

Poster #9

Altered Neonatal Development and Endocrine Function in American Alligators (*Alligator mississippiensis*) from a Contaminated Lake in Florida

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Lake Apopka is a large eutrophic lake in north central Florida that has been subject to nearly 40 years of intense agricultural and municipal influences. The lake is adjacent to the Tower Chemical EPA superfund site where a pesticide spill consisting largely of dicofol, DDT, and other organochlorines occurred in 1980. Altered circulating hormone concentrations, *in vitro* steroidogenesis, and reduced phallus size have been reported in juvenile alligators from Lake Apopka. It was hypothesized that these abnormalities are the result of organizational disruptions during embryonic development. The purpose of this study was to compare several morphological and endocrine indices between hatchling alligators obtained from eggs collected from Lake Apopka and a reference site, Lake Woodruff National Wildlife Refuge (LWNWR). Hatchlings from LWNWR had greater total length, snout-vent length, and body mass and thyroid/body mass ratio. Lake Apopka hatchlings had greater spleen/body mass and liver/body mass ratios. Circulating plasma testosterone concentration was greater both in males and females from Lake Apopka when compared to hatchlings from LWNWR. Females from LWNWR exhibited higher levels of *in vitro* gonadal estradiol-17 synthesis. Estradiol production in males from both areas was near or below detection limits. Because eggs were incubated and the resulting hatchlings were maintained under controlled laboratory conditions, the developmental differences are likely the result of differential embryonic environments. The results of this study support the organizational disruption hypothesis. How long these differences persist-and to what extent they might impair successful reproduction-remains the subject of future investigations.