



## *Patuxent Science Meeting 2004 Poster Abstract*

---

### **Detecting warning signs of trouble: using capture-recapture modeling to uncover changes in population dynamics leading to declines**

Jeffrey A. Spindel, James E. Nichols, William L. Kendall, James E. Hines, Jeff S. Hatfield, and Ian C.T. Nisbet

An intensive mark-recapture/resighting program has been carried out on the Roseate Terns *Sterna dougallii* nesting at Falkner Island, Connecticut, USA since the late 1980s. Substantial losses of tern eggs and chicks to predation at this colony site began in 1996 when Black-crowned Night-Herons *Nycticorax nycticorax* started nocturnal raids. This depredation has been a major factor in the reduction of productivity from about 1.0 chicks/pair during the 10 years before night-heron predation began to as low as about 0.2 chicks/pair in 2002. Capture-recapture modelling has revealed other effects on the population dynamics of Roseate Terns at this site, including a large reduction in the "development of residency" rates of first-time breeders, and a decline in the local "survival-and-fidelity" rates of experienced breeders, probably due to increased emigration rates.