

Reconsidering Species Extinctions in National Parks: Reply to Berger

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We concur with Joel Berger's (2003) gut feeling that the intuitive answer to whether a species should be allowed to become extinct in a national park is no. Berger also acknowledges there is probably no unanimous answer for all species in all parks but then presents a case supporting the negative, anticipated reply. Although there is probably no net benefit to conservation from extinction of a native species within a national park, we view this problem from a different perspective, demonstrated by a case from Central Europe.

The question of whether a species should be allowed to become extinct in a national park can only be addressed for those species that are not confined to one or a small number of parks or species for which substantial proportions of their population do not occur within the park in question. There can be little doubt that it is entirely unacceptable to let an endemic species go extinct in a park that is in fact its sole refuge. The question should focus on native species only because the extermination of introduced species is sometimes essential, an issue beyond the problem we discuss here (Atkinson 2001).

Berger states that pronghorn (*Antilocapra americana*) in Grand Teton National Park comprise only a small fraction of the state's population of this species, and he argues his case with scientific and educational values of the phenomenon of overland migration. Given that most species are less charismatic than large, open-country mammals and may therefore contribute little to overall park setting and public experience, their local extinction would probably go unnoticed among nonprofessional visitors. If their general populations were unaffected by the local extinction within a park and if the functional integrity of the park's ecosystem would not suffer from the absence of this species, would it then be acceptable to let this species go extinct? Being aware that in most cases we may not be

able to determine a priori the consequences of a loss, we believe that the answer could be yes. But how then should we explain this to the public or to policy makers, who justifiably expect parks to protect species?

Although it is well known among conservation scientists and managers that external human activities may corrode the integrity of a park's ecosystem (Janzen 1983; Laurance & Cochrane 2001), this view is much less widespread among the general public and politicians in particular (Meffe 1998; Robertson & Hull 2001). Berger's hope that the public and politicians will become vigorous opponents of economic development and advocates for the preservation of natural features may be slim given this general lack of awareness. In western societies, with a pronounced focus on economic growth and development, nature is exiled to reserves, and any plea to expand conservation areas is generally turned down because it might impede economic growth. Moreover, environmental policies have a history of being reactive as opposed to proactive, further reducing chances that natural features will be given priority over economic development before substantial harm becomes evident (Pimm et al. 2001). Evidence of this might be provided by a species going extinct even within a national park, and a species charismatic enough to be of public interest might increase public awareness.

In Europe, the European parliament has attempted to counteract the continuous deterioration of habitats outside conservation areas by passing two directives in the late 1970s and early 1990s (Council Directive 92/43/EEC), creating the NATURA 2000 network. Both directives formally protect areas that are home to certain species listed in the appendix of the two directives. Furthermore, the establishment of the network of stepping stones has required all European parliament member nations to formally protect at least 5% of their respective land area. The two directives allow traditional use of the areas they protect but prohibit changes to their current status (i.e., a pasture may remain a pasture but cannot be turned into a

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cornfield). Thus, what Berger proposes for pronghorn in Wyoming, namely to preserve the current migration corridor as it is, has become law in Europe already. The implementation of the European directives has been far from successful, however, despite threats of penalty payments ranging up to billions of Euros. About half the nations are still struggling to meet the area requirements, and farmers often modify land to prevent it from being listed as valuable habitat under either of the two directives.

The Wadden Sea ecosystem along the North Sea coast of Germany is one of the world's largest tidal flat areas and has been deprived of its natural dynamics by increasing land reclamations over the past centuries. Today the Wadden Sea is protected by national parks and nature protection laws in Central Europe, but the landward border of the parks is an artificial sea wall, designed to protect the mainland from flooding during storm events. This artificial sea wall reduces the natural dynamics of the coastline. Consequently, fewer new habitats, such as islands and beach plains, are currently formed through sediment accumulations than were formed centuries ago. Two bird species, the Little Tern (*Sterna albifrons*) and Kentish Plover (*Charadrius alexandrinus*), depend on open sandy habitats usually provided by newly emerging sandbanks or on developing beach plains. In the course of natural succession, these sandy habitats become overgrown and unsuitable as a breeding ground, forcing terns and plovers to relocate and colonize new developing habitat.

Populations of Little Tern and Kentish Plover have declined dramatically over the last century, and further declines are to be expected as sandy habitats become vegetated or as predation increases (Becker & Erdelen 1987; Potel et al. 1998; Südbeck et al. 2000). Although in some places protective measures will probably prevent a complete collapse of the population, their extinction within this national park is not unimaginable. Both species have very large geographic ranges with substantial populations in Southern Europe and Asia, and the Wadden Sea can be regarded as northwestern periphery of their breeding ranges (Tuck & Heinzel 1979; Bezzel 1985). Because of their low numbers and high position in the food web, both species are unlikely to exert disproportionate influences on processes in the coastal ecosystem. Their local extinction therefore may not substantially alter the remaining community. On the other hand, measures to protect these species' habitat would require ongoing efforts to halt vegetation at certain sites (Becker & Erdelen 1986), to the detriment of other endangered species following the natural succession. Park management objectives promote naturalness as the ultimate goal, but this naturalness may not prevent the local extinction of the Little Tern and Kentish Plover. Given the conflict associated with single-species management (Simberloff 1997), would it be unacceptable to let these species disappear? If the causes of their demise were made explicitly clear to the public, perhaps they would serve as a drastic warning signal that would increase conservation mindedness.

Another issue that should be considered before letting a species go extinct is the reversibility of a local extinction. In the case of the Little Tern and Kentish Plover, a local extinction in the Wadden Sea would probably be reversible when restoration of natural processes succeeded at a large enough spatial scale to provide sufficient breeding habitat. For less mobile species, which are unlikely to recolonize areas where they became extinct, one could argue in favor of preemptive measures.

Asking whether species should be allowed to go extinct in national parks is playing with fire. If such extinctions do not trigger the public outcry required to politically implement large-scale changes in anthropogenic land use, then more than a species will be lost. We will have lost all hope of stemming the tide of further degradation of the few natural reserves we have left in Central Europe. The approach Berger suggests is on the safer side—but how realistic is it to stop economic development when “only a few” animals are at stake? In Germany experience has taught us that these chances are low.

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