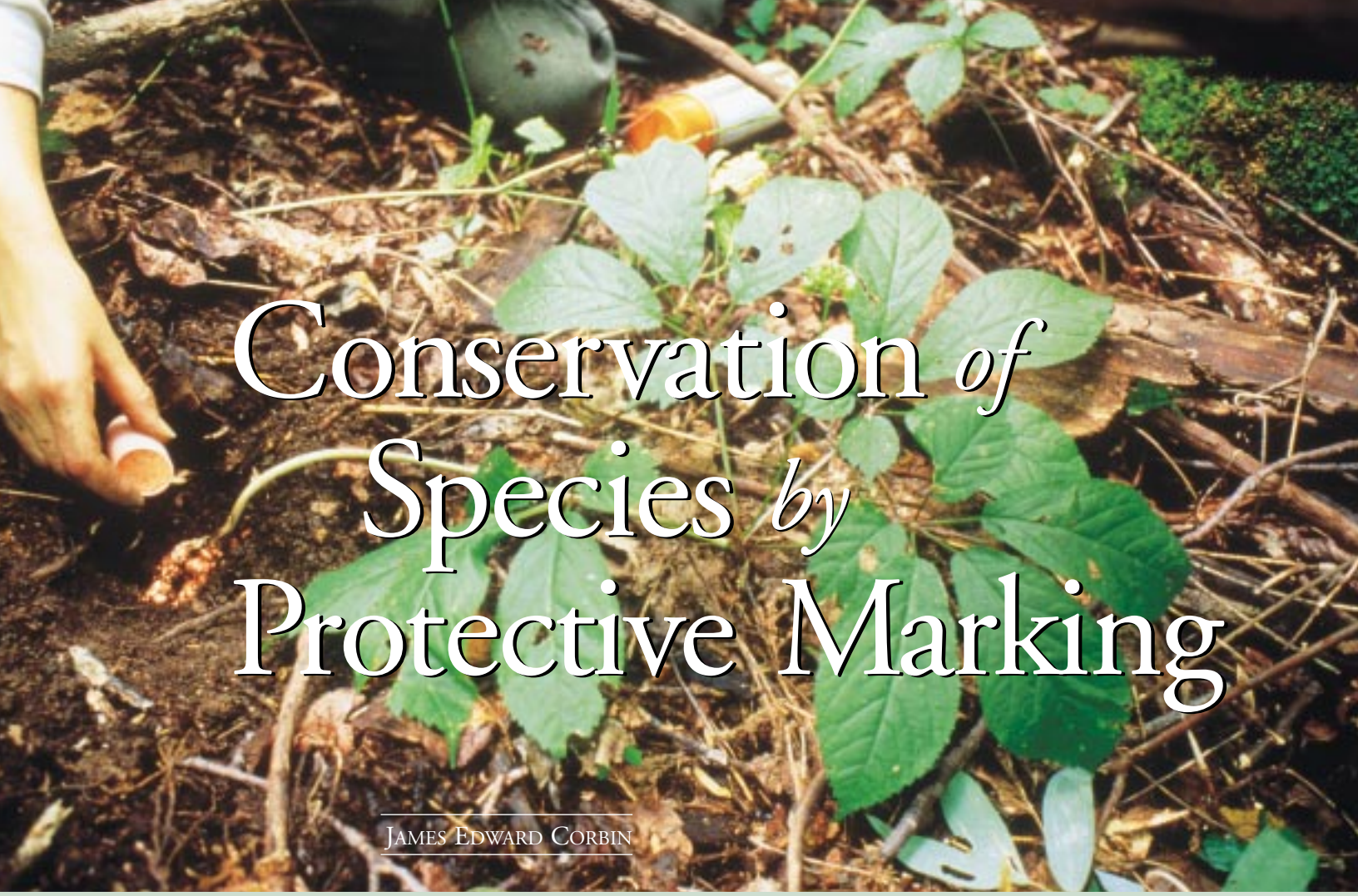

Conservation *of* Species *by* Protective Marking

James Edward Corbin

Photo by Dan Drees

Figure 1 • *Applying dye to ginseng.*

ABSTRACT

A variety of marking systems including steel ribbons, dyes, and silicon chips are being used to deter illegal harvesting of medicinal plants.

KEY WORDS: ginseng, *Panax quinquefolius*, Araliaceae, threatened and endangered, harvesting

NOMENCLATURE: USDA NRCS (2001)

In a 10-d period in 1993, John Garrison, a supervisory ranger with the Great Smoky Mountains National Park, saw 6 kg (13 lb) of ginseng (*Panax quinquefolius* L. [Araliaceae]), approximately 8000 plants, seized from 2 different groups of poachers. This sent a wake-up call throughout the country that certain plants in the wild were in need of protection. Garrison teamed up with me to address the problem.

To help protect ginseng, I originally designed a marking system that used tiny stainless steel ribbon inserts, coded in the Navajo language. The code revealed the location and date plants were marked. These plants could be seized at the dealer level if found, however, expensive instruments were needed to find the marked roots. An immediate, easy-to-see identification was needed as a deterrent and as a means to assist the dealer in finding illegally collected material.

After studying soil, physiology, and nutrient needs of native herbaceous perennials, a nutrient dye was developed to facilitate instant recognition. The dye contains small quantities of nutrients with proper ratios to allow the root to absorb the dye and mark the plant permanently (within an hour of application). Because collection is illegal in national parks, the permanent dye was a perfect solution. In private stands, a type of non-permanent dye was developed so that plants could be marketed.

To make it more difficult for poachers, silicon marking chips the size of flour grains are used in association with the dyes, which allows the plants to be electronically tracked. The Blue Ridge Parkway uses Microtaggent™, the same product used by the explosives industry to track their products.

Naturally, the violators will be able eventually to counter the actions of enforcement. Our protection systems must continually evolve if we are to sufficiently protect our natural resources. In 2001, protection efforts took a new twist with the addition of a K-9 unit to detect the marker at the dealer level. The dog, only 8 wk old when training started, has an extremely bright future. His sensitive nose found a single, illegally collected root in a pile of 189 kg (417 lb) of ginseng roots. During his first 2 wk of service, the dog assisted with 9 seizures of illegally collected ginseng that were returned to the Great Smoky Mountains National Park for replanting.

Since its inception, the protective marking program has expanded to include many other ornamental and medicinal plants that are being illegally exploited, including bloodroot (*Sanguinaria canadensis* L. [Papaveraceae]), blue cohosh (*Caulophyllum thalictroides* (L.) Michx. [Berberidaceae]), trillium (*Trillium* L. spp. [Trilliaceae]), and pitcher plants (*Sarracenia* spp. L. [Sarraceniaceae]).

Deterrents are applied during the growing season by groups of dedicated Plant Protection Specialists from North Carolina Department of Agriculture and Consumer Services (NCDA & CS), park technicians, and rangers who have become adept at identification and application. Experts are training botanists and law enforcement personnel in the marking methods. Leading the effort to mark plants have been John Scott of NCDA & CS, John Garrison and Ken Johnson of the Blue Ridge Parkway, Janet Rock of the Great Smoky Mountains National Park, and Gary Kauffman of the USDA Forest Service. A combined effort of personnel from NCDA & CS, Great Smoky Mountains National Park, USDA Forest Service, US Fish and Wildlife Service, North Carolina Wildlife Commission, Blue Ridge Parkway, and North Carolina State University has yielded outstanding results (nearly 80 convictions in 1996; convictions continue on a yearly basis) in the war against decimation and exploitation of native plant species. Currently 14 states and 1 Canadian province have used some form of the system.

Continued protection work will allow the next generation to enjoy the pristine beauty of the native medicinal plants.

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