

Digital supplementary material to

OKAMOTO, M., KOBAYASHI, K., HASEGAWA, E. & OHKAWARA, K. 2015: Sexual and asexual reproduction of queens in a myrmicine ant, *Vollenhovia emeryi* (Hymenoptera: Formicidae). – Myrmecological News 21: 13-17.

**Table S1:** Genotype frequencies at microsatellite loci (a) *L-5*, (b) *Vems-78*, and (c) *Myrt-3* of colony members at site-SD. Genotypes are indicated with lower case letters. All mother queens and almost all short-winged queens were homozygous, while almost all long-winged queens were heterozygous for parental alleles, the same as workers. At the three loci examined, most genotypes were not shared between females (mother queen, short-winged queens) and males. *L-5* a: 113 bp, b: 115 bp, c: 111 bp, d: 109 bp, e: 107 bp; *Vems-78* a: 113 bp, b: 123 bp, c: 125 bp, d: 127 bp, e: 129 bp; *Myrt-3* a: 226 bp, b: 234 bp, d: 236 bp.

(a) *L-5*

Colony	Genotype frequency								New sexuals					
	Queen		Sperm			Worker			Short-winged		Long-winged		Male	
	cc	a	b	e	ac	cb	ce	cc	cc	ac	cb	a	c	e
SD-1	8	8			9			1	10	2			1	
SD-2	6	2	1	3	1	4	5		10		1		2	2
SD-3	3	3			10				5	2		4		
SD-4	3	3			10				5	1		5		
SD-5	1	1			10				5	1		2		
sum	21	17	1	3	40	4	5	1	35	6	1	11	3	2
%	100.0	81.0	4.8	14.3	80.0	8.0	10.0	2.0	100.0	85.7	14.3	68.8	18.8	12.5

(b) *Vems-78*

Colony	Queen		Sperm			Worker			Short-winged		Long-winged		Male		
	aa	a	c	d	ac	ad	cc	aa	ac	aa	ac	a	b	c	
SD-1	8		8		10			10		1	1	1			
SD-2	6	1	3	1	9	1		8	1		1	2	2		
SD-3	3		3		9		1	5			2			4	
SD-4	3		3		10			5			1		5		
SD-5	1		1		10			5			1			2	
sum	21	1	18	1	48	1	1	33	1	1	6	3	7	6	
%	100.0	5.0	90.0	5.0	96.0	2.0	2.0	97.1	2.9	14.3	85.7	18.8	43.8	37.5	

(c) *Myrt-3*

Colony	Queen		Sperm			Worker				Short-winged		Long-winged			Male		
	aa	bb	a	b	d	aa	ab	ad	bd	aa	bb	aa	ad	bd	a	b	d
SD-1		8			8				10		10			2		1	
SD-2	6		1	3	2	2	3	5		9		1			2	2	
SD-3		3			3				10		5			2			4
SD-4		3			3				10		5		1				5
SD-5	1				1			10		5			1				2
sum	7	14	1	3	17	2	3	15	30	14	20	1	2	4	2	3	11
%	33.3	66.7	25.0	75.0	81.0	4.0	6.0	30.0	60.0	41.2	58.8	14.3	28.6	57.1	12.5	18.8	68.8

**Table S2:** Genotype frequencies at microsatellite loci (a) *L-5*, (b) *Vems-14* and (c) *Vems-78* of colony members at site-TK. Genotypes are indicated with lower case letters. All mother queens and almost all short-winged queens were homozygous, while all long-winged queens were heterozygous for parental alleles, the same as workers. *L-5* a: 113 bp, b: 115 bp, c: 111 bp, d: 109 bp, e: 107 bp; *Vems-14* a: 202 bp, b: 232 bp, c: 240 bp, d: 208 bp; *Vems-78* a: 113 bp, b: 123 bp, c: 125 bp, d: 127 bp, e: 129 bp.

**(a) L-5**

Colony	Genotype frequency											New sexuals								
	Queen	Sperm					Worker					Short-winged		Long-winged			Male			
	aa	a	b	c	d	e	aa	ab	ac	ad	ae	aa	ab	ac	ad	ae	a	b	c	e
TK-1	2	1		1		1			2		8	10			1					10
TK-2	4	1		2		1	1		2		7	10				2			2	8
TK-3	1	1				1					10	10				1				
TK-4	2		2		2		2	7			1	10	1					1		
TK-5	5	4		1		1	2		8			10		1			4			
TK-6	3	2	2	1				6	3	1		10	4				6	4		
sum	17	9	4	5	2	4	5	13	15	1	26	60	5	1	1	3	10	5	2	18
%	100.0	37.5	37.5	20.8	8.3	16.7	8.3	21.7	25.0	1.7	43.3	100.0	50.0	10.0	10.0	30.0	28.6	14.3	5.7	51.4

**(b) Vems-14**

Colony	Queen	Sperm				Worker			Short-winged		Long-winged		Male		
	aa	a	b	c	d	ab	bb	dd	aa	ab	ab	ac	a	b	c
TK-1	2		2			10			9	1	1			10	
TK-2	4	1	4		1	8	1	1	10		2			10	
TK-3	1		1			9	1		10		1				
TK-4	2		2			7			8	2	1			1	
TK-5	5	1	1		2	9	1		10			1	4		
TK-6	3		3	1		9	1		10		4			3	1
sum	17	2	13	1	3	52	4	1	57	3	9	1	4	24	1
%	100.0	10.5	68.4	5.3	15.8	91.2	7.0	1.8	95.0	5.0	90.0	10.0	13.8	82.8	3.4

**(c) Vems-78**

Colony	Queen	Sperm					Worker					Short-winged		Long-winged			Male				
	aa	a	b	c	d	e	aa	ab	ac	ad	ae	aa	ab	ac	ad	ae	a	b	c	e	
TK-1	2	1		1		1			2		8	10			1					10	
TK-2	4	1		2		1	1		2		7	10				2			2	8	
TK-3	1	1				1					10	10				1					
TK-4	2		2		2		2	7			1	10	1					1			
TK-5	5	4		1		1	2		8			10		1			4				
TK-6	3	2	2	1				6	3	1		10	4				6	4			
sum	17	9	4	5	2	4	5	13	15	1	26	60	5	1	1	3	10	5	2	18	
%	100.0	37.5	37.5	20.8	8.3	16.7	8.3	21.7	25.0	1.7	43.3	100.0	50.0	10.0	10.0	30.0	28.6	14.3	5.7	51.4	