ANTELOPE ISLAND STATE PARK

Antelope Island is managed by the Utah Division of State Parks and Recreation. It is the largest island in the Great Salt Lake and can be reached via a 7.5 mile-long causeway. The island's area is 28,463 acres with elevations ranging from 4,200 feet to 6,597 feet. Campsites are located on the northwest side of the island with trails scattered throughout the area.

History

In 1845, John C. Fremont and Kit Carson made the first European exploration of Antelope Island. They shot two antelope and Fremont named the island after them (Utah State Historical Society 2007). By the 1930's, the island's namesake had disappeared from Antelope Island. In 1993, a cooperative effort between the Utah Division of Wildlife Resources and the Utah Division of State Parks and Recreation resulted in the re-introduction of 24 pronghorn antelope. By the 1995 fawning season, the population had nearly doubled. It is hoped that predation from coyotes, bobcats, and eagles will act as population control.

Fielding Garr was quick to recognize Antelope Island's potential as livestock range. He began construction of a ranch house in 1848. He not only tended his own herds, but those of other stockmen as well. In 1849, Brigham Young asked Garr to manage the LDS Church's Tithing Herd, which was kept on the island until 1871. During this time, the LDS Church also invested thousands of dollars in valuable stallions and brood mares which were turned loose on the island. Antelope Island was also used as a base camp for a government funded survey of the Great Salt Lake by Captain Howard Stansbury during the years of 1849-50.

On February 15, 1893, twelve head of bison were transported to Antelope Island. John Dooly and George Frary loaded the bison into a small sailboat that nearly capsized as they sailed to the island. The Island Improvement Company owned most of the island from 1884 thru 1972. Cattle and sheep were the company's primary ranching commodity, although bison and horses were always on the island. In the 1930's, Antelope Island was the largest private sheep sheering operation west of the Mississippi. Recognizing its recreation potential, the northern 2,000 acres were acquired by the state in 1969. In 1981, the state purchased most of the remainder of the island, thus preserving it as a state park for all people to enjoy.

The Great Salt Lake is the largest natural lake west of the Mississippi River. It is 75 miles long and about 35 miles wide. Located in several wide flat basins, a slight rise in water level expands the surface area of the lake considerably. The first scientific measurements were taken in 1849. Since then, the lake level has varied by 20 feet, shifting the shoreline in some places as much as 15 miles. The Great Salt Lake is salty because it does not have an outlet. Tributaries are constantly bringing in small amounts of salt dissolved in their fresh water flow. Once in the Great Salt Lake, much of the water evaporates leaving the salt behind.

The Great Salt Lake is the remnant of Lake Bonneville; a great ice age lake that rose dramatically from a small saline lake 30,000 years ago. The most conspicuous reminders of Lake Bonneville are the ancient terraces etched into the landscape along the lake's former shorelines. The terraces were eroded by wave action and are relatively flat areas which follow a contour line. After the ice age, the earth's climate became drier and Lake Bonneville gradually receded to form the Great Salt Lake.

The ever fluctuating Great Salt Lake has frustrated attempts to develop its shoreline. As a result, much of the lake is ringed by extensive wetlands making the Great Salt Lake one of the most important resources for migrating and nesting birds.

Wildlife

The island has a bison herd that fluctuates between 550 and 700, making it one of the largest publicly owned bison herds in the nation. The herd is also recognized as one of the oldest in the country and possesses unique genetic characteristics making it of interest to breeders. Other mammals found on the island include mule

deer, pronghorn antelope, bighorn sheep, coyotes, bobcats, badgers, porcupines, jackrabbits, and several species of rodents. Antelope Island and the Great Salt Lake attract numerous migrating and nesting birds.

Trend Studies

Range Trend studies were first established on Antelope Island in 1994. Two studies were set up that year and four additional studies established the next year. All studies were reread in 1996, 2001, and 2006 and the results are reported here.

SUMMARY

MANAGEMENT UNIT - 00 - ANTELOPE ISLAND

Six trend studies were reread in the spring of 2006, all of which were dominated by annual grass and forb species.

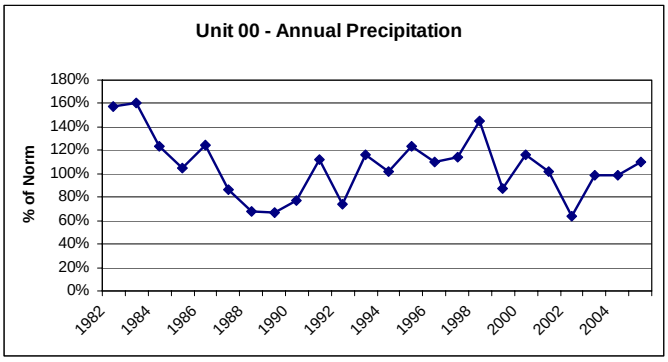

Figure 1. Annual precipitation data for Antelope Island. Data was collected at the Garfield and National Weather Sevice Forecast Office weather stations (Utah Climate Summaries 2006).

Vegetation trends are dependent upon fall and spring precipitation patterns. Precipitation data from this herd unit was compiled from the Garfield (just west of Magna and south of the Great Salt Lake) and National Weather Service Forecast Office (just south of the airport) weather stations (Figures 1 and 2). These weather stations were chosen for their similarity in precipitation to historical Antelope Island precipitation data collected from 1952 to 1972. In 2002, the average precipitation value at the 2 weather stations was below drought level (75% of normal; Figure 1). Spring precipitation for the unit was below normal from 2000 to 2004 and below 75% of normal in 2000 and 2001 (Figure 2). Spring precipitation is essential for the recruitment of browse seedlings and the establishment of native perennial grasses and forbs. Fall precipitation was below drought level in 1999 and 2002 (Figure 2), which decreases cheatgrass establishment. Many of the changes in the trends discussed below are resultant of changes in precipitation.

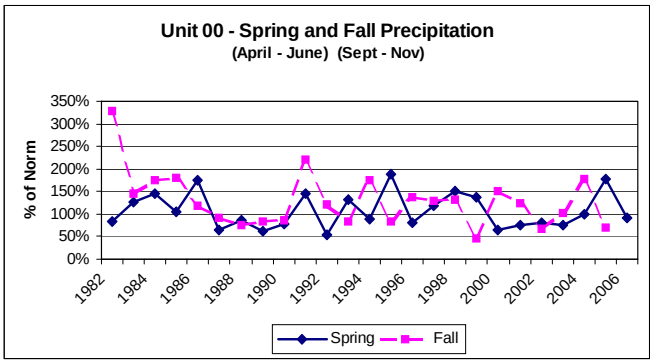

Figure 2. Spring and fall precipitation data for Antelope Island. Data was collected at the Garfield and National Weather Service Forecast Office weather Stations (Utah Climate Summaries 2006).

The browse trends have not changed on the island since the studies were established in 1994 and 1995 (Figure 3). This is due to a lack of browse on the study areas. Sagebrush was sampled in the density measurements of only 1 of the 6 studies, Frary Homestead (00-2). On this study, the density of basin big sagebrush increased slightly from 20 plants/acre in 1996 and 2001 to 160 plants/acre in 2006. In the case of all studies, the fire frequency is far too high for sagebrush to establish and thrive which depletes sagebrush seed in the seedbank. The fire frequency is increased because of increased fine fuels provided by the high abundance of annual grasses (namely cheatgrass; Figure 4). The dense annual grasses also prevent the recruitment of perennial grasses and shrubs.

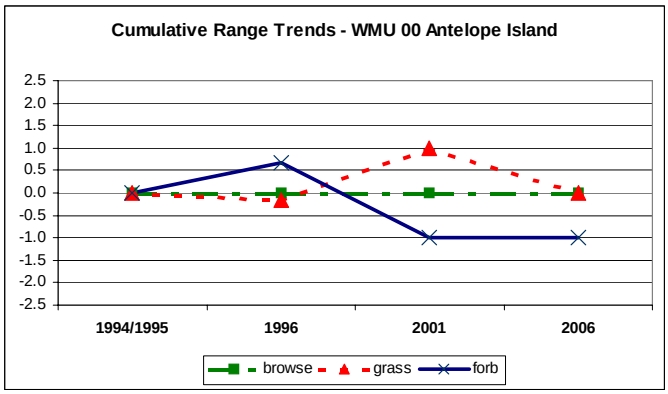

Figure 3. Cumulative range trends for unit 00, Antelope Island.

The grass trends have fluctuated since the study establishments in 1994/1995 (Figure 3). The grass trends have oscillated as nested frequencies of cheatgrass and perennial grasses have fluctuated (Figures 3, 4, and 5). The most notable change occurred in 2001 when cheatgrass nested frequency decreased and the nested frequency of perennial grasses increased; the grass trend reached a unit high (Figures 3 and 5). Overall, it appears as though the nested frequency and cover of cheatgrass has

decreased since 1994/1995 (Figures 4 and 5). One explanation for the decrease in cheatgrass is the drought in 2000 and 2001, which caused a substantial decrease in cheatgrass nested frequency in 2001 and did not recover by 2006. Another likely explanation for the decrease in cheatgrass is the increase in bulbous bluegrass (Figures 4 and 5). Stewart and Hull (1949) noticed that bulbous bluegrass has the ability to displace and outcompete cheatgrass. The nested frequency unit averages for these two species appear to be supporting that observation (Figure 5). The grass composition is poor and, in 2006, the majority of the perennial grass cover and nested frequency was contributed by purple three-awn and bulbous bluegrass, low value increasers.

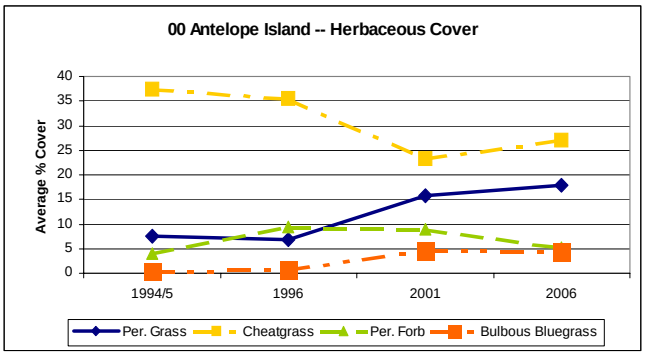

Figure 4. Antelope Island herbaceous understory cover unit averages.

The forb composition is also poor. Most forbs in the unit provide little forage value for big game and many are weedy. The forb trend (Figure 3) decreased from 1996 to 2001, then stabilized in 2006. It appears that the perennial forbs are not able to compete with the abundant annual grasses (Figures 4 and 5). Coupled with heavy grazing pressure from bison, many forbs have been decreasing in nested frequency and cover. This was exemplified at the Alfalfa Seeding study (00-4), where the combination of drought and heavy grazing decreased the abundance of alfalfa. It now appears that annual weeds are replacing the alfalfa. The exception to the decrease in perennial forbs is moth mullein. Moth mullein has been sampled on 5 of the 6 studies, but has been increasing in nested frequency and cover on the western studies (Timely Gull Ridge and Buffalo Scaffold). It and storksbill have been increasing despite competition with cheatgrass.

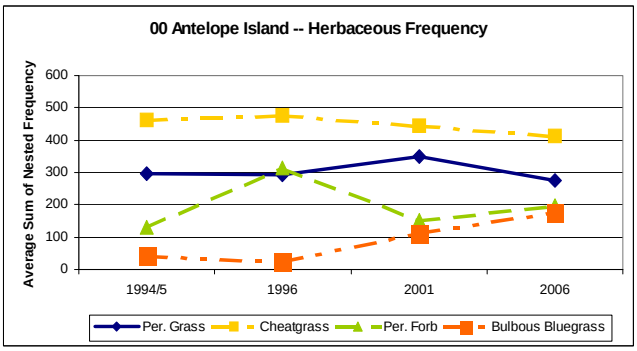

Figure 5. Antelope Island herbaceous understory nested frequency unit averages.

The Desirable Components Index (DCI) scores for the unit are quite low and will continue to be so long as annual grasses dominate and key browse species are unable to establish (Figure 6). The DCI scores in 1994/1995 and 1996 were very poor. The scores increased to poor in 2001 and 2006. The reasons for the low scores are the high annual grass cover and low browse cover. Until the cheatgrass is controlled and preferred browse for big game are reestablished, the DCI scores will remain low.

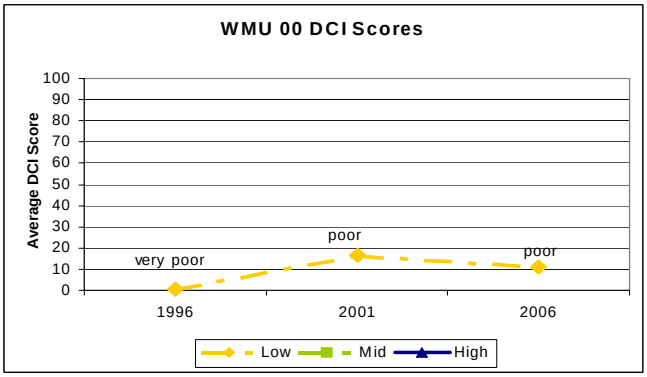

Figure 6. Antelope Island unit average Desirable Components Index (DCI) scores by year. The DCI score are divided into 3 categories based on ecological potential. These are: Low, Mid-level, and High. All studies on Antelope Island are low potential.