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Using a geographic information system (GIS) to distinguish and predict patterns of distribution among Alabama fishes

Alabama's rich diversity of freshwater fish is unsurpassed by that of any other state. Almost one third of the described and undescribed species of the North American fish fauna occur within its boundaries. Geographic Information Systems (GIS) offer a powerful new method of distinguishing and analyzing trends in these fish distributions employing a computer based system designed to collect, store, analyze, and display spatially referenced data. A spatial database is compiled in ARC/INFO (Environmental Systems Research Institute) containing landscape coverages derived from USGS and Alabama Geological Survey maps. These landscape features are then analyzed using an overlay function with species distribution maps derived from field data. Biogeographical trends are then identified for single species or for groups of species. This database is also used to identify species rich habitats, predict localities of rare species, and develop models that can aid in management and conservation practices. (Session 33, Sunday June 29, HUB 209, 11:00)

2.94
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Validity of the Greek ninespine stickleback, *Pungitius hellenicus*, with comments on the other species

The validity of *Pungitius hellenicus*, a ninespine stickleback from Greece, is confirmed in a morphological study of specimens from throughout the range of the genus *Pungitius*. We recognize three valid species in this genus; *P. hellenicus*, *P. platygaster*, and *P. pungitius*, with five subspecies; *P. p. pungitius*, *P. p. laevis*, *P. p. sinensis*, *P. p. tymensis* and *P. p. occidentalis*. Three characters distinguish *P. hellenicus* from both *P. pungitius* and *P. platygaster*: reduced ectocoracoid, fewer dorsal spines (2-6 vs. usually 7-12), and all dorsal spines vertically arranged (vs. some being inclined). The absence of a caudal peduncle keel further differentiates *P. hellenicus* from *P. pungitius*, and the absence of the large lateral scutes and a complete pelvic girdle differentiates *P. hellenicus* from *P. platygaster*. (Session 5, Friday June 27, HUB 310, 3:30)

***KELLY, DENNIS, KROHMER, R. W.**

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Trematoda parasitism in the Canadian red-sided garter snake (*Thamnophis sirtalis parietalis*)

Parasitic infections in garter snakes, (*Thamnophis spp.*) appears to be a natural occurrence due to their habitat and feeding behavior. Furthermore, several species of digenetic trematodes have been found to cause respiratory infections in garter snakes. The Canadian red-sided garter snake (*Thamnophis sirtalis parietalis*) appears to be parasitized by a particular species from the family Plagiorchiidae. This study details the progression from apparently healthy animals, those showing no signs of infection, to the heavily infected individuals. Our investigation examined the abundance of infecting organisms in conjunction with an apparent parasite tissue preference. In addition, a comparative study of the pathology of the infected tissues was conducted to detail the progression and effects of this particular trematode parasitism. (Poster Session 2, Sunday 8-5, Monday 8-12)

***KENNETT, ROD, CHRISTIAN, K., BEDFORD, G.**

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Underwater nesting by the Australian freshwater turtle, *Chelodina rugosa*: Prolonged immersion in water reduces incubation period and hatchling size

The Northern Long-necked Turtle, *Chelodina rugosa*, occupies seasonally ephemeral freshwater wetlands in the wet-dry tropics of northern Australia. The nesting strategy of *C. rugosa* is unique in the world in that it does not nest on dry ground but instead digs its nest and lays its eggs underwater. This unusual behaviour is believed to be an adaptive response to the highly seasonal nature of its aquatic habitat. Nesting occurs during the annual wet season when there is extensive flooding and the availability of dry nest sites is restricted and unpredictable. Previous laboratory studies demonstrated that eggs can survive long periods of immersion but that physiological changes occur within the egg. The present study indicates that prolonged egg immersion has "costs" in terms of reduced hatchling size. Egg survival was not influenced by duration of immersion but both time to hatching and the variance in time to hatching were significantly less in eggs immersed for 10 weeks compared with eggs immersed for 2 and 6 weeks and a control group. The ecological implications of these findings are discussed. (Session 7, Friday June 27, HUB auditorium, 4:45)

***KENT, DANIEL I., FISHER, JOHN D., MARLIAVE, JEFFREY B.**

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Interspecific nesting in marine fishes: Spawning of the spinynose sculpin *Asemichthys taylori*, on the eggs of the buffalo sculpin, *Enophrys bison*

Egg masses of the spinynose sculpin, *Asemichthys taylori*, were found laid on top of the egg masses of the buffalo sculpin, *Enophrys bison*. Positive identification of spinynose sculpin eggs and new description of their larvae were achieved by laboratory rearing from hatching through to juvenile stages. Buffalo sculpin egg masses occurred in clusters which were guarded