

GRADUATE SEMINAR ANNOUNCEMENT
BIOLOGY PROGRAM
DEPARTMENT OF LIFE SCIENCES
TEXAS A&M UNIVERSITY – CORPUS CHRISTI

SUBJECT: The Application of Pulsed-Field Gel Electrophoresis to Determine Sources of Fecal Contamination in Mission and Aransas Rivers, Texas.

SPEAKER: Margaret “Maggie” K. Spoo

DATE: July 10, 2009

TIME: 10:00 a.m.

PLACE: Harte Research Institute, Room 127

ABSTRACT

Fecal contamination of water resources is a major hazard to water quality and is the most widespread source of pollutants in surface waters. Human exposure to fecal contamination of recreational waters can result in illness. Fecal contamination can also force the closure of recreational waters, thus impacting the economy. The 2004 Texas Water Quality Inventory and 303(d) list designated the tidal portions of the Mission and Aransas Rivers in southeast Texas as impaired for bacteria non-point sources and do not meet water quality standards. These waters flow into Copano Bay where important oyster harvesting beds are located, which are frequently closed due to high levels of fecal contamination. The purpose of this study was to determine the source of *Escherichia coli*, a fecal indicator, isolated from these waters using the DNA fingerprinting method of Pulsed-Field Gel Electrophoresis (PFGE). A known source library of DNA banding patterns of *E. coli* isolates from cow, duck, human sewage, feral hog, and horse was developed to compare with unknown source isolate DNA banding patterns using an algorithm. Analysis revealed that sources of fecal pollution included human sewage as the largest source contributor followed by duck, horse, and cow respectively. Feral hog was not a significant contributor to fecal pollution, though a larger known source library would be needed. The method of PFGE is extremely sensitive to genetic differences and has been successful in assessing sources of fecal contamination in Mission and Aransas Rivers, Texas.