

**Alberta Arctic Butterfly Surveys,
Capulin Volcano National Monument Area
2003 Annual Report**

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Introduction

The area east of Raton, New Mexico includes a variety of extinct volcanic features such as lava flows, shield volcanoes, and cinder cones. Extending eastward from the Rocky Mountain Front Range into the high plains, the Raton Mesa complex varies in elevation from 2200m to 2700m, and the climate is harsh (Cary 2001). This archipelago of volcanic uplands harbors several endemic butterfly subspecies and relict butterfly species not known from other localities in New Mexico and Colorado (Cary and Holland 1992 [1994]). Capulin Volcano National Monument (CAVO) is one of several uplands in this complex.

North American butterflies in the genus *Oeneis* are commonly called "arctics" because they generally inhabit windy, tundra-like habitats, often at high elevation. The Alberta arctic (*Oeneis alberta*) occupies the lowest habitats for its genus. Its core population is on the prairies of Alberta, Saskatchewan, Manitoba, Montana and North Dakota (Scott 1986:249). A small number of outlier colonies have been identified far to the south in the White Mountains of Arizona (*O. alberta daura*), in central Colorado (unnamed), and on the Raton mesa complex (*O. alberta capulinensis*) of northeast New Mexico.

The Capulin subspecies of the Alberta arctic butterfly (*O. alberta capulensis*) was described by Brown (1970). Since its discovery at Capulin Volcano, it has been found to inhabit other windblown grassy mesas in the Raton Mesa complex: Little Horse Mesa at Sugarite Canyon State Park, Dale Mountain on Johnson Mesa, and Sierra Grande (Toliver et al. 1994; Cary 2001). The Capulin Mountain population occurs on the north side of the outer volcano rim, in patches of bunch grass (Brown 1970).

At Capulin Volcano, Brown (1970) found the butterfly in flight at the Capulin Mountain crater rim in mid-May, but not after early June. In Brown's study, only males were flying, while females stayed in grass clumps or cracks in the rock. Coloration is variable, from light to darker greyish brown. The underside is lighter than the upper side. The upper forewing typically has one to three spots on the forewing and one on the hindwing. The female upper forewing may be

less grey than that of the male, making females appear brighter in color. The host plant is not known with certainty, but the butterfly associates with bunch grasses of the genus *Festuca* (Brown 1970, Scott 1986:249), and the host is probably a member of this genus (Parmenter et al. 2000).

The Capulin Alberta arctic butterfly is not considered threatened by human activities within the national monument (Parmenter et al. 2000). However, so little is known about the species' distribution and biology within the park that it is difficult to assess potential threats. Human or natural impacts on the small known populations could threaten the species' existence. For example, loss of larval host plant(s) within the park would threaten the butterfly. Implementation of a fire management plan (currently in preparation) could heavily impact the butterfly. Because the population and distribution within the park are so small, drought and severe weather such as hailstorms during the flight period could greatly affect the CAVO butterflies. Basic natural history information is needed before potential impacts to the population can be anticipated and a management strategy developed. The purpose of this study is to investigate the biology of the Capulin Alberta arctic butterfly at CAVO, with particular emphasis on determining its distribution, larval host plant(s), and potential conservation issues. The primary goal is to provide management recommendations for this endemic butterfly.

Methods

We conducted surveys at CAVO and Dale Mountain, NM, on state land near the park, on 27-28 May 2003. KJ, SC, and LP, accompanied by Bruce Robinson, park biological technician, and Sheryl Horton, Student Conservation Association intern, conducted all surveys. On 27 May we conducted walking area searches of the north slope of the outside north rim of the cone at CAVO and on the north slope of the inside south face of the cone, from approximately 1300h to 1400h. On 28 May we again conducted walking area searches of the outside north rim from 830h to 945h.

We surveyed at Dale Mountain on 27 May from 1400h to 1500h and on 28 May from 1045h to 1245h. We searched various habitat types on the east side of the mountain, east of the communications tower, on the first day. On day two, we focused on wetter, greener areas having apparently greater plant diversity, because butterflies appeared to be more abundant in those habitats, and we avoided large bunch grasses, where we had seen few butterflies.

We captured a subset of butterflies using standard butterfly nets and we took GPS points of all butterflies detected.

Results and Discussion

CAVO

We found no Alberta arctic butterflies at CAVO on either day. The weather was sunny and breezy, but warm; thus, if butterflies were present they should have been flying. Park staff noted that a strong hailstorm occurred at CAVO between 10-14 May. If butterflies had been flying when the storm occurred, they could have been killed. Alternatively, we could have missed the butterflies' active period, which could be over by the last week of May. However, some butterflies were active at nearby Dale Mountain, which suggests that our survey timing was appropriate. Further surveys are necessary to determine if the CAVO population is extant.

Dale Mountain

On 27 May, we captured one Alberta arctic at Dale Mountain and observed four more, for a total of five. The next morning we detected 22, mainly in patches of *Festuca* (Figure 1). The butterflies appeared to be more abundant at the lower edges of north-facing slopes, in wetter, greener vegetation. SC has observed larger numbers at this site on previous visits, which suggests that either we did not survey during the peak activity period at Dale Mountain or numbers were down at that site relative to previous surveys.

Future Work

We plan to visit the CAVO and Dale Mountain sites again in 2004, this time to survey in the second week of May. We will also conduct surveys at Little Horse Mesa, another site in the area where the butterfly could be present. If no butterflies are detected at CAVO during the first visit, we will make another trip to both sites in late May. If we find appreciable numbers of Alberta arctics at any of the sites, we will attempt to determine the host plants used for oviposition, and we will map habitat occurrence and use.

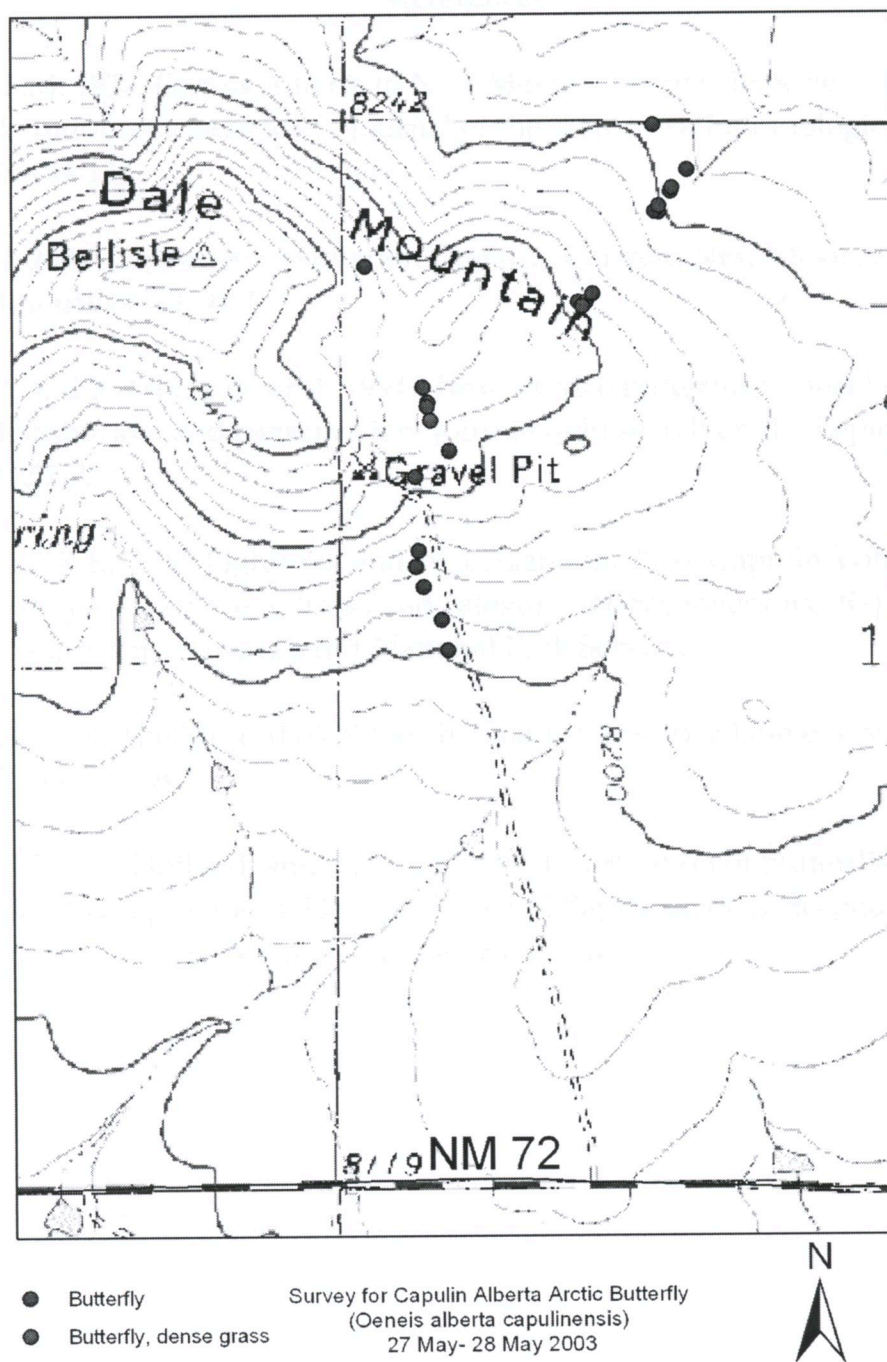


Figure 1. Map of Dale Mountain, showing locations of Alberta arctic detections, 27-28 May 2003.

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