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Species Management Account

WOOD THRUSH (*Hylocichla mustelina*)

ORDER PASSERIFORMES – FAMILY TURDIDAE



THE INSTITUTE FOR BIRD POPULATIONS
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Distribution:

The geographic breeding range of the Wood Thrush occupies the eastern portion of the United States as far north as the Great Lakes Region excluding southern Florida. The winter range occupies lowland forests that extend from Mexico on the Atlantic slope, and from Oaxaca on the Pacific slope south to western Panama.



Preferred Habitat:

Wood Thrush breeds successfully in upland mature or older second-growth deciduous and mixed forests. Typically, there is a well developed understory, the soil is moist and the forest floor is open with decaying leaf litter. Although Wood Thrush will breed in small woodlots, higher productivity is associated with larger tracts of forest. However, population responses to forest patch size seems to regionally vary. Densely occupied winter habitat is typically the interior understory of mature tropical semi-evergreen, broad-leaved, and mixed palm forests below 1000m. This species is also found along forest edges, and in second-growth forests.



Wood Thrushes require decaying leaf litter for foraging

Conservation Status:

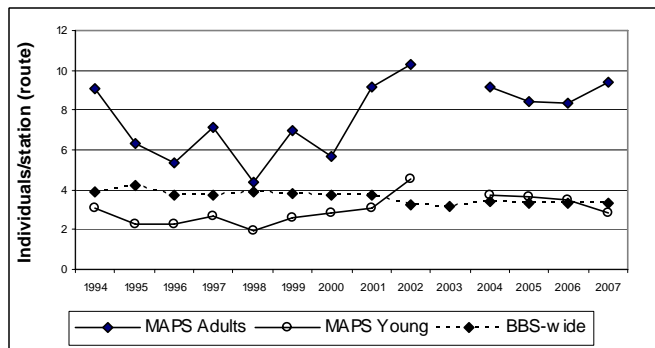
Wood Thrush is listed by the US Fish and Wildlife Service (FWS) as a Bird of Conservation Concern in Bird Conservation Regions 12, 14, 22, 23, 24, 25, 26, 27, 28, 29, 30 and USFWS Regions 2, 3, 4, and 6. Survey-wide Breeding Bird Survey data show significant decline (1966-2007). This decline is attributed to many factors including forest loss and fragmentation, Brown-headed Cowbird (*Molothrus ater*) parasitism; reduced understory due to White-tailed Deer over-population; and acid rain deposition that reduces canopy cover, calcium levels, arthropod densities, and ultimately egg survival.

Wood Thrush populations breed on most of the larger DoD properties in the eastern states in extensive stands of relatively undisturbed mature forest (Nott and Morris 2007). Throughout the winter range the favored forest habitats are at risk to logging operations.

Performance on DoD Installations:

Monitoring Avian Productivity and Survivorship (MAPS) program DoD-MAPS data (Nott et al. 2003) showed that adult populations declined in the late 1990's but since 2001 they have recovered. Annual numbers of young tracked adult numbers and significantly increased after 1994 but reproductive success (young/adults) remained stable. Curiously, Breeding Bird Survey data for the same period correlated negatively and significantly with numbers of MAPS adults (-0.63, P<0.02).

Increasing or stable high numbers of MAPS adult captures were recorded at Fort Bragg, NC; Big Oaks NWR (formerly Jefferson Proving Ground), IN; NSWC Crane, IN; Fort Knox, KY; Forts Leavenworth and Riley, KS and Ft Leonard Wood, MO. the mean body condition (mass/wing length) increased annually among pooled Indiana and Kentucky populations. Conversely, both the adult body condition and numbers declined at installations in Maryland and Virginia (manuscript in prep.).



Wood Thrush: DoD-MAPS and BBS trends 1994-2007

Management:

It is imperative to conserve large mature forest refugia for "source" populations of area-sensitive species such as Wood Thrush and Acadian Flycatcher. A study of Wood Thrush demographics at Big Oaks NWR (Nott 2000) suggested that the highest numbers of adults and young were detected in 1250ha landscapes featuring >60% forest cover and a minimum mean forest patch size of 20ha. Broader-scale species-landscape models (Nott et al. 2003, Nott 2006) concluded that maintaining areas of contiguous mature forest tracts in excess of 600 hectares benefited Wood Thrush populations.

Small areas of agricultural land, successional habitat and forest clearcuts create edge that appears to benefit dispersing foraging young but can also lead to increased invasion by Brown-headed Cowbirds. For example, within the boundaries of a MAPS station on NWSW

Crane, IN the numbers of cowbirds increased alarmingly after the development of a logging trail to remove a single-aged stand from interior forest. Temporary logging roads of this kind should be quickly reforested. Microhabitat management must also maintain a healthy forest understory and mesic hydrologic conditions.

Climate Sensitivity:

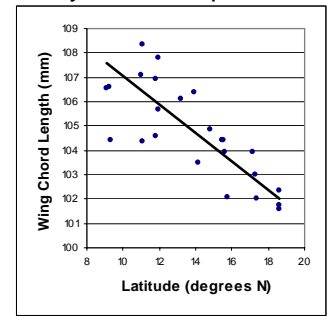
The USDA Forest Service produced a climate change atlas of the Wood Thrush range. Currently, incidence probabilities are close to unity across the core of the range but expected to decline by 20-60%.

http://www.nrs.fs.fed.us/atlas/bird/fut_incid_7550.html)

However, the IPCC report (2007) predicted that the winter range of the Wood Thrush will experience drier "wet seasons". The predicted 10% decrease in wet season precipitation across much of the winter range will likely lead to changes in the forest type and structure that may affect winter survival, body condition, and subsequent reproductive success.

A comparison of MAPS Wood Thrush data from installations in Indiana, Kentucky, and Missouri with data from Virginia and surrounding states revealed critical differences in wing chord length and annual trends in body condition. Wing chord length data collected by the Monitoreo de Sobrevivencia Invernal (MoSI) program

operating throughout the winter range revealed a latitudinal gradient. The study concluded that the longer-winged "Virginia" populations flew to the southern portion of the winter range where they have experienced annually decreasing levels of pre-spring migration rainfall. Conversely, the shorter-winged populations were mapped to southern Mexico where pre-spring migration increased. It is likely that low precipitation levels causes poor body condition in returning adults which, in turn, is reflected in the body condition of the young produced that year.



At northerly latitudes the North Atlantic Oscillation drives springtime conditions and invertebrate availability. A strong predictive model of annual reproductive success for Virginia Wood Thrush populations used two simple climate indices for February to April, the El Niño Southern Oscillation Precipitation Index (ESPI), and the North Atlantic Oscillation (NAO) Index (NOAA). The annual ESPI indices strongly correlated with body condition. When combined with NAO in a multiple regression model the two variables described 65% of the annual variation in reproductive success.

Other Species Accounts:

USDA Treearch Database: <http://www.treearch.fs.fed.us/>

Birds of North America: <http://bna.birds.cornell.edu/bna/species/246/>

USGS Patuxent Wildlife Research Center: <http://www.mbr-pwrc.usgs.gov/id/framlst/i7550id.html>

Cornell Lab of Ornithology: http://www.birds.cornell.edu/AllAboutBirds/BirdGuide/Wood_Thrush.html

NatureServe Explorer: <http://www.natureserve.org/explorer/servlet/NatureServe>

References:

Matthews, S.N., L. R. Iverson, A.M. Prasad, A. M., and M.P. Peters. 2007-ongoing. **A Climate Change Atlas for 147 Bird Species of the Eastern United States [database]**. <http://www.nrs.fs.fed.us/atlas/bird>, Northern Research Station, USDA Forest Service, Delaware, Ohio.

Nott, M. P. and T. Morris. 2007. **Performance Measure Analysis: Examples of Comparing and Contrasting Installation-specific Demographics with Regional Demographics and Landscape Characteristics**. (Tech. report to the U.S. Department of Defense Legacy Resources Management Program, Contribution No.324 of The Institute for Bird Populations, Point Reyes Station, CA.) <http://www.birdpop.org/downloaddocuments/PerformanceMeasures.pdf>

Nott, M. P. and K. Gordon. 2006. **Analysis of MAPS Data from Military Installations outside of the Legacy-funded Network**. (Tech. report to the U.S. Department of Defense Legacy Resources Management Program, Contribution No.295 of The Institute for Bird Populations, Point Reyes Station, CA.) <http://www.birdpop.org/downloaddocuments/NonLegacyReport06.pdf>

Nott, M. P. and N. Michel. 2005. **Management strategies for reversing declines in landbirds of conservation concern on military installations: Predictive modeling of landbird populations on military installations**. The Institute for Bird Populations, Pt. Reyes Station, CA. A report to the Legacy Resources Management Office, Washington. D.C.. <http://birdpop.org/downloaddocuments/DoDReport2005.pdf>

Nott, M. P., D. F. DeSante, and N. Michel. 2003. **Management Strategies for Reversing Declines in Landbirds of Conservation Concern on Military Installations: A Landscape-scale Analysis of MAPS data**. A report to the Legacy Resources Management Office, Washington. D.C. <http://birdpop.org/downloaddocuments/DoDExec2003.pdf>

Nott, M.P. 2000. **Identifying Management Actions on DoD Installations to Reverse Declines in Neotropical Birds**. (Tech. report to U.S. Army Corps of Engineers, Contribution No. 133 of The Institute for Bird Populations, 21 p) *This report documents the results of a landscape analysis of National Landcover Data surrounding MAPS stations located on Big Oaks NWR (formerly Jefferson Proving Ground)*. <http://birdpop.org/DownloadDocuments/BigOaksNWR2002.pdf>

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