

**A comparative analysis of
Mediterranean and Queensland fruit fly
wing-buzzing sounds
associated with mating**



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Acknowledgments

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The Queensland Fruit Fly is the most economically damaging fruit fly pest in Australia. Sterile flies are released yearly in a

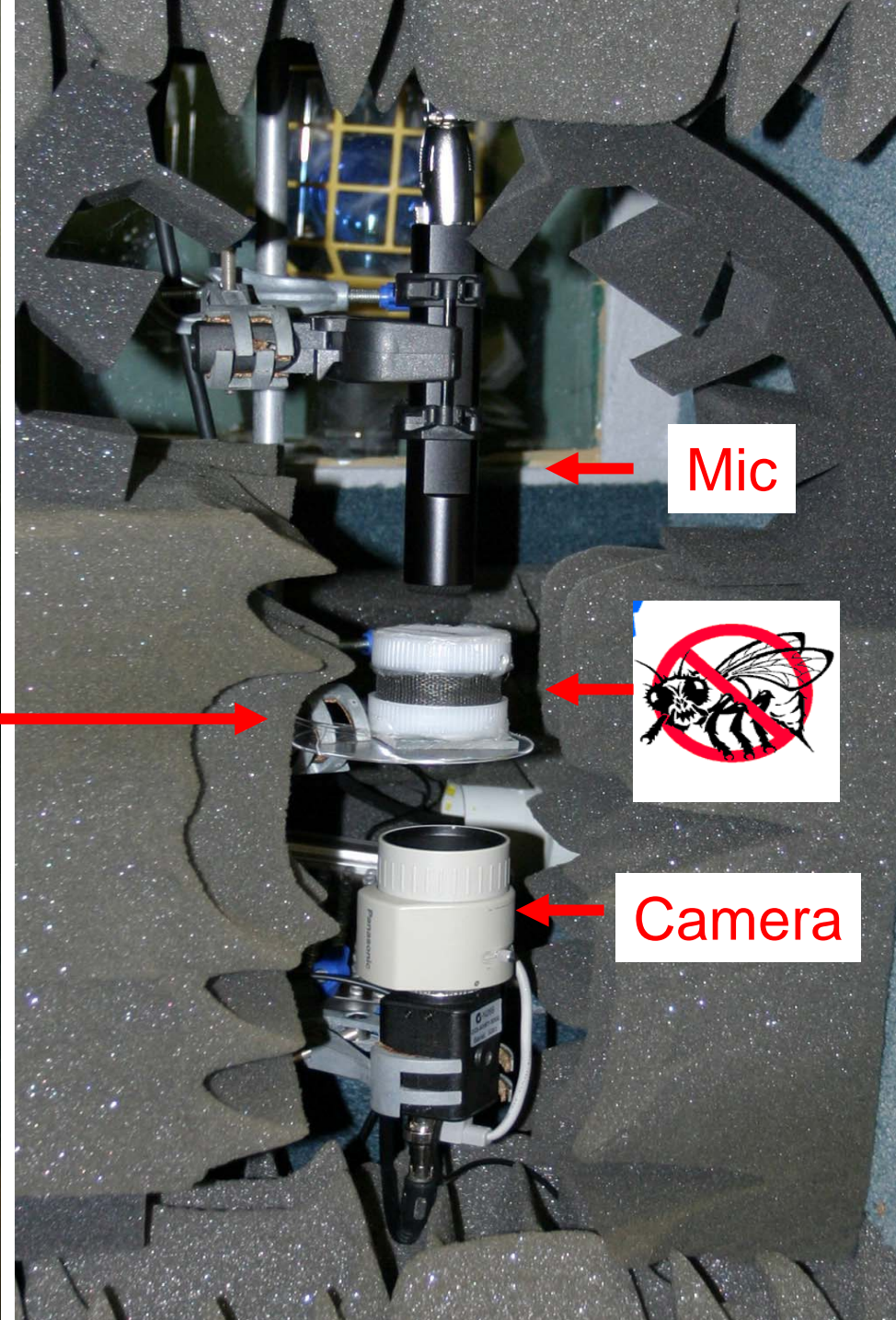
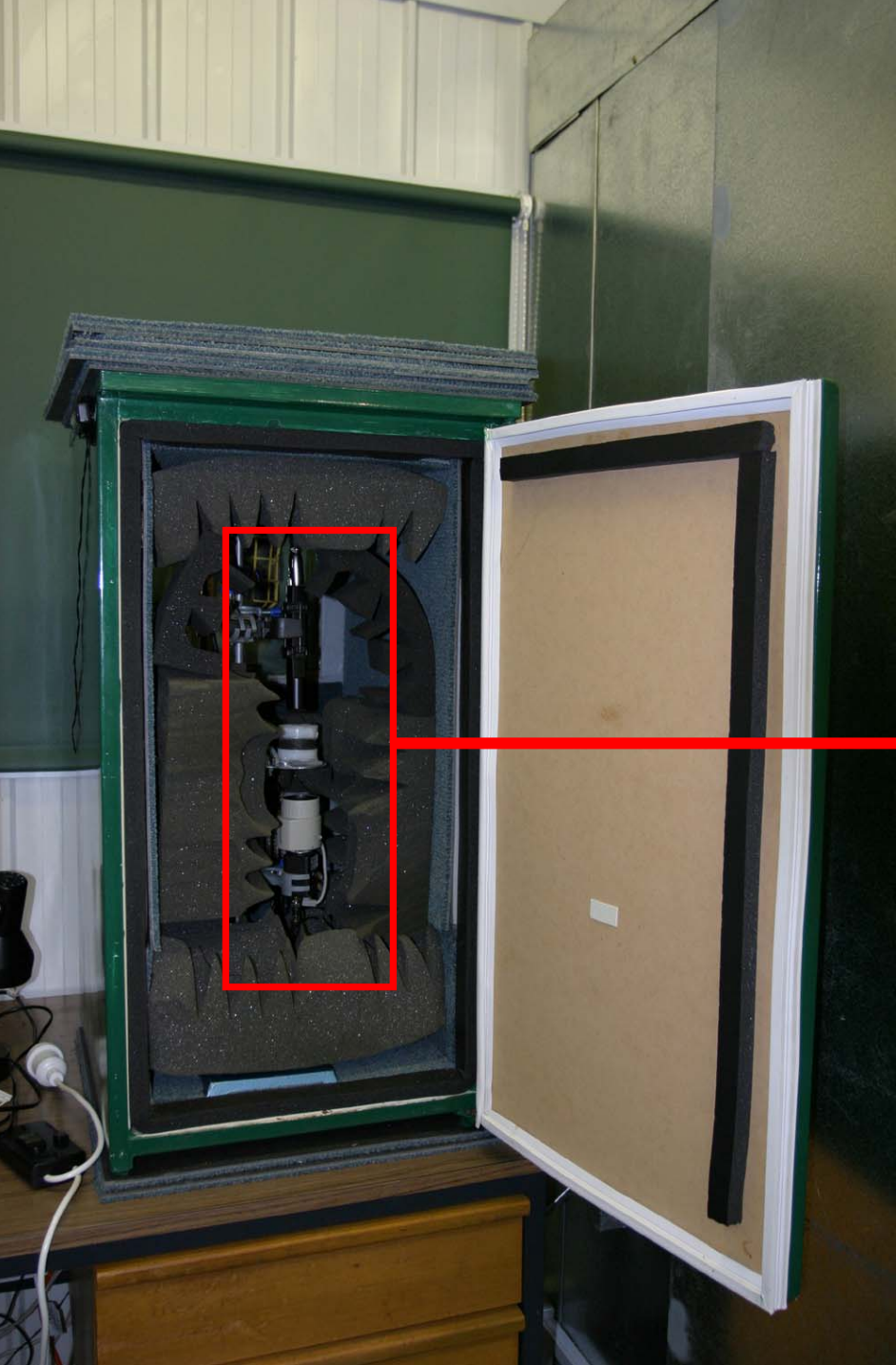
'FRUIT FLY EXCLUSION ZONE' 



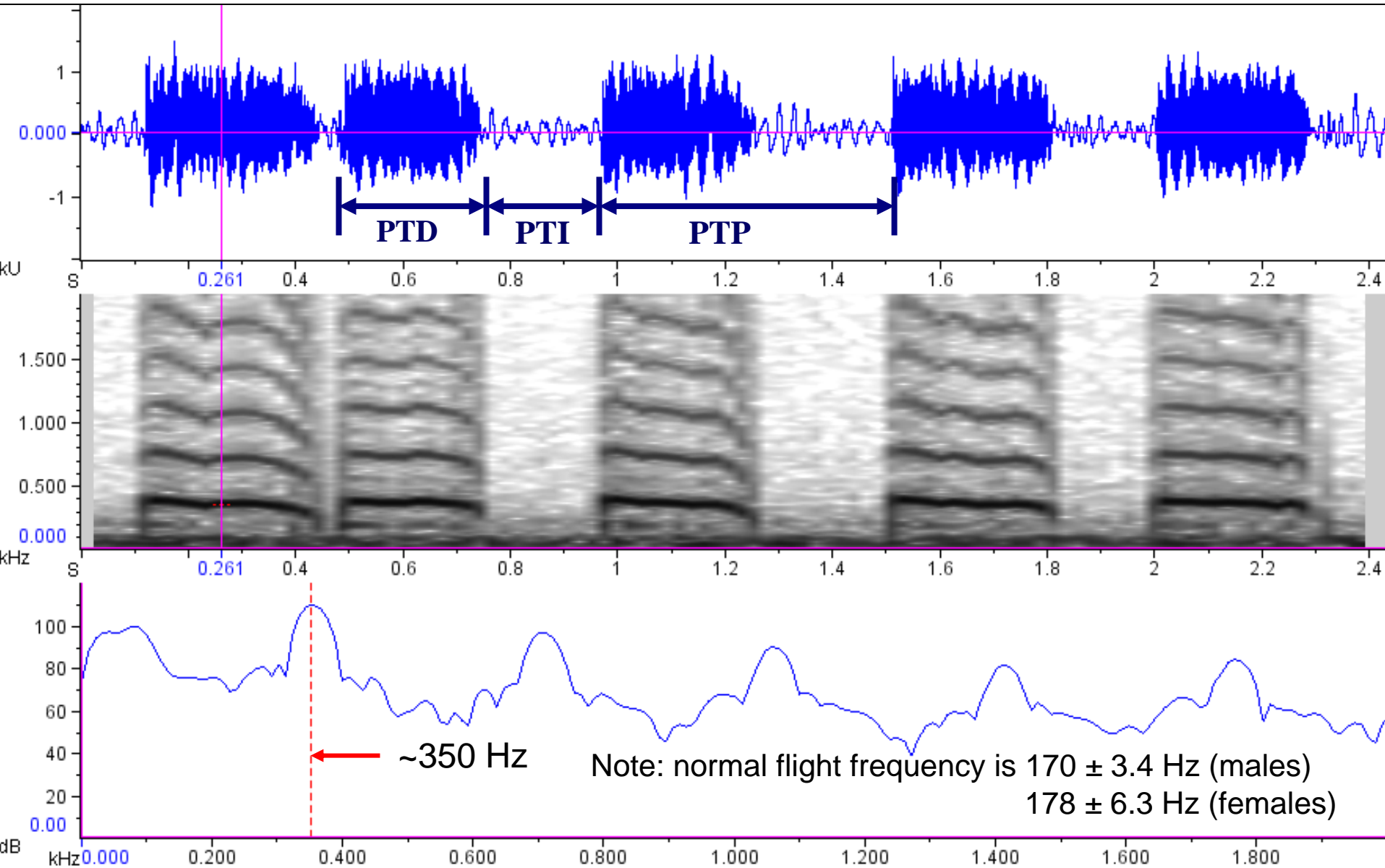
- Study of the mating behaviour of Queensland fruit flies (QFF) is important for economic reasons - due to the pest status of this species (\$20 million damage yearly), there is a continual search for effective control methods

- Male QFF produce 3 sounds during mating: *calling*, *courtship* & *copula*

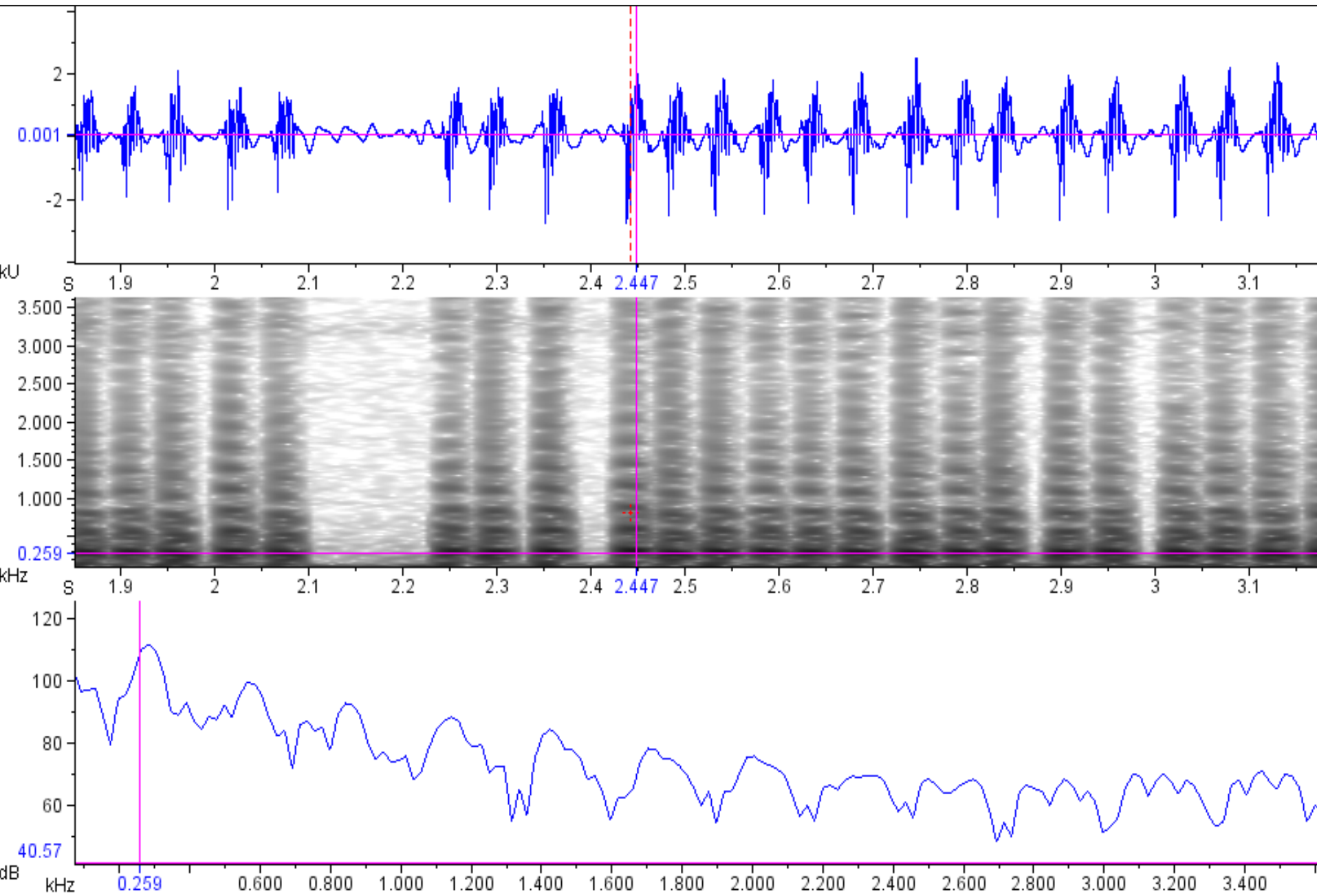
- These sounds may function (alone or with other mating behaviours) as 'isolating mechanisms' preventing hybridization with closely related, sympatric species, and they may signal sexual competitiveness to other QFF males and females



Calling-Phase Sounds



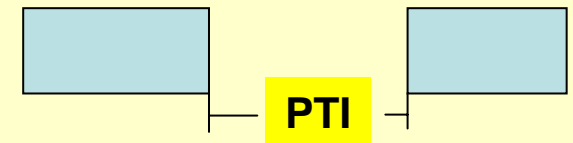
Courtship-Phase Sounds



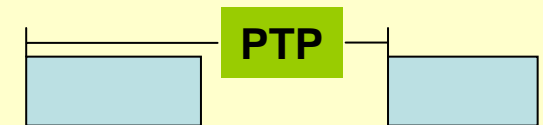
Calling-Phase Acoustic Parameters

Parameter	QFF-This Study		Cf. Med FF Sivinski et al. (1989) Briceño et al. (2002)
	Fertility Treatment		
	Untreated (N=19)	Irradiated (N=30)	
Fundamental Frequency (Hz)	315.7 ± 6.2	326.8 ± 5.4	319-355
Pulse Train Duration (ms)	141.5 ± 22.3	150.7 ± 19.4	95-152
Pulse Train Interval ^a (ms)	322.5 ± 69.4	508.2 ± 60.5	145-182
Pulse Train Period ^b (ms)	473.6 ± 67.2	679.3 ± 58.5	

^aSignificant difference between Untreated and Irradiated ($t = -2.018$, $P = 0.049$).



^bSignificant difference between Untreated and Irradiated ($t = -2.31$, $P = 0.025$).



Note: 54 untreated and 57 irradiated males called in 186 tests of each group

Courtship-Phase Acoustic Parameters

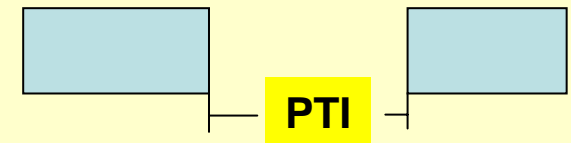
QFF-This Study

Cf. Med FF
Sivinski et al. (1989)

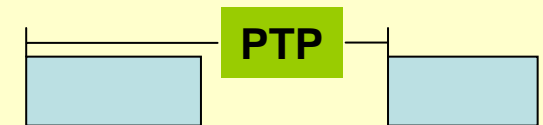
Parameter	Fertility Treatment	
	Untreated (N=19)	Irradiated (N=30)
Fundamental Frequency (Hz)	304.8 ± 5.0	303.6 ± 4.0
Pulse Train Duration (ms)	27.57 ± 0.96	29.22 ± 0.76
Pulse Train Interval ^a (ms)	11.76 ± 1.50	16.70 ± 1.12
Pulse Train Period ^b (ms)	39.47 ± 1.59	46.17 ± 1.26

167-195

^aSignificant difference between Untreated and Irradiated ($t = 6.78$, $P = 0.013$).



^bSignificant difference between Untreated and Irradiated ($t = 10.87$, $P = 0.0019$).



Note: 35 untreated and 31 irradiated males produced courtship calls in 186 tests

