

COUNTY OF Johnston)
STATE OF NORTH CAROLINA)

STATEMENT OF DR. JAMES J. ARENDS

1. My name is Dr. James J. Arends, consulting entomologist in this case. In 1979, I earned a Masters of Science in Entomology from Oklahoma State University. In 1981, I received my Doctorate in Entomology from Oklahoma State University. From 1993-1995, I was on faculty at North Carolina State University a professor in the Department of Entomology, and Department of Microbiology, Pathology, and Parasitology in the School of Veterinary Medicine. I have been an expert witness in over fifty cases involving fly, odor or beetle pest issues. I have been an expert witness in thirty-seven cases in which murder or determination time or location of death was an issue.
2. I have been informed that the State accepts the January entomological report of Dael Morris "as accurate, true, and correct." In her report, Ms. Morris identified *C. cadaverina* as the blow fly species that colonized Ms. Trotter's body. Ms. Morris also concluded that *C. cadaverina* colonized Ms. Trotter's body no sooner than December 18, 1998. It is my understanding that the State does not contest Ms. Morris's identification of the colonizing species, *C. cadaverina*, and "accepts the findings of Ms. Morris's report on their face."
3. I have reviewed Ms. Morris report and data on which it depends, including genetic identification of *C. cadaverina* and hourly temperature data. I have also reviewed the report of the pathological examination of Ms. Trotter's body conducted by Dr. Joyce M. Carter, crime scene photographs of the body of Melissa Trotter, autopsy photographs of Ms. Trotter's body, Montgomery County Sheriff Department reports on the crime scene investigation; and the trial testimony of Dr. Carter in which Dr. Carter provides the

opinion that the body of Ms. Trotter, which was recovered on January 2, 1999, was deposited in the San Jacinto National Forest twenty-five days earlier on December 8, 1998.

4. I have been asked to provide an opinion regarding an explanation for the entomological evidence reported by Ms. Morris, which I understand the State has advanced, namely:

Mr. Swearingen left Ms. Trotter's body in the woods on December 8, 1998, but ovipositing by blow-flies did not occur until December 18, 1998, in this case because temperature conditions from December 8, 1998 to December 18, 1998, prevented egg deposition.

For the following reasons, the State's explanation is not supported by the forensic evidence in this case.

5. Daytime temperatures rose above the 12 C° (= approximately 50° F) on December 8, 9, and 10, 1998 and again on December 14, 15, 16, and 17, 1998. Hence, ambient air temperatures permitted movement and egg laying during portions of the day. Furthermore, if there were a reason that flies would have been close to the body, more fly activity would be expected.

6. Crime scene reports indicate that deer remains were found in the immediate area due to hunting activity by humans. Deer offal would have been a source of active blow flies as long as weather permitted. Data from the National Oceanographic and Atmospheric Administration ("NOAA") shows that temperatures, in Fahrenheit, beginning December 1 and ending December 11, 1998, were as follows:

Date	1	2	3	4	5	6	7	8	9	10	11
Max	76	78	76	81	80	83	79	79	57	58	46
Min	57	64	67	70	65	65	47	44	48	44	43

Conditions such as these – offal and warm temperatures – are conducive to increasing populations of blow-flies. Based on this information, on or about December 8 – 11, 1998, populations of those blow-fly species that are commonly found in the area would have been sufficient to provide a source of female flies ready to oviposit and colonize a body left in the open that had an open wound (stab wound as reported by the Medical Examiner, Joye M. Carter, in trial testimony).

7. Review of report from the Texas extension entomology service on submission of flies for identification from 1992 through 2002, show that the flies that occur most frequently in the area where the body of Ms. Trotter was recovered are *Cochliomyia macellaria* the secondary screw worm and *Phaenicia sericata*. Both species find bodies swiftly and readily colonize a fresh body. I would have expected both species present in significant numbers in the vicinity of the crime scene on December 8-11, 1998, under the conditions indicated by temperature data and crime scene reports (based upon reports from DNR of the area being used to dispose of deer cleaning, hides etc), and would have been readily attracted to a wound or body openings at that time. However, neither species was identified from the hundreds of insect samples Ms. Morris says were present in the evidence the State released to her as would be expected if Ms. Trotter's body had been left in the woods on December 8, 1998, as the State maintains.

8. *C. cadaverina*, the blow fly species that the State concedes colonized Ms. Trotter's body, is primarily a northern species. Its range extends into Texas, but it is not a species commonly found in the State. Review of the Texas extension services data from 1992 through 2002, shows that *C. cadaverina* shows up as a species submitted for identification only a single time, whereas *Cochliomyia* and *Phaenicia* were submitted in

the majority of blow fly submissions for identification. *C. cadaverina* is prevalent under fall conditions; however, wooded areas are not the preferred habitat of this species. It is primarily found indoors. It is extremely unlikely therefore that this species would have colonized Ms. Trotter's body rather than blow-flies common to rural Texas, (San Jacinto National Forest) if the body had been left in the woods beginning December 8, 1998 as the State contends.

9. The theory that the body was left in the woods on December 8, 1998, date and colonized by *C. cadaverina* ten days later is not supported by the entomological evidence. The probability of this hypothesis being true is, in fact, extremely low. Instead, the entomological evidence points to death in a different location with body placement at the site at a date later than December 8, 1998.

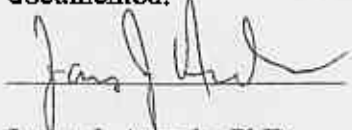
10. Other evidence relevant to a forensic entomological opinion detracts from the State's theory. According to crime scene investigators, Ms. Trotter's body was found with shirt and bra pushed up exposing the torso and breasts. However, scavenging of these regions of the body is not documented in crime scene reports, autopsy reports or photographically. It is highly unusual, in my experience, for a body not to exhibit signs of significant scavenging if left in remote wooded areas, such as the San Jacinto National Forest, for a period as extensive as 25 days. While the autopsy report indicates some animal activity in the head and neck region, this is comparatively minor. Structures, such as the hyoid bone were found intact, in the area subject to scavenging, and the Medical Examiner indicated she could discern a wound consistent with a man made incision. Substantial scavenging would have obliterated such evidence. It is very common to find near to complete skeletonization, and bones scattered over a wide area by scavengers, in

cases where remains of missing persons are not recovered for significant periods of time after being left in locations such as the location in the instant case.

11. Finally, as indicated in my statement dated January 19, 2007, the Medical Examiner's description of internal organs indicated substantially less autolysis than would be expected if Ms. Totter's body had been exposed in the San Jacinto Forest as soon as December 8-11, 1998. The gram weights of internal organs reported by autopsy show only at most a 30% reduction in weight due to dehydration which is inconsistent with exposure in the San Jacinto National Forest from December 11, 1998, to January 2, 1999, under temperature conditions indicated by NOAA data.

12. The State's suggestion that training as a pathologist is necessary in order to comment on organ autolysis and dehydration is mistaken. Familiarity with these indicators is important in forensic specialties besides pathology, including forensic anthropology and forensic entomology. For example, there is a succession of parasitical activity, with certain species colonizing corpses after others. The succession of fauna and flora to which a body is host during the process of decay is dictated by mechanical and chemical processes. Succeeding organisms require breakdown of organic material, which is accomplished in part through the activity of earlier parasites, into media that they can consume and reproduce in. Familiarity with the type and rates of change that organs and tissues undergo *post mortem* is frequently a prerequisite for providing a competent expert opinions based upon parasite activity. To understand the changes that tissues and organs undergo one must understand basic human anatomy, including the basic properties tissues and organs have in a normal or healthy state.

13. The State's contention that at Swearingen's trial in June of 2000, "forensic entomology was not a common investigatory tool at the time" is also mistaken. The earliest application of entomology in forensic science is often quoted as cases by Yovanovitch (1888), however Linnaeus (1767) is quoted "three flies consume the corpse of a horse as quickly as a lion did". Classic work in the field was by Megnin (1887, 1884) but the bulk of published cases, techniques and scientific methods were completed from 1921 through present day scientific literature. Much of the current (last 20 years) literature has been done in conjunction with forensic anthropologists, most noted being the body farm in Knoxville, TN. where not only forensic anthropology information could be developed, but the faunal succession of arthropods on cadaver could be studied and documented.



James J. Arends, PhD

Before me on this 26 day of March 2007, personally appeared Dr. James J. Arends who upon being deposed on his oath stated that, to the best of his knowledge, the foregoing statements are true and correct.



Notary Public

My commission expires: 10/9/2010