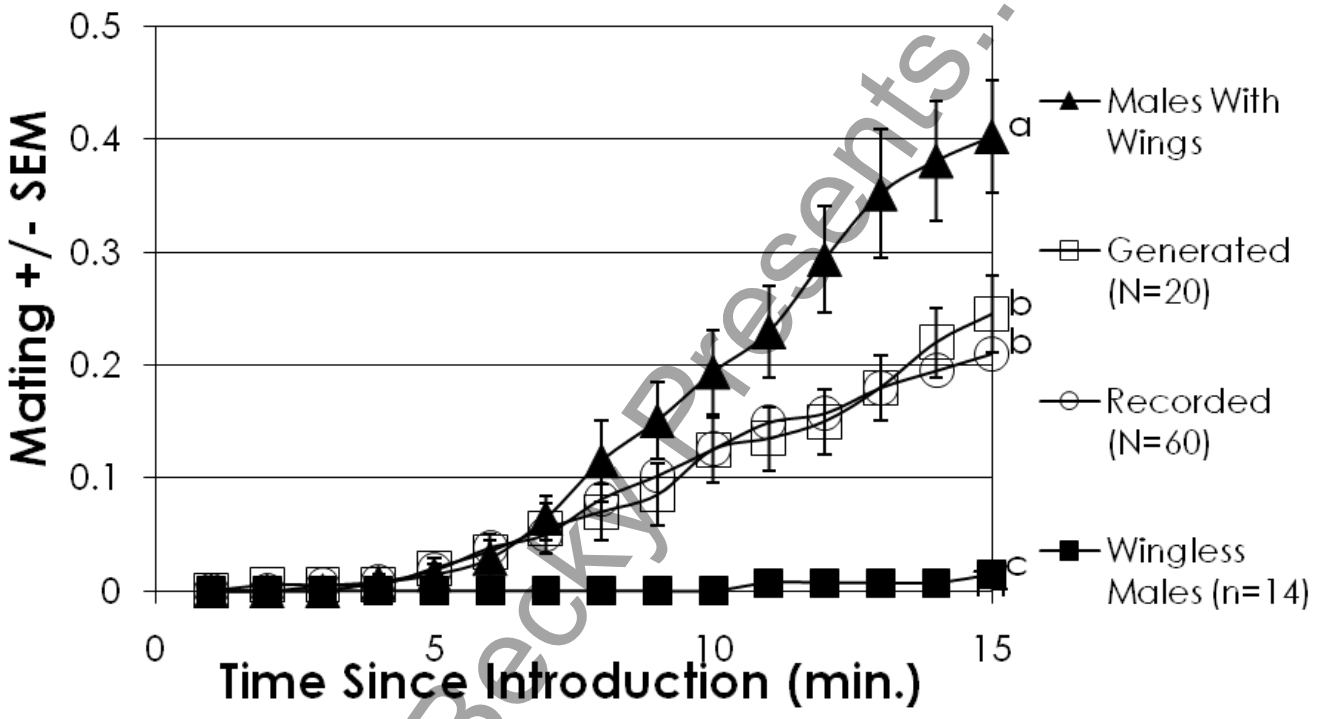
Numerical Data: Graphs



Graph 11: Proportion of mating pairs in groups of equal numbers of males and females (10 ea.) measured every minute for 15 minutes. When intact males were used (positive controls) mating was more rapid than with males whose wings had been surgically removed (negative controls). When recorded song or artificial song generated to mimic recorded song were played to groups with wingless males, mating was partially, but not completely rescued. *N* indicates the number of individual trials (each utilizing 10 pairs of flies) run with each treatment type. Statistics: overall $F_{6,206}$=11.072, p<0.0005; courtship $F_{3,104}$=4.122, p=0.008; mating $F_{3,104}$=16.420, p.0005. Markers with the same letter are not significantly different from each other. Based on data originally published in Talyn & Dowse in press, reprinted with permission.

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Figures & Pictorial Displays

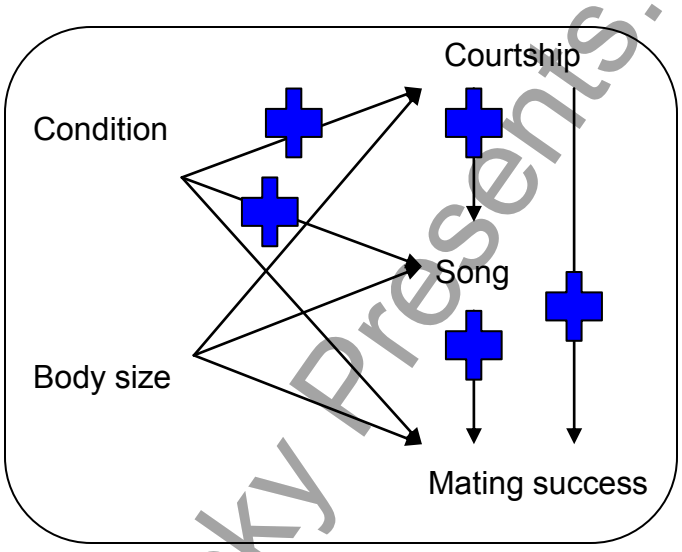

Figure 1: This is a study of the relationships between body size, energy reserves, courtship song and mating success for male *Drosophila* from lab stocks and field populations. Based on published literature, the relationship in the lab follows the pattern shown by the direction of arrowheads, all relationships positive). Blue +s indicate which arrows are expected to maintain importance in the field.

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Tables

Table 1: Song characteristics of three species of *Drosophila*. Differences among species analyzed using multivariate analysis of variance, yielding overall $F_{18,68} = 7.446$; $P < 0.0005$; Wilks' $\lambda = 0.113$. F and P values in chart are based on corresponding Univariate F-tests. Since eight variables were used, only those with $P < 0.006$ were considered significant, and are shown in bold. Song characteristics in bold are those strongly related to amount of singing. For each song characteristic, values with the same superscript do not differ significantly based on pairwise MANOVAs corrected for multiple comparisons ($P < 0.016$).

	D. mel	*D. sim*	*D. maur*	$F_{2,13}$	P
Number of Songs Measured	18	14	13		
Total Duration of recording (s)	512[a]	566[a]	464[a]	1.369	0.266
Total Number Pulses	3618[a]	332[b]	603[b]	33.137	**<0.0005**
Total Pulse Duration (s)	118.3[a]	29.1[b]	29.3[b]	30.651	**<0.0005**
Number Trains	316.4[a]	30.6[b]	43.3[b]	66.705	**<0.0005**
Average Intertrain Interval (s)	2.06[a]	39.64[b]	22.90[b]	9.489	**<0.0005**
Average Train Duration (s)	0.385[a]	1.085[b]	0.751[b]	4.963	0.012
Average Number Pulses Per Train	11.2[a]	10.9[a]	15.2[a]	3.287	0.047
Average Interpulse Interval (ms)	40[a]	114[c]	64[b]	19.353	**<0.0005**

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Table 2: Manipulations of body size and condition. The first experiment used to determine the relationships of courtship song and mating success to size and condition will utilize males reared in: 1) two treatments known to affect body size, high and low food availability during the larval stages, and 2) two treatments know to affect adult condition, high and low protein diet during the adult stage. The result of these treatments is that we will produce flies that differ in body size and condition in ways that will allow us to determine the relative importance of each (Table 1).

Table 2		Adult Diet	
		Low	High
Larval Diet	Low	Small Poor condition	Small Good condition
	High	Large Poor condition	Large Good condition

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Table 3: Species identification using interpulse interval of pulse song.

	Overall[1]			*df*	Courtship[2]		Mating[2]	
	df	*F*	*p*		*F*	*p*	*F*	*p*
IPI variable								
Controls[3]	4,248	31.96	**<0.0005**	2,125	4.939	**0.009**	44.10	**<0.0005**
Playbacks[4]								
IPI	4,179	0.869	0.484	2,90	0.636	0.532	1.658	0.196
Sine	2,89	0.117	0.890	1,90	0.222	0.638	0.005	0.943
Interaction	4,178	1.520	0.198	2,90	0.627	0.235	1.474	0.253

[1] Overall *F* and *p* are based on Wilks' l from MANOVA.
[2] *p* values for courtship and mating are based on the corresponding univariate *F* tests based on the same degrees of freedom (*df*). Significant results ($p<0.05$) are indicated in bold.
[3] Positive controls (winged males, no playback) vs. playbacks (pooled; wingless males) vs. negative controls (wingless males, no playback).
[4] Among playback treatments.

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Table 3: Prezygotic reproductive isolation among three species of the *D. melanogaster* species group is controlled by both males and females based on several communication modalities. Indicates sex responsible and modality used for reproductive isolation in each species combination. The sex that contributes most strongly to reproductive isolation is listed first for each species combination. Information on the diagonal indicates modalities known to be important for intraspecific mate choice.

		Female Species		
		D. melanogaster	*D. simulans*	*D. mauritiana*
Male Species	*D. melanogaster*	♀ Song parameters (Talyn and Dowse 2004)	♀ Unknown (pheromones?) ♂ Pheromones (Jallon 1984)	♀ Song parameters (This study) ♂ Pheromones (Jallon 1984)
	D. simulans	♂ Pheromones (Savarit et al. 1999) ♀ Song (Ritchie et al. 1999)	Unknown	♀ Song parameters/ lack of song (This study)
	D. mauritiana	♂ Pheromones (Savarit et al. 1999) ♀ Song (Ritchie et al. 1999)	♀ Genital arch (Coyne 1983)	Unknown

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Table 4: Courtship effort of three species of *Drosophila* males. CE = courtship effort, am average of the proportion of males courting during each observation of each trial. The operated column refers to treatments with wingless males or deafened females. Overall statistics based on 2-way ANOVA. Wingless experiment: species F = 18.027, p < 0.0005; treatment F = 2.587, p = 0.114; interaction F = 0.838, p = 0.439. Deaf experiment: species F = 7.189, p = 0.002; treatment F = 1.840, p = 0.181; interaction F = 1.854, p = 0.167. *D. simulans* males with females of different species: species F = 8.855, p = 0.006; treatment F = 0.100, p = 0.754; interaction F = 0.002, p = 0.962.

Experiment	Male Species	Female Species	Intact CE +/- SEM	Operated CE +/- SEM	*
Wingless	*D. melanogaster*	*D. melanogaster*	0.549 +/- 0.042	0.712 +/- 0.045	a
	D. mauritiana	*D. mauritiana*	0.450 +/- 0.053	0.502 +/- 0.064	a
	D. simulans	*D. simulans*	0.266 +/- 0.072	0.293 +/- 0.086	b,y
	D. simulans	*D. mauritiana*	0.489 +/- 0.094	0.509 +/- 0.040	z
Deaf	*D. melanogaster*	*D. melanogaster*	0.511 +/- 0.089	0.726 +/- 0.064	m
	D. mauritiana	*D. mauritiana*	0.439 +/- 0.092	0.582 +/- 0.072	mn
	D. simulans	*D. simulans*	0.357 +/- 0.086	0.270 +/- 0.083	n

*Results of Tukey's post hoc test for species comparisons. In all cases, courtship effort for intact and operated trials are not significantly different. Treatments that share the same letter are not significantly different. Sequential letters (i.e. a and b) indicate statistically significant differences in direct comparisons.