

Mosquito studies: Upper Site; collection of *Anopheles walkeri* Theobald

William L. Butts¹

Activities on the Upper Site were localized at the confluence of the Beaver Pond and flooded Area IV environs in an attempt to document on-site development of *Anopheles walkeri* Theobald. On May 2, an emergence cage constructed to cover an area of approximately 2 m² was placed over a patch of mowed cattail (*Typha* sp.) stubble along the bank of flooded Area IV environs (Figure 1). The lower wooden frame of the cage was submerged so that any specimen collected would have developed within the enclosure. The placement of the cage was effected shortly after the overlying ice had melted, assuring that mosquitoes present internally would have been present prior to placement.

A CDC Miniature light Trap suspended from a metal “Shepherd’s Hook” was enclosed within a large, plastic drum liner bag with the open end secured with duct tape around a projecting piece of 4” plastic pipe opening into the cage. A one gallon insulated plastic container with a hinged, closable pouring spout was partially filled with 1.5 liters of untreated water from Otsego Lake and ca 454 grams of granulated sucrose. Before placement the mixture was agitated to dissolve the sucrose and ca 90 grams of dry yeast were added, the top tightly secured and the pouring spout opened to evacuate the CO₂ produced by fermentation. Initial attempts to house the generator within the plastic shroud were unsuccessful. A piece of clear plastic tubing attached to the pouring spout with its free end introduced into the opening to the cage created a CO₂ gradient towards the opening.

An alternate placement was adopted by suspending the generator on a metal hook adjacent to the cage opening allowing the generator to be enclosed within the plastic shroud. Traps were activated in late afternoon or early evening and removed early on the following morning. After disassembly, the light trap was removed, the net bag closed and returned to the Lakeside Lab where it was placed in a freezer for 3-4 hours to inactivate the mosquitoes for mounting and retention. Traps were set on the following dates: 2 May; 2, 9, 13, 19 and 26 June; 5, 10, 25 July 06.

Results of the trapping procedure were largely negative and a single specimen of *Coquillettidia perturbans* (Walker) and a damaged specimen of *Anopheles* sp., probably *walkeri*, were collected and the use of the emergence trap was terminated.

On 16 August 06, a light trap with CO₂ generated by fermentation was set at water’s edge along the bank of flooded Area IV environs adjacent to its confluence with the Beaver Pond, and an alighting/biting sampling made from 5:30 -8:00PM. Subsequent trapping sets using CO₂ only and set with intake at ca 0.7 meter above ground level were

¹ Professor emeritus, SUNY Oneonta Biological Field Station.

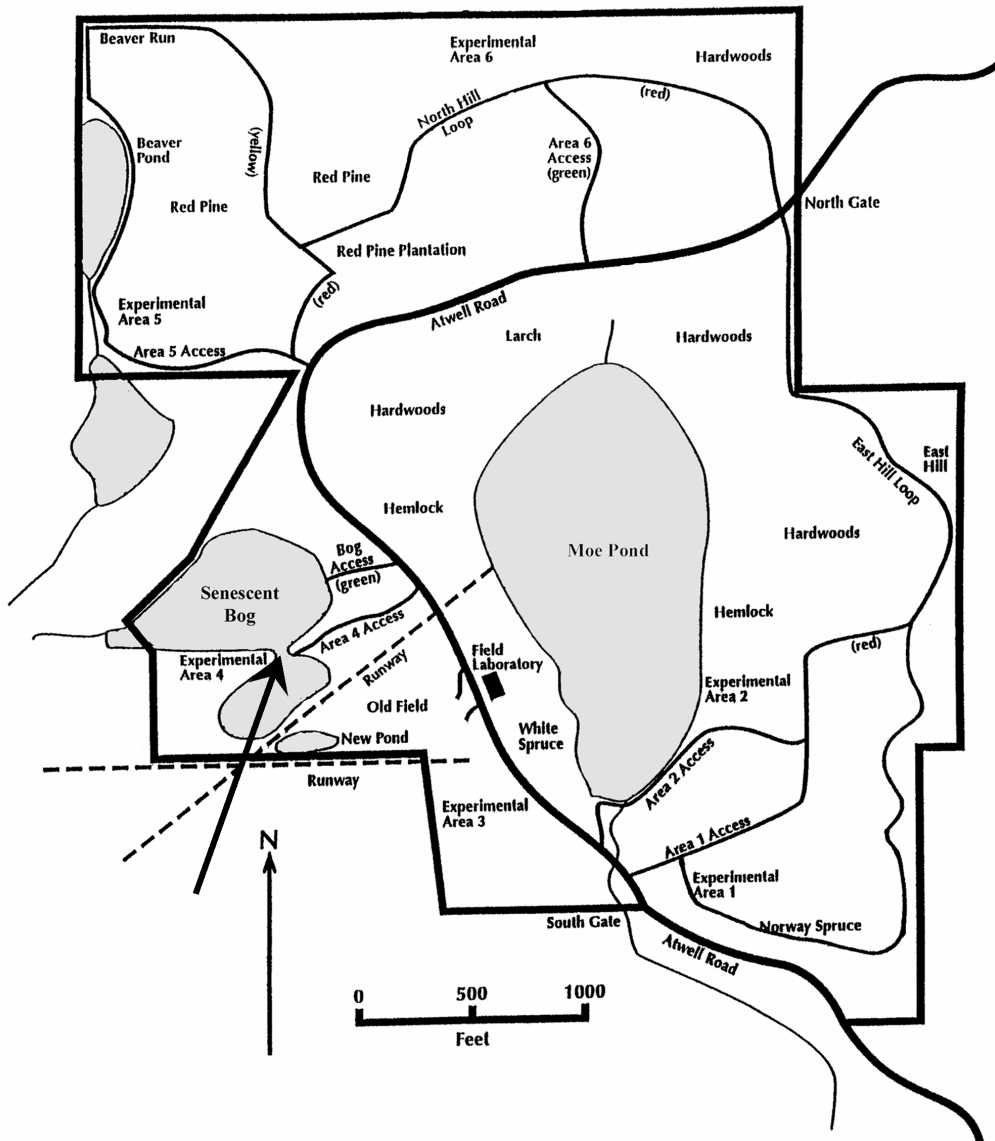


Figure 1. The Upper Site, Otsego, NY. Area IV, the study site, is indicated by the bold arrow.

placed at water's edge and ca 10 meters back towards the woods along the path to the confluence on 13 and 19 September. See Table I.

The number of mosquitoes taken on 18 September in the low level traps baited only with CO₂ strongly suggest that a resident population of *Anopheles walkeri* has become established on or closely adjacent to the Upper Site. Additional attempts to establish presence of on-site larval development are anticipated in 2007

Table I. Mosquitoes collected at confluence of Beaver Pond and flooded Area IV environs during August and September 2006.

Species	Date (2006)	Light /CO ₂	Light only	CO ₂ only	Alighting
<i>Anopheles walkeri</i> Theobald	16 Aug	1			3
	28 Aug	4			
	18 Sep			46	
<i>Coquillettidia perturbans</i> (Walker)	28 Aug	3			
	18 Sep			18	

Results of three successive years of collection after no previous indication of presence of *An. walkeri* are suggestive of a recent introduction of this species to the Upper Site. The source of introduction cannot be definitively assessed, but introduction by attachment of “winter eggs” by wading birds is a strong possibility. Three species of the family Ardeidae have been recorded from the Upper Site, and the great blue heron (*Ardea herodias*) is a regular feeder in the impoundments each summer. The somewhat peculiar movements of members of this species in late summer and early fall in which long non-migrating movements in a number of directions have been observed. Such activity in that time frame could easily explain introduction of “winter eggs” on the legs of herons.

An important caveat to this conclusion is appropriate. Although relatively isolated and with adjoining properties having been maintained largely unaltered for a number of years, the research area is surrounded or relatively close to areas that see a high and increasing level of tourist activity. One boundary is common to that of the Farmer’s Museum complex which is maintained by the New York Historical Society and is in close proximity to the Village of Cooperstown, site of the Baseball Hall of Fame. The latter facility has been an attraction for many years for visitors from a quite broad geographical area. In recent years a tendency has developed for local entrepreneurs to capitalize on this proximity by establishing extensive playing fields for youth baseball activity, attracting families from much of the eastern United States. Accommodations for these visitors have been an important feature in maintaining activity at local camp grounds. The potential for introduction of the adult stages of various mosquitoes by recreational vehicles and a variety of storage containers associated with automotive travel must be considered as a possibility.

The ever present potential of introduction by boating enthusiasts who utilize Otsego Lake represents another avenue of potential human intervention. Although the logistics of travel would make introduction by patrons of the arts somewhat less likely, it should be noted that the lakeside facilities of the Glimmerglass Opera Company located approximately 5 miles north of the Upper Site attract automotive travel from a very wide geographical area during the summer season.