SUPPLEMENTAL TABLE 1

West Nile virus isolations from North Dakota mosquitoes, 2003–2006

Mosquito species	Year	County	Total no. mosquitoes (pools)	No. virus isolations	Infection rate* (95% CI)
Aedes vexans	2003	Cass	134,510 (2,762)	26	0.19 (0.13–0.28)
	2004	Cass	235,569 (5,442)	3	0.01 (0.00–0.03)
		Williams	260,426 (5,265)	3	0.01 (0.00–0.03)
	2005	Cass	455,439 (9,505)	6	0.01 (0.01–0.03)
		Williams	1,022,184 (20,640)	16	0.02 (0.01–0.02)
	2006	Williams	591,152 (11,947)	1	0.002 (0.00–0.1)
Coquillettidia perturbans	2005	Williams	1,893 (142)	1	0.53 (0.03–2.54)
Culex tarsalis	2003	Cass	1,935 (151)	10	5.57 (2.85–9.95)
		Nelson	678 (79)	2	2.94 (0.54–9.51)
		Richland	415 (17)	1	2.32 (0.14–11.21)
	2004	Cass	13,733 (423)	15	1.12 (0.65–1.80)
		Williams	6,616 (204)	10	1.56 (0.80–2.79)
	2005	Cass	38,435 (1,161)	56	1.51 (1.15–1.94)
		Williams	10,023 (388)	22	2.30 (1.48–3.43)
	2006	Williams	478 (82)	5	12.26 (4.53–27.94)
Culiseta inornata	2005	Cass	11,769 (447)	2	0.17 (0.03–0.56)
Ochlerotatus dorsalis	2005	Cass	26,767 (743)	1	0.04 (0.00–0.18)
Ochlerotatus flavescens	2005	Cass	178 (56)	1	5.61 (0.32–26.94)
Ochlerotatus spencerii	2005	Cass	110 (47)	1	9.10 (0.53–43.45)
Ochlerotatus triseriatus	2003	Cass	92 (27)	1	10.61 (0.63–49.88)
Ochlerotatus trivittatus	2004	Cass	91,993 (2,007)	1	0.01 (0.00–0.05)
	2005	Williams	35,645 (872)	2	0.06 (0.01–0.18)

*Maximum likelihood estimate of the infection rate.[1]

SUPPLEMENTAL TABLE 2

Risk of seven North Dakota species transmitting West Nile virus to humans, 2003–2006

Species	Relative abundance*	WNV infection rate (IR)**	Vector competence	Fraction mammal	Risk***	% Risk
Aedes vexans	83.2	0.019	0.17[2], 0.63[3], 0.71[4], Ave = 0.50	0.96[5], 0.88[6], 1.0[7], 0.99[8] 0.92[9], 0.82[10] 0.99[11], 0.95[12] 0.95[13], 0.99[14] 1.0[15], 0.83[16] 1.0[17], 0.98[18] 0.94[19], 0.97[20] Ave. = 0.95	0.751	34.0
Coquillettidia perturbans	0.2	0.21	0.12[21]	0.87[22], 1.0[23] 0.57[24], 1.0[6], 0.91[14], 1.0[17], 1.0[25], 0.83[15], 1.0[16], 0.97[18], 1.0[19], Ave. = 0.92	0.003	0.1
Culex tarsalis	2.2	1.73	0.81[4], 0.72[4], 0.76[26], 0.96[26], Ave = 0.81	0.77[25], 0.83[8], .56[27], 0.85[10], .36[23], 0.10[28], 0.38[11], 0.12[29], 0.32[12], 0.41[30], 0.51[13], 0.40[31], 0.20[5], 0.83[8], 0.85[10], 0.18[32], 0.15[33], 0.20[34], Ave. = 0.45	1.356	61.4
Culiseta inornata	.9	0.07	0.29[4]	0.98[8], 0.99[10], 0.99[27], 0.98[35], 0.99[11], 1.0[12], 1.0[30], 1.0[13], 1.0[36], Ave. = 0.99	0.017	0.8
Ochlerotatus dorsalis	1.7	0.02	0.83[4]	0.81[8], 1.0[13], 0.97[10], 1.0[11], Ave. = 0.94	0.026	1.2

(continued)

SUPPLEMENTAL TABLE 2
Continued

Species	Relative abundance*	WNV infection rate (IR)**	Vector competence	Fraction mammal	Risk***	% Risk
Ochlerotatus. triseriatus	<0.1	3.87	0.50[37]	.92[22], 1.0[15], 0.22[16], 0.94[38], 0.92[18], 1.0[20], Ave. = 0.84	.017	0.8
Ochlerotatus. trivittatus	7.7	0.01	0.54[39]	1.0[8], 90[40], 1.0[18], 0.95[22], 0.91[5], Ave. = 0.95	0.039	1.8

*From Table 1.
**Maximum likelihood estimate of the infection rate (MLE).[1] Mosquito pools combined over 4 years. The number of mosquito pools for *Aedes vexans* was too large for the program of MLE. We divided the number of pools into two groups, determined the MLE for each group, added the two MLEs, and divided by 2 to obtain the IR for *Aedes vexans*.
***Risk=Abundance X WNV IR X Vector competence X Fraction feeding on mammals.[41]

SUPPLEMENTAL TABLE 3
Risk of six species transmitting West Nile virus to humans in Cass County North Dakota in 2003, 2004, and 2005

Year	Species	Relative abundance	WNV infection rate (IR)*	Vector competence**	Fraction feeding on mammals**	Risk***	% Risk
2003	*Aedes vexans*	87.9	0.19	0.50	0.95	7.93	73.6
	Culex tarsalis	1.3	5.57	0.81	0.45	2.58	23.9
	Ochlerotatus triseriatus	0.1	10.61	0.50	0.84	0.27	2.5
2004	*Aedes vexans*	67.3	0.02	0.50	0.95	0.64	24.8
	Culex tarsalis	4.4	0.99	0.81	0.45	1.58	61.3
	Ochlerotatus trivittatus	23.6	0.03	0.54	0.95	0.36	13.9
2005	*Aedes vexans*	63.1	0.03	0.50	0.95	0.90	17.3
	Culex tarsalis	5.1	2.16	0.81	0.45	3.99	76.6
	Culiseta inornata	2.9	0.17	0.29	0.99	0.14	2.7
	Ochlerotatus dorsalis	6.0	0.04	0.83	0.94	0.18	3.4

*Maximum likelihood estimate of the infection rate (MLE).[1]
**Data obtained from Supplemental Table 2.
***Risk=Abundance X WNV IR X Vector competence X Fraction feeding on mammals.[41]

SUPPLEMENTAL TABLE 4
Weekly risk for *Culex tarsalis*, *Aedes vexans, and* five other infected species* in transmitting West Nile virus to humans, North Dakota, 2003–2006

Date**	Species	Relative abundance	WNV infection rate (IR)***	Vector competence‡	Fraction mammal§	Risk¶	% Risk
16–22 June	*Culex tarsalis*	0.2	0	0.81	0.45	0	0
	Aedes vexans	87.8	0.005	0.5	0.95	0.21	70.1
	Other species	6.9	0.03	0.47	0.93	0.09	29.9
30 June–6 July	*Culex tarsalis*	1.3	0.93	0.81	0.45	0.45	100
	Aedes vexans	83.9	0	0.5	0.95	0	0
	Other species	13.9	0	0.47	0.93	0	0
7–13 July	*Culex tarsalis*	1.5	0.25	0.81	0.45	0.13	26.0
	Aedes vexans	78.1	0.01	0.5	0.95	0.37	74.0
	Other species	15.3	0	0.47	.93	0	0
14–20 July	*Culex tarsalis*	2.3	1.32	0.81	0.45	1.09	50.5
	Aedes vexans	86.5	0.02	0.5	0.95	0.82	38.0
	Other species	8.2	0.07	0.47	0.93	0.25	11.6
21–27 July	*Culex tarsalis*	8.7	1.08	0.81	0.45	3.44	58.1
	Aedes vexans	74.5	0.07	0.5	0.95	2.48	41.9
	Other species	13.2	0	0.47	0.93	0	0
28 July–3 August	*Culex tarsalis*	7.3	1.43	0.81	0.45	3.80	42.2
	Aedes vexans	73.4	0.14	0.5	0.95	4.88	54.2
	Other species	18.0	0.04	0.47	0.93	0.32	3.6
4–10 August	*Culex tarsalis*	7.2	2.75	0.81	0.45	7.23	61.1
	Aedes vexans	81.9	0.11	0.5	0.95	4.28	36.2
	Other species	9.2	0.08	0.47	0.93	0.32	2.7
11–17 August	*Culex tarsalis*	7.0	3.96	0.81	0.45	10.16	89.7
	Aedes vexans	82.0	0.03	0.5	0.95	1.17	10.3
	Other species	7.7	0	0.47	0.93	0	0
18–24 August	*Culex tarsalis*	6.7	4.98	0.81	0.45	12.13	83.9
	Aedes vexans	84.1	0.04	0.5	0.95	1.60	11.1
	Other species	8.3	0.2	0.47	0.93	0.73	5.0

(continued)

SUPPLEMENTAL TABLE 4
Continued

Date**	Species	Relative abundance	WNV infection rate (IR)***	Vector competence‡	Fraction mammal§	Risk¶	% Risk
25–31 August	*Culex tarsalis*	17.3	3.93	0.81	0.45	24.77	78.9
	Aedes vexans	60	0.16	0.5	0.95	4.56	14.5
	Other species	19.8	0.24	0.47	0.93	2.08	6.6
1–7 September	*Culex tarsalis*	1.2	8.07	0.81	0.45	3.56	64.5
	Aedes vexans	82.4	0.05	0.5	0.95	1.96	35.5
	Other species	15.9	0	0.47	0.93	0	0
8–14 September	*Culex tarsalis*	0.3	5.64	0.81	0.45	0.58	40.0
	Aedes vexans	91.8	0.02	0.5	0.95	0.87	60.0
	Other species	7.7	0	0.47	0.93	0	0

**Coquillettidia perturbans, Culiseta inornata, Ochlerotatus dorsalis, Ochlerotatus triseriatus, and Ochlerotatus trivittatus*.
**No isolations made on June 23–29; data not shown.
***Maximum likelihood estimate of the infection rate (MLE).[1]
‡Data for *Cx. tarsalis* and *Ae. vexans* taken from Vector competence column in Supplemental Table 2. Data for other species obtained by taking numbers from Vector competence column in Supplemental Table 2 for *Coquillettidia perturbans*, *Culiseta inornata*, *Ochlerotatus dorsalis*, *Ochlerotatus triseriatus*, and *Ochlerotatus trivittatus* and dividing sum by 5.
§Data for *Cx. tarsalis* and *Ae. vexans* taken from Fraction mammal column in Supplemental Table 2. Data for other species obtained by taking numbers from Fraction mammal column in Supplemental Table 2 for *Coquillettidia perturbans*, *Culiseta inornata*, *Ochlerotatus dorsalis*, *Ochlerotatus triseriatus*, and *Ochlerotatus trivittatus* and dividing sum by 5.
¶Risk=Abundance X WNV infection rate X Vector competence X Fraction feeding on mammals.[41]

SUPPLEMENTAL TABLE 5

Weekly vector index for *Culex tarsalis*, *Aedes vexans, and* seven other infected species* in transmitting West Nile virus to humans, North Dakota, 2003

Date**	Species	Ave. per trap	WNV infection rate***	Vector Index****
30 June–6 July	*Culex tarsalis*	26.9	3.36	0.09
	Aedes vexans	3,769.9	0	0.00
	Other species	128.4	0	0.00
7–13 July	*Culex tarsalis*	8.4	0	0.00
	Aedes vexans	3,830.7	0	0.00
	Other species	235.7	0	0.00
14–20 July	*Culex tarsalis*	107.7	4.68	0.50
	Aedes vexans	11,752.7	0	0.00
	Other species	2,868.5	0	0.00
21–27 July	*Culex tarsalis*	113	2.26	0.26
	Aedes vexans	4,039.2	0.19	0.77
	Other species	830.2	0	0.00
28 July–3 August	*Culex tarsalis*	116.2	1.67	0.19
	Aedes vexans	3,719.6	0.6	2.23
	Other species	284.8	0	0.00
4–10 August	*Culex tarsalis*	45.2	9.44	0.43
	Aedes vexans	4,543.4	0.4	1.82
	Other species	299	0	0.00
11–17 August	*Culex tarsalis*	20.6	4.31	0.09
	Aedes vexans	642.8	0.16	0.10
	Other species	7.6	12.71	0.10
18–24 August	*Culex tarsalis*	39.2	5.26	0.21
	Aedes vexans	221.8	0.9	0.20
	Other species	3.4	0	0.00
25–31 August	*Culex tarsalis*	48.5	19.6	0.95
	Aedes vexans	71.7	3.48	0.25
	Other species	4.25	0	0.00
8–14 September	*Culex tarsalis*	0.8	0	0.00
	Aedes vexans	25.6	0	0.00
	Other species	9.8	0	0.00

*The other species were: *Coquillettidia perturbans, Culiseta inornata, Ochlerotatus dorsalis, Ochlerotatus flavescens, Ochlerotatus spencerii, Ochlerotatus triseriatus, and Ochlerotatus trivittatus*.
**Mosquitoes were not collected during the week of 1–7 September.
***Maximum likelihood estimate of the infection rate (MLE).[1]
****Vector Index = Average number per trap X WNV infection rate /1000.[42]

SUPPLEMENTAL TABLE 6

Weekly vector index for *Culex tarsalis*, *Aedes vexans, and* seven other infected species* in transmitting West Nile virus to humans, North Dakota, 2004

Date	Species	Ave. per trap	WNV infection rate**	Vector Index***
16–22 June	*Culex tarsalis*	1.7	0	0
	Aedes vexans	799.3	0	0
	Other species	1,637.8	0	0
23–29 June	*Culex tarsalis*	2.6	0	0
	Aedes vexans	290.7	0	0
	Other species	328.7	0	0
30 June–6 July	*Culex tarsalis*	43.2	0	0
	Aedes vexans	10,027.6	0	0
	Other species	1,198.6	0	0
7–13 July	*Culex tarsalis*	201.5	0.56	0.11
	Aedes vexans	4,518.6	0.02	0.09
	Other species	456.2	0	0
14–20 July	*Culex tarsalis*	164.6	1.24	0.20
	Aedes vexans	3,823.0	0.01	0.04
	Other species	412.0	0	0
21–27 July	*Culex tarsalis*	185.7	0.97	0.18
	Aedes vexans	1,857.9	0.03	0.06
	Other species	603.3	0	0
28 July–3 August	*Culex tarsalis*	364.8	1.25	0.46
	Aedes vexans	1,80.9	0.05	0.06
	Other species	1,234.2	0	0
4–10 August	*Culex tarsalis*	49.8	0	0
	Aedes vexans	346.7	0	0
	Other species	253.0	0	0
11–17 August	*Culex tarsalis*	86.2	3.46	0.30
	Aedes vexans	1,009.9	0	0
	Other species	156.2	0	0
18–24 August	*Culex tarsalis*	22.1	4.92	0.11
	Aedes vexans	590.8	0	0
	Other species	157.7	0.33	0.05
25–31 August	*Culex tarsalis*	5.8	0	0
	Aedes vexans	344.8	0.18	0.06
	Other species	49.9	0	0
1–7 September	*Culex tarsalis*	2.6	0	0
	Aedes vexans	222.4	0	0
	Other species	101.8	0	0
8–14 September	*Culex tarsalis*	2.7	21.31	0.06
	Aedes vexans	670.9	0	0
	Other species	42.2	0	0

*The other species were: *Coquillettidia perturbans, Culiseta inornata, Ochlerotatus dorsalis, Ochlerotatus flavescens, Ochlerotatus spencerii, Ochlerotatus triseriatus, and Ochlerotatus trivittatus*.
**Maximum likelihood estimate of the infection rate (MLE).[1]
***Vector Index = Average number per trap X WNV infection rate /1000.[42]

SUPPLEMENTAL TABLE 7

Weekly vector index for *Culex tarsalis*, *Aedes vexans, and* seven other infected species* in transmitting West Nile virus to humans, North Dakota, 2005

Date	Species	Ave. per trap	WNV infection rate**	Vector Index***
16–22 June	*Culex tarsalis*	11	0	0
	Aedes vexans	1,902.8	0.03	0.06
	Other species	441.5	0.11	0.05
23–29 June	*Culex tarsalis*	15.7	0	0
	Aedes vexans	5,367.1	0	0
	Other species	1,669.9	0	0
30 June–6 July	*Culex tarsalis*	350.3	0.8	0.28
	Aedes vexans	12,438.8	0	0
	Other species	2,200.1	0	0
7–13 July	*Culex tarsalis*	304.7	0.12	0.04
	Aedes vexans	9,434.8	0.004	0.04
	Other species	605.0	0	0
14–20 July	*Culex tarsalis*	316.1	1.07	0.34
	Aedes vexans	12,899.3	0.02	0.26
	Other species	594.0	0.22	0.13
21–27 July	*Culex tarsalis*	282.0	0.8	0.23
	Aedes vexans	1,371.1	0.08	0.11
	Other species	132.1	0	0
28 July–3 August	*Culex tarsalis*	223.2	1.79	0.40
	Aedes vexans	4,637.3	0.03	0.14
	Other species	103.2	0.74	0.08
4–10 August	*Culex tarsalis*	363.0	2.56	0.93
	Aedes vexans	3,486.2	0.05	0.17
	Other species	336.2	0.24	0.08
11–17 August	*Culex tarsalis*	95.2	4.34	0.41
	Aedes vexans	799.3	0	0
	Other species	50.4	0	0
18–24 August	*Culex tarsalis*	169.5	4.93	0.84
	Aedes vexans	1,902.8	0.03	0.06
	Other species	95.2	0	0
25–31 August	*Culex tarsalis*	174.1	3.25	0.57
	Aedes vexans	349.6	0	0
	Other species	173.5	0.3	0.05
1–7 September	*Culex tarsalis*	29.1	8.5	0.25
	Aedes vexans	1,952.4	0.06	0.12
	Other species	341.6	0	0
8–14 September	*Culex tarsalis*	4.9	0	0
	Aedes vexans	1,794.5	0.02	0.04
	Other species	159.0	0	0

*The other species were: *Coquillettidia perturbans, Culiseta inornata, Ochlerotatus dorsalis, Ochlerotatus flavescens, Ochlerotatus spencerii, Ochlerotatus triseriatus, and Ochlerotatus trivittatus*.
**Maximum likelihood estimate of the infection rate (MLE).[1]
***Vector Index = Average number per trap X WNV infection rate /1000.[42]

SUPPLEMENTAL TABLE 8

Weekly vector index for *Culex tarsalis*, *Aedes vexans, and* seven other infected species* in transmitting West Nile virus to humans, North Dakota, 2006

Date**	Species	Ave. per trap	WNV infection rate***	Vector Index****
4–10 June	*Culex tarsalis*	1.2	0	0
	Aedes vexans	13,016.3	0	0
	Other species	581.0	0	0
11–17 June	*Culex tarsalis*	1.0	0	0
	Aedes vexans	13,440.3	0	0
	Other species	291.3	0	0
18–24 June	*Culex tarsalis*	0.0	0	0
	Aedes vexans	930.3	0	0
	Other species	53.0	0	0
25 June–1 July	*Culex tarsalis*	2.8	0	0
	Aedes vexans	41,448.8	0	0
	Other species	949.0	0	0
9–15 July	*Culex tarsalis*	19.5	0	0
	Aedes vexans	39,677.0	0.01	0.40
	Other species	833.8	0	0
16–22 July	*Culex tarsalis*	7.0	0	0
	Aedes vexans	732.8	0	0
	Other species	33.5	0	0
23–29 July	*Culex tarsalis*	29.3	30.49	0.89
	Aedes vexans	39,26.0	0	0
	Other species	34.0	0	0
30 Jul–5 August	*Culex tarsalis*	1.2	0	0
	Aedes vexans	187.8	0	0
	Other species	6.5	0	0
6–12 August	*Culex tarsalis*	29.8	19.57	0.58
	Aedes vexans	296.2	0	0
	Other species	7.2	0	0
13–19 August	*Culex tarsalis*	1.3	0	0
	Aedes vexans	2.3	0	0
	Other species	4.8	0	0
20–26 August	*Culex tarsalis*	3.6	0	0
	Aedes vexans	50.8	0	0
	Other species	19.8	0	0
27 August–2 September	*Culex tarsalis*	0.2	0	0
	Aedes vexans	4.8	0	0
	Other species	14.7	0	0
3–7 September	*Culex tarsalis*	0.0	0	0
	Aedes vexans	8.8	0	0
	Other species	6.7	0	0

*The other species were: *Coquillettidia perturbans, Culiseta inornata, Ochlerotatus dorsalis, Ochlerotatus flavescens, Ochlerotatus spencerii, Ochlerotatus triseriatus, and Ochlerotatus trivittatus*.
**Mosquitoes were not collected during the week of 1–8 July.
***Maximum likelihood estimate of the infection rate (MLE).[1]
****Vector Index = Average number per trap X WNV infection rate /1000.[42]

SUPPLEMENTAL TABLE 9

Weekly vector index for *Culex tarsalis*, *Aedes vexans, and* seven other infected species* in transmitting West Nile virus to humans, North Dakota, 2003–2006

Date	Species	Ave. per trap	WNV infection rate**	Vector Index***
16–22 June	*Culex tarsalis*	6.2	0	0
	Aedes vexans	5,082.7	0.005	0.03
	Other species	816.3	0.03	0.02
23–29 June	*Culex tarsalis*	9.6	0	0
	Aedes vexans	3,268.6	0	0
	Other species	839.1	0	0
30 June–6 July	*Culex tarsalis*	133.9	0.93	0.12
	Aedes vexans	8371.1	0	0
	Other species	1,101.8	0	0
7–13 July	*Culex tarsalis*	215.7	0.25	0.05
	Aedes vexans	9,393.5	0.01	0.09
	Other species	1,305.4	0	0
14–20 July	*Culex tarsalis*	189	1.32	0.25
	Aedes vexans	7,141.3	0.02	0.14
	Other species	690	0.10	0.07
21–27 July	*Culex tarsalis*	221.7	1.08	0.24
	Aedes vexans	1,892.9	0.07	0.13
	Other species	338.2	0	0
28 July–3 August	*Culex tarsalis*	239.4	1.43	0.34
	Aedes vexans	2,411.1	0.14	0.34
	Other species	595.7	0.04	0.02
4–10 August	*Culex tarsalis*	192.2	2.75	0.53
	Aedes vexans	2,183.1	0.11	0.24
	Other species	246.2	0.15	0.04
11–17 August	*Culex tarsalis*	63.9	3.96	0.25
	Aedes vexans	744.9	0.03	0.02
	Other species	75.7	0.28	0.02
18–24 August	*Culex tarsalis*	82.1	4.98	0.41
	Aedes vexans	1,033.6	0.04	0.04
	Other species	102.1	0.2	0.02
25–31 August	*Culex tarsalis*	79.9	3.93	0.31
	Aedes vexans	277.2	0.16	0.04
	Other species	93.5	0.24	0.02
1–7 September	*Culex tarsalis*	16.2	8.07	0.13
	Aedes vexans	1,100.6	0.05	0.06
	Other species	211.9	0	0
8–14 September	*Culex tarsalis*	3.6	5.64	0.02
	Aedes vexans	1,199.9	0.02	0.02
	Other species	100.8	0	0

*The other species were: *Coquillettidia perturbans, Culiseta inornata, Ochlerotatus dorsalis, Ochlerotatus flavescens, Ochlerotatus spencerii, Ochlerotatus triseriatus, and Ochlerotatus trivittatus*.
**Maximum likelihood estimate of the infection rate (MLE).[1]
***Vector Index = Average number per trap X WNV infection rate /1000.[42]

SUPPLEMENTAL TABLE 10

Cache Valley virus isolations from North Dakota mosquitoes, 2003 and 2005

Mosquito species	Year	County	Total no. mosquitoes (pools)	No. virus isolations	Infection rate (95% CI)[1]
Aedes vexans	2005	Cass	442,944 (9,234)	18	0.04 (0.02–0.06)
		Williams	1,022,184 (20,640)	74	0.07 (0.06–0.09)
Aedes cinereus	2005	Williams	5,832 (245)	3	0.52 (0.14–1.4)
Anopheles earlei	2005	Williams	61 (26)	1	16.55 (0.96–78.73)
Culex tarsalis	2005	Cass	38,435 (1,161)	3	0.08 (0.02–0.21)
		Williams	10,023 (388)	1	0.10 (0.01–0.48)
Culiseta inornata	2003	Nelson	616 (71)	1	1.66 (0.09–8.19)
	2005	Cass	11,769 (447)	22	1.94 (1.25–2.89)
		Williams	9,671 (451)	4	0.41 (0.13–0.99)
Ochlerotatus dorsalis	2005	Cass	26,767 (743)	10	0.38 (0.19–0.67)
		Williams	10,110 (454)	5	0.50 (0.18–1.10)
Ochlerotatus flavescens	2005	Williams	758 (220)	1	1.32 (0.08–6.36)
Ochlerotatus melanimon	2005	Williams	35,223 (893)	6	0.17 (0.07–0.35)
Ochlerotatus trivittatus	2003	Cass	14,021 (351)	1	0.07 (0.0–0.35)
	2005	Williams	35,645 (872)	1	0.03 (0.0–0.14)

Supplemental Table 11

Jamestown Canyon virus isolations from North Dakota mosquitoes, 2003–2006

Mosquito species	Year	County	Total no. mosquitoes (pools)	No. virus isolations	Infection rate (95% CI)[1]
Aedes vexans	2003	Nelson	84,432 (1,726)	4	0.05 (0.02–0.11)
		Cass	139,261 (2,863)	11	0.08 (0.04–0.14)
	2004	Cass	235,560 (4,870)	4	0.02 (0.1–0.04)
	2005	Cass	442,944 (9,234)	3	0.01 (0.0–0.02)
		Williams	1,022,184 (20,640)	36	0.04 (0.03–0.05)
Culex tarsalis	2004	Cass	13,733 (423	1	0.07 (0.0–0.35)
	2005	Cass	38,435 (1,161)	1	0.03 (0.0–0.13)
Culiseta inornata	2005	Cass	11,769 (447)	2	0.17 (0.03–0.56)
		Williams	9,671 (451)	2	0.21 (0.04–0.68)
Ochlerotatus dorsalis	2003	Nelson	837 (89)	1	1.21 (0.07–5.98)
	2004	Cass	8,835 (357)	3	0.34 (0.09–0.92)
	2005	Cass	26,767 (793)	2	0.07 (0.1–0.24)
		Williams	10,110 (454)	1	0.10 (0.01–0.48)
	2006	Williams	1,375 (194)	1	0.72 (0.04–3.49)
Ochlerotatus flavescens	2006	Williams	310 (87)	1	3.18 (0.14–15.21)
Ochlerotatus melanimon	2004	Williams	8,210 (224)	1	0.12 (0.01–0.59)
	2005	Williams	35,223 (893)	1	0.03 (0.0–0.14)
Ochlerotatus sticticus	2005	Cass	23,890 (629)	1	0.04 (0.0–0.20)
Ochlerotatus trivittatus	2003	Richland	1,973 (45)	1	0.51 (0.03–2.47)
	2004	Cass	91,993 (2,007)	2	0.02 (0.0–0.07)
	2005	Cass	97,325 (2,106)	5	0.05 (0.02–0.11)
	2005	Williams	35,645 (872)	4	0.11 (0.04–0.27)

Supplemental Table 12

Trivittatus virus isolations from North Dakota mosquitoes, 2003–2006

Mosquito species	Year	County	Total no. mosquitoes (pools)	No. virus isolations	Infection rate (95% CI)[1]
Aedes vexans	2003	Cass	134,510 (2,762)	23	0.17 (0.11–0.25)
		Richland	4,751 (101)	2	0.42 (0.08–1.38)
	2004	Cass	235,560 (4,870)	6	0.03 (0.01–0.05)
		Williams	260,426 (5,265)	4	0.02 (0.00–0.04)
	2005	Cass	442,944 (9,234)	15	0.03 (0.02–0.05)
		Richland	12,505 (281)	2	0.16 (0.03–0.52)
		Williams	1,022,184 (20,640)	22	0.02 (0.01–0.03)
	2006	Williams	591,152 (11,947)	3	0.01 (0.00–0.01)
Culex tarsalis	2004	Cass	13,733 (423)	1	0.07 (0–0.35)
		Williams	6,616 (204)	1	0.15 (0.01–0.73)
Ochlerotatus dorsalis	2005	Williams	10,110 (454)	1	0.10 (0.01–0.48)
Ochlerotatus melanimon	2005	Williams	35,223 (893)	1	0.03 (0.0–0.14)
Ochlerotatus sticticus	2005	Cass	23,840 (629)	3	0.13 (0.03–0.34)
Ochlerotatus trivittatus	2003	Cass	14,021 (351)	12	0.87 (0.47–1.48)
		Richland	1,973 (45)	9	5.05 (2.49–9.30)
	2004	Cass	91,986 (2,006)	78	0.87 (0.69–1.07)
		Richland	963 (35)	1	1.04 (0.06–5.11)
		Williams	1,948 (97)	9	5.09 (2.50–9.39)
	2005	Cass	97,325 (2,106)	105	1.11 (0.91–1.34)
		Richland	2,903 (69)	2	0.70 (0.12–2.28)
		Williams	35,645 (872)	49	1.42 (1.06–1.86)
	2006	Williams	12,757 (349)	30	2.48 (1.71–3.50)

Supplemental Table 13

Western equine encephalomyelitis, Snowshoe hare, and Potosi viruses isolations from North Dakota mosquitoes, 2004 and 2005

Virus	Mosquito species	Year	County	Total no. mosquitoes (pools)	No. virus isolations	Infection rate (95% CI)[1]
Western equine encephalomyelitis	*Culex tarsalis*	2004	Williams	6,616 (204)	2	0.30 (0.05–0.99)
Snowshoe hare	*Ochlerotatus trivittatus*	2004	Cass	91,986 (2,006)	1	0.01 (0.0–0.05)
	Aedes vexans	2005	Cass	442,944 (9,234)	3	0.01 (0.0–0.02)
Potosi	*Aedes vexans*	2005	Cass	442,944 (9,234)	4	0.01 (0–0.02)
	Ochlerotatus dorsalis	2005	Cass	26,767 (743)	1	0.04 (0.0–0.18)
	Culiseta inornata	2005	Cass	11,769 (447)	1	0.08 (0.0–0.41)

REFERENCES

1. Biggerstaff BJ, 2006. *PooledInfRate, Version 3.0: a Microsoft Excel Add-In to compute prevalence estimates from pooled samples*. Fort Collins, CO: Centers for Disease Control and Prevention.
2. Turell MJ, O'Guinn ML, Dohm DJ, Jones JW, 2001. Vector competence of North American mosquitoes (Diptera: Culicidae) for West Nile virus. *J Med Entomol 38:* 130–134.
3. Tiawsirisup S, Kinley JR, Tucker BJ, Evans RB, Rowley WA, Platt KB, 2008. Vector competence of *Aedes vexans* (Diptera: Culicidae) for West Nile virus and potential as an enzootic vector. *J Med Entomol 45:* 452–457.
4. Goddard LB, Roth AE, Reisen WK, Scott TW, 2002. Vector competence of California mosquitoes for West Nile virus. *Emerg Infect Dis 8:* 1385–1391.
5. Ritchie SA, Rowley WA, 1981. Blood-feeding patterns of Iowa mosquitoes. *Mosq News 41:* 271–275.
6. Cupp EW, Stokes G, 1973. Identification of bloodmeals from mosquitoes collected in light traps and dog-baited traps. *Mosq News 33:* 39–41.
7. Nasci RS, 1984. Variatons in the blood-feeding patterns of *Aedes vexans* and *Aedes trivittatus* (Diptera: Culicidae). *J Med Entomol 21:* 95–99.
8. Edman JD, Downe AER, 1964. Host-blood sources and multiple-feeding habits of mosquitoes in Kansas. *Mosq News 24:* 154–160.
9. Molaei G, Andreadis TG, 2006. Identification of avian- and mammalian-derived bloodmeals in *Aedes vexans* and *Culiseta melanura* (Diptera: Culicidae) and its implication for West Nile virus transmission in Connecticut, U.S.A. *J Med Entomol 43:* 1088–1093.
10. Shemanchuk JA, Downe AER, Burgess L, 1963. Hosts of mosquitoes (Diptera:Culicidae) from the irrigated areas of Alberta. *Mosq News 23:* 336–341.
11. Tempelis CH, Francy DB, Hayes RO, Lofy MF, 1967. Variations in feeding patterns of seven culicine mosquitoes on vertebrate hosts in Weld and Larimer Counties, Colorado. *Am J Trop Med Hyg 16:* 111–119.
12. Hayes RO, Tempelis CH, Hess AD, Reeves WC, 1973. Mosquito hosts preference studies in Hale County, Texas. *Am J Trop Med Hyg 22:* 270–277.
13. Reeves WC, Hammon WM, 1944. Feeding habits of the proven and possible mosquito vectors of western equine and St. Louis encephalitis in the Yakima Valley, Washington. *Am J Trop Med Hyg 24:* 131–134.
14. Edman JD, 1971. Host-feeding patterns of Florida mosquitoes I. *Aedes*, *Anopheles*, *Coquillettidia*, *Mansonia* and *Psorophora*. *J Med Entomol 8:* 687–695.
15. Apperson CS, Harrison BA, Unnasch TR, Hassan HK, Irby WS, Savage HM, Aspen SE, Watson DW, Rueda LM, Engber BR, Nasci RS, 2002. Host-feeding habits of *Culex* and other mosquitoes (Diptera: Culicidae) in the Borough of Queens in New York City, with characters and techniques for identification of *Culex* mosquitoes. *J Med Entomol. 39:* 777–785.
16. Irby WS, Apperson CS, 1988. Hosts of mosquitoes in the coastal plain of North Carolina. *J Med Entomol. 25:* 85–93.
17. Nasci RS, Edman JD, 1981. Blood-feeding patterns of *Culiseta melanura* (Diptera: Culicidae) and associated sylvan mosquitoes in southeastern Massachusetts eastern equine encephalitis enzootic foci. *J Med Entomol 18:* 493–500.
18. Apperson CS, Hassan HK, Harrison BA, Savage HM, Aspen SE, Farajollahi A, Crans W, Daniels TJ, Falco RC, Benedict M, Anderson M, McMillen L, Unnasch TR, 2004. Host feeding patterns of established and potential mosquito vectors of West Nile virus in the eastern United States. *Vector-Borne Zoonotic Dis. 4:* 71–82.
19. Gingrich JB, Williams GM, 2005. Host-feeding patterns of suspected West Nile virus mosquito vectors in Delaware, 2001-2002. *J Am Mosq Control Assoc 21:* 194–200.
20. Magnarelli LA, 1977. Host feeding patterns of Connecticut mosquitoes (Diptera: Culicidae). *Am J Trop Med Hyg 26:* 547–552.
21. Sardelis MR, Turell MJ, Dohm DJ, O'Guinn ML, 2001. Vector competence of selected North American *Culex* and *Coquillettidia* mosquitoes for West Nile virus. *Emerg Infect Dis 7:* 1018–1022.
22. Molaei G, Andreadis TG, Armstrong PM, Diuk-Wasser M, 2008. Host-feeding patterns of potential mosquito vectors in Connecticut, U.S.A.: molecular analysis of bloodmeals from 23 species of *Aedes*, *Anopheles*, *Culex*, *Coquillettidia*, *Psorophora*, and *Uranotaenia*. *J Med Entomol 45:* 1143–1151.
23. Tempelis CH, 1974. Host-feeding patterns of mosquitoes, with a review of advances in analysis of blood meals by serology. *J Med. Entomol. 11:* 635–653.
24. Downe AER, 1962. Some aspects of host selection by *Mansonia perturbans* (Walk.) (Diptera: Culicidae). *Can J Zool 40:* 725–732.
25. Suyemoto W, Schiefer BA, Elderidge B, 1973. Precipitin tests of blood-fed mosquitoes collected during the VEE surveillance survey in the southern United States in 1971. *Mosq News 33:* 392–395.
26. Anderson JF, Main AJ, Cheng G, Ferrandino FJ, Fikrig E, 2012. Horizontal and vertical transmission of West Nile virus genotype NY99 by *Culex salinarius* and genotypes NY99 and WN02 by *Culex tarsalis*. *Am J Trop Med Hyg 86:* 134–139.
27. Andersen DM, Collett, GC, Winget, RN, 1967. Preliminary host preference studies of *Culex tarsalis* Coquillett and *Culiseta inornata* (Williston) in Utah. *Mosq News 27:* 12–15.
28. Reeves WC, Tempelis CH, Bellamy RE, Lofy MF, 1963. Observations on the feeding habits of *Culex tarsalis* in Kern County, California, using precipitating antisera produced in birds. *Am J Trop Med Hyg 12:* 929–935.
29. Tempelis CH, Reeves WC, Bellamy RE, Lofy MF, 1965. A three-year study of the feeding habits of *Culex tarsalis* in Kern County, California. *Am J Trop Med Hyg 14:* 170–177.
30. Tempelis CH, Washino RK, 1967. Host-feeding patterns of *Culex tarsalis* in the Sacramento Valley, California, with notes on other species. *J Med Entomol 4:* 315–318.
31. Lee JH, Hassan H, Hill G, Cupp EW, Higazi TB, Mitchell CJ, Godsey MSJr., Unnasch TR, 2002. Identification of mosquito avian-derived blood meals by polymerase chain reaction-heteroduplex analysis. *Am J Trop Med Hyg 66:* 599–604.
32. Molaei G, Cummings RF, Su T, Armstrong PM, Williams GA, Cheng ML, Webb JP, Andreadis TG, 2010. Vector-host interactions governing epidemiology of West Nile virus in Southern California. *Am J Trop Med Hyg 83:* 1269–82.
33. Kent R, Juliusson L, Weissmann M, Evans S, Komar N, 2009. Seasonal blood-feeding behavior of *Culex tarsalis* (Dipter: Culicidae) in Weld County, Colorado, 2007. *J Med Entomol 46*: 380–390.
34. Thiemann TC, Lemenager DA, Kluh S, Carroll BD, Lothrop HD, Reisen WK, 2012. Spatial variation in host feeding patterns of *Culex tarsalis* and the *Culex pipiens* complex (Diptera: Culicidae) in California. *J Med Entomol 49:* 903–16.
35. Washino RK, Nelson RL, Reeves WC, Scrivani RP, Tempelis CH, 1962. Studies on *Culiseta inornata* as a possible vector of encephalitis viruses in California. *Mosq News 22:* 268–274.
36. Edman JD, Webber LA, Kale II HW, 1972. Host-feeding patterns of Florida mosquitoes. II. *Culiseta. J Med Entomol 9:* 429–434.
37. Erickson SM, Platt KB, Tucker BJ, Evans R, Tiawsirisup S, Rowley WA, 2006. The potential of *Aedes triseriatus* (Diptera: Culicidae) as an enzootic vector of West Nile virus. *J Med Entomol 43:* 966–970.
38. Burkot TR, DeFoliart, GR, 1982. Bloodmeal sources of *Aedes triseriatus* and *Aedes vexans* in a southern Wisconsin forest endemic for La Crosse enephalitis virus. *Am J Trop Med Hyg 31:* 376–381.
39. Tiawsirisup S, Platt KB, Evans RB, Rowley WA. 2005. A comparisionof West Nile virus transmission by *Ochlerotatus trivittatus* (Coq.), *Culex pipiens* (L.), and *Aedes albopictus* (Skuse). *Vector-Borne Zoonotic Dis. 5:* 40–47.
40. Nasci RS, 1984. Variatons in the blood-feeding patterns of *Aedes vexans* and *Aedes trivittatus* (Diptera: Culicidae). *J Med Entomol 21:* 95–99.
41. Kilpatrick AM, Kramer LD, Campbell SR, Alleyne EO, Dobson AP, Daszak P, 2005. West Nile virus risk assessment and the bridge vector paradigm. *Emerg Infect Dis 11:* 425–429.
42. Centers for Disease Control and Prevention, 2013. West Nile virus in the United States: Guidelines for surveillance, prevention, and control. http://www.cdc.gov/westnile/vectorcontrol/index.html. 1–69. Accessed August 13, 2014.