D54 A Heavy Grasshopper Infestation Creating a Delay in Blow Fly Oviposition on a Suicide Victim During Summer in Montana

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After attending this presentation, attendees will understand that there could be delays in insect oviposition caused by heavy infestations of grasshoppers in certain portions of the United States.

This presentation will impact the forensic community and/or humanity by obtaining a more precise postmortem interval.

The use of insect evidence to answer questions surrounding a death scene is becoming a common practice across the U.S. Conclusions made by forensic entomologists are based upon known behavior, biology, and growth and development of many insect species that interact with decomposing animal carrion in a predictable pattern and sequence. In most cases, there is little which will alter or affect this known succession or pattern. However, as with all trends in natural science, there are a few exceptions. Normally, when a body is placed in an outdoor environment and the temperatures are adequate (50°F or greater) blow fly female adults will initiate colonization within minutes of death. The postmortem interval estimate is based upon the oldest life stages present of a specific species of blow fly. In Texas, heavy populations of fire ants in close proximity to decomposing carrion (pigs) altered what would be recognized as the start of the initial blow fly colonization. Fire ants were observed feeding on and carrying off early depositions of blow fly eggs faster than the blow fly females could accumulate any sizable egg masses. It was nearly 48 hours after placement of the dead pig before the blow flies were able to begin an accumulation of eggs that would produce the first hatching larvae. Therefore, the estimated time of death based upon blow flies would be 48 hours later than the true time when death occurred. A case from western Montana demonstrates another example of how colonization of the blow flies can be delayed. The body of a middle aged male was discovered in an open field on August 21st. A contact gun shot wound with muzzle stamp was observed in the right temple area of the head with an exit wound seen behind the left ear. A 1991A Model Colt was seen lying on the ground beside the body. The body was removed to the Montana State Crime Lab where examination by the forensic pathologist suggested at least 24 to 48 hours postmortem due to drying of the tips of the ears and the fingers. Full rigor had been present when the remains were discovered, but rigor had passed by the 22nd when the autopsy was conducted. Investigation on the decedent's activities prior to death showed his last contact to be with the estranged wife. The wife received a phone call from the decedent at approximately 10 PM on August 19. There was a muffled noise in the background which could have been a gun shot. A cell phone was found in the pocket of the decedent. The forensic pathologist recognized the noticeable absence of fly eggs or larvae which should have been present with a body laying in an open, outdoor environment during summer for two days. Temperature data indicated daily highs for the two day period (August 20 and 21) when the blow flies should have colonized the remains were 74° and 76°F respectively. These daily highs are well above the 50°F lower limit threshold necessary for flight and egg laying activity. During body recovery, it was noted that there was a very high population of grasshoppers on the body. Artifacts of the skin were seen on the remains where it was suspected that insect feeding had taken place. These feeding areas were most likely the result of grasshoppers, due to the absence of other insect taxa (kinds). The absence of fly eggs and larvae were due, most likely, to the presence of high numbers of grasshoppers disturbing the female flies from depositing their eggs. This case is important in its documentation of high numbers of grasshoppers disturbing the blow flies from their normal egg deposition behavior and creating a delay of colonization for at least a two day interval if not longer. An explanation of a delay in colonization, as a result of high populations of grasshoppers, could have a major impact on the outcome of a death investigation.

Time of Death, Delayed Oviposition, Grasshopper

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