Dr. Jeanette Wyneken recently received a $4,200 award from the National Save the Sea Turtle Foundation to support her studies on the factors determining sex in marine turtles. A series of these studies designed to understand variation sex ratios in these species, which have environmentally determined sex rather than gender directed by chromosomes, began several years ago. Most recently, Dr. Wyneken has been mentoring a senior undergraduate student, Ms. Alexandra Lolavar, who plans to complete an Honors thesis based upon an experiment she is doing under Dr. Wyneken's supervision.

In sea turtles (and most reptiles), sex is determined by physical conditions inside the nest during embryonic development. Until recently, nest temperature was considered the most important factor but that finding was based primarily upon laboratory studies where temperature was kept constant. At the beach, however, physical conditions (temperature, humidity) fluctuate with implications that were not well understood. In addition, scientists were concerned that because of global warming, sex ratios of marine turtles maybe abnormally skewed toward too many females and not enough males.

Wyneken spent several years identifying sex ratios based upon numbers of male and female turtles produced in nests on Florida beaches. Because nest temperatures in Florida are warm, the expectation was that females should predominate. That was, for the most part true but Wyneken also found many exceptions, even when nest temperatures were quite warm. Was humidity also important? That finding prompted an experiment designed by Ms. Lolavar and Dr. Wyneken to see if temperature and humidity interacted to determine the sex of marine turtles.

The two scientists spent the summer incubating hundreds of loggerhead eggs under different laboratory humidity regimes. Almost all of the eggs hatched into turtles that then were reared at the Gumbo Limbo Marine Laboratory to a size large enough to be sexed. That sexing is now in progress, using a laparoscopic technique developed by Dr. Wyneken. Sex is identified with 100% accuracy, the turtles recover from laparoscopic exam in a few days, and all are then released in the ocean.

The funds received from the Foundation are being used to care for and grow the turtles, and to sex each loggerhead that participated in the grand experiment. The turtles and updates on the study can be seen at the FAU Marine Lab Visitor's gallery at Gumbo Limbo Nature Center. We should know the results soon. Stay tuned!