



**Chisel and other tool marks** surround this sauropod dinosaur humerus (upper arm bone) and are clear signs of attempted theft and vandalism. Training of rangers and other park staff in paleontological resource protection since 1997 is coincidental with, and may be directly related to, an increase in the documented cases of illegal fossil hunting activity over this period.

## Battling Vandalism

### Geologic resource protection training increases park vigilance

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Park surveys conducted initially in 1992 and again in 1999 reveal some interesting trends in the recording of law enforcement incidents, citations, and arrests associated with the loss of paleontological resources from units of the national park system. During this time, the National Park Service increased its efforts to provide paleontological resource protection training to park staff. The data available from the two surveys show an apparent correlation between training and the increase in documented incidents of fossil theft or vandalism.

In 1999 the associate directors for natural resources and park operations jointly asked parks to participate in the survey, which also gathered information on the loss of cave

and other geologic resources. However, because the 1992 survey included only paleontological resources, long-term data for caves and other geologic resources are not available.

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Data from the 1992 survey were used to determine which geographic areas were most heavily impacted by loss and where increased training may be valuable. The data showed that the highest incidence of paleontological resource loss was reported from parks in what is now



Intermountain Region. Based upon the results of the 1992 survey, more than 250 NPS protection rangers, stationed in parks on the Colorado Plateau, Great Plains, and Mojave Desert, have participated in paleontological resource protection training over the past few years.

During the three years assessed in the initial survey (1989–1991), 16 parks reported incidents of paleontological resource loss, with a total of 154 issued citations totaling \$5,920 in fines. During the three years assessed in the more recent survey (1995–1997), 16 parks reported incidents, with a total of 388 issued citations totaling \$95,075 in fines. The survey data show a greater than 150% increase in the number of citations issued between the two periods assessed. The numbers of arrests reported in each of the surveys were not significantly different, with five reported during the initial survey and six in the more recent survey.

The data compiled in the surveys indicate a substantial increase in the number of documented cases of paleontological resource loss; however, whether this increase represents

actual changes in visitor behavior or elevated awareness by park rangers leading to better documentation is unclear (see related story on fossil theft at Badlands National Park, page 41). The trend observed in national parks seems to parallel the escalation of the commercial market for fossils nationwide.

The continued monitoring of paleontological resource theft and vandalism in national parks, along with training of additional rangers (particularly in the Alaska Region), will enable a greater understanding of the variables influencing the loss of park fossils. The protection of these nonrenewable remains of past life is clearly part of the NPS mission.