

## DISTRIBUTIONAL RECORDS FROM THE U.S. AIR FORCE OVITRAPPING PROGRAM—1990

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**ABSTRACT.** During 1990, ovitrapping was conducted at 38 U.S. Air Force installations. Twelve installations were positive for *Aedes albopictus*. The August 24 collection of *Ae. albopictus* at Tinker Air Force Base, OK, is a first record for Oklahoma County. Four installations recorded the presence of *Ae. aegypti*; 14 installations were positive for *Ae. triseriatus*. During the previous 3 years, an increase in the distribution and abundance of *Ae. albopictus* coincided with a decline in *Ae. aegypti*.

During 1988 and 1989, the U.S. Air Force (USAF) ovitrapping program documented the presence of container-breeding *Aedes* at 30 USAF installations, 2 Army posts and the San Antonio metropolitan area, including 4 new county records for *Aedes albopictus* (Skuse) (McHugh and Vande Berg 1989, McHugh and Hanny 1990). The following summarizes the results of the USAF ovitrapping program during 1990 and notes a trend in the distribution and abundance of *Ae. albopictus* and *Ae. aegypti* (Linn.).

During 1990, a total of 1,973 ovipaddles collected at 38 USAF installations were forwarded to the Epidemiology Division, USAF School of Aerospace Medicine, Brooks Air Force Base (AFB), TX, for processing. Eggs on the ovipaddles were tentatively identified as *Ae. triseriatus* (Say) or *Aedes* (*Stegomyia*) and then hatched and reared for specific identification as described previously (McHugh and Vande Berg 1989).

*Aedes albopictus* was detected at 12 installations (Table 1). One *Ae. albopictus*-positive paddle was collected at Tinker AFB, OK, on August 24. That is the first record of *Ae. albopictus* from Oklahoma County, and the northernmost record of *Ae. albopictus* in the state to date. *Aedes albopictus* previously has been collected in 5 other Oklahoma counties, all in the southern part of the state (R. E. Wright, unpublished data). Two additional paddles with eggs tentatively identified as *Aedes* (*Stegomyia*), but from which specimens could not be reared for specific identification, also were collected at Tinker AFB on August 24. One *Ae. albopictus*-positive paddle was collected at Tinker AFB on September 10. *Aedes aegypti* was collected at 4 installations (Table 1), all of which had previously reported the presence of that mosquito. Seventy-seven paddles from 14 installations were positive for *Ae. triseriatus* (Table 1). Paddles submitted by

17 other installations were negative for mosquitoes (Table 1).

Anecdotal reports of increases in *Ae. albopictus* abundance, coincident with declines in *Ae. aegypti*, have been published (Hawley 1988, Nasci et al. 1989). Interspecific mating of *Ae. albopictus* males with *Ae. aegypti* females is one mechanism by which this alleged replacement may occur (Nasci et al. 1989). Studies cited in Hawley (1988) and recent work by Ho et al. (1989) suggest that larval *Ae. aegypti* may not be at a competitive disadvantage in mixed cultures with *Ae. albopictus*. Although patterns at the individual installations varied, data from the USAF ovitrapping program for the years 1988–90 generally support the hypothesis that an increase in *Ae. albopictus* is matched by a concomitant decrease in *Ae. aegypti*. For all organizations participating in the program, the number recording *Ae. albopictus* increased from 10 in 1988 to 11 and 12 in 1989 and 1990, respectively. The number of organizations reporting *Ae. aegypti* decreased from 12 to 4 over the same 3-year interval. The number of paddles positive for *Ae. albopictus* increased four-fold (56 to 239) from 1988 to 1989; and although that number declined in 1990, the number of *Ae. albopictus*-positive paddles in 1990 (118) was twice the 1988 total. The number of *Ae. aegypti*-positive paddles also increased from 1988 to 1989, but the increase was not as dramatic (91 to 149). In 1990, that number declined to one-eighth (11) of the 1988 total. A similar trend is apparent when only those installations reporting both *Ae. albopictus* and *Ae. aegypti* are considered (Table 2). The number of installations reporting *Ae. albopictus* increased from 1988 to 1990 while the number reporting *Ae. aegypti* was halved. The total number of and the percent *Ae. albopictus*-positive paddles increased five-fold, while the number of and the percent *Ae. aegypti*-positive paddles declined. There are too many uncontrolled variables in the program to allow demonstration of a causal relationship, but the consistency of this and other reports suggests that the decline in *Ae. aegypti* coincident with the

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Table 1. Summary of ovipaddles processed at the Epidemiology Division, USAF School of Aerospace Medicine, during 1990.

Organization and state	County (Parish in LA)	Total ovipaddles	Positive ovitraps							
			<i>Aedes albopictus</i>		<i>Aedes aegypti</i>		<i>Aedes (Stegomyia)</i>		<i>Aedes triseriatus</i>	
			n	%	n	%	n	%	n	%
Eaker AFB, AR	Mississippi	141	1	0.7	0	0.0	1	0.7	0	0.0
Little Rock AFB, AR	Pulaski	131	17	13.0	0	0.0	5	3.8	6	4.6
Bolling AFB, DC		170	0	0.0	0	0.0	0	0.0	3	1.8
Tyndall AFB, FL	Bay	72	1	1.4	0	0.0	0	0.0	2	2.8
MacDill AFB, FL	Hillsborough	30	0	0.0	2	6.7	1	3.3	0	0.0
Robins AFB, GA	Houston	30	0	0.0	0	0.0	2	6.7	0	0.0
Scott AFB, IL	St. Clair	46	0	0.0	0	0.0	0	0.0	10	21.7
Barksdale AFB, LA	Bossier	63	11	17.5	0	0.0	6	9.5	3	4.8
England AFB, LA	Rapides	12	1	8.3	0	0.0	0	0.0	0	0.0
Hanscom AFB, MA	Middlesex	17	0	0.0	0	0.0	0	0.0	2	11.8
Wurtsmith AFB, MI	Iosco	90	0	0.0	0	0.0	0	0.0	6	6.7
Whiteman AFB, MO	Johnson	35	0	0.0	0	0.0	0	0.0	1	2.9
Keesler AFB, MS	Harrison	31	13	41.9	0	0.0	2	6.5	0	0.0
Columbus AFB, MS	Lowndes	6	0	0.0	0	0.0	1	16.7	2	33.3
Tinker AFB, OK	Oklahoma	45	2	4.4	0	0.0	2	4.4	1	2.2
Charleston AFB, SC	Berkeley	43	0	0.0	0	0.0	1	2.3	0	0.0
Arnold AFB, TN	Coffee	84	6	7.1	0	0.0	3	3.6	37	44.0
Brooks AFB, TX	Bexar	19	9	47.4	1	5.3	2	10.5	1	5.3
Kelly AFB, TX	Bexar	65	7	10.8	6	9.2	2	3.1	0	0.0
Lackland AFB, TX	Bexar	176	18	10.2	2	1.1	12	6.8	2	1.1
Randolph AFB, TX	Bexar	100	32	32.0	0	0.0	16	16.0	1	1.0
Total		1,973 <sup>1</sup>	118		11		56		77	

<sup>1</sup> Includes ovipaddles submitted by the following organizations, all of which were negative: Eglin AFB, FL-7; Patrick AFB, FL-96; Moody AFB, GA-69; McConnell AFB, KS-7; Grissom AFB, IN-10; Pope AFB, NC-7; Seymour Johnson AFB, NC-113; McGuire AFB, NJ-0; Holloman AFB, NM-95; Altus AFB, OK-37; Shaw AFB, SC-27; Myrtle Beach AFB, SC-17; Dyess AFB, TX-7; Carswell AFB, TX-4; Bergstrom AFB, TX-12; Reese AFB, TX-12; Langley AFB, VA-38.

Table 2. The presence and abundance of *Aedes aegypti* and *Ae. albopictus* at selected Air Force Bases during 1988-90.

Base and state	Positive installations					
	<i>Aedes albopictus</i>			<i>Aedes aegypti</i>		
	1988	1989	1990	1988	1989	1990
Little Rock AFB, AR	+	+	+	0	+	0
Barksdale AFB, LA	+	+	+	+	0	0
England AFB, LA	0	+	+	+	0	0
Brooks AFB, TX	+	+	+	+	0	+
Kelly AFB, TX	0	+	+	+	+	+
Lackland AFB, TX	+	+	+	+	+	+
Randolph AFB, TX	+	+	+	+	+	0
Carswell AFB, TX	0	+	0	0	+	0
Total bases positive	5	8	7	6	5	3
Total ovipaddles positive	19	101	95	25	21	9
(% positive)	(2.6)	(11.5)	(16.7)	(3.4)	(2.4)	(1.6)

introduction of *Ae. albopictus* is not an accident or an artifact.

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