

States of the Union: Ranking America's Biodiversity

April 2002



A NatureServe Report
Prepared for



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NatureServe is a non-profit organization dedicated to providing the scientific knowledge that forms the basis for effective conservation action.

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Executive Summary

Pride in place is a powerful impulse. And with its dazzling array of wild species and natural habitats, America has much to be proud of. Indeed, to find world-class biodiversity we need not look to foreign shores—it is right here in our own backyard. But while the concept of biodiversity has global connotations, conservation is a quintessentially local activity. To place conservation efforts in context, *States of the Union: Ranking America's Biodiversity* offers new information on state patterns of biological wealth and risk—where our wild plants and animals are found, and how they are faring.

Each of America's 50 states maintains an important part of the nation's biological heritage. Taking best advantage of conservation opportunities, however, requires an understanding of the varying roles each state can play. *States of the Union* offers a striking picture of the “state of the states,” based on an analysis of more than 21,000 plant and animal species. Providing new insights into the scale of the nation's conservation challenges and opportunities, these analyses find that **in one out of every four states, more than ten percent of native species are at risk.**

Our rankings of the 50 states and the District of Columbia focus on several key biological characteristics: diversity of species; levels of rarity and risk; distinctiveness of the flora and fauna, termed endemism; and number of species already lost to extinction. The top-ranking states for these measures are:

| RANK | DIVERSITY | RISK | ENDEMISM | EXTINCTIONS |
|------|------------|------------|------------|-------------|
| 1 | California | Hawaii | California | Hawaii |
| 2 | Texas | California | Hawaii | Alabama |
| 3 | Arizona | Nevada | Texas | California |
| 4 | New Mexico | Alabama | Florida | Texas |
| 5 | Alabama | Utah | Utah | Georgia |

Four states in particular emerge from these analyses as having exceptional levels of biodiversity—**California, Hawaii, Texas, and Alabama**. Looking at specific groups of plants and animals, however, reveals some surprising nuances. For instance, while freshwater fishes are most diverse in the rain-drenched southeastern United States, Arizona—a state more commonly associated with cacti—leads the nation in proportion of at-risk fish species.

The condition of nature in America reflects an interplay between natural history and human history. And it is the breadth and intensity of this interaction that tends to define a geography of risk for wild species. As *States of the Union* demonstrates, each state has a vital role to play in sustaining America's plants and animals for future generations. But for the many U.S. species that are at risk of extinction, time is running out. With sufficient knowledge, resources, and commitment, the nation's remarkable biodiversity can be safeguarded, leading to a more perfect union.

State of the States

The United States harbors a dazzling variety of life. From Maine’s Great North Woods to California’s giant redwoods, and from Hawaii’s tropical peaks to the Florida Everglades’ “river of grass,” the 50 states feature an unparalleled spectrum of wild places and wild species.

While efforts to protect America’s natural treasures began in earnest more than 130 years ago with the establishment of Yellowstone National Park, the pace of environmental change over recent decades has sparked a renewed commitment to conserving our remaining natural lands and waters. As a nation we have also achieved a deeper understanding of the complexity and fragility of our ecosystems, and for the wild species they sustain. Even the term *biodiversity*, which celebrates a scientifically inclusive view of life on Earth, was coined within the past two decades. This improved understanding is proving essential for increasing the effectiveness of conservation efforts and for targeting actions towards areas of greatest ecological significance.

Although the concept of biodiversity has global connotations, conservation is a quintessentially local activity. To place these conservation efforts in context, *States of the Union: Ranking America’s Biodiversity* offers new information on state patterns of biological wealth and risk—where our wild plants and animals are found, and how they are faring. We rank the 50 states and the District of Columbia based on analyses of several key species measures: diversity, risk, endemism, and extinctions. This newly updated information from NatureServe’s scientific databases offers a striking picture of the state of the states.

Riches in Our Backyard

Two years ago NatureServe and The Nature Conservancy published a comprehensive assessment of the condition of America’s biological riches in the book *Precious Heritage: The Status of Biodiversity in the United States*.¹ This critically acclaimed volume documented the full breadth and complexity of life in America, and considered what will be needed to protect these living resources into the future.

Key findings from that study include:

- Scientists have documented more than 200,000 species from the United States, representing more than 10% of formally described species worldwide.
- The United States is a global center of diversity for many groups of organisms, especially those that rely on aquatic systems such as salamanders, freshwater mussels, and freshwater turtles.
- About one-third of species in the best-known groups of plants and animals are at risk, and more than 500 U.S. species are already extinct or are missing.
- Habitat destruction and degradation are the leading threats to U.S. biodiversity, followed by the spread of harmful alien species.

Wild plants and animals are not distributed uniformly across the landscape, but rather concentrations of species are found in certain regions, termed biodiversity hotspots. Nonetheless, important species and ecosystems are found across the country, and each

state has a crucial role to play in efforts to protect the nation's rich biological heritage. By considering the distribution and condition of more than 21,000 plant and animal species—2,200 more than were included in our previous analyses—*States of the Union* provides new insights into the scale of the nation's conservation challenges and opportunities.

NatureServe: Exploring Our Natural Heritage

NatureServe is a non-profit organization dedicated to providing the scientific knowledge that forms the basis for effective conservation action. Working together with a network of biological inventory programs in all 50 states—natural heritage programs—NatureServe has compiled comprehensive scientific databases on the condition and distribution of U.S. species and ecosystems. Established in 1999, NatureServe represents a new institutional home for the scientific exploration and biodiversity information activities previously carried out by The Nature Conservancy. Thus, while new as an organization, NatureServe's databases, methods, and expertise reflect more than a quarter-century of experience. NatureServe and its natural heritage program members are now regarded as the leading source for detailed information on rare and endangered species and threatened ecosystems. Public access to much of this vast data resource is available over *NatureServe Explorer* (www.natureserve.org/explorer), a web site with conservation information on more than 50,000 U.S. and Canadian species and ecological communities.

The figures reported here are derived from NatureServe's central databases, and are the product of continual scientific data development, analysis, review, and refinement. These databases synthesize information from the published scientific literature, from scientific collections maintained by natural history museums, botanical gardens, and universities, and from field work carried out by NatureServe staff, natural heritage biologists, and other collaborators.

Assessing Conservation Status

Assessing the conservation status of individual species is key to understanding the overall condition of the flora and fauna and setting priorities for conservation. Conservation status assessments are designed to reflect the relative risk of extinction facing a particular plant or animal species. While many wild species may have stable population numbers and be at little or no risk of extinction, the viability of others may be compromised by their intrinsic rarity, by loss of the habitat they need to survive, or by other threats leading to their decline.

The scientific staff of NatureServe and its member programs use a consistent and rigorous methodology for assessing extinction risk that is based on evaluation of multiple factors.² Evaluation criteria include: the number and condition of populations and individuals; the area or range occupied by the species; population trends (that is, whether numbers are increasing, stable or declining); and known threats. Biologists assess each species against these multiple risk factors based on the best available scientific information and assign the appropriate conservation status rank (*Table 1*).

Table 1. Definition of Conservation Status Ranks

| RANK | CONSERVATION STATUS | DEFINITION |
|-------------|----------------------------|---|
| GX | Presumed Extinct | Not located despite intensive searches; virtually no likelihood of rediscovery. |
| GH | Possibly Extinct | Missing; known only from historical occurrences but still some hope of rediscovery. |
| G1 | Critically Imperiled | At very high risk due to extreme rarity (often 5 or fewer populations or very few individuals), declines, threats, or other factors. |
| G2 | Imperiled | At high risk due to very restricted range, very few populations (often 20 or fewer), few individuals, declines, threats, or other factors. |
| G3 | Vulnerable | At moderate risk due to a restricted range, relatively few populations (often 80 or fewer) or individuals, declines, threats, or other factors. |
| G4 | Apparently Secure | Uncommon but not rare; some cause for long-term concern due to declines or other factors. |
| G5 | Secure | Common; widespread and abundant. |

Assessments of conservation status have been carried out comprehensively for many of the best known groups of plants and animals. The analyses in this report are based on assessments of the nearly 16,200 native vascular plant species found in the United States, the nation’s approximately 2,550 native vertebrate animal species (including mammals, birds, reptiles, amphibians, and freshwater fishes), and a broad selection of invertebrate animals. These invertebrates include all 2,600 species in the following groups: freshwater mussels; freshwater snails; crayfishes; large branchiopods; butterflies and skippers; underwing moths; tiger beetles; and dragonflies and damselflies.

NatureServe and its member programs document not only the global conservation status of these species—that is, the species’ condition across its entire range—but also their state-level distributions and status within each state. The natural heritage programs take this further still. These state-level biological inventories map all known localities for those species in their states that are at risk and of conservation interest. The scientific databases of NatureServe and its member programs include nearly a half-million localities of rare and endangered species. This information is used extensively to inform conservation and land-use decisions made by government agencies, industry, and environmental organizations. The *New York Times* has even called NatureServe’s databases on species and ecosystems “...the country’s leading source of biological information for conservation planners, government agencies and land managers.”³

Nature Across America: Ranking the States

Stretching from above the Arctic Circle to below the Tropic of Cancer, and from the edge of the Atlantic to the middle of the Pacific Ocean, the United States encompasses a vast and varied landscape. The way in which life evolved and inhabited the nation's lands and waters has been influenced primarily by patterns in climate, landform, and geological history. The biological wealth of a region expresses the interaction between these physical features and the distinctive evolutionary histories of particular organisms. Adding to this complexity is the intersection between natural history and human history. Indeed, the breadth and intensity of this interaction tends to define a geography of risk for natural ecosystems and wild species.

Of course, nature is not limited by lines on a map, and state boundaries are merely artificial constructs superimposed on an ecologically complex landscape. From both a biological and conservation perspective, characterizing the landscape based on state boundaries has serious shortcomings, including the enormous disparity in size between states like Rhode Island and Alaska. Nonetheless, these geographic units are embedded in our culture and consciousness in a way that more ecologically sensible units—whether ecoregions, watersheds, or biomes—are not. And because of the way in which scientific data historically has been gathered, state-based assessments allow us to consider patterns for the broadest array of species, both rare and common.

Assessing biological condition and ecological health is a complex endeavor. Ideally one would consider both species and ecosystems, and the degree to which their composition, structure, and function compares to original conditions. Unfortunately, most of the data that would allow this idealized assessment on a state-by state basis does not exist. Instead, we focus here on four characteristics that provide more limited but still useful measures of the biological condition of the states, and for which we have consistent and comparable information: diversity, risk, endemism, and extinctions.

- **Diversity**
The number of different native species—or species “richness”—is the most prevalent measure of diversity and provides a general measure of biological wealth.
- **Risk**
The percentage of a state's plants and animals that are at risk of extinction due to rarity or other factors provides a measure of the scale of the conservation challenge. This measure includes species with a conservation status of extinct, imperiled, or vulnerable (GX through G3).
- **Endemism**
The number of species endemic—or unique—to a particular state provides a measure of its biological distinctiveness. Because these endemic species are found nowhere else in the world, their fate rests exclusively with conservation efforts carried out in that state.
- **Extinctions**
The number of species that are presumed or possibly extinct (GX and GH) measures the amount of diversity already lost. This measure includes only those species that

are globally extinct—that is, have disappeared from their entire former range—and does not include species that have disappeared from one state but still exist elsewhere.

Overall Biodiversity Patterns

For an overall perspective on the biological condition of the 50 states and the District of Columbia, Appendix Tables A through D present complete state rankings for diversity, risk, endemism, and extinctions. These overview assessments are based on analyses of the status and distribution of 21,395 plant and animal species, representing all species groups for which NatureServe currently has complete state-level distributional data. The state-level analyses presented here build on the work originally presented in *Precious Heritage*, but incorporate newly developed data on nearly 2,200 additional species.

Summarizing the top ranking states for each of these measures highlights several key patterns (Table 2).⁴ State size clearly matters for some measures such as diversity. Another pattern relates to the general tendency for species richness to increase towards the tropics, and most of the highly ranked states occupy positions along the nation’s southern border. Four states in particular stand out as having exceptional levels of biodiversity as measured by these four factors: California, Hawaii, Texas, and Alabama.

Table 2. Overall Top-Ranking States

| RANK | DIVERSITY | RISK | ENDEMISM | EXTINCTIONS |
|-------------|------------------|-------------|-----------------|--------------------|
| 1 | California | Hawaii | California | Hawaii |
| 2 | Texas | California | Hawaii | Alabama |
| 3 | Arizona | Nevada | Texas | California |
| 4 | New Mexico | Alabama | Florida | Texas |
| 5 | Alabama | Utah | Utah | Georgia |

California

California is a remarkable state biologically, ranking highly in each of these categories. Often referred to as an ecological island, separated by high mountains from the rest of the continent, California’s diversity is the product of the state’s variability of landforms, climate, and soil types. This physical complexity has fostered development of an array of specialized habitat types and has been the principal driver in the evolution of a highly distinctive flora and fauna. Along with this rich biota, the state supports a \$1.2 trillion economy, the world’s seventh largest, and an ever increasing flood of humanity. Many of the state’s species and natural habitats have been severely depleted due to conversion of vast stretches of land to housing, agriculture and transportation, and to large-scale exploitation of water, timber, and mineral resources.

Hawaii

Hawaii’s mid-oceanic isolation has created conditions allowing for the evolution of one of the world’s most distinctive biotas. Although few species were able to naturally colonize the archipelago, those that did won a biological sweepstakes. Faced with few competitors, these colonists evolved into a host of unique life forms. Because Hawaii’s native species developed in isolation, however, they have been particularly sensitive to the many changes brought about by human colonization of the islands, first by

Polynesians and later by westerners. Ironically, Hawaii ranks last among states in diversity of native species, yet those that it has pack a punch. The state leads in both percentage of species at risk and number of extinctions. Hawaii also has extraordinary levels of endemism, and were this expressed as a proportion of the total biota, rather than absolute number of endemic species, the state would also rank first in that category.

Texas

Looming large in both popular imagination and in biological diversity, Texas ranks highly in diversity, endemism, and number of extinctions. Occupying a central position along the nation’s southern border, this vast state overlaps several major ecological regions, including the southwestern deserts, the Great Plains, the humid Gulf Coast, and, at the state’s southern tip, the Mexican subtropics. As a result, many species reach distributional limits in Texas, and a strange blend of eastern and western species commingle within the state. Certain unusual landforms contribute to the state’s high rankings, including the Edwards Plateau, a limestone region that supports some of the rarest species in the nation.

Alabama

A state long overlooked from a conservation perspective, Alabama emerges from this analysis as the leading eastern state for species diversity, levels of risk, and numbers of extinct species. The state is home to an exceptionally rich freshwater fauna, thanks to an ancient and complex geological terrain and more than 235,000 miles of waterways spanning three major river basins. The state was also spared from the direct effects of the Pleistocene glaciers, enabling its flora and fauna to continue diversifying even during this unsettled geological period. Unfortunately, many of the state’s rivers and streams have now been dammed and otherwise severely altered, leading to the high levels of risk and extinction among Alabama’s diverse species.

Rankings by Plant and Animal Group

Looking at specific groups of plants and animals can reveal distinctive, and at times strikingly different, patterns from those seen in the overview of all 21,000 species. For a more detailed view of diversity and rarity patterns, Appendix Tables E through J present analyses for six key groups of organisms: vascular plants, mammals, birds, reptiles, amphibians, and freshwater fishes. Summarizing these findings, Table 3 lists top-ranking states for diversity in these taxonomic groups, while Table 4 lists top-ranking states for risk levels.

Table 3. Diversity: Top-Ranking States

| RANK | PLANTS | MAMMALS | BIRDS | REPTILES | AMPHIBIANS | FISHES |
|-------------|---------------|----------------|--------------|-----------------|-------------------|---------------|
| 1 | California | California | Texas | Texas | North Carolina | Alabama |
| 2 | Texas | Texas | New Mexico | Arizona | Georgia | Tennessee |
| 3 | Arizona | New Mexico | Arizona | New Mexico | Virginia | Georgia |
| 4 | New Mexico | Oregon | California | Florida | Tennessee | Kentucky |
| 5 | Oregon | Arizona | Florida | California | Texas | Mississippi |

Diversity for plants and mammals is highest in the southwest, where many of the states are large and have numerous specialized habitat types. In contrast, amphibians and freshwater fishes reach their highest levels of diversity in the southeastern United States. Indeed, with its combination of Appalachian highlands and humid coastal lowlands, this region is a global center for freshwater diversity. Bird and reptile diversity are more geographically mixed with both eastern and western states represented in the top tier. Texas, straddling east and west, leads all other states for both groups.

Table 4. Risk: Top-Ranking States

| RANK | PLANTS | MAMMALS | BIRDS | REPTILES | AMPHIBIANS | FISHES |
|-------------|---------------|----------------|--------------|-----------------|-------------------|---------------|
| 1 | Hawaii | Hawaii | Hawaii | Hawaii | California | Arizona |
| 2 | California | Florida | Alaska | Massachusetts | Oregon | Hawaii |
| 3 | Utah | California | California | Florida | Nevada | Utah |
| 4 | Nevada | Alaska | Florida | Maine | Washington | Nevada |
| 5 | Arizona | Georgia | Washington | California | Arizona | California |

Levels of rarity and risk highlight the precarious condition of Hawaii’s distinctive flora and fauna, and the state is tops for most taxonomic groups (with the major exception of amphibians, which do not naturally occur in Hawaii). Risk patterns for amphibians and freshwater fishes display an interesting contrast to diversity patterns in those same groups. Whereas southeastern states have the most species, the highest percentage of rare and at-risk fishes and amphibians are found in western states. Arizona, for example, an arid state more commonly associated with cacti, ranks highest for at-risk freshwater fishes. Alaska illustrates another interesting placement. This huge and still ecologically intact state has relatively few species overall due to its northern location, yet for rare birds ranks second only to Hawaii. The surprisingly high reptile rankings for Massachusetts and Maine are skewed by the inclusion of sea turtles in this analysis, all six species of which are considered to be at risk.

A More Perfect Union

The United States represents a remarkable political achievement, the result of stitching together state and federal interests into a self-sustaining union. Each state has representation in the governance of the whole, and each state contributes to the union’s overall success. So too, does each state maintain in trust a part of the nation’s overall biological heritage. And each plays a vital role in safeguarding America’s wild species for future generations.

But with more than 500 U.S. species already extinct or missing and several thousand more at risk, all is not well with the union. And while more than 200,000 species are known from the United States, scientific understanding of most of these is rudimentary. Yet just as we depend on clean water, clean air, and fertile soils for our well being, we depend on this diversity of life, both the well-known and charismatic, and the still unnamed and microscopic. As Harvard biologist Edward O. Wilson eloquently asserts, “surely the rest of life matters.”⁵

Pride in place is a powerful impulse, and an essential ingredient in engaging communities in successful conservation efforts. Taking best advantage of conservation opportunities, however, requires an understanding of the varying roles each state can play. *States of the Union* helps bring these roles into focus and places conservation opportunities into context. And while some states—such as California, Hawaii, Texas, and Alabama—may have special responsibilities, every state will need to be part of the overall conservation portfolio.

As with politics, all conservation ultimately is local. Efforts to protect our remaining natural lands and waters are now the focus of unprecedented interest and activity. A whole new generation of land and wildlife protection activities are being carried out by public and private sector institutions, ranging in size from major organizations, such as The Nature Conservancy, to the grassroots land trusts and watershed councils that have sprouted across the country. Taking local conservation action, however, requires localized information and knowledge. NatureServe and its network of natural heritage program members, with a presence in all 50 states, are dedicated to supporting the entire conservation community by providing needed scientific information and expertise about what exists, how it is doing, and where it is found.

Although we still have a great deal to learn about the nature of life in America, what we know already confirms just how extraordinary it is. Indeed, finding world-class biodiversity doesn't require that we look to foreign shores—we can find it in our own backyard. For the many U.S. species that are at risk of extinction, though, time is running out. America has demonstrated time and again that it can rise to and overcome daunting challenges. We are confident that given sufficient knowledge, resources, and commitment, the nation's remarkable biodiversity can be safeguarded, leading to the creation of a more perfect union.

Appendix: State Ranking Tables

The state-ranking tables on the following pages are based on analyses of the status and distribution of 21,395 plant and animal species drawn from the NatureServe Central Databases. A publicly accessible version of these databases is available through the NatureServe Explorer web site (www.natureserve.org/explorer). These analyses include all species groups for which NatureServe currently has complete data for state-level distributions and global conservation status. The tables include all native U.S. species of vascular plants, all native vertebrate animal species (excluding marine fishes), and native species in the following invertebrate groups: freshwater mussels; freshwater snails; crayfishes; large branchiopods; butterflies and skippers; underwing moths; tiger beetles; and dragonflies and damselflies. The figures reflect full taxonomic species only and do not include infraspecific taxa, such as subspecies or varieties. To provide a more complete picture of extinctions across America, Table D, Extinctions, draws from the entire NatureServe central database, and includes presumed or possibly extinct species from some invertebrate groups not listed above.

Table A. Species Diversity by State

| RANK | STATE | # OF SPECIES |
|------|----------------------|--------------|
| 1 | California | 6,717 |
| 2 | Texas | 6,273 |
| 3 | Arizona | 4,759 |
| 4 | New Mexico | 4,583 |
| 5 | Alabama | 4,533 |
| 6 | Georgia | 4,436 |
| 7 | Florida | 4,368 |
| 8 | Oregon | 4,136 |
| 9 | North Carolina | 4,131 |
| 10 | Utah | 3,892 |
| 11 | Nevada | 3,872 |
| 12 | Virginia | 3,803 |
| 13 | Tennessee | 3,772 |
| 14 | South Carolina | 3,701 |
| 15 | Oklahoma | 3,616 |
| 16 | Colorado | 3,597 |
| 17 | Mississippi | 3,580 |
| 18 | Louisiana | 3,495 |
| 19 | Arkansas | 3,415 |
| 20 | Washington | 3,375 |
| 21 | Missouri | 3,340 |
| 22 | New York | 3,333 |
| 23 | Kentucky | 3,258 |
| 23 | Illinois | 3,258 |
| 25 | Idaho | 3,205 |
| 26 | Wyoming | 3,184 |
| 27 | Ohio | 3,152 |
| 28 | Maryland | 3,148 |
| 29 | Michigan | 3,135 |
| 29 | Pennsylvania | 3,135 |
| 31 | Indiana | 3,098 |
| 32 | New Jersey | 3,022 |
| 33 | Montana | 2,921 |
| 34 | West Virginia | 2,873 |
| 35 | Wisconsin | 2,869 |
| 36 | Minnesota | 2,817 |
| 37 | Kansas | 2,778 |
| 38 | Massachusetts | 2,765 |
| 39 | Nebraska | 2,587 |
| 40 | Iowa | 2,533 |
| 41 | Connecticut | 2,497 |
| 42 | South Dakota | 2,406 |
| 43 | Maine | 2,352 |
| 44 | New Hampshire | 2,327 |
| 45 | Vermont | 2,274 |
| 46 | Delaware | 2,244 |
| 47 | Rhode Island | 2,078 |
| 48 | District of Columbia | 1,909 |
| 49 | North Dakota | 1,889 |
| 50 | Alaska | 1,835 |
| 51 | Hawaii | 1,418 |

Source: NatureServe Central Databases, April 2002

Table B. Risk Levels by State

| RANK | STATE | % AT RISK |
|-------------|----------------------|------------------|
| 1 | Hawaii | 62.7% |
| 2 | California | 28.5% |
| 3 | Nevada | 15.8% |
| 4 | Alabama | 14.8% |
| 5 | Utah | 14.7% |
| 6 | Florida | 14.3% |
| 7 | Arizona | 13.6% |
| 8 | Georgia | 12.9% |
| 9 | Oregon | 10.9% |
| 10 | Tennessee | 10.3% |
| 11 | New Mexico | 10.1% |
| 11 | Texas | 10.1% |
| 13 | North Carolina | 9.9% |
| 14 | Colorado | 9.1% |
| 15 | South Carolina | 8.6% |
| 16 | Alaska | 8.0% |
| 16 | Virginia | 8.0% |
| 18 | Washington | 7.3% |
| 19 | Kentucky | 7.0% |
| 19 | Mississippi | 7.0% |
| 21 | Wyoming | 6.8% |
| 22 | Idaho | 6.7% |
| 23 | Arkansas | 6.4% |
| 24 | Missouri | 5.4% |
| 25 | Louisiana | 5.2% |
| 26 | Montana | 5.1% |
| 27 | Indiana | 4.9% |
| 27 | New York | 4.9% |
| 27 | West Virginia | 4.9% |
| 27 | Illinois | 4.9% |
| 31 | Oklahoma | 4.5% |
| 32 | Pennsylvania | 4.3% |
| 32 | Ohio | 4.3% |
| 34 | Michigan | 4.0% |
| 35 | Maryland | 3.9% |
| 36 | Maine | 3.8% |
| 37 | Massachusetts | 3.7% |
| 38 | New Jersey | 3.6% |
| 39 | Iowa | 3.3% |
| 40 | Wisconsin | 3.2% |
| 41 | Vermont | 3.0% |
| 42 | Connecticut | 2.9% |
| 43 | New Hampshire | 2.8% |
| 43 | Rhode Island | 2.8% |
| 43 | Minnesota | 2.8% |
| 43 | Delaware | 2.8% |
| 47 | Kansas | 2.7% |
| 48 | Nebraska | 2.2% |
| 49 | District of Columbia | 2.0% |
| 51 | North Dakota | 1.6% |
| 51 | South Dakota | 1.6% |

Source: NatureServe Central Databases, April 2002

Table C. Endemism by State

| RANK | STATE | # OF SPECIES |
|------|----------------------|--------------|
| 1 | California | 1,295 |
| 2 | Hawaii | 1,011 |
| 3 | Texas | 340 |
| 4 | Florida | 269 |
| 5 | Utah | 182 |
| 6 | Nevada | 173 |
| 7 | Alabama | 144 |
| 8 | Arizona | 135 |
| 9 | Oregon | 106 |
| 10 | Colorado | 93 |
| 11 | New Mexico | 90 |
| 12 | Georgia | 63 |
| 13 | Washington | 53 |
| 14 | Idaho | 51 |
| 15 | Tennessee | 49 |
| 16 | Arkansas | 33 |
| 17 | Wyoming | 32 |
| 18 | Alaska | 26 |
| 19 | North Carolina | 24 |
| 20 | Mississippi | 23 |
| 21 | Virginia | 21 |
| 22 | Montana | 17 |
| 23 | Missouri | 16 |
| 24 | Kentucky | 14 |
| 25 | West Virginia | 13 |
| 26 | Michigan | 10 |
| 27 | New York | 9 |
| 28 | Louisiana | 8 |
| 29 | South Carolina | 7 |
| 30 | Connecticut | 6 |
| 30 | Massachusetts | 6 |
| 30 | Oklahoma | 6 |
| 33 | New Hampshire | 5 |
| 33 | Ohio | 5 |
| 33 | Pennsylvania | 5 |
| 36 | Illinois | 3 |
| 36 | Indiana | 3 |
| 36 | Maine | 3 |
| 36 | Nebraska | 3 |
| 36 | Rhode Island | 3 |
| 41 | Maryland | 2 |
| 41 | Minnesota | 2 |
| 41 | Vermont | 2 |
| 41 | Wisconsin | 2 |
| 45 | South Dakota | 1 |
| 51 | Delaware | 0 |
| 51 | District of Columbia | 0 |
| 51 | Iowa | 0 |
| 51 | Kansas | 0 |
| 51 | New Jersey | 0 |
| 51 | North Dakota | 0 |

Source: NatureServe Central Databases, April 2002

Table D. Extinctions by State

| RANK | STATE | TOTAL EXTINCT | PRESUMED EXTINCT (GX) | POSSIBLY EXTINCT (GH) |
|------|----------------------|------------------|--------------------------|--------------------------|
| 1 | Hawaii | 217 | 27 | 190 |
| 2 | Alabama | 90 | 25 | 65 |
| 3 | California | 53 | 12 | 41 |
| 4 | Texas | 27 | 3 | 24 |
| 5 | Georgia | 26 | 4 | 22 |
| 6 | Florida | 23 | 5 | 18 |
| 7 | Tennessee | 22 | 13 | 9 |
| 8 | Virginia | 20 | 7 | 13 |
| 9 | Kentucky | 18 | 15 | 3 |
| 10 | Ohio | 15 | 11 | 4 |
| 11 | Illinois | 13 | 7 | 6 |
| 11 | Nevada | 13 | 6 | 7 |
| 13 | Arkansas | 12 | 5 | 7 |
| 13 | New Mexico | 12 | 2 | 10 |
| 13 | North Carolina | 12 | 4 | 8 |
| 13 | Oregon | 12 | 2 | 10 |
| 17 | Colorado | 11 | 2 | 9 |
| 17 | Mississippi | 11 | 3 | 8 |
| 17 | Utah | 11 | 4 | 7 |
| 20 | Indiana | 10 | 8 | 2 |
| 20 | New York | 10 | 3 | 7 |
| 22 | Maryland | 8 | 2 | 6 |
| 22 | Oklahoma | 8 | 2 | 6 |
| 24 | Louisiana | 7 | 2 | 5 |
| 25 | Iowa | 6 | 3 | 4 |
| 25 | Michigan | 6 | 2 | 4 |
| 25 | Minnesota | 6 | 2 | 4 |
| 25 | New Jersey | 6 | 2 | 4 |
| 25 | Pennsylvania | 6 | 2 | 4 |
| 30 | South Carolina | 5 | 3 | 2 |
| 30 | West Virginia | 5 | 2 | 3 |
| 32 | District of Columbia | 4 | 1 | 3 |
| 32 | Kansas | 4 | 2 | 2 |
| 32 | Missouri | 4 | 2 | 2 |
| 32 | Wyoming | 4 | 1 | 3 |
| 36 | Arizona | 3 | 0 | 3 |
| 36 | Connecticut | 3 | 1 | 2 |
| 36 | Maine | 3 | 1 | 2 |
| 36 | Montana | 3 | 1 | 2 |
| 40 | Nebraska | 3 | 2 | 1 |
| 40 | North Dakota | 3 | 1 | 2 |
| 40 | Washington | 3 | 0 | 3 |
| 40 | Wisconsin | 3 | 2 | 1 |
| 44 | Alaska | 2 | 0 | 2 |
| 44 | Delaware | 2 | 1 | 1 |
| 44 | Massachusetts | 2 | 1 | 1 |
| 44 | New Hampshire | 2 | 1 | 1 |
| 44 | Rhode Island | 2 | 1 | 1 |
| 44 | South Dakota | 2 | 2 | 0 |
| 44 | Vermont | 2 | 1 | 1 |
| 51 | Idaho | 1 | 1 | 0 |

Source: NatureServe Central Databases, April 2002

Table E. Vascular Plant Diversity and Risk

| RANK | STATE | # SPECIES | RANK | STATE | % AT RISK |
|------|----------------------|-----------|------|----------------------|-----------|
| 1 | California | 5,418 | 1 | Hawaii | 64.3% |
| 2 | Texas | 4,509 | 2 | California | 30.7% |
| 3 | Arizona | 3,512 | 3 | Utah | 16.6% |
| 4 | New Mexico | 3,305 | 4 | Nevada | 15.7% |
| 5 | Oregon | 3,161 | 5 | Arizona | 15.3% |
| 6 | Florida | 3,038 | 6 | Florida | 14.1% |
| 7 | Georgia | 2,994 | 7 | Colorado | 11.2% |
| 8 | Utah | 2,966 | 8 | New Mexico | 11.1% |
| 9 | Alabama | 2,902 | 8 | Georgia | 11.1% |
| 10 | Nevada | 2,875 | 10 | Oregon | 11.0% |
| 11 | North Carolina | 2,771 | 11 | Texas | 9.4% |
| 12 | South Carolina | 2,582 | 11 | Alabama | 9.4% |
| 13 | Virginia | 2,580 | 13 | North Carolina | 9.2% |
| 14 | Colorado | 2,550 | 14 | South Carolina | 8.2% |
| 15 | Washington | 2,476 | 15 | Alaska | 8.0% |
| 16 | Idaho | 2,438 | 16 | Washington | 7.6% |
| 17 | Tennessee | 2,407 | 17 | Wyoming | 7.3% |
| 18 | Louisiana | 2,385 | 18 | Idaho | 7.0% |
| 19 | Mississippi | 2,369 | 19 | Tennessee | 6.6% |
| 20 | Oklahoma | 2,355 | 20 | Virginia | 6.0% |
| 21 | Wyoming | 2,286 | 21 | Montana | 5.1% |
| 22 | Montana | 2,239 | 21 | Mississippi | 5.1% |
| 23 | Maryland | 2,234 | 23 | Louisiana | 4.2% |
| 24 | New York | 2,215 | 24 | Kentucky | 3.8% |
| 25 | Arkansas | 2,202 | 25 | Arkansas | 3.7% |
| 26 | Pennsylvania | 2,202 | 25 | New York | 3.7% |
| 27 | Illinois | 2,155 | 27 | West Virginia | 3.6% |
| 28 | Michigan | 2,097 | 28 | Maryland | 3.4% |
| 29 | Missouri | 2,095 | 29 | Missouri | 3.3% |
| 30 | Kentucky | 2,085 | 30 | New Jersey | 3.1% |
| 31 | New Jersey | 2,074 | 30 | Delaware | 3.1% |
| 32 | Indiana | 2,063 | 30 | Oklahoma | 3.1% |
| 33 | Ohio | 2,062 | 33 | Maine | 3.0% |
| 34 | Massachusetts | 1,958 | 34 | Pennsylvania | 2.9% |
| 35 | West Virginia | 1,897 | 35 | Michigan | 2.7% |
| 36 | Wisconsin | 1,890 | 36 | Massachusetts | 2.6% |
| 37 | Connecticut | 1,823 | 37 | Indiana | 2.5% |
| 38 | Minnesota | 1,809 | 37 | Illinois | 2.5% |
| 39 | Kansas | 1,778 | 39 | Connecticut | 2.4% |
| 40 | New Hampshire | 1,631 | 40 | Vermont | 2.3% |
| 41 | Vermont | 1,622 | 41 | Ohio | 2.2% |
| 42 | Maine | 1,601 | 41 | Wisconsin | 2.2% |
| 43 | Delaware | 1,598 | 43 | New Hampshire | 2.1% |
| 44 | Iowa | 1,583 | 43 | Rhode Island | 2.1% |
| 45 | Nebraska | 1,561 | 45 | Kansas | 1.9% |
| 46 | South Dakota | 1,504 | 45 | Iowa | 1.9% |
| 47 | Rhode Island | 1,392 | 47 | District of Columbia | 1.8% |
| 48 | Alaska | 1,354 | 48 | Minnesota | 1.7% |
| 49 | District of Columbia | 1,314 | 49 | Nebraska | 1.3% |
| 50 | Hawaii | 1,249 | 51 | South Dakota | 0.9% |
| 51 | North Dakota | 1,201 | 51 | North Dakota | 0.9% |

Source: NatureServe Central Databases, April 2002

Table F. Mammal Diversity and Risk

| RANK | STATE | # SPECIES |
|------|----------------------|-----------|
| 1 | California | 195 |
| 2 | Texas | 159 |
| 3 | New Mexico | 154 |
| 4 | Oregon | 150 |
| 5 | Arizona | 138 |
| 6 | Colorado | 133 |
| 7 | Washington | 127 |
| 8 | Utah | 126 |
| 9 | Nevada | 123 |
| 10 | Wyoming | 109 |
| 11 | North Carolina | 107 |
| 12 | Idaho | 105 |
| 13 | Montana | 104 |
| 13 | Oklahoma | 104 |
| 15 | Alaska | 96 |
| 15 | South Carolina | 96 |
| 17 | Georgia | 92 |
| 18 | New York | 91 |
| 19 | South Dakota | 90 |
| 20 | Maryland | 88 |
| 21 | Florida | 86 |
| 22 | North Dakota | 85 |
| 23 | Nebraska | 83 |
| 24 | Kansas | 82 |
| 25 | Minnesota | 80 |
| 25 | Virginia | 80 |
| 27 | Tennessee | 76 |
| 28 | Massachusetts | 74 |
| 29 | Maine | 73 |
| 30 | Missouri | 72 |
| 31 | New Jersey | 71 |
| 32 | Kentucky | 70 |
| 33 | Arkansas | 69 |
| 34 | Indiana | 68 |
| 34 | Iowa | 68 |
| 34 | Pennsylvania | 68 |
| 34 | West Virginia | 68 |
| 38 | Illinois | 67 |
| 38 | Michigan | 67 |
| 38 | Wisconsin | 67 |
| 41 | Ohio | 66 |
| 42 | New Hampshire | 64 |
| 43 | Alabama | 63 |
| 44 | Connecticut | 62 |
| 45 | Louisiana | 59 |
| 45 | Vermont | 59 |
| 47 | Mississippi | 56 |
| 48 | Delaware | 54 |
| 49 | Rhode Island | 53 |
| 50 | District of Columbia | 43 |
| 51 | Hawaii | 7 |

| RANK | STATE | % AT RISK |
|------|----------------------|-----------|
| 1 | Hawaii | 28.6% |
| 2 | Florida | 18.6% |
| 3 | California | 16.4% |
| 4 | Alaska | 14.6% |
| 5 | Georgia | 14.1% |
| 6 | South Carolina | 13.5% |
| 7 | Alabama | 12.7% |
| 8 | Massachusetts | 12.2% |
| 9 | Texas | 10.7% |
| 10 | Kentucky | 10.0% |
| 11 | Maine | 9.6% |
| 12 | Rhode Island | 9.4% |
| 13 | Tennessee | 9.2% |
| 14 | Indiana | 8.8% |
| 14 | Virginia | 8.8% |
| 16 | Arkansas | 8.7% |
| 16 | Oklahoma | 8.7% |
| 18 | Missouri | 8.3% |
| 19 | North Carolina | 7.5% |
| 19 | Illinois | 7.5% |
| 21 | Mississippi | 7.1% |
| 21 | New Mexico | 7.1% |
| 21 | Washington | 7.1% |
| 24 | Louisiana | 6.8% |
| 25 | New York | 6.6% |
| 26 | Ohio | 6.1% |
| 27 | West Virginia | 5.9% |
| 28 | New Jersey | 5.6% |
| 29 | Connecticut | 4.8% |
| 30 | Pennsylvania | 4.4% |
| 31 | Oregon | 4.0% |
| 32 | Kansas | 3.7% |
| 33 | Maryland | 3.4% |
| 33 | Vermont | 3.4% |
| 35 | Nevada | 3.3% |
| 36 | Arizona | 2.9% |
| 37 | Wyoming | 2.8% |
| 38 | Nebraska | 2.4% |
| 38 | Utah | 2.4% |
| 38 | North Dakota | 2.4% |
| 41 | District of Columbia | 2.3% |
| 42 | South Dakota | 2.2% |
| 43 | Montana | 1.9% |
| 43 | Delaware | 1.9% |
| 45 | New Hampshire | 1.6% |
| 46 | Colorado | 1.5% |
| 46 | Michigan | 1.5% |
| 46 | Iowa | 1.5% |
| 49 | Minnesota | 1.3% |
| 50 | Idaho | 1.0% |
| 51 | Wisconsin | 0.0% |

Source: NatureServe Central Databases, April 2002

Table G. Bird Diversity and Risk

| RANK | STATE | # SPECIES |
|------|----------------------|-----------|
| 1 | Texas | 477 |
| 2 | New Mexico | 447 |
| 3 | Arizona | 435 |
| 4 | California | 415 |
| 5 | Florida | 386 |
| 6 | Washington | 372 |
| 7 | Colorado | 371 |
| 8 | North Carolina | 360 |
| 9 | Nebraska | 346 |
| 9 | Oklahoma | 346 |
| 11 | Kansas | 341 |
| 12 | New Jersey | 340 |
| 13 | South Dakota | 339 |
| 14 | Oregon | 338 |
| 15 | Georgia | 328 |
| 16 | New York | 327 |
| 17 | Alabama | 326 |
| 18 | Louisiana | 322 |
| 18 | Virginia | 322 |
| 20 | North Dakota | 318 |
| 21 | South Carolina | 313 |
| 22 | Arkansas | 312 |
| 23 | Illinois | 311 |
| 23 | Missouri | 311 |
| 25 | Minnesota | 308 |
| 26 | Maryland | 305 |
| 27 | Massachusetts | 303 |
| 27 | Michigan | 303 |
| 29 | Mississippi | 301 |
| 30 | Nevada | 299 |
| 31 | Utah | 296 |
| 32 | Delaware | 295 |
| 32 | Wyoming | 295 |
| 34 | Maine | 293 |
| 35 | Montana | 285 |
| 36 | Idaho | 284 |
| 36 | Kentucky | 284 |
| 38 | New Hampshire | 283 |
| 39 | Ohio | 280 |
| 40 | Wisconsin | 279 |
| 41 | Tennessee | 278 |
| 42 | Rhode Island | 277 |
| 43 | Indiana | 275 |
| 44 | Iowa | 274 |
| 45 | Connecticut | 273 |
| 46 | Alaska | 269 |
| 47 | Pennsylvania | 267 |
| 48 | District of Columbia | 241 |
| 49 | Vermont | 240 |
| 50 | West Virginia | 237 |
| 51 | Hawaii | 115 |

| RANK | STATE | % AT RISK |
|------|----------------------|-----------|
| 1 | Hawaii | 42.6% |
| 2 | Alaska | 5.6% |
| 3 | California | 4.8% |
| 4 | Florida | 3.1% |
| 5 | Washington | 3.0% |
| 6 | Texas | 2.9% |
| 6 | Oklahoma | 2.9% |
| 8 | Georgia | 2.7% |
| 8 | Nevada | 2.7% |
| 10 | North Carolina | 2.5% |
| 10 | Kentucky | 2.5% |
| 12 | Oregon | 2.4% |
| 13 | Kansas | 2.3% |
| 14 | Arkansas | 2.2% |
| 14 | Louisiana | 2.2% |
| 14 | Tennessee | 2.2% |
| 17 | Utah | 2.0% |
| 17 | Nebraska | 2.0% |
| 17 | Mississippi | 2.0% |
| 20 | Illinois | 1.9% |
| 20 | Missouri | 1.9% |
| 20 | Colorado | 1.9% |
| 20 | Pennsylvania | 1.9% |
| 20 | Virginia | 1.9% |
| 25 | Alabama | 1.8% |
| 25 | Arizona | 1.8% |
| 25 | Iowa | 1.8% |
| 25 | Indiana | 1.8% |
| 25 | Wisconsin | 1.8% |
| 25 | Ohio | 1.8% |
| 25 | South Dakota | 1.8% |
| 25 | Montana | 1.8% |
| 33 | Wyoming | 1.7% |
| 34 | South Carolina | 1.6% |
| 34 | North Dakota | 1.6% |
| 34 | New Mexico | 1.6% |
| 37 | New Jersey | 1.5% |
| 38 | New Hampshire | 1.4% |
| 38 | Maine | 1.4% |
| 40 | Massachusetts | 1.3% |
| 40 | Maryland | 1.3% |
| 40 | Minnesota | 1.3% |
| 40 | West Virginia | 1.3% |
| 44 | New York | 1.2% |
| 45 | Connecticut | 1.1% |
| 45 | Rhode Island | 1.1% |
| 47 | Michigan | 1.0% |
| 48 | District of Columbia | 0.8% |
| 49 | Idaho | 0.7% |
| 49 | Delaware | 0.7% |
| 51 | Vermont | 0.4% |

Source: NatureServe Central Databases, April 2002

Table H. Reptile Diversity and Risk

| RANK | STATE | # SPECIES | RANK | STATE | % AT RISK |
|------|----------------------|-----------|------|----------------------|-----------|
| 1 | Texas | 149 | 1 | Hawaii | 100.0% |
| 2 | Arizona | 102 | 2 | Massachusetts | 20.7% |
| 3 | New Mexico | 98 | 3 | Florida | 20.0% |
| 4 | Florida | 90 | 4 | Maine | 19.0% |
| 5 | California | 86 | 5 | California | 16.3% |
| 6 | Alabama | 85 | 6 | Rhode Island | 16.0% |
| 7 | Georgia | 83 | 7 | Georgia | 14.5% |
| 8 | Mississippi | 82 | 8 | New York | 14.3% |
| 9 | Oklahoma | 80 | 9 | Texas | 14.1% |
| 10 | Louisiana | 78 | 10 | Mississippi | 13.4% |
| 11 | South Carolina | 72 | 11 | Alabama | 11.8% |
| 12 | North Carolina | 68 | 12 | South Carolina | 11.1% |
| 13 | Missouri | 67 | 13 | Maryland | 10.9% |
| 14 | Arkansas | 64 | 14 | New Hampshire | 10.5% |
| 14 | Kansas | 64 | 15 | Pennsylvania | 8.1% |
| 16 | Illinois | 60 | 16 | Arizona | 7.8% |
| 16 | Virginia | 60 | 17 | Louisiana | 7.7% |
| 18 | Indiana | 58 | 18 | Michigan | 7.4% |
| 19 | Tennessee | 55 | 18 | North Carolina | 7.4% |
| 20 | Kentucky | 52 | 20 | New Mexico | 6.1% |
| 20 | Nevada | 52 | 21 | Indiana | 5.2% |
| 22 | Utah | 50 | 22 | Illinois | 5.0% |
| 23 | Colorado | 49 | 22 | Ohio | 5.0% |
| 24 | Iowa | 47 | 22 | Virginia | 5.0% |
| 24 | Nebraska | 47 | 25 | Washington | 4.8% |
| 26 | Maryland | 46 | 26 | Iowa | 4.3% |
| 27 | New Jersey | 42 | 27 | Colorado | 4.1% |
| 28 | Ohio | 40 | 28 | Kentucky | 3.8% |
| 29 | West Virginia | 39 | 28 | Nevada | 3.8% |
| 30 | Delaware | 37 | 30 | Connecticut | 3.7% |
| 30 | Pennsylvania | 37 | 31 | Tennessee | 3.6% |
| 32 | New York | 35 | 32 | Minnesota | 3.4% |
| 32 | Wisconsin | 35 | 33 | District of Columbia | 3.2% |
| 34 | Oregon | 32 | 34 | Kansas | 3.1% |
| 35 | District of Columbia | 31 | 34 | Oregon | 3.1% |
| 35 | South Dakota | 31 | 36 | Missouri | 3.0% |
| 37 | Massachusetts | 29 | 37 | Wisconsin | 2.9% |
| 37 | Minnesota | 29 | 38 | Delaware | 2.7% |
| 39 | Connecticut | 27 | 39 | Oklahoma | 2.5% |
| 39 | Michigan | 27 | 40 | New Jersey | 2.4% |
| 41 | Rhode Island | 25 | 41 | Nebraska | 2.1% |
| 42 | Idaho | 23 | 42 | Arkansas | 1.6% |
| 43 | Wyoming | 22 | 51 | Alaska | 0.0% |
| 44 | Maine | 21 | 51 | Idaho | 0.0% |
| 44 | Washington | 21 | 51 | Montana | 0.0% |
| 46 | New Hampshire | 19 | 51 | North Dakota | 0.0% |
| 47 | Vermont | 18 | 51 | South Dakota | 0.0% |
| 48 | Montana | 17 | 51 | Utah | 0.0% |
| 49 | North Dakota | 15 | 51 | Vermont | 0.0% |
| 50 | Hawaii | 4 | 51 | West Virginia | 0.0% |
| 51 | Alaska | 0 | 51 | Wyoming | 0.0% |

Source: NatureServe Central Databases, April 2002

Table I. Amphibian Diversity and Risk

| RANK | STATE | # SPECIES |
|------|----------------------|-----------|
| 1 | North Carolina | 84 |
| 2 | Georgia | 77 |
| 3 | Virginia | 74 |
| 4 | Tennessee | 72 |
| 5 | Texas | 71 |
| 6 | Alabama | 68 |
| 7 | South Carolina | 66 |
| 8 | Mississippi | 58 |
| 9 | California | 57 |
| 10 | Florida | 56 |
| 11 | Kentucky | 53 |
| 12 | Louisiana | 51 |
| 12 | Oklahoma | 51 |
| 14 | Arkansas | 49 |
| 15 | West Virginia | 47 |
| 16 | Missouri | 42 |
| 17 | Maryland | 40 |
| 18 | Illinois | 39 |
| 18 | Ohio | 39 |
| 20 | Indiana | 38 |
| 21 | Pennsylvania | 36 |
| 22 | New York | 32 |
| 23 | New Jersey | 31 |
| 23 | Oregon | 31 |
| 25 | Kansas | 29 |
| 26 | Delaware | 27 |
| 27 | New Mexico | 26 |
| 28 | Arizona | 25 |
| 28 | Washington | 25 |
| 30 | District of Columbia | 24 |
| 31 | Iowa | 23 |
| 31 | Michigan | 23 |
| 33 | Connecticut | 22 |
| 34 | New Hampshire | 21 |
| 34 | Vermont | 21 |
| 36 | Massachusetts | 20 |
| 36 | Minnesota | 20 |
| 38 | Wisconsin | 19 |
| 39 | Rhode Island | 18 |
| 40 | Colorado | 17 |
| 40 | Maine | 17 |
| 42 | Utah | 16 |
| 43 | South Dakota | 15 |
| 44 | Montana | 14 |
| 45 | Nebraska | 13 |
| 45 | Nevada | 13 |
| 45 | Wyoming | 13 |
| 48 | Idaho | 12 |
| 48 | North Dakota | 12 |
| 50 | Alaska | 6 |
| 51 | Hawaii | 0 |

| RANK | STATE | % AT RISK |
|------|----------------------|-----------|
| 1 | California | 49.1 |
| 2 | Oregon | 38.7 |
| 3 | Nevada | 38.5 |
| 4 | Washington | 32.0 |
| 5 | Arizona | 24.0 |
| 6 | North Carolina | 22.6 |
| 7 | Texas | 21.1 |
| 8 | Tennessee | 20.8 |
| 9 | Georgia | 19.5 |
| 10 | Alabama | 17.6 |
| 11 | New Mexico | 15.4 |
| 12 | South Carolina | 13.6 |
| 13 | Virginia | 13.5 |
| 14 | West Virginia | 12.8 |
| 15 | Florida | 12.5 |
| 15 | Utah | 12.5 |
| 17 | Mississippi | 10.3 |
| 18 | Arkansas | 10.2 |
| 19 | Idaho | 8.3 |
| 20 | Wyoming | 7.7 |
| 21 | Montana | 7.1 |
| 22 | Pennsylvania | 5.6 |
| 23 | Indiana | 5.3 |
| 24 | Ohio | 5.1 |
| 25 | Maryland | 5.0 |
| 26 | Louisiana | 3.9 |
| 26 | Oklahoma | 3.9 |
| 28 | Kentucky | 3.8 |
| 29 | New York | 3.1 |
| 30 | Illinois | 2.6 |
| 31 | Missouri | 2.4 |
| 32 | Alaska | 0.0 |
| 32 | Colorado | 0.0 |
| 32 | Connecticut | 0.0 |
| 32 | Delaware | 0.0 |
| 32 | District of Columbia | 0.0 |
| 32 | Iowa | 0.0 |
| 32 | Kansas | 0.0 |
| 32 | Maine | 0.0 |
| 32 | Massachusetts | 0.0 |
| 32 | Michigan | 0.0 |
| 32 | Minnesota | 0.0 |
| 32 | Nebraska | 0.0 |
| 32 | New Hampshire | 0.0 |
| 32 | New Jersey | 0.0 |
| 32 | North Dakota | 0.0 |
| 32 | Rhode Island | 0.0 |
| 32 | South Dakota | 0.0 |
| 32 | Vermont | 0.0 |
| 32 | Wisconsin | 0.0 |
| n/a | Hawaii | |

Source: NatureServe Central Databases, April 2002

Table J. Freshwater Fish Diversity and Risk

| RANK | STATE | # SPECIES |
|------|----------------------|-----------|
| 1 | Alabama | 284 |
| 2 | Tennessee | 283 |
| 3 | Georgia | 250 |
| 4 | Kentucky | 230 |
| 5 | Mississippi | 209 |
| 6 | North Carolina | 206 |
| 7 | Arkansas | 203 |
| 8 | Virginia | 202 |
| 9 | Missouri | 200 |
| 10 | Indiana | 189 |
| 11 | Illinois | 188 |
| 12 | Texas | 175 |
| 13 | Oklahoma | 171 |
| 14 | Pennsylvania | 163 |
| 15 | Louisiana | 160 |
| 16 | New York | 159 |
| 17 | West Virginia | 151 |
| 18 | Ohio | 148 |
| 19 | Wisconsin | 146 |
| 20 | Iowa | 139 |
| 21 | Michigan | 137 |
| 22 | Florida | 136 |
| 23 | Minnesota | 135 |
| 24 | Kansas | 121 |
| 25 | South Carolina | 120 |
| 26 | Maryland | 89 |
| 26 | South Dakota | 89 |
| 28 | Nebraska | 87 |
| 28 | North Dakota | 87 |
| 30 | Vermont | 81 |
| 31 | New Jersey | 67 |
| 32 | District of Columbia | 65 |
| 32 | Oregon | 65 |
| 34 | California | 62 |
| 34 | Delaware | 62 |
| 36 | Montana | 56 |
| 36 | Wyoming | 56 |
| 38 | Maine | 54 |
| 38 | New Mexico | 54 |
| 40 | Washington | 51 |
| 41 | New Hampshire | 50 |
| 42 | Colorado | 48 |
| 42 | Nevada | 48 |
| 44 | Connecticut | 46 |
| 44 | Massachusetts | 46 |
| 46 | Alaska | 44 |
| 47 | Idaho | 42 |
| 48 | Rhode Island | 37 |
| 49 | Arizona | 28 |
| 49 | Utah | 28 |
| 51 | Hawaii | 5 |

| RANK | STATE | % AT RISK |
|------|----------------------|-----------|
| 1 | Arizona | 85.7% |
| 2 | Hawaii | 80.0% |
| 3 | Utah | 60.7% |
| 4 | Nevada | 56.3% |
| 5 | California | 50.0% |
| 6 | New Mexico | 48.1% |
| 7 | Oregon | 29.2% |
| 8 | Texas | 23.4% |
| 9 | Tennessee | 21.6% |
| 10 | Idaho | 19.0% |
| 10 | Alabama | 19.0% |
| 12 | Colorado | 18.8% |
| 13 | Georgia | 16.8% |
| 14 | Wyoming | 16.1% |
| 15 | Kentucky | 14.8% |
| 16 | Virginia | 14.4% |
| 17 | Arkansas | 14.3% |
| 18 | North Carolina | 13.6% |
| 19 | Indiana | 11.1% |
| 20 | Missouri | 11.0% |
| 21 | Ohio | 10.1% |
| 22 | Illinois | 9.6% |
| 22 | Mississippi | 9.6% |
| 22 | Florida | 9.6% |
| 25 | Louisiana | 9.4% |
| 25 | Oklahoma | 9.4% |
| 27 | West Virginia | 9.3% |
| 28 | Montana | 8.9% |
| 29 | Michigan | 8.8% |
| 30 | Kansas | 8.3% |
| 31 | Pennsylvania | 8.0% |
| 32 | Washington | 7.8% |
| 33 | New York | 7.5% |
| 34 | Iowa | 7.2% |
| 35 | Nebraska | 6.9% |
| 35 | North Dakota | 6.9% |
| 37 | Minnesota | 6.7% |
| 37 | South Carolina | 6.7% |
| 39 | Wisconsin | 6.2% |
| 40 | New Hampshire | 6.0% |
| 41 | South Dakota | 5.6% |
| 41 | Maine | 5.6% |
| 43 | Rhode Island | 5.4% |
| 44 | Alaska | 4.5% |
| 44 | Maryland | 4.5% |
| 46 | Connecticut | 4.3% |
| 46 | Massachusetts | 4.3% |
| 48 | District of Columbia | 3.1% |
| 49 | New Jersey | 3.0% |
| 50 | Vermont | 2.5% |
| 51 | Delaware | 1.6% |

Source: NatureServe Central Databases, April 2002

U.S. Natural Heritage Programs

NatureServe represents a network of member programs comprising 75 independent centers that collect and analyze data about the plants, animals, and ecological communities of the Western Hemisphere. These natural heritage programs are found in all 50 U.S. states, ten Canadian provinces, and 12 countries and territories of Latin America and the Caribbean, where they are called conservation data centers. Most U.S. natural heritage programs are state government agencies; others are housed in universities or within Nature Conservancy field offices.

A directory of links to websites for these programs can be found via the NatureServe website at http://www.natureserve.org/nhp/us_programs.htm.

Alabama Natural Heritage Program
Montgomery, Alabama
334-834-4519

Georgia Natural Heritage Program
Social Circle, Georgia
706-557-3032

Alaska Natural Heritage Program
Anchorage, Alaska
907-257-2783

Great Smoky Mountains National Park
Gatlinburg, Tennessee
865-430-4743

Arizona Heritage Data Management System
Phoenix, Arizona
602-789-3618

Hawaii Natural Heritage Program
Honolulu, Hawaii
808-956-2501

Arkansas Natural Heritage Commission
Little Rock, Arkansas
501-324-9761

Idaho Conservation Data Center
Boise, Idaho
208-334-3402

California Natural Diversity Database
Sacramento, California
916-324-1414

Illinois Natural Heritage Database Program
Springfield, Illinois
217-785-8774

Colorado Natural Heritage Program
Fort Collins, Colorado
970-491-1150

Indiana Natural Heritage Data Center
Indianapolis, Indiana
317-232-4078

Connecticut Natural Diversity Database
Hartford, Connecticut
860-424-3589

Iowa Natural Areas Inventory
Des Moines, Iowa
515-281-8524

Delaware Natural Heritage Program
Smyrna, Delaware
302-653-2880

Kansas Natural Heritage Inventory
Lawrence, Kansas
785-864-3453

District of Columbia Natural Heritage Program
/National Capital Region Conservation Data Center
Washington, D.C.
202-342-1443

Kentucky Natural Heritage Program
Frankfort, Kentucky
502-573-2886

Florida Natural Areas Inventory
Tallahassee, Florida
850-224-8207

Louisiana Natural Heritage Program
Baton Rouge, Louisiana
225-765-2823

Maine Natural Areas Program
Augusta, Maine
207-287-8045

Maryland Natural Heritage Program
Annapolis, Maryland
410-260-8572

Massachusetts Natural Heritage
& Endangered Species Program
Westborough, Massachusetts
508-792-7270

Michigan Natural Features Inventory
Lansing, Michigan
517-373-7565

Minnesota Natural Heritage & Nongame Research
St. Paul, Minnesota
651-297-2276

Mississippi Natural Heritage Program
Jackson, Mississippi
601-354-7303

Missouri Natural Heritage Database
Jefferson City, Missouri
573-751-4115

Montana Natural Heritage Program
Helena, Montana
406-444-3019

Navajo Natural Heritage Program
Window Rock, Arizona
520-871-7068

Nebraska Natural Heritage Program
Lincoln, Nebraska
402-471-5569

Nevada Natural Heritage Program
Carson City, Nevada
775-687-4245

New Hampshire Natural Heritage Inventory
Concord, New Hampshire
603-271-3623

New Jersey Natural Heritage Program
Trenton, New Jersey
609-984-0097

New Mexico Natural Heritage Program
Albuquerque, New Mexico
505-277-3822

New York Natural Heritage Program
Albany, New York
518-402-8948

North Carolina Natural Heritage Program
Raleigh, North Carolina
919-715-8697

North Dakota Natural Heritage Program
Bismarck, North Dakota
701-328-5370

Ohio Natural Heritage Database
Columbus, Ohio
614-265-6472

Oklahoma Natural Heritage Inventory
Norman, Oklahoma
405-325-1985

Oregon Natural Heritage Program
Portland, Oregon
503-731-3070

Pennsylvania Natural Diversity Inventory - East
Middletown, Pennsylvania
717-948-3959

Pennsylvania Natural Diversity Inventory - Central
Harrisburg, Pennsylvania
717-783-0383

Pennsylvania Natural Diversity Inventory - West
Pittsburgh, Pennsylvania
412-281-1487

Rhode Island Natural Heritage Program
Providence, Rhode Island
401-222-2776

South Carolina Heritage Trust
Columbia, South Carolina
803-734-3930

South Dakota Natural Heritage Database
Pierre, South Dakota
605-773-4227

Tennessee Valley Authority Regional Natural Heritage
Norris, Tennessee
865-632-1661

Tennessee Division of Natural Heritage
Nashville, Tennessee
615-532-0437

Texas Conservation Data Center
San Antonio, Texas
210-224-8774

Texas Wildlife Diversity Program
Austin, Texas
512-389-4771

Utah Natural Heritage Program
Salt Lake City, Utah
801-538-4716

Vermont Nongame & Natural Heritage Program
Waterbury, Vermont
802-241-3718

Virginia Division of Natural Heritage
Richmond, Virginia
804-786-4554

Washington Natural Heritage Program
Olympia, Washington
360-902-1661

West Virginia Natural Heritage Program
Elkins, West Virginia
304-637-0245

Wisconsin Natural Heritage Program
Madison, Wisconsin
608-266-3369

Wyoming Natural Diversity Database
Laramie, Wyoming
307-766-3027

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Overall responsibility for NatureServe's central scientific databases rests with the NatureServe zoology and botany groups, who have specific responsibility for developing and maintaining rangewide information on species taxonomy, distribution, and conservation status. NatureServe's chief zoologist, Larry Master, oversees development and quality assurance of the animal data with other NatureServe staff including Geoff Hammerson, Dale Schweitzer, Syd Cannings, Margaret Ormes, and Nicole Capuano. NatureServe's North American botanist, Larry Morse, oversees development and quality assurance of the botanical data, with much of the taxonomic and distributional information based on data from John Kartesz of the Biota of North America Program. NatureServe staff assisting in the botanical work include Gwen Davis, Nancy Benton, Leah Oliver, and Kat Maybury.

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Notes

- ¹ Stein, B.A., L.S. Kutner, and J.S. Adams eds. 2000. *Precious Heritage: The Status of Biodiversity in the United States*. New York: Oxford University Press.
- ² Master, L.L. 1991. Assessing threats and setting priorities for conservation. *Conservation Biology* 5: 559-563; see also www.natureserve.org/explorer/ranking.htm.
- ³ Stevens, W.K. 2000. U.S. found to be a leader in its diversity of wildlife. *New York Times*, March 16, 2000, sec. A, p.18.
- ⁴ For a more thorough discussion of the ecological and evolutionary factors behind these geographic patterns, see Stein et al. 2000, pages 119-157.
- ⁵ Wilson, E.O. 2002. *The Future of Life*. New York: Knopf.