National Defense Center for Energy and Environment

IMPROVED EFFICIENCY OF ARTIFICIAL ROOSTS AS A MANAGEMENT AND MITIGATION TOOL FOR THREATENED AND ENDANGERED BATS

PROJECT OVERVIEW

Artificial roosts are widely used on DoD properties to aid bat populations (e.g., by providing habitat) or to relocate animals away from areas of conflict (e.g., buildings). However, this increasingly popular conservation tool can unintentionally pose a risk to bat safety if ill-designed or poorly placed, presenting a challenge for military natural resource managers tasked with managing federally protected species. Here, we evaluated the suitability of different artificial roost designs for housing bats and the utility of acoustic lure technology for actively recruiting bats to colonize roosts to improve the efficacy of this management tool.

BENEFITS

As consumers of nighttime insects, bats provide critical ecological and economic value, but many populations are declining. This project produced much needed guidance to aid military natural resource managers in implementing artificial roost technology and help navigate the abundance of largely untested options in the marketplace. We provide data-driven recommendations for specific roost designs deemed most suitable for housing bats, enabling the DoD to invest in artificial roosts proven to be safe and effective for imperiled species, thereby minimizing the likelihood of adverse outcomes. Installation-level adoption of this technology can occur for approximately $8K, with very low costs (<$1K) for monitoring and maintenance in out years.

Three of the artificial roost designs evaluated in this demonstration. A rocket box with external water jacket chamber (left) provides a more stable and suitable microclimate for bats than a standard rocket box (center) or chamber box (right).

PATH FORWARD

Guidance has been provided on the following topics: site selection; artificial roost construction, deployment, and monitoring for occupancy; acoustic lure operation; and temperature monitoring for roost suitability. Guidance materials include supply lists, costs, and recommendations for appropriate use. In-person technology transfer to DoD, federal, state, and NGO stakeholders occurred at two demonstration sites. We continue technology transfer in forthcoming scientific journal publications and conference presentations to natural resource practitioners.

DoD Executive Agent
Office of the Assistant Secretary of the Army for Installations, Energy, and Environment

FOR FURTHER INFORMATION

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http://www.denix.osd.mil/ndcee/home
Engineer Research and Development Center
https://www.erdc.usace.army.mil
University of Illinois at Urbana-Champaign
Tips for making bat boxes safer for bats:
https://wildlife.nres.illinois.edu/safer_bat_boxes/