

BIRD CONSERVATION

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FOREST BIRD SURVEY IN FINAL PHASE



The Housatonic River in Soubury, Ct . at dawn– the site of one of this year's forest bird surveys.

The eight year long *Forest Bird Survey of Southern New England* will reach its conclusion with this winter's surveys of southwestern Connecticut. Since beginning in 2001, the survey has covered all of Connecticut and Rhode Island.

The survey established 148 transects that sam-

pled 2,220 points. At the points, 11,100 habitat observations were made, as well as approximately 50,000 bird observations.

Unlike most other large scale studies, this project has eliminated the problem of variability in observer perception by employing a single observer–

BCR Director Dr. Robert Craig. The study also employs a sophisticated, state-of-the-art census procedure, the Variable Circular Plot, which accounts for differential detectability of bird species. Doing this is critical to producing accurate estimates of bird populations.

WHAT DETERMINES MARSH BIRD DIVERSITY?



The freshwater tidal marshes of Deep River, Ct. were one of the study sites for our investigations into what factors regulate marsh bird diversity.

“A research paper on our findings has now been produced”

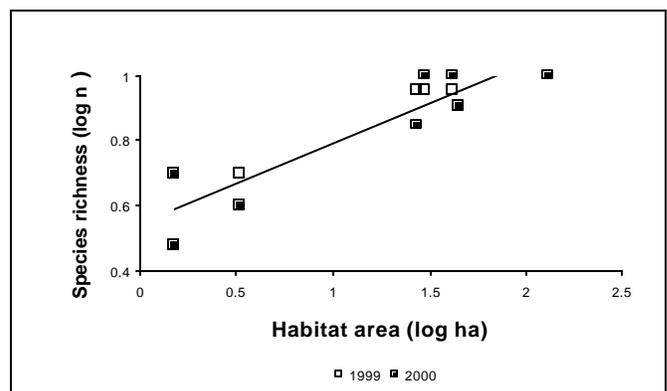
Our 1999-2000 study of bird diversity determinants in southern New England marshes has been “sitting on the shelf” while we completed work of national conservation policy (see publications at the BCR web site) and conducted the Forest Bird Survey of Southern New England.

As these projects have concluded, our attention has returned to our earlier efforts. A research paper detailing our findings has now been produced- *Determinants of Species-Area Relationships for Marsh-nesting Birds*. The paper appears in the latest issue

of the *Journal of Field Ornithology*, one of North America’s leading ornithological journal.

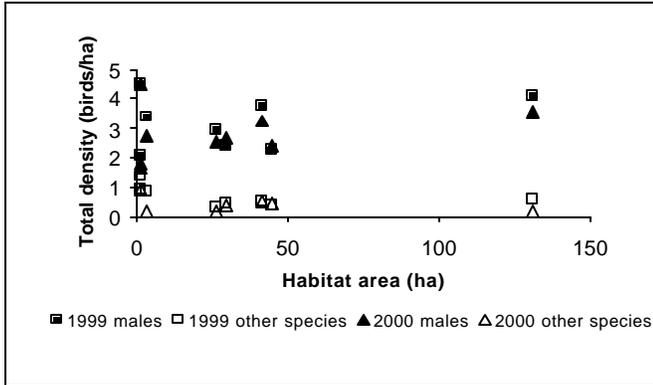
Following is the paper’s abstract:

To clarify the underlying causes of the species-area relationship in marsh-nesting birds, I focused on a single class of habitat-freshwater tidal marshes of the Connecticut River. I



The number of bird species present increases with marsh size.

RESULTS OF MARSH STUDY PUBLISHED



Marsh bird density shows no relationship with marsh area (density estimates for species detected via singing males are separated from those detected using other means).

studied eight marshes that differed in area, degree of isolation, mudflat cover, water cover, tidal regime and extent of individual plant communities, and measured these habitat variables on aerial infrared photos with ESRI Arcview 3.3 and Image Analysis software.

I surveyed bird populations by mapping the distribution of all birds in marshes under 5 ha and establishing 50 m radius plots in marshes over 5 ha. From surveys, I computed species richness, population densities and total populations.

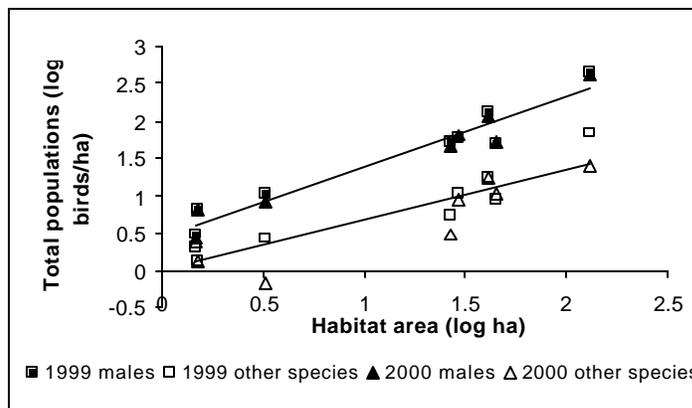
A strong, positive relationship occurred between species and area (SA) in the absence of a correlation between area and habitat heterogeneity, a confounding relationship in most species-

area studies. Other habitat variables were poor predictors of species richness.

The lack of a relationship between habitat and richness appeared to be a consequence of most vegetation types present not being sufficiently distinct for birds to differentially associate with them. Bird population density and area showed no

relationship, suggesting that habitat quality did not improve with marshes of increasing size, and species evenness declined with increasing richness, because greater richness was associated with the presence of more rare species. An association of richness specifically with area was indicated by accumulation at larger sites of rarer species, species with greater total populations and species with a minimum threshold area for occurrence.

The findings are consistent with theoretical predictions that, as individuals are added to a community, more rare species are present, and larger populations are less prone to local extinction.

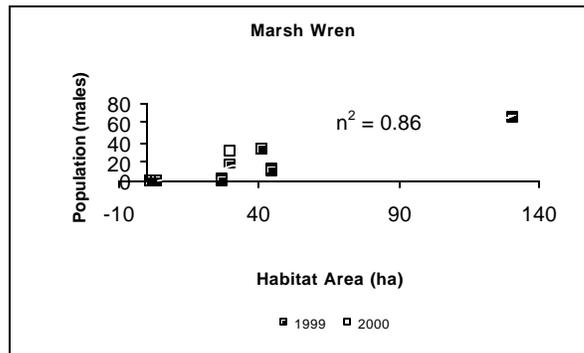


Total marsh bird populations increase as marsh area increases.

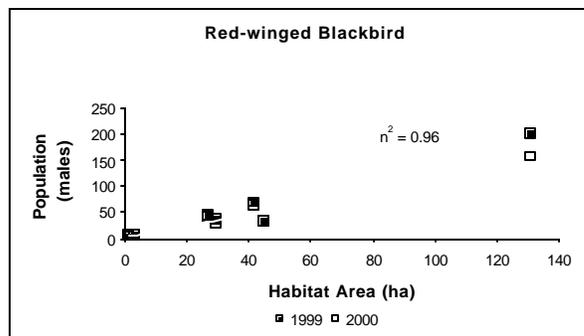
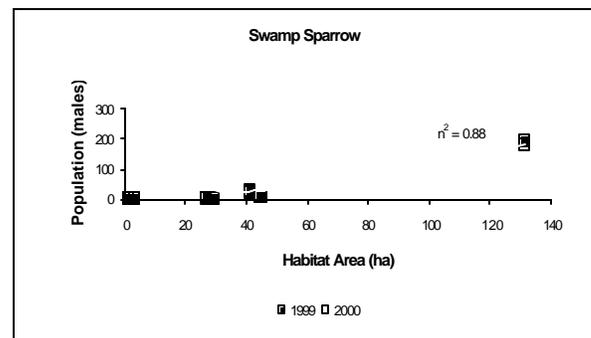
“An association of richness specifically with area was indicated by accumulation at larger sites of rarer species, species with greater total populations and species with a minimum threshold area for occurrence.”

POPULATIONS OF MARSH BIRD SPECIES INCREASE WITH MARSH SIZE

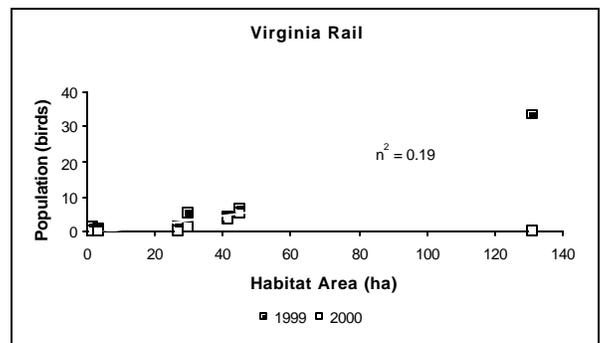
The graphs opposite provide a view of how populations of individual species are affected by increases in marsh size.



Not surprisingly, many (but not all) bird species have larger populations at larger marshes. These large populations are more resistant to local extirpation than are small populations at small marshes.



The fate of a relatively small population makes this point. The Virginia Rail was eliminated at both large and small marshes by late spring flooding in 2000. It persisted only where the effects of flooding were minimal. This same phenomenon has been observed during other years of spring flooding.



VIDEO FOCUS ON FLOODPLAINS



The Connecticut River floodplain in Cromwell, Ct. is a focus of the video.

Production of a video series aimed at educating the public about New England habitats has reached the editing stage. The first episode focuses on the floodplains of the Connecticut and Blackstone Rivers. Graphics are being developed to compliment existing footage.

In our floodplain production, we examine the role of the physical environment in shaping the biological environment. We explore zonation in plant communities that develops from differing floodplain soils and micro-elevations.

Along the Blackstone River,

we also follow students from Uxbridge High School in Uxbridge, Mass. as they measure characteristics of the floodplain forest. From

their measurements, they determine the structure of the present community and predict future changes in community composition.



Students compare the canopy and understory of floodplain trees on the Blackstone River to determine the direction of forest succession.

“We examine the role of the physical environment in shaping the biological environment.”

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