

Endangered Species UPDATE

Including a Reprint of the latest USFWS
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School of Natural Resources



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Local Government and the Protection of an Endangered Species: The Florida Key Deer

by
Jeffrey Schaeffer

Habitat loss resulting from residential and commercial development is one of the greatest threats to endangered species, and a lack of regulatory authority over development in critical habitats has proven to be a weakness in statutory protective measures for these species. While federal and state agencies are frequently given jurisdiction over endangered animals and plants, their jurisdiction over habitat is either lacking or limited.

The strongest regulatory framework governing the habitats of endangered species is the set of federal regulations governing enforcement of the Endangered Species Act by the U.S. Fish and Wildlife Service (USFWS). The Service evaluates the impact of proposed federally-funded projects, U.S. Army Corps of Engineers permit applications, and private sector applications for development in areas inhabited by endangered species and it can issue jeopardy opinions that require developers to obtain taking permits. Unfortunately, this mode of action places the Service, and other regulatory agencies, in a defensive position.

In order to monitor development that affects endangered species, a regulatory agency must first be aware that habitat destruction is occurring. Often there is no formal mechanism to inform these agencies that habitat destruction is happening at a particular site. The worst example of this is the Palos Verdes blue Butterfly (*Glaucopsyche lygdamus palosverdesensis*) which became extinct after its habitat was developed and subjected to fire control practices (Arnold 1987). The local town council had inadequate knowledge of the butterfly and its habitat requirements,

and the U.S. Fish and Wildlife Service did not learn of the construction activity until well after the habitat destruction occurred.

Even when regulatory agencies are well-informed regarding development plans, protection and enforcement can still be difficult. Personnel must monitor critical habitats, perform site visits, and comment on individual permit applications. In many cases, these efforts require so much time that research and conservation become secondary goals. It is extremely difficult and expensive to administer these types of programs,

particularly over long distances. Additionally, the authority of regulatory biologists is generally limited to direct impacts of proposed developments. Secondary and cumulative impacts, while often important, are usually outside their jurisdiction.

In reality, although a regulatory agency may have jurisdiction over an endangered or threatened species, the fate of a population is often determined by the issuance of building permits by local governments that have jurisdiction over the habitat. I propose that local governments should share responsibility with state and federal agencies in the conservation of threatened and endangered species and cite the Florida Key Deer (*Odocoileus virginianus clavium*) as an example of the depth to which local governments can successfully participate in a recovery program.

The Florida Key Deer

The Key Deer is the smallest sub-species of the Virginia white-tailed deer. Found only in limited areas of the lower Florida Keys, the deer stand 24 to 28 inches high and weigh 45 to 65 pounds. With a current population of less than 300 animals, both the USFWS and the State of Florida Game and Freshwater Fish Commission have classified the deer as an endangered species.

Key Deer formerly ranged throughout the lower Florida Keys but poaching left them increasingly rare during the early years of this century. A 1934 cartoon by conservationist Ding Darling first called attention to their plight, but no action was undertaken to protect them until 1952,



Photo by Chet Elstead

National Key Deer Refuge wildlife biologist Tom Wilmers with three roadkilled Key Deer fawns which were frozen then later thawed for necropsy.

when the Boone and Crockett Club hired a warden to protect 25 to 50 remaining individuals. Congress authorized the establishment of the National Key Deer Refuge in 1954, and additional land purchases have expanded the original boundaries of the refuge. Under this protection, the population expanded to an estimated 400 individuals by the late 1970s. Unfortunately, new threats to the population have reversed this trend.

New Threats to the Population

Although an estimated 400 animals inhabited the lower Keys in the 1970s, the population is declining (Humphrey 1986), and 250 to 300 animals remain on and around Big Pine Key. The current decline is a direct consequence of rapid residential and tourist-oriented development of the lower Keys.

The development of Big Pine Key and the lower Keys has affected the Key Deer population in several ways. Direct loss of habitat occurs through land clearing and construction. Patchwork development patterns have fragmented large areas of hammock and pineland. Human intrusion has created new sources of mortality such as entanglement in fences, harassment by dogs, and drowning in steep-sided boat canals and mosquito ditches. These problems are exacerbated by local residents treating the animals as pets. Deer are given supplemental food and water and many animals have become absurdly tame. Deer are habituated to humans, vehicles, and dogs and are frequently lured into developed areas by the prospect of handouts and treats. However, these problems become minor when roadkills are examined.

Development of the lower Keys and the city of Key West has caused large increases in traffic. Consequently, roadkills now represent the major documented cause of mortality. From 1980 through 1986, an average of 41 deer were killed yearly, and an all-time high of 57 animals were roadkilled in 1987. Just over half the deaths occurred on U.S. Highway 1; the rest occurred on

secondary roads that course through the residential areas in and around Big Pine Key. Roadkills alone indicate a total annual mortality of 10 to 20 percent, and other sources of mortality undoubtedly occur.

The present scenario would appear to be hopeless—a declining population, low natality, high mortality, increased rates of habitat loss, and ever increasing traffic. However, an innovative local program may offset these threats to the population.

The Origins of Local Concern

The involvement of Monroe County, the political entity governing most of the Florida Keys, with the Key Deer began in 1972 when the Florida Legislature declared the Keys to be an "Area of Critical State Concern". The general intent of the State of Florida Critical Area Statutes (Chapter 380) was an acknowledgement by the legislature that certain areas within the State of Florida possessed natural resources that were important to the state as a whole and local land use practices within these areas should be evaluated to insure that these resources were not degraded.

The primary threat to the natural resources of the Florida Keys was that existing development regulations did not provide adequate protection of the fragile Keys' habitats. The inadequacy of existing regulations was addressed by a legislative requirement that the county modify its land development regulations. The new development regulations were to be consistent with a portion of Chapter 380, known as "The Principles for Guiding Development".

The principles consisted of a series of objectives, guidelines, and policies that local governments were required to consider during the development of comprehensive land use plans. In general, the principles required local governments to address the adequacy of local regulatory policies governing environmental protection, preservation of scenic and cultural resources, capital facilities and growth management issues, and civil defense. One of 12 objec-

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Instructions for Authors:

The Endangered Species UPDATE welcomes articles related to species protection in a wide range of areas including but not limited to: research and management activities for endangered species, theoretical approaches to species conservation, and habitat protection and preserve design. Book reviews, editorial comments, and announcements of current events and publications are also welcome.

Readers include a broad range of professionals in both scientific and policy fields. Articles should be written in an easily understandable style for a knowledgeable audience. Manuscripts should be 7-10 double spaced typed pages. For further information please contact Rob Blair at the number listed below.

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Cover:

Key Deer
(*Odocoileus virginianus clavium*)

Photo by Tom Wilmers

tives was "to protect the habitats of endangered species". Thus, the local government found itself under a state mandate to revise its land development regulations to protect a federally endangered species.

The Focal-Point Plan for Big Pine Key

The Monroe County Commission found itself facing many of the same issues confronting the USFWS. Although residents liked the deer, many opposed any land use control. On the other hand, citizen groups and environmentalists suggested that the proposed changes permitted too much development. Conflict over the protection of Key Deer was deferred by establishing a focal-point planning program for northern Big Pine Key. A planning document was to be developed that defined the issues associated with protection of the Key Deer, identify conflicts, define information needs, and discuss alternative courses of action. Development on northern Big Pine Key would be governed by the new land use plan and special interim regulations until the focal-point planning program could be completed.

While the focal-point plan does an excellent job of addressing the immediate sources of mortality--road kills and dogs--it does not assure long-term survival of the species.

Monroe County implemented its new land use plan on September 15, 1985. The land development regulations provide some improvement in protection of the deer and their habitat. There are now specific prohibitions on development in wetlands and landowners are required to preserve significant portions of their property in a natural state. Residential densities in and

around Big Pine Key were reduced in some areas, and fencing configurations that would entrap or entangle deer are discouraged. The development of the focal-point plan represents a regulatory overlay that, when completed, will enhance protective measures for the deer.

A draft focal-point plan was completed by Monroe County during October 1987. The purpose of the plan was "to establish a focal-point planning effort directed at reconciling the conflict between reasonable investment-backed expectations and the habitat needs of the Florida Key Deer, which is listed as endangered under the Federal Endangered Species Act" (Monroe County Land Development Regulations, Section 11-109-B).

Recommendations for Local Conservation Efforts

The draft plan recommends a combination of regulatory policies and acquisition as a means of achieving long-term survival of the species. There are five elements to the plan including; 1) land use regulation, 2) traffic control, 3) domestic animal control, 4) land acquisition and redevelopment, and 5) formation of a multiagency committee to coordinate programs. Specific information needed to implement the plan is also defined.

The land use regulatory element is comprehensive, and suggests reductions in density, increases in the protection of habitat, expansion of the planning area boundary to include migration corridors, and mechanisms to facilitate transfer of development rights to other areas. The focal-point plan does not create new regulations: it can only suggest changes. Statutory changes to the land development regulations must be approved by the County Commission using a specific review process. In practice, this will be difficult to achieve. Local opponents of land use controls are well organized and heavily financed, and additional restrictions on development will be unpopular with property owners.

The traffic control element of the focal-point plan is designed to reduce

the incidence of road kills. This aspect of the plan calls for reductions in the speed limit on U.S. 1 from 55 to 35 mph, and suggests speed limits of 30 mph on county roads, with additional restrictions to 20 mph during the critical hours around sunset and sunrise—the time of day when most roadkills occur. Efforts to reduce the speed limit on U.S. 1 by the USFWS and local residents have been underway for several years; unfortunately, the Florida Department of Transportation has absolutely stonewalled these efforts. Hopefully, the addition of traffic controls as local ordinances will facilitate these long-needed changes.

The domestic animal control program has recently been implemented. The county hired a full-time animal warden for Big Pine Key and established a shelter for stray dogs and cats.

The most important long-term goal of the program is its emphasis on acquisition of developable lands in and around the planning area. Five major groups are involved: the USFWS, the State of Florida, the Monroe County Land Authority, the Nature Conservancy, and the Florida Keys Land Trust. Funds for the preservation of freshwater wetlands may also be available through monies from the South Florida Water Management Districts "Save Our Rivers" program. Although funds for acquisition are increasing, acquisition agencies face the worst of all possible situations. Many areas of Big Pine Key are platted with large numbers of small lots under single ownership. Lots with development potential command high prices and must be acquired in blocks large enough to be valuable as habitat.

Weaknesses of the Focal-Point Plan

While the focal-point plan does an excellent job of addressing the immediate sources of mortality—road kills and dogs—it does not assure long-term survival of the species. Despite proposed density reductions, about 3500 lots within the planning area could be

(Continued on UPDATE page 4)

developed. Full development of these subdivisions and the traffic that would be associated with them could render much of the area unusable by the deer. Even if the vast majority of residents obey reduced speed limits and leash laws, a low incidence of non-compliance by a greatly expanded human population could negate potential benefits.

It should be stressed that Key Deer inhabit other areas of the lower Keys and the scenario of habitat loss through development is being repeated on many other islands, none of which are receiving the same degree of land use planning. It is likely that the population will continue its present decline until all of the protective actions proposed in the focal-point plan are implemented, and these are no guarantee of an increase in or even stability for the deer population.

This situation, while grave as it sounds, offers a great deal of hope for the Key Deer and other endangered species as well. The deer are better off than they would be otherwise and action has begun when the animals are still reasonably abundant. Reduction in the frequency of roadkills should at least buy some valuable time during which acquisition efforts can be organized, speed limits reduced, and residents can be educated regarding the effects of dogs and junk food.

A Model for Other Communities

Most importantly, the focal-point plan represents a sincere attempt by a local government and its citizens to take an active role in the preservation and management of an endangered species which is, to my knowledge, unprecedented. Although the plan was required by a state statute, citizen action and participation resulted in a document that attempts to achieve far more than would have been required for mere compliance. It is possible that small successes inspired by this program will lead to new ideas that may benefit the Key Deer, and the program suggests a new mechanism to enhance the preservation of endangered species.

This case history documents that

Local Government involvement in the conservation of endangered species may be more successful than the current programs because there is an opportunity to influence policies that protect habitats.

local governments can fully participate in conservation programs of endangered species. In this case, the proximity of a National Wildlife Refuge with dedicated personnel greatly facilitated the development of the plan; however, similar programs that convey biological information, habitat needs, and enhancement measures for endangered species could easily be provided to other communities.

Because land use practices are the primary means by which habitat is lost or saved, review of local land development regulations should be considered during the development of recovery plans. Protection measures provided by local regulations may help biologists formulate strategies for recovery, and analysis of local development patterns can forewarn agencies of potential impacts.

Regulatory agencies should encourage their biologists to interact with local governments and citizens' groups. Recovery efforts, management problems, and information regarding the biology of endangered species should be well publicized in communities in and around the habitat. This may be contraindicated for those species whose rarity results from collection, but knowledge of the presence of endangered species and their habitat requirements should be disseminated before any informed local decision-making can be expected.

Local government involvement in the conservation of endangered species, may, in the long run, may be more successful than the current programs be-

cause there is opportunity to influence policies that protect habitats. Undoubtedly, the success of this type of program will be quite varied. Some communities do not regulate land use practices, while others may lack the resources that would enable them to participate in recovery plans. Still others may reject the concept entirely. However, even a low incidence of voluntary compliance would greatly reduce the current regulatory burden, and would free agencies to devote more resources to other conservation efforts. The focal-point plan for Big Pine Key illustrates the potential and the problems of multi-jurisdictional efforts to save an endangered population. Further development of this type of process deserves consideration as a management tool for implementation of recovery plans in other areas of the United States.

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Publication Schedule for the UPDATE:

Because the UPDATE follows the publication schedule of the *Endangered Species Technical Bulletin*, irregularity of our monthly distribution is at times unavoidable. One of our goals is to provide the most current information on the federal Endangered Species Program. Hence, we publish and distribute the UPDATE as soon as possible after reprint materials are received.

Book Review

Down by the River: The Impact of Federal Water Projects and Policies on Biological Diversity

by Constance E. Hunt

Riparian habitats are one of the most neglected ecosystems in the United States. Conservationists have long ignored the preservation of river systems in favor of easier-to-manage blocks of land or ostensibly more exotic ecosystems such as the tropical rainforest or Arctic tundra. But, slowly, the conservationist community is realizing the value of and the threats to riparian habitats in the United States.

Only 23 million of approximately 121 million acres of land within the 100-year floodplains of rivers in the U.S. remain in their natural or semi-natural condition. Some areas, such as the Sacramento Valley in California, have virtually no undisturbed riparian habitat. The situation becomes more serious when one realizes that a disproportionate number of terrestrial species depend on riparian habitat. For example, 80 percent of the terrestrial species in the entire Great Basin region in Oregon are directly linked to riparian zones.

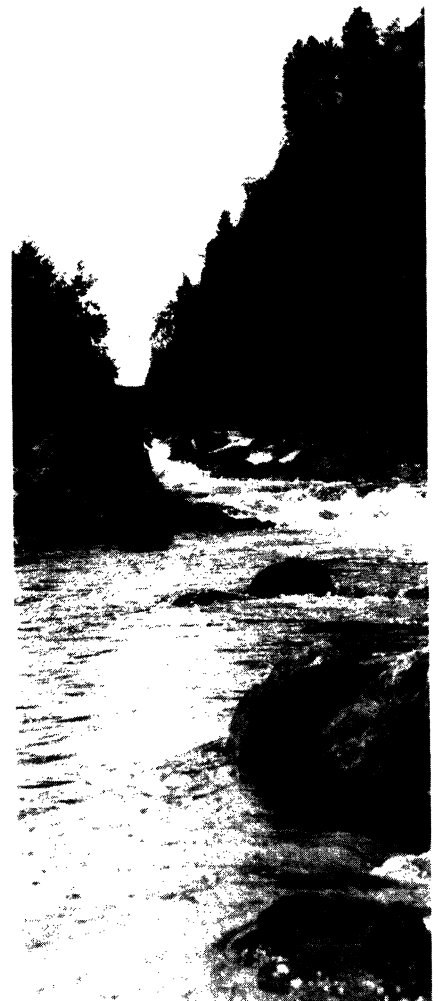
'Down by the River—The Impact of Federal Water Projects and Policies on Biological Diversity' tackles the issue of how federal water policies have affected riparian ecosystems throughout the United States. The first chapters of the book introduce both the scientific and lay reader to riparian ecosystems and the history of their management by the federal government. The middle chapters address the problems caused by the damming and channelizing of rivers for navigation, irrigation, and power generation by presenting case studies of such rivers as the Columbia, the Missouri, and the Colorado. The last chapter calls for a halt to the destruction of these ecosystems, development of methods to restore damaged rivers, and the enactment of an endangered ecosystems, not just species, act.

The following excerpt from the preface of the book introduces the overall theme of the work and raises some of the questions which it addresses.

Riparian communities are disappearing, victim's of the nation's eagerness to harness natural resources. Much of their demise is caused by federal projects and policies that Congress intended to benefit the general public. Such programs include the damming and channelizing of rivers—diversions of flows vital to the maintenance of in-stream and riparian life— and the granting of subsidies that encourage urban, industrial, and agricultural development of flood-prone land. Economically inefficient projects to be funded by the taxpayers are justified with contrived and skewed benefit-cost ratios. The estimated local benefits of many projects are inflated by inclusion of speculative benefits. Such benefits may include increased commerce on underused waterways and increased crop production. These are further inflated through the exclusion of long-term 'negative benefits' such as erosion and decreased water quality. The predicted benefits often do not materialize, as illustrated by the lack of anticipated traffic on the Tennessee-Tombigbee Waterway; or they become social liabilities such as surplus crops (like soybeans and cotton) that drive down the market prices of farm products and drain the Treasury through deficiency payments and other subsidies. The actual costs excluded from consideration in planning documents are usually greater than anticipated; an example is the elimination of two anadromous fisheries from the Apalachicola-Chattahoochee-Flint waterway in Alabama, Georgia, and Florida as a result of damming and channelizing, or deepening and straightening, the rivers of

navigation. Thus sole reliance on a benefit-cost analysis to determine the public's 'best interest' often results in a prodevelopment bias. The natural values of intact ecosystems, as well as the cumulative and indirect environmental effects of their alteration are simply too difficult to assess.

Down by the River: The Impact of Federal Water Projects and Policies on Biological Diversity will be published November 22, 1988 by the Island Press, Box 7, Covelo, California 95428. \$22.95 plus \$2.00 shipping and handling.



Identifying Threatened and Endangered Species: A Global Analysis is Underway

By Thomas Sisk

While many of us battle for the listing and protection of particular endangered species, hundreds of lesser-known organisms are approaching extinction unnoticed. The necessarily narrow focus of most endangered species professionals has unduly influenced the perspective of species conservation efforts in general. Our concept of threatened and endangered species has been shaped, to a large extent, by political processes that confer protective status on those declining species with strong public appeal, or persuasive political and biological advocates. Unfortunately, most of the world's vanishing species have neither. Although current listings tally well under 2,000 endangered species, various estimates of global extinction rates predict the loss of between 1,000 and 10,000 species per year through the end of the century. Clearly, we cannot rely on the current listing process if we are to adequately address the expanding problem of global extinctions.

To receive threatened or endangered status, a species must be nominated by a qualified scientist, pass an extensive review by recognized authorities, and withstand the challenges of all who oppose its listing. The burden of proof is on those proposing protection: a species is assumed to be unthreatened and stable until its decline is proven unequivocally. This system may be appropriate for conflict resolution in a legal context, but it is clearly insufficient for identifying the proper subjects for research and conservation efforts.

Under the current listing protocol, well-studied species stand a much better chance of receiving protection than do equally threatened species about which we know relatively little. Similarly, the biotas of developing countries, which have received comparatively little study and consideration, are

omitted from much of the global conservation initiative because of inadequate baseline data. This is particularly unfortunate because threats to natural habitats are typically great in developing countries, many of which are tropical nations supporting high biological diversity and many endemic species. Biologists and conservationists are, in effect, erring on the side of extinction by shying away from those species and parts of the world that have seen little research activity.

Long-term preservation of biological diversity will require a global approach, beginning with equal consid-

Our concept of threatened and endangered species has been shaped, to a large extent, by political processes...

eration of all species and all parts of the planet. A logical and consistent approach to the identification of threatened species is needed, one that is based on biological factors, such as distribution, habitat, and behavior, and land use trends, including agriculture, timber harvest, and human settlement.

Biologists at Stanford University's Center for Conservation Biology are developing a tool that will allow a relatively unbiased and consistent global analysis of threatened species. Through the formation of the Global Species Database (GSD), conservationists have developed methods that identify endemic and geographically restricted species. The GSD currently holds all mammal and bird species, and includes

information on their global distribution. When these data are combined with information on species-specific habitat requirements and the rates of habitat conversion and loss for a given country or biogeographic unit, the GSD will be able to identify those species that are most at risk. This data overlay technique will also be able to identify "extinction hotspots" — geographic areas that support numerous endemics and disturbance-sensitive species. Additionally, the database will be able to provide species lists and basic habitat information for countries, major islands and archipelagos, and biogeographic regions.

While the compilation of the distributions and habitats of all the world's species is an unreasonable goal, the selection of representative taxa will allow a broad-based analysis. Butterflies will soon be added to the database, decreasing the vertebrate bias that has characterized most conservation efforts to date. In the future, inclusion of selected plant data will further broaden this analytical approach to the identification of sensitive species.

Endangered species lists based upon simple biological criteria, such as distribution and habitat loss, will not provide the detailed species-specific data generated by current listing procedures. The conferral of protective status on threatened species will continue to rely on the nomination and review process. The GSD will, however, provide a new synthesis of the endangered species concept, one that is much more relevant to government planners, international conservation organizations, and researchers. Additionally, it will provide a more realistic view of the global extinction issue, helping conservationists around the world identify the areas and organisms most in need of their professional attention.

Bulletin Board

New UPDATE Editor

This issue represents a changing of the guard for the Endangered Species UPDATE. Kathy Kohm has completed her Master's degree in the School of Natural Resources and will be moving to Boston to work for the Wilderness Society. She will be working on a variety of issues as Regional Associate for their Northeast office. Her efforts during the past year have resulted in a revised and expanded UPDATE and her enthusiasm will be sorely missed.

As the new editor of the UPDATE, I plan to continue Kathy's vision by focusing on issue-oriented articles as well as those pertaining to particular species. For the coming year, I am planning articles on such topics as the problem of global warming on southern terminal populations, the introduction of the Andean Condor in Southern California, and insect conservation. Also, I will continue regular features such as the book review and the Technical Notes.

I am excited about the future of the UPDATE and invite your comments, suggestions, and article submissions.

Rob Blair
UPDATE Editor

Endangered Species Act Reauthorization

On July 28th, the Senate passed S. 675, reauthorizing the Endangered Species Act for four years. The law passed 93 to two with Steve Symms R-ID and Jake Garn R-UT opposed. Senator James McClure R-ID obtained an amendment which requires public comment on recovery plans and species-by-species reporting of the costs of recovery. This was an attempt to hinder the program.

To clear the way for passage, Senator Mitchell accepted a compromise on the sea turtle/turtle excluder device controversy. The compromise delays use of the TEDs until May 1989 for offshore waters and 1990 for in-shore areas. The bill also calls for a study of sea turtle protection efforts by the National Academy of Sciences.

Representatives of the House and Senate have just recently agreed on the Endangered Species Act Reauthorization Bill in conference. The Senate approved the conference version of the bill on September 15 and the House approved it on September 26. The bill is now before President Reagan and will take effect on October 5 unless the President chooses to veto the bill or sign it into law before that date.

Natural Areas Association

The Natural Areas Association, founded in 1978, is a nonprofit organization dedicated to providing information and encouragement to individuals actively involved in identifying, preserving, protecting, and managing natural communities, non-game habitat, and endangered and threatened species on public and private lands. The natural areas field is broad and includes many specialties: biology, geology, soil science, landowner contact, fundraising, community restoration, ecological stewardship, land acquisition, and legislative lobbying. Most of the 1300 members are professionals who actively participate in some way in natural areas work. The Natural Areas Association (NAA) sponsors an annual conference and publishes a quarterly journal. All NAA members receive the journal as part of their \$15 annual dues. Anyone interested in becoming a member should write: Natural Areas Association, 320 South Third Street, Rockford, Illinois 61104.

Bulletin board information provided in part by Jane Villa-Lobos, Smithsonian Institution and Faith Campbell, Natural Resources Defense Council.

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