3-2009

Use of Pop-Up Satellite Archival Tags to Determine Habitat utilization of sailfish (Istiophorus platypterus) in the Southern Gulf of Mexico.

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The local mixed layer depth. The maximum depths of the short-duration movements are also well below the measured depth distributions and individual movement patterns are examined, including differences in habitat utilization in relation to addresses two questions: (1) Does temperature influence the feeding behavior and prey-capture kinematics of the invasive first study to investigate the effect of temperature on the prey-capture kinematics through ontogeny in an invasive species. It addresses two questions: (1) Does temperature influence the feeding behavior and prey-capture kinematics of the invasive pike killifish, Belonesox belizanus? and (2) Does the effect of temperature in this species vary through ontogeny? To address these questions, three individuals in each size class, neonate (< 25 mm standard length [SL]), juvenile (25 mm < SL > 55 mm) and adults (> 55 mm SL)] were filmed in 45 L experimental tanks feeding on adult Artemia sp. or Gambusia holbrooki at two different temperature regimes, 20°C and 30°C. Each individual was filmed three times at each temperature, yielding 54 films analyzed. Prey-capture velocity, peak gape velocity, and Q10 were compared among life-history stages using ANOVA. At both temperature regimes, juveniles significantly finished their feeding bout (i.e., greatest prey-capture velocity) and reached peak gape fastest relative to the neonates and adults. The Q10 values were 1.167-1.342 for prey-capture velocity and 1.247-1.425 for peak gape velocity, but were not significantly different among life-history stages. Results reveal that the effect of temperature on prey-capture kinematics and feeding behavior is stage-specific. This study suggests that in examining how temperature influences the rate and range of spread of an exotic species in Florida one must address the different stages in the life history of the target species.

BIO-11 Stage-specific effects of temperature on the feeding behavior of the invasive Pike Killifish in Florida. J.R. KERFOOT and R.G. TURINGAN. Department of Biology, Florida Institute of Technology, 150 W. Univ. Blvd., Melbourne, FL 32901. The ability of an invasive fish to utilize an available food resource influences its growth and subsequent survival in an invaded ecosystem. It is hypothesized that feeding is affected by ambient temperature. This is the first study to investigate the effect of temperature on the prey-capture kinematics through ontogeny in an invasive species. It addresses two questions: (1) Does temperature influence the feeding behavior and prey-capture kinematics of the invasive pike killifish, Belonesox belizanus? and (2) Does the effect of temperature in this species vary through ontogeny? To address these questions, three individuals in each size class, neonate (< 25 mm standard length [SL]), juvenile (25 mm < SL > 55 mm) and adults (> 55 mm SL)] were filmed in 45 L experimental tanks feeding on adult Artemia sp. or Gambusia holbrooki at two different temperature regimes, 20°C and 30°C. Each individual was filmed three times at each temperature, yielding 54 films analyzed. Prey-capture velocity, peak gape velocity, and Q10 were compared among life-history stages using ANOVA. At both temperature regimes, juveniles significantly finished their feeding bout (i.e., greatest prey-capture velocity) and reached peak gape fastest relative to the neonates and adults. The Q10 values were 1.167-1.342 for prey-capture velocity and 1.247-1.425 for peak gape velocity, but were not significantly different among life-history stages. Results reveal that the effect of temperature on prey-capture kinematics and feeding behavior is stage-specific. This study suggests that in examining how temperature influences the rate and range of spread of an exotic species in Florida one must address the different stages in the life history of the target species.

BIO-12 Gastrointestinal parasites of selected tropical pelagic elasmobranchs and mesopelagic teleosts. M. TAYLOR (1), H. LAUBACH (2), and D.W. KERSTETTER (1). (1) Nova Southeastern University Oceanographic Center 8000 North Ocean Drive Dania Beach, FL 33004, (2) College of Medical Sciences, 3200 South University Drive, Ft. Lauderdale, FL 33328. Natural mortality is a poorly known aspect of fisheries biology, despite its importance in stock assessments and population analysis. Of the many potential sources of mortality and morbidity in fishes, the effects of gastrointestinal parasites is perhaps the least studied. Parasite loads in the elasmobranch spiral valve and teleost fish gastrointestinal tract may both inhibit nutrient uptake and stimulate an inflammatory response in the host. The gastrointestinal parasites of several tropical pelagic elasmobranchs including dusky, silky, and night sharks (Carcharinus obscurus, C. falciformis, and C. signatus), the pelagic stingray (Pteroplatytrygon violacea) and the mesopelagic fishes snake mackerel (Gempylus serpens), oilfish (Ruvettus pretiosus), and escolar (Lepidocybium flavobrunneum) are described from the South Atlantic Bight in the western North Atlantic. Species found to date include nematodes, trematodes and cestodes, and their potential transmission vectors are being explored. Total gastrointestinal parasite loads are compared against the size (length and weight) of the host, showing no relationship for pelagic elasmobranchs and only a weak relationship for mesopelagic teleosts. To date, 60 elasmobranch specimens have been sampled with a yield of approximately five parasites and approximately 20 mesopelagic teleosts have been sampled, yielding approximately 80 total parasites, the majority being nematodes.

BIO-13 Use of pop-up satellite archival tags to determine habitat utilization of sailfish (Istiophorus platypterus) in the southern Gulf of Mexico. D.W. KERSTETTER. Nova Southeastern University Oceanographic Center, 8000 N. Ocean Dr., Dania Beach, FL 33304. To determine habitat utilization of sailfish in the southern Gulf of Mexico and Florida Straits, 18 pop-up satellite archival tags were deployed on animals incidentally captured during regular commercial pelagic longline fishing operations targeting swordfish and tunas. Tags were programmed for a 10-day deployment period, with point measurements of depth, temperature, and light level every 90 seconds. A total of 17 tags transmitted following the full deployment period, transmitting 25-82% of the archived data; three tags were also physically returned, allowing for 100% recovery of the archived data. The data recorded by the tags showed repeated short-duration movements throughout the deployment period to depths greater than 75 m for less than five minutes each, presumably for feeding. Diel differences in depth distributions and individual movement patterns are examined, including differences in habitat utilization in relation to the local mixed layer depth. The maximum depths of the short-duration movements are also well below the measured
BIO-14  The potential role of ALK-1 growth-factor receptor in angiogenesis.  I. DUFFY (1), A. CURRY (1) and J. HAWKER (2).  (1) Dept. of Math and Science, Saint Leo University, PO BOX 6665, Saint Leo, FL 33574, (2) Dept. of Chemistry and Biochemistry, Florida State University, Tallahassee, FL 32306.  Cancer and heart disease are amongst the leading causes of death in the USA.  To become malignant tumors must induce a new blood vessel supply, i.e., tumor angiogenesis, for tumor growth and metastasis.  Blood flow through the heart is diminished, often fatally, in patients with heart disease, but may be restored by augmenting angiogenesis, or new blood vessel formation, in the heart.  Growth factors and their receptors may coordinately regulate different stages of angiogenesis. Activin-Like Receptor Kinase 1(ALK-1), a type I Ser/Thr kinase receptor of the transforming growth factor beta (TGFβ) family, which is predominantly expressed in endothelial cells (EC) and blood vessels, may play a role in blood vessel formation and structure.  Our aims are to show that ALK-1 is expressed in coronary venular endothelial cells (CVEC) and that TGFβ signals through ALK-1, to show that ALK-1 is required for angiogenesis, and to identify the genes regulated by ALK-1 in endothelial cells.

BIO-15  Behavioral and morphological changes of mosquito larvae when introduced to Cylindrospermopsis raciborskii (CYN) cells.  N.S. HELAL and D. STOCK.  Department of Biology, Stetson University, 421 North Woodland Blvd, Deland, Fl 32723.  The effect of CYN on smaller organisms such as mosquito larvae (Anopheles culex) has not yet been examined.  We hypothesized that the cyanobacteria would have a fatal effect on the larvae with the largest number of deaths being in the group with the highest concentration of CYN.  The CYN we used was collected from Lake Dora in Mount Dora, Florida while the mosquito larvae were collected in DeLand and Port Orange, Fl.  Three experimental groups were used in which different cell concentrations of CYN were placed in water (106, 104, 102 cells/ml).  Our control was dechlorinated water without CYN cells.  After placing the larvae into the water containing CYN we observed behavioral changes over a three day period.  The behaviors observed were the number of movements in 30 seconds and the time required for the larvae to float from the bottom of the dish to the surface of the water.  On the third day we recorded the behavioral responses as well as morphological changes in head width and body length of the larvae.  Death occurred in both the experimental and control groups.  Based on this result we concluded that CYN does not appear to have an effect on the larvae.  However, this result may be due to the fact that the sample size was only 15 larvae per experimental group.  We feel increasing the sample size will give us a different result, in that we would be able to accept our hypothesis.  Further experimentation will be conducted.

BIO-16  Pollen as a tool for tracking stable flies.  D.M. JARZEN (1) and J.A. HOGSETTE (2).  (1) Paleobotany and Palynology Laboratory, Florida Museum of Natural History, University of Florida, Gainesville, Florida 32611-7800, (2) U.S. Department of Agriculture, Agricultural Research Service, Center for Medical, Agricultural, and Veterinary Entomology, Gainesville, Florida 32608.  The stable fly, (Stomoxys calcitrans L.), is an important pest of humans and livestock in many parts of the world.  Its immature stages develop in decaying vegetation, e.g. hay, silage, feed, mulch and grass clippings, in agricultural and urban areas.  Although both sexes are obligate blood feeders, this fly uses nectar from flowers as an energy source for local and long distance flight.  Pollen from these flowers becomes attached to the nectar-feeding flies, which thereby indicates which herbaceous plants or trees the flies have visited and, at times, the route used by the flies to arrive at their point of capture.  Stable flies collected on sticky traps at the University of Florida Horse Teaching Unit (HTU) in March, 2008, were examined for the presence of pollen adhering to their exoskeletons.  The pollen was recovered and identified as Carolina willow, Salix caroliniana Michaux 1803.  This small shrub or tree is common throughout Florida primarily in wetland areas.  Carolina willow was blooming at the HTU when the flies were captured, so it was impossible to determine whether the pollen on the flies was from on-site Carolina willows or from the many Carolina willows on Paynes Prairie to the south.

BIO-17  Effects of seed dispersal and proximity to other vegetation on the distribution of an endangered, endemic perennial, Asclepias curtissii.  P. MONDO and C. C. BENNINGTON.  Department of Biology, Stetson University, 421 N. Woodland Blvd, DeLand, FL 32723.  Curtis' milkweed (Asclepias curtissii) is an endangered perennial herbaceous plant endemic to Florida scrub habitat.  Although many scrub peripherals are gap specialists, A. curtissii is often found growing in close association with woody vegetation.  We asked whether seedlings benefit from growing in the shade of larger plants.  One hundred forty-four seedlings were planted into a total of 12 3 × 2 m fenced plots within Lyonia Preserve, Deltona, FL.