

A REARING METHOD FOR *Aedes abserratus*  
(F. AND Y.)

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Univoltine *Aedes* species of Manitoba are difficult to rear in the laboratory and *A. abserratus* is no exception. A method of rearing the larvae is described here and the same technique has been adapted to other species of Northern Manitoba and the North West Territories.

Eggs of *A. abserratus* required at least 2 months of cold or winter temperatures (2–4° C.) before they would hatch. Maximum hatch was obtained when eggs were kept for 2 months at 20° C. following oviposition, and 4 months at 4° C. A hatch of 90 percent of the viable eggs was obtained when eggs were taken directly from 4° C. and placed in dilute nutrient broth (1:200) at 12–15° C. Larvae hatched after 36–48 hours. They were reared at constant temperatures of 10°, 20°, 23°, 24°, 25°, 26° C., and also at a diurnal temperature cycle of 10° and 23°.

At constant temperatures the writers found that 30–50 percent of the larvae reached the adult stage. Larvae completed their development to pupae in 21–25 days at 10° C.; in 10–12 days at 20° C., and in 5 days at 26° C. Mortality was greatest at the highest temperature, and intersexes resulted at temperatures of 24°–26° C. (Brust, 1966).

By using a daily cycle of low and high temperatures, the writers were able to get 80–85 percent of the larvae through to adults. Temperatures of 10° C. for 12 hours, and 23° C. for 12 hours daily were found to be most suitable. The larval medium consisted of 100–300 ml. of distilled water, 300 mg. of Fleischman's "live" dry yeast, 300 mg. of fine ground dog food (Gaines pellets) and 5 ml. of "wetted" sphagnum peat moss (purchased at garden supplies stores) per 50 larvae. The yeast and dog food (weighed dry) were suspended in distilled water and the floating particles decanted. Air was removed from the peat by vacuum, and the peat wetted down with distilled water. Only the suspended particles of peat were used in the medium; the floating particles were decanted. A stock supply of the prepared peat and food were kept frozen until needed.

Larvae were reared in a closed, unbreakable plastic pan 21 x 30 x 8 cm. The water level in the pan was kept to 3 mm. for first and second instar larvae. Fresh medium was prepared after the third or fourth day and the water level raised to 6 mm. The medium was changed again during the fourth instar, and this time the water level raised to 10 mm.

Pupae were removed to a cage and kept in distilled water at a constant temperature of 20° C. Adult males began to emerge after the third day and females after the fourth day. Adults lived up to 2 months in cages where the humidity was kept at or above 80 percent R.H.

The adults have been mated artificially using the method described by McDaniel and Horsfall, 1957, but the authors have not attempted to maintain a continuous colony.

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NEW RECORDS FOR *Aedes* SPECIES IN MANITOBA

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Four species not previously reported from Manitoba include *Aedes abserratus* (Felt and Young), *A. triseriatus* (Say), *A. detritus* (Howard, Dyar and Knab), and *A. barri* (Rueger). The first two have been reported from several provinces in Canada, but *A. detritus* only from Labrador and Ontario (Smith 1952, Steward and McWade 1961) and *A. barri* only from Ontario in Canada (Steward and McWade 1961).

*A. barri* larvae occur in temporary snow-melt pools in Manitoba, together with *A. excrucians* (Walker), *A. fitchii* (F. and Y.), *A. punctator* (Kirby) and *A. communis* (De Geer). Larvae have been collected from the Sandilands Forest Reserve, and from Oak Bluff, Manitoba. Adults, which laid eggs in the laboratory, were collected from Churchill, Flin Flon, Porcupine Forest Reserve, Turtle Mountain Forest Reserve, Riding Mountain National Park, and Sandilands Forest Reserve. The larvae are easily identified if one is using Barr's key (1958) to Minnesota mosquitoes, but may be confused with *A. excrucians* if one is using a key which does not include *A. barri*.

Larvae from Manitoba are similar to those described from Minnesota. The number of comb scales ranged from 10 to 21 with an average of 15. The comb scales were arranged in an irregular double row or in a triangular patch. The upper and lower head hairs were usually double, but occasionally triple. The siphon was 4 times as long as broad at the middle (range 3½–4½); the pecten extended beyond the middle to the outer third with 3 or 4 detached teeth. The ventral tuft on the siphon consisted of 2 or 3 branches and was closely associated with the last pecten tooth. Usually the distal pecten tooth, and often the penultimate tooth, was not straight or gently curved as in *A. excrucians*, but had a slight kink near its base. The most reliable character for separating *A. barri* larvae from *A. excrucians* was found to be the spine on each ventral valve of the siphon. The valves are triangular shaped and are located on the most distal part of

the siphon. In *A. excrucians*, as in *A. fitchii*, this spine was distinctly sickle shaped, whereas in *A. barri* it was only curved. The spine in *A. barri* was also much smaller in size, being  $\frac{1}{2}$  to  $\frac{3}{4}$  as long as in *A. excrucians*.

*A. decticus* was taken at Churchill, Manitoba in 1965. Adults were collected in July and laid eggs in the laboratory. Eggs were conditioned at 4° C. for 3 months, then hatched in a dilute solution (1:500) of nutrient broth. Eggs were quite distinct in shape and size, and could be separated from eggs of other species occurring at Churchill.

*A. triseriatus* larvae were found developing in the hollow bases of oak, elm and maple trees along the Red and Assiniboine rivers in Manitoba. Tree holes were often filled with water, after heavy summer rains, to a depth of 15-20 cm. The first larvae were found in early July in 1964 and 1965, and the first adults appeared near the end of July. Eggs were found adhering to rotted wood inside the tree holes, the egg band beginning just below the maximum water level of the hole. Hundreds of larvae were taken out of tree holes where the hole contained no more than 2-3 liters of water.

Females were reluctant to take a blood meal when first taken to the laboratory. After 2-3 days, nearly all fed once and some took several blood meals. Only a few gravid females laid eggs on moist cheesecloth pads, whereas all gravid females oviposited on paper toweling. Paper toweling was also found to be more attractive for oviposition than a moist piece of rotted oak.

Eggs of *A. triseriatus* were able to withstand several weeks of normal room humidity without harm, similar to eggs of *A. aegypti* (L.). The eggs, however, had to be a week old, or at least

the embryos had to be completely developed before the eggs could be exposed to the low humidity.

*A. abseerratus* was one of the most numerous species found in jackpine and spruce forests along the eastern boundary of the province. Larvae developed in well shaded sphagnum pools and appeared simultaneously, and in the same pools, with *A. punctator*, *A. fitchii*, *A. implicatus* (Vockeroth), *A. trichuris* (Dyar) and *A. intrudens* (Dyar). Eggs hatched as soon as the snow melted around the edge of the pool, and larvae often developed to the third instar in water of 2-3° C. In the forest, adults were active during the entire day and were found to be vicious biters. Adult females were collected from May 20 to August 15 in 1965. Females took one to two blood meals and laid eggs readily in the laboratory. The eggs had quite a distinct chorionic pattern (observed at 600 x) and could be separated from eggs of *A. punctator* and *A. intrudens* with which the adult females may often be confused.

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