OPERATIONAL AND SCIENTIFIC NOTES

REPORT ON AN OUTBREAK OF WESTERN EQUINE ENCEPHALITIS IN THE UINTAH BASIN, UTAH

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An extensive outbreak of western equine encephalitis occurred in the Uintah Basin of northeastern Utah in the late summer of 1978. The disease, with no human cases reported, occurred throughout an agricultural and rural area of several hundred square miles in the mid and northern regions of both Uintah and Duchesne Counties. Those counties have recently established, but fully operational mosquito abatement districts.

The first 4 suspected cases of WEE in horses were diagnosed and reported by a local veterinarian in Roosevelt City, Duchesne County, on August 1. Shortly thereafter, additional suspected cases from the Vernal City-Jensen area were reported by a Uintah County veterinarian. The report of new, additional cases of the disease in both counties on a daily basis through the first week of August prompted the immediate concern and action of State Department of Agriculture authorities, as well as the statewide attention of supervisory personnel of all other Utah mosquito abatement districts. In addition, key personnel of the Center For Disease Control in Fort Collins, Colorado were alerted to the problem.

On August 8, the Utah State Veterinarian, accompanied by a federal veterinarian, a local veterinarian and the directors of the Uintah and Duchesne County Mosquito Abatement Districts conducted an extensive on-location examination of several suspect horses. Blood samples were drawn from 5 of those animals examined and were submitted to the Utah State Division of Health Bureau of Laboratories for serological analysis. Three of those samples proved positive for WEE. Accordingly, a basin-wide horse vaccination-immunization program, already in progress, was intensified. A total of 3,500 horses received immunizing initial and booster vaccinations through the remainder of August and early September.

Conferences were convened in Salt Lake City, at which officials and representatives of the State Department of Agriculture, State Division of Health and member districts of the Utah Mosquito Abatement Association discussed the potential threat to public health posed by the apparent epizootic, as well as those actions to be cooperatively undertaken to minimize or arrest the spread of the disease. By August 14, 11 more cases of suspected WEE in horses were recorded. Upon the special request of the State Commissioner of Agriculture, supplementary monies from the Governor's Emergency Fund were appropriated for use, if necessary, by the Uintah and Duchesne County MAD's to facilitate the necessarily greater than normal application of pesticides to Uintah Basin vector populations. With the increased possibility of serious state-wide occurrence of WEE, all phases of the UMAA Encephalitis Surveillance Program were geared to meet the problem as effectively as possible. The number of sample pools of light trap-collected adult female *Culex tarsalis* regularly submitted by Utah abatement districts for analysis and possible laboratory detection of WEE virus activity was markedly increased. Each organized district in the state participated fully in that program. All data from light trap collections as well as other supportive information and precautionary procedures followed via the Encephalitis Surveillance Program were regularly reported to, and discussed with the State Veterinarian, State Epidemiologist, representatives of the University of Utah Department of Biology, U. of U. Virology Laboratory, Utah State University and other local personnel.

Additional new cases of WEE in Uintah Basin horses continued to be reported, often daily, through the remainder of August and late September. A possible explosive acceleration in the incidence of cases diagnosed by the third week of August did not occur though, as was previously feared. Suspected cases in horses were reported from other regions of the state in August and September. Blood sera from numerous suspect horses from 6 other Utah counties, tested by the State Division of Health Laboratories, were all negative for WEE, VEE and SLE. All sample pools of adult

female *Cx. tarsalis* submitted by Utah abatement districts (including those from Uintah and Duchesne Counties) for analysis by the University of Utah Virology Laboratory proved negative. Through that period during which active WEE transmission was occurring in the Uintah Basin, comparatively low larval and adult surveillance counts of the vector were recorded by mosquito abatement districts throughout the state, including areas in the immediate vicinities of several sites of equine infection in Uintah and Duchesne Counties. That observation, based upon comparisons of past and current regular larval collections and light trap data would strongly indicate that those Uintah Basin vector populations, though present in reduced numbers were optimally capable of successful WEE transmission, as determined by seasonal environmental conditions, the status of local reservoir bird populations and other ecological factors.

The two Uintah Basin MAD's maintained mosquito control procedures at full operational capacity through the month of September. At the beginning of the outbreak of disease, the public relations programs of those districts were modified to present via the local media, specific information related to the biology and cycle of infection of WEE, and the role of the districts in controlling vector populations as well as providing precautionary information to the public to reduce the chances of possible human infection. Throughout that period of regular, special communications with the concerned public, emphasis was placed upon the state-wide cooperative measures being taken in the overall response to the problem by the many government agencies, institutions and professionals so involved. The public response was excellent.

More than 60 cases of WEE were professionally diagnosed in Uintah Basin horses in August and September. Of those cases, 6 were terminal. The incidence of new clinical disease in horses ceased abruptly in the last week of September, corresponding with the onset of significantly cooler diurnal temperatures in the early part of that month.

Utah Mosquito Abatement Association Encephalitis Surveillance Program follow-up studies were planned for 1979, including the bleeding of selected samples of Uintah Basin bird populations for serological analysis, increased light trap collections and laboratory analysis of sample pools of local adult female vector populations as well as other pertinent comparative studies.

A GYNANDROMORPH IN *ANOPHELES GAMBIAE*

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At the present no *Anopheles* gynandromorph has been recorded in the literature despite considerable work on this group. The purpose of this note is to describe, and record the behavior of an anopheline gynandromorph and to discuss its possible origin.

DESCRIPTION OF THE GYNANDROMORPH

This particular gynandromorph was observed in the F_1 progeny of a pink eye (p) female from the *Anopheles gambiae* species A (Davidson & Jackson 1962) Lagos strain crossed with a wild type male from the same colony. Given the X-Y type of sex-linkage in *An. gambiae* (Giles) (Mason 1967) one would expect all the F_1 generation males to be pink-eyed and the females to have normal eyes. With these points in mind the gynander was examined and found to be an anterior-posterior type (Plate 1). The entire anterior portion from the posterior edge of the thorax forward was thought to be female in character. Consequently the eyes were wild type in color and the antennae were of the short-haired type; both of these are characteristics expected of the F_1 female. Similarly the palps and the proboscis were distinctly female in character (Plate 1). The classification of the thorax and its appendages was equally distinct for those characteristics which differ in the male and female. The prothoracic legs in the gynandromorph were typically female. Since the remaining legs do not differ in the male and female the tissue type could not be determined.

In contrast the abdomen was typically male in character. As can be seen in Plate 1 it had the long slim, more tapered shape of the adult male terminating in a pair of 2-segmented claspers between which the aedeagus was readily visible. The abdomen of this gynandromorph appears to have been functioning in the normal manner since, at the time it was discovered, the terminalia had rotated. Since the terminalia had assumed the mating position, and the proboscis appeared normal, an