

# **THE ECOLOGICAL IMPORTANCE AND BIOLOGICAL UNIQUENESS OF THE GREATER CANYONLANDS ECOREGION**

**Submitted to:**

**The Southern Utah Wilderness Alliance**

**Submitted by:**

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## **Greater Canyonlands Region, Ecological Values**

The Greater Canyonlands Region encompasses a highly biodiverse area with outstanding wildlife habitat and rich ecological communities. Highly variable geography, geology and soil types that result from unique geological formations, coupled with elevation which ranges from 3,790 ft. to 10,360 ft., have resulted in a high diversity of ecotypes ranging from salt desert shrub, to lush grasslands, to alpine conifer forests in this area. These characteristics made this four thousand square mile region so rugged and wild that this is one of this country's last places European Americans discovered. Adopted thousands of years ago by the first Americans, who left some of the best evidence of their culture here, this high sandstone plateau deeply cut by several major rivers has remained today protected largely by its remoteness.

### **An Astounding Array of Ecological Treasures**

The Greater Canyonlands Region, which includes the Canyonlands Floristic Province, possesses greater plant diversity than almost any other floristic region in Utah. An astounding 960 different species of plants can be found in the greater Canyonlands Region –fully 57% of all plants known to the Colorado Plateau. The basis for these high rates of unique species, known as endemics, is linked to many unique features of this province such as climate, position along plant migratory routes, and distinctive geologic history. Conditions for growth on the unique geologic layers and stark formations of this part of the plateau are often rigorous at best, limiting the number of plants capable of establishment and reproduction in any given distinctive area. This results in small populations of unique plants that have evolved in relative isolation. Many of these species are so rare that they are easily imperiled by human actions such as off-road vehicle (ORV) use and non-native species introduction, and are protected as federally Threatened or Endangered species (e.g., Wright fishhook cactus). These species often have low reproductive potential, restricted geographic ranges, or typically experience substantial variation in population size, all of which make them highly vulnerable to human disturbance.

The highly rich and diverse plant communities of the greater Canyonlands ecoregion have led to a rich community of wildlife. Many hundreds of species of birds, mammals, fish and reptiles are found here. This includes 27 species of animals on Utah's Sensitive Species list, and seven species on the federal Threatened/Endangered/Candidate Species list. The points on the attached map represent surveyed sites for these rare and imperiled wildlife species, but most of the Canyonlands region remains unsurveyed, with the full range of ecological riches yet to be discovered. Biological hot spots include the Abajo Mountains and areas to the west, and river canyons including the San Rafael, Dirty Devil, Green, and Colorado Rivers. Of particular importance, roughly three quarters of greater Canyonlands region offers critical and high value predicted habitat for the majestic desert bighorn sheep.

### **Valuable Streams, Springs and Wetlands Are Critical to the Survival of Native Plants and Wildlife**

Free-flowing watercourses and healthy, interconnected riparian areas are critical to the survival of these fish and wildlife species,. The greater Canyonlands region contains over 750 miles of perennial and intermittent watercourses, most of which support perennial riparian vegetation, including Arch Canyon, Tenmile Wash, Keg Springs, Three Canyon, Barrier Creek, Dark Canyon and approximately 300 miles of the Colorado, Dirty Devil, San Rafael, and Green Rivers.

Riparian ecosystems, which make up less than one percent (1%) of all public lands managed by the Bureau of Land Management (BLM) in Utah, yet support 70-80% of Utah's arid land plants and wildlife species, and in fact act as important migration corridors for larger species such as deer, mountain lions and bears. Riparian zones provide temporary or permanent connections to outlying wetland pockets that provide auxiliary nurseries for a variety of invertebrates, amphibians, and larval and immature native fish. They provide refuges and stopovers for neotropical migrant birds within otherwise dry and inhospitable habitat. Riparian corridors are natural attractants to recreational users and are easily disturbed by human activities ranging from motorized and non motorized recreation to dams and water diversions. Because riparian sites are often relatively isolated from similar habitat in riparian zones associated with a different drainage, their recovery from disturbance is likely to be hindered by the difficulty of recolonization from other drainages. Therefore, it is important that the critical stream and riparian waterways within the greater Canyonlands region are adequately protected.

In addition, there are nearly 300 perennial springs in this otherwise dry landscape which are similarly critical to the survival of native plants and wildlife. Deep sandstone formations that store water bond with less permeable

layers leading to seeps and springs where they meet. Some of the rarest and most spectacular biotic assemblages of species in Utah are those associated with the springs and seeps that dot the landscape in this region. Just as areas with distinctive soil types are inhabited by their own special floras, including “hanging gardens” fed by sandstone seeps, the uniqueness of spring and seep habitats usually translates into unusual species communities. Further, because these springs are generally isolated from other springs and seeps, their recovery from any form of disturbance is likely to be impeded markedly by the difficulty of recolonization from similar habitats that may be miles away. Moreover, seeps, springs and hanging gardens provide crucial habitat for a variety of wildlife, ranging from important stop-over habitat for neotropical migrants, to essential habitat for resident vertebrates – especially amphibians - who use these areas for foraging and breeding. Because these communities are often unique and difficult or impossible to replace, they merit the strongest possible protection.

The State of Utah, and its recently completed “Wildlife Action Plan” for Utah’s sensitive wildlife, has recognized the outstanding values of the greater Canyonlands region for wildlife, and has delineated ten separate wildlife “Focus Areas” in this region. These areas were chosen by the Utah Division of Wildlife Resources as a high priority for protection in land use plans because they are known to harbor particularly high densities of state sensitive species while at the same time containing good mixtures of the top ten most important wildlife habitats identified by the Division, such as aspen stands, mountain shrublands, grasslands, and riparian areas. Certain wildlife Focus Areas within the greater Canyonlands region in particular stand out, such as the Abajo Mountains Focus Area, which contains 100% of all the Yavapai mountain snail known to exist in Utah, as well healthy populations of northern goshawk. The Elk Ridge Focus Area provides critical habitat for spotted owl, three-toed woodpeckers, and four species of state-listed bats. The Hanksville Desert Focus Area contributes high percentages of intact grassland habitat, as well as significant habitat for flannelmouth Sucker, which is a Conservation Agreement species.

### **The Importance of Protecting Roadless Areas**

Most of the State’s identified Focus Areas in the Wildlife Action Plan overlap with large tracts of roadless lands. In fact, all or part of 23 BLM and 8 Forest Service candidate wilderness units identified by the Utah Wilderness Coalition and Utah’s National Forest conservation community can be found in the greater Canyonlands ecoregion. The science of conservation biology in the past few decades has, through empirical research, conclusively shown us that one of the best “bangs for the buck” in terms of preserving biodiversity and sustaining critical ecological processes is through the conservation of large, unroaded tracts of habitat. This is achieved by protecting rare and susceptible native plant associations and wildlife from impacts including: aggressive exotic weeds that tend to “march in” on roads; plant collectors, hunters, and poachers who access areas on roads; noise that affects animal behavior; off-road vehicles that illegally degrade habitat by crossing pristine areas from roads; and pollution and erosion caused by roads and thus affecting watersheds. The science of conservation biology has demonstrated that keeping roadless areas intact, and connecting roadless areas through the protection of other unfragmented wildlife movement corridors, is critical for preserving species viability. Habitat fragmentation is of particular concern when species, such as bighorn sheep, require large expanses of habitat for activities such as breeding and foraging. Thus, ensuring connectivity across the landscape, as would be achieved by protecting the greater Canyonlands region, would help prevent local populations of species like bighorn sheep from becoming isolated from one another, can help increase reproductive success and genetic diversity, and decrease susceptibility of these populations to chance events (e.g. disease and natural disasters), which may lead to local extinctions.

Even though there are many large roadless tracts within the greater Canyonlands ecoregion, there are still a large number of roads and ways. On BLM lands there are approximately 2,500 miles of routes available for motor vehicle use. This is an increase of 70% more miles of motorized routes over that shown on 1985 maps. In addition, on National Forest lands in this area, there are roughly 360 miles of vehicle routes, and 370 on National Park Service lands, for a total of 3,200 miles of vehicles routes in this Greater Canyonlands area. Off-road vehicle use continues to be a growing threat. Major ORV events bring tens of thousands of vehicles to this area causing major problems such as soil erosion and dust resulting from surface disturbance - predominately in the eastern and southern part of the greater Canyonlands region. Wind erosion, which is an order of magnitude more significant than water erosion in this area, is significantly amplified by any soil surface disturbance. Such wind erosion may lead to particulate air quality problems over large areas. Most soil nutrients such as nitrogen

and carbon are stored in the top one inch of desert soils found in this area. This means that erosion can have a significant negative effect on the nutrients plants need. Soil compaction from the passage of just a few vehicles destroys fragile cryptobiotic soil crusts and is likely to take decades to recover. These living crusts, a combination of cyanobacteria, lichens, and mosses, reduce both wind and water erosion and enhance soil fertility. They are the most important source of nitrogen for plants in these systems and help store carbon in the soil. The impacts of ORVs to the soil leads to impacts to the vegetation which in turn affects functioning wildlife habitat, in addition to the fact that ORVs scare and induce behavioral changes in local wildlife.

Protection of this region will aid in our response to climate change. Leaving fossil fuels – particularly some of the dirtiest available – in the ground will prevent climate damaging emissions. Managing this area primarily for its outstanding natural values will improve this region's ecological health, function, and most importantly its ecological resilience, or rather - the ability to "bounce back" from the increased droughts expected with climate change.

One of our rarest experiences, a pristine night sky and natural quiet, is today almost impossible to experience in the lower 48 states. Enhanced by good air quality, this area offers a view of stars at their clearest against an absolutely black night. With no town within it and no intercity highways crossing it, the greater Canyonlands region is one of the few places where you can find the night sky unhindered by light pollution and silence only interrupted by wind and the sounds of wildlife.

Allison Jones, Jim Catlin, Emanuel Vasquez, Wild Utah Project, February 2011

# Canyonlands Region Rivers, Streams, and Springs

Green River

## LEGEND

-  Springs
-  Rivers and streams
-  Park Service Lands
-  Canyonlands Region

Hanksville

Moab

Monticello

Fry Canyon

0 5 10 20 30 40 Miles

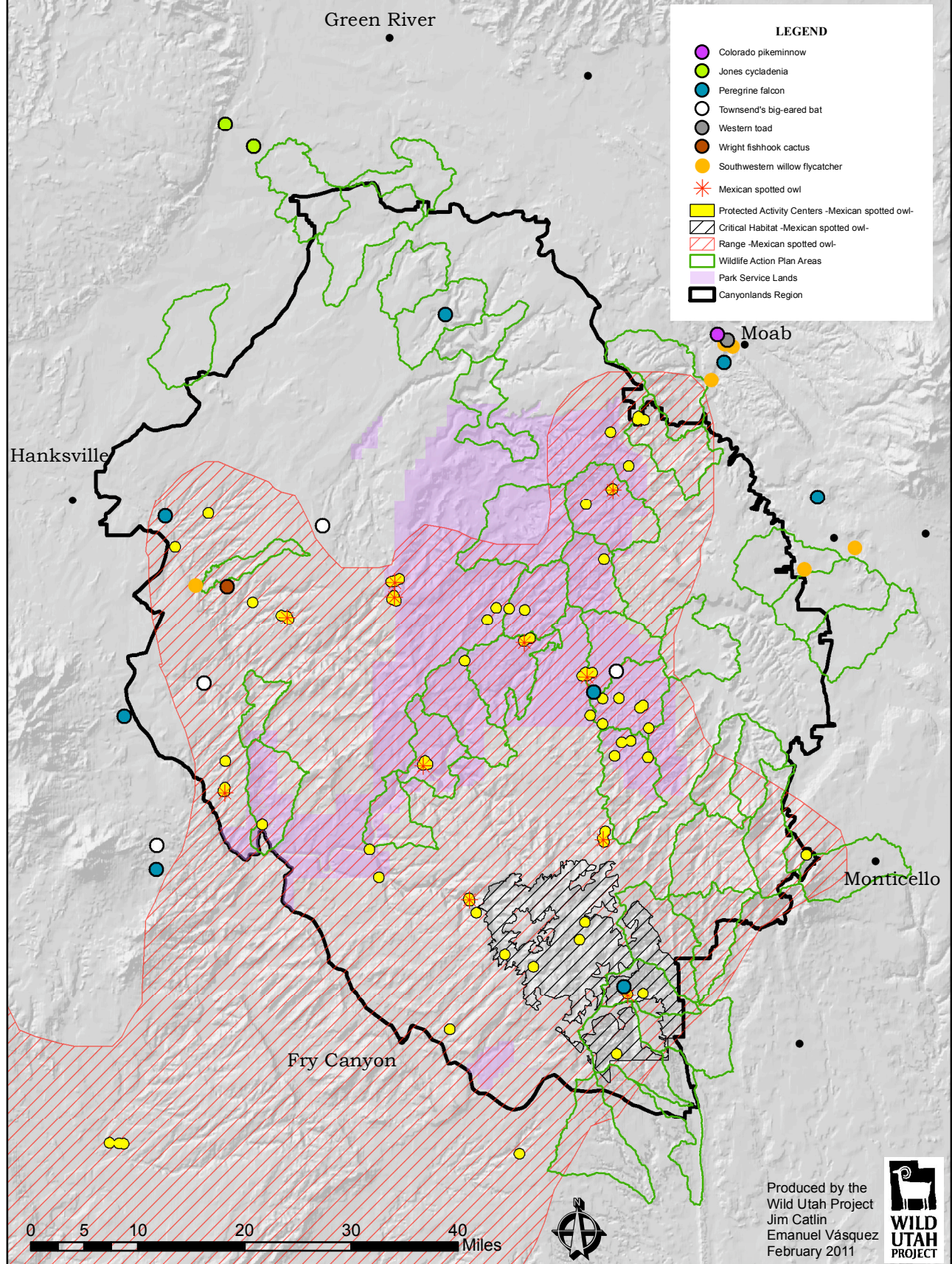


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# Canyonlands Region Wildlife Action Plan Areas and Threatened, Endangered, and Sensitive Species.





# Canyonlands Region Huntable Wildlife

Green River

## LEGEND

Crucial habitat for:

- Mule deer
- Blue grouse
- Black bear
- Rocky Mountain elk
- Sage grouse
- Desert big horn sheep
- Pronghorn antelope
- Canyonlands Region
- Park Service Lands

Moab

Hanksville

Monticello

Fry Canyon

0 5 10 20 30 40 Miles



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