

Red List status of Caribbean forest endemic birds: extinction risk and data bias

Eleanor Devenish-Nelson^{1,2}, Douglas Weidemann², Jason Townsend^{3,2} and Howard Nelson^{1,2}



¹Department of Biological Sciences, University of Chester; ²BirdsCaribbean; ³Department of Wildlife, Fish and Conservation Biology, University of California - Davis



Background

- Extinction prone species
 - Island endemics
 - Forest-dependent
- 171 Caribbean forest (regional) endemic birds
- 26% threatened with extinction
- 29% of threatened have active species management (IUCN data)







Management challenges

- Regional governments limited human and financial resources
- Accelerating loss and degradation of habitats from development
- Direct and indirect impacts of overexploitation
- Threat of climate change
- Limited published data on population status of species







Key Questions for Conservation Triage

- Are species that should get attention, getting attention?
- Are data we need to manage available and being published?
- What is the quality of data, if it exists at all?







Aims - Where are gaps in knowledge?

- Understanding extinction risk is key in triage of Caribbean endemics:
 - Is there life history bias in extinction risk and research effort?
 - Is research effort different for threatened species vs. nonthreatened endemics?



 What are conservation implications of existing data gaps?



Methods – predictors of extinction risk

- Life history predictors of extinction risk
 - Phylogenetic generalised least squares (PGLS)
- Response variables:
 - Extinction risk
- Explanatory variables:
 - Forest dependency (low, medium, high)
 - Mean clutch size
 - Mean body mass
 - Generation time (years)
 - Maximum elevation

Methods – Data bias and quality

- BirdLife (BL) Data Zone estimates of data quality
- Systematic review of Web of Knowledge and Journal of Caribbean Ornithology (1988-2016)
 - Research effort: N studies per species
- Data bias related to life history and taxonomic extinction risk
 - BL data quality of population trend estimate vs. RL status and order
 - Phylogenetic generalised linear mixed model (PGLMM) of research effort ~ life history traits
 - Expected vs. observed studies for threatened species per order

Results - Life history and extinction risk



• PGLS Best fitting model: Phylogenetic signal, $\lambda = 0.48$

BirdLife data quality of population trend





Data quality of population trend and RL status





BirdLife data quality of population trend vs order





Research effort by Extinction Risk

- Mean number of papers published per species, 1988-2016:
 - WoK: 6.02 ± 11.01 (n = 988);
 - JCO: 4.52 ± 4.88 (n= 742)



Kruskal Wallis: χ^2 = 5.85, df = 4, p = 0.21

Research effort – life history bias



Expected vs. Observed literature – order bias?

• Expected # studies given threatened endemic species per order







- High forest dependency predictor of extinction risk but not research effort
- Extinction risk not an indicator of research effort
 - but....
- Species with active species management more data and higher confidence in data
- Paucity of data for least concern species

Summary – what it means

• Traditional triage approach: the plight of common species



Rapid declines of common, widespread British moths provide evidence of an insect biodiversity crisis

Kelvin F. Conrad^{a,*}, Martin S. Warren^b, Richard Fox^b, Mark S. Parsons^a, Ian P. Woiwod^a ^aRothamsted Research, Plant and Invertebrate Ecology, West Common, Harpenden, Hertfordshire AL5 2JQ, UK ^bButterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP, UK

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Richard Inger ⊠, Richard Gregory, James P. Duffy, Iain Stott,

Petr Voříšek, Kevin J. Gaston

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Conservation Biology 🔌

Contributed Paper

Declines in Common, Widespread Butterflies in a Landscape under Intense Human Use

HANS VAN DYCK,* ARCO J. VAN STRIEN,† DIRK MAES,‡** AND CHRIS A. M. VAN SWAAY§**

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D.B. Lindenmayer*, J.T. Wood, L. McBurney, C. MacGregor, K. Youngentob, S.C. Banks

Fenner School of Environment and Society, The Australian National University, Canberra, ACT 0200, Australia



Summary – what it means

- Long-term monitoring population estimates, demography, impacts of conservation actions
- Role of BirdsCaribbean/JCO
 - Strength of regional journal small-scale studies, single site, distribution data [eBirdCaribbean]; Potential as data repository
 - Endemic Bird Festival
- Study limitations
 - Missing life history data for PGLS/PGLMM
 - Analysis of temporal change in RL status and population trend
 - Measure of unpublished literature and money spent on conservation

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- BirdsCaribbean
- Data sources: IUCN Red List; Birdlife Data Zone; Cornell Neotropical Birds Online; Handbook of the Birds of the World; Dunning, CRC handbook of avian body masses; Myhrvold, Amniote life-history database; BirdTree.org









