Morels in Four National Capital Region Parks

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Introduction

Morels (*Morchella* spp.) are the most commonly harvested wild edible mushrooms in eastern North America (Fig. 1). Although morels are known to occur in National Capital Region (NCR) parks, very little is known about what species are present, their ecological distribution or what impact harvesting of fruiting bodies may have on their overall occurrence and abundance. The primary objective of the still ongoing project described herein is to obtain baseline data on the occurrence and distribution of morels in four NCR parks.

Methods

During late April and early May of 2006 and 2007, surveys for morels were carried out in Antietam National Battlefield, Catoctin Mountain Park, C&O Canal National Historical Park and Harpers Ferry National Historical Park to determine the species present and their ecological distribution. Information recorded for each collection or observation included the species of trees with which fruiting bodies were associated. In addition, permanent 2 by 5 meter plots were established in three parks for long-term monitoring of morel fruiting bodies (Fig. 2). DNA sequences obtained from the ITS, LSU, RPB2 and EF-1 alpha regions of specimens of morels from the four parks are currently being analyzed to assess the taxonomic relationships of the species present.

Results

In 2006, morels were relatively abundant, with estimates (based on data from the permanent plots) of several hundred fruiting bodies per hectare for some areas of Catoctin Mountain Park and Harpers Ferry National Historical Park. For the spring of 2007, numbers were much lower, apparently because of unusually cold and dry weather conditions (Table 1).

Morel fruiting bodies were found to occur in association with a number of different types of trees, including box elder (*Acer negundo*), tulip-poplar (*Liriodendron tulipifera*), white ash (*Fraxinus americana*), red maple (*Acer rubrum*) and pignut hickory (*Carya glabra*), but box elder and tulip-poplar were the most common associates (Fig. 3).

Results from molecular studies suggest that at least six distinct taxa of *Morchella* are present in the four parks, but two of these are morphologically cryptic species that are members of the first of four major clades that were identified from analysis of DNA sequences obtained from specimens collected in 2006. These clades generally correspond to four basic morphotypes (Figs. 4-7): (1) small yellow, white or tan colored morels, (2) larger yellow morels, (3) "half-free" morels, and (4) "black" morels.

Fig. 1. Morel as collected in the field

Fig. 2. Permanent plot (2 m by 5 m) at Catoctin Mountain Park

Table 1. Estimated numbers of morels based on fruiting bodies recorded from permanent plots during the spring of 2006 and the spring of 2007. Actual numbers per hectare of forest would be expected to be much lower, since the plots were placed in localities where morels were known to occur. However, these estimates do reflect the appreciable differences noted for numbers of morels in the two years.

Plot	Park	No./ha 2006	No./ha 2007
CM1	Catoctin Mountain Park	7,000	2,000
CM2	Catoctin Mountain Park	9,000	4,000
CM3	Catoctin Mountain Park	7,000	0
CM4	Catoctin Mountain Park	11,000	1,000
HF1	Harpers Ferry National Historical Park	17,000	0
HF2	Harpers Ferry National Historical Park	23,000	5,000

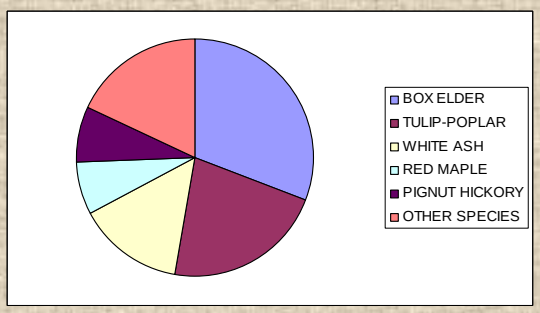

Fig. 3. Types of trees with which fruiting bodies of morels were associated. Other species recorded were pawpaw (*Asimina triloba*), black birch (*Betula lenta*), black walnut (*Juglans nigra*), spicebush (*Lindera benzoin*), hop hornbeam (*Ostrya virginiana*) and sycamore (*Plantanus occidentalis*).

Fig. 4. Small yellow morel

Fig. 5. Larger yellow morel

Fig. 6. Half-free morel

Fig. 7. Black morel

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