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**NATIONAL PARK SERVICE POLICIES:  
HIGHLIGHTS FROM A WORKSHOP ON  
GENETICALLY MODIFIED ORGANISMS (GMOs) IN PARK LANDS**

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**Abstract:** A workshop was sponsored by the National Park Service (NPS) to begin developing policy regarding use of genetically modified organisms (GMOs) within NPS resource management programs. GMOs were defined as organisms that contain gene combinations that do not occur naturally and were not created through traditional breeding practices. There are no current NPS policies that specifically prohibit use of GMOs on park lands. Therefore, for the purpose of the Chestnut Workshop, all technologies will be considered as potential tools to help restore American chestnuts to lands where they once occurred.

**Key words:** GMO / Workshop / NPS / Policy

### INTRODUCTION

In April 2004, the National Park Service (NPS) sponsored a workshop to begin the process of developing policy regarding use of genetically modified organisms (GMOs) within NPS managed lands. The objectives of the workshop were to educate a core group of NPS personnel on various GMO issues, discuss where GMOs are currently being used on NPS lands, and identify unclear or controversial issues that would need to be resolved before policy development.

The GMO Workshop was structured much the same as the Chestnut Workshop, with two days of invited talks followed by a day of deliberations by NPS staff to begin drafting the major elements of a GMO policy. Invited talks covered basic concepts of GMO technology, current use of GMO products in North America, GMO products in development, current and potential use of GMOs in National Parks, potential environmental and social risks associated with GMOs, and a review of NPS policies that relate to GMO use in resource management programs. The Chestnut Workshop was scheduled to occur after the GMO Workshop in case policy described or developed at the GMO Workshop would clearly preclude use of genetically engineered products in an NPS chestnut restoration program.

### WORKSHOP OUTCOMES

NPS policy is primarily contained within the publication *Management Policies* last revised in 2001. Policy can be supplemented or amended between revisions through formal issuance of a Directors Order. *Management Policies 2001* contains only brief direct references to GMOs, but does contain substantial guidelines on use of biological products to attain resource management goals. Those include: 1) guidance to restore extirpated native species using the closest available genetic material (4.4.2.2); 2) ability to introduce an exotic species in rare situations to meet specific management objectives (4.4.4.1); 3) ability to use a hybrid, subspecies, or improved variety where the natural variety cannot survive human-altered environmental conditions (4.4.4.1), and; 4) the ability to use bioengineered products for exotic pest management (4.4.5.4). There are no specific prohibitions against using GMOs within National Parks.

Genetically engineered agricultural crops, primarily herbicide tolerant and insect resistant corn and soybeans, are currently used in several agricultural lease programs by military and historical parks that are mandated to preserve farmed fields within the historic landscape. These parks generally lease fields to local farmers through cooperative use programs. GMO crops are often preferred because they are believed to decrease total use of pesticides, enable use of less toxic herbicides, and reduce fuel and labor costs. In addition, the use of GMO soybeans is so prevalent in U.S. agriculture that it is often difficult for farmers to obtain non-GMO seed in the commercial market.

A second area where GMO products are currently used in NPS management programs is recombinant wildlife vaccines such as rabies vaccines for coyotes and raccoon, canine distemper vaccines for black-footed ferrets and fox, and equine West Nile Virus vaccine for horses and mules. It is possible that other GMOs are being introduced on NPS lands without parks being aware they contain engineered genes.

A proposed working definition of GMOs was those organisms that contain gene combinations or gene sequences that do not occur naturally and were not created through traditional breeding practices. This generally refers to technologies that remove a small number of genes from one or more donor organisms that are inserted into a receiving organism, often across taxonomic groups. For NPS policy purposes, this would not include hybrids produced through artificial breeding or products of GMOs that do not contain viable genetic material, such as killed vaccines. There was also discussion on the benefits and limitations of categorizing all GMOs as exotic species for policy purposes.

The general feeling among workshop participants was that existing NPS policy would allow introduction of a GMO into a park if it met clearly defined management objectives and all feasible and prudent measures were taken to minimize risk or harm to other natural and cultural resources. Other policy considerations discussed included: 1) a prohibition against using GMOs for purely aesthetic purposes; 2) a prohibition against using GMOs if doing so would jeopardize park objectives or pose risk to human health or safety; 3) a prohibition against growing GMO crops that produce pharmaceuticals; 4) stringent risk & benefit analysis before considering introduction of a GMO, including full NEPA compliance; 5) consideration of possible gene flow to areas outside the park, particularly if certified organic farms are nearby; 6) monitoring use of GMOs outside of park boundaries for possible impact to park resources; 7) approval of GMO use on a case-by-case basis, and; 8) annual reporting of all GMOs used or released on NPS managed lands.

## CONCLUSIONS

The process of constructing NPS policy on use of GMOs in park resource management programs has just begun, and will be developed and formalized over the coming years. At present, there are no specific prohibitions against using a GMO in park programs. The general feeling of workshop participants was that a GMO might be deemed acceptable if it is the best available product to meet a specific management goal, is generally considered safe by the scientific community, is accepted by the public, and is approved through the NEPA process. Therefore, for the purposes of the Chestnut Workshop, any technology can be discussed for possible incorporation into an NPS restoration program, including genetically modified trees and fungal pathogens.