Assessing dietary changes of bats in the wake of White-nose Syndrome

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Introduction
• White-nose Syndrome has caused dramatic mortality in eastern North America’s bats
• The resulting shifts in bat community structure may be accompanied by dietary shifts
• Lepidoptera are a core resource for most North American bats
• Energetic profitability may vary among Lepidopteran species
• Prey consumption likely relates to trends in prey nutritive quality

Calorimetry Methods
• Malacosoma americanum and Trichoplusia ni were reared in the laboratory
• Halysidota tessellaris and Iridopsis sp. were field-collected on an illuminated substrate
• Finely ground moth samples (ca. 250 mg) were combusted in a bomb calorimeter to determine the gross heat generated (calories / gram)

Molecular Analysis Methods
• Bats are captured at the entrance of Colossal Cave in the fall and spring
• Fecal material from captured bats is preserved in 95% ethanol
• Prey DNA will be extracted from fecal material, amplified, and sequenced
• Sequenced prey DNA will be identified to species using reference arthropod sequences

Calorimetry Results
• Kruskal-Wallis tests were used to make pairwise comparisons
• Differences in caloric yield between M. americanum and Iridopsis sp. were significant (P = 0.03)
• No differences in caloric yields of
  - T. ni and M. americanum
  - T. ni and H. tessellaris
  - M. americanum and H. tessellaris
  - H. tessellaris and Iridopsis sp.

Discussion and Future Work
• Results indicate that a variety of Lepidoptera may be of similar prey quality; future research will include additional insect orders
• Molecular analyses of bat diets are ongoing; results will be compared to dietary data collected prior to the arrival of WNS

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Myotis bats are highly affected by White-nose Syndrome

Bats consume a variety of Lepidoptera, including Dryocampa rubicunda

Illuminated substrate used to attract Lepidoptera

Processing a captured bat at Colossal Cave

Bats are captured at the entrance of Colossal Cave in the fall and spring.