



CROPS, SOILS, AGRONOMY

NOVEMBER 2006 V51 N11

CSA NEWS

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CAN SOIL GO EXTINCT?

examining a proposal
to recognize rare,
threatened soils



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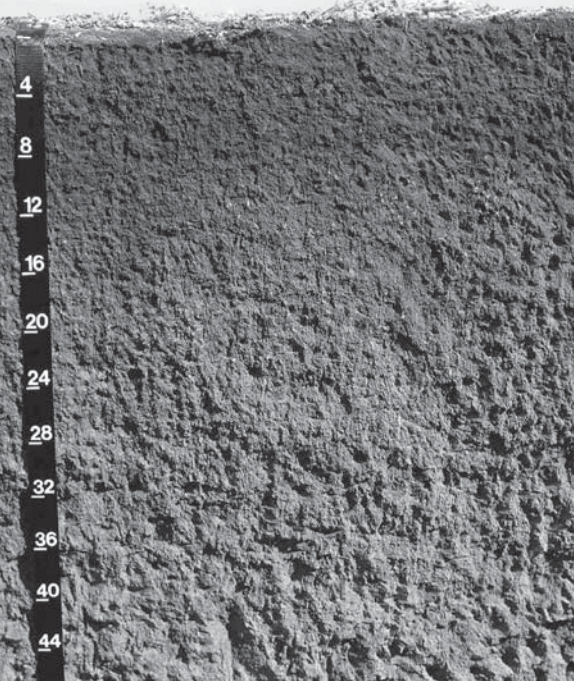
mal process for recognizing natural (nonanthropogenically made) soils that are rare or threatened.

Just as we lose animal and plant species to extinction, so too are soils damaged or destroyed by pressures from many human practices. This destruction of soil can put life at risk. Worldwide, the effects of global warming are predicted to lead to the disappearance of permafrost within 1,000 years, which would result in the extinction of a whole order of soils—Gelisols, in the U.S. system of soil taxonomy, which cover approximately 8.6% of earth's ice-free land area. Other examples exist throughout history of civilizations that rise and fall because of their management of soil. The best soils for food production are often ideal for building sites, which often results in their degradation and significant economic loss.

Drohan and Farnham define a rare soil as one of limited areal extent, occurring in relatively small portions of the landscape, and a threatened soil as one of greater areal extent undergoing a transformation that alters its characteristics and therefore function.

Their proposed strategy for protection avoids the political complications of legislation by developing a monitoring and recognition program based on BirdLife International/Audubon Society's Important Bird Area program, the United Kingdom's County Wildlife Sites, and Conservation International's hotspots designations. The

Can soil go extinct? A recent article in the November–December *Soil Science Society of America Journal* proposes formally recognizing rare and threatened soils. The authors, Patrick Drohan, Hartwick College, and Timothy Farnham, the University of Nevada–Las Vegas, make a case for protections for soil similar to what one might more commonly associate with endangered species. Given the long history of protecting the various parts of nature that we perceive to be endangered by our development activities, the authors argue that it is certainly reasonable to propose a for-



TOP: White River Valley, Nevada. Photo by Patrick Drohan. MIDDLE: Tama soil series profile in Iowa. Photo by Mike Sucik (USDA-NRCS). BOTTOM: Death Valley National Park, California. Photo by Brenda Buck.

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flexibility of such a system would allow anyone to nominate a soil for rare or threatened status by documenting criteria demonstrating its importance and location. Rather than legislative protection, designation would indicate a soil's ecological importance—another factor that developers and planning commissions should consider in making development decisions.

Drohan and Farnham's nontraditional approach uses five values associated with soil (economic, ecosystem, scientific, historic/cultural, and rarity) to bolster the argument for protecting a soil. They believe the most promising alternative to legislation is the formal recognition of soils identified as worthy in one or more of these value categories—for example, soils that are important for food production or for plant and animal species habitat, or soils that have valuable characteristics due to scientific, historic, or cultural interest. Examples of threatened soils include productive Iowa agricultural soils subject to erosion, the unique Mima mound fields of southern Cali-

fornia, and the historically valuable Cliffhouse soil series in Colorado that was in part developed by ancient Puebloan agricultural practices.

To solidify the designation and give it greater on-the-ground power, Drohan and Farnham suggest that soils accepted as rare or threatened should be "certified" by SSSA either by a formal vote or acceptance by a nomination review committee. They also propose a "Threatened and Endangered Soils Awareness Week" to help promote awareness of the certification and widen the use of the nomination process and the number of designated soils. The conservation potential of the nomination process could be enhanced by developing memoranda of understanding with organizations such as The Nature Conservancy, The Conservation Fund, Conservation International, the National Audubon Society, and scientific societies.

According to the authors, the designation process would help increase the effectiveness of educating the public about soil and its importance.

If SSSA is successful in gaining the support of other conservation organizations, a dual or multiorganization designation could be developed to cooperatively recognize the designated soils. This would add more importance to the designation. In the same way that certain animals and plants are used as "poster children" for the plight of endangered species and environmental degradation, so too could certain dramatic examples of the loss of valuable soils raise awareness of the importance of soil science and conservation. Soils, as Drohan and Farnham point out, are often described as the foundation of all life, and the unique structures and characteristics of various soils make them key support systems to the diversity of life on earth, including humans.

Drohan, P.J., and T.J. Farnham. 2006. Protecting life's foundation: A proposal for recognizing rare and threatened soils. Soil Sci. Soc. Am. J. 70:2086–2096. View the full article online at <http://soil.scijournals.org/content/vol70/issue6/>