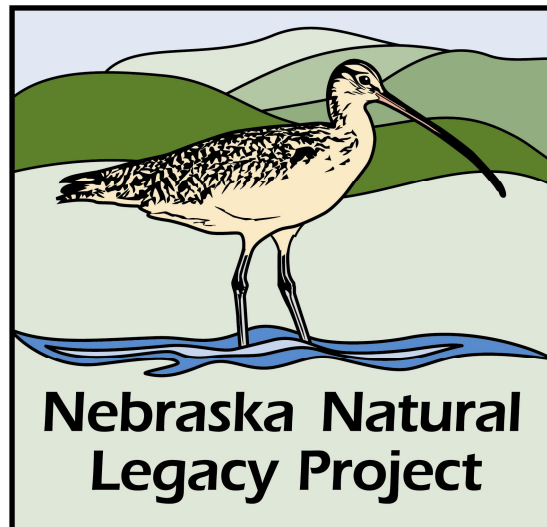


Buchholz Black Dash

(Euphyes conspicua buchholzi)

A Species Conservation Assessment
for
The Nebraska Natural Legacy Project



Prepared by Melissa J. Panella
Nebraska Game and Parks Commission
Wildlife Division
November 2012

The mission of the Nebraska Natural Legacy Project is to implement a blueprint for conserving Nebraska's flora, fauna and natural habitats through the proactive, voluntary conservation actions of partners, communities and individuals.

Purpose

The primary goal in development of at-risk species conservation assessments is to compile biological and ecological information that may assist conservation practitioners in making decisions regarding the conservation of species of interest. The Nebraska Natural Legacy Project recognizes the Buchholz Black Dash (*Euphyes conspicua buchholzi*) as a Tier I at-risk species of high conservation priority. The Buchholz Black Dash (BBD) is a subspecies of the Black Dash (*Euphyes conspicua*). Survival of BBD is likely to be highly influenced by available habitat in Nebraska. Some general management recommendations are made here regarding the BBD; however, conservation practitioners will need to use professional judgment to make specific management decisions based on objectives, location, and a multitude of variables. This resource was designed to share available knowledge of the BBD that will aid in the decision-making process or in identifying research needs to benefit the species. Species conservation assessments should not be stagnant documents but rather will need to be updated as new scientific information becomes available. The Nebraska Natural Legacy Project focuses efforts in the state's Biologically Unique Landscapes (BULs), but it is recommended that whenever possible, practitioners make considerations for a species throughout its range in order to increase the outcome of successful conservation efforts.

<u>Common Name</u>	Buchholz Black Dash	<u>Scientific Name</u>	<i>Euphyes conspicua buchholzi</i>	
<u>Order</u>	Lepidoptera	<u>Family</u>	Hesperiidae	
<u>G-Rank</u>	G4T1	<u>S-Rank</u>	S1	<u>Goal</u> 10 <u>Distribution</u> Limited
<u>Criteria for selection as Tier I</u>	G1			
<u>Trends since 2005 in NE</u>	Stable			
<u>Range in NE</u>	Northeastern portion of state			
<u>Habitat</u>	Wet meadow and spring-fed marsh; larvae feed on wide-leaf sedge; adults in boggy areas			
<u>Threats</u>	Habitat conversion and fragmentation; exotics; drying up of "wet" areas; housing development; heavy grazing Climate Change Vulnerability Index: Extremely vulnerable			
<u>Research/Inventory</u>	Conduct surveys to assess distribution, abundance and population dynamics; determine best management practices			
<u>Landscapes</u>	Elkhorn Confluence, Elkhorn River Headwaters			

Status

BBD State Heritage Status Rank is S1, U.S. national status is N1, and global conservation rank is G4T1 Critically Imperiled (NatureServe 2009). It is one of the rarest marsh skippers in Nebraska. Its survival will likely be highly dependent on actions taken within the state. The Nebraska Natural Legacy Science Team set a goal of maintaining ten populations in the state, assuming there is little movement between populations and fates of populations are not correlated. Moderate viability (40% chance of survival) of each population gives >99% probability of at least one population surviving 100 years (Morris et al. 1999).

Principal Threats

The conversion of wet meadow and other moist habitats used by BBD to agriculture and housing developments destroys or fragments once suitable sites for the butterfly. Heavy urbanization of some areas within the range of *E. conspicua* has caused it to become increasingly rare in those locales (Stichter 2012). An increase in trees and exotic plants can push BBD out of its wetland habitat (Schneider 2011, Stichter 2012). Under normal grazing conditions, cattle tend to avoid ingesting toxic milkweed (whose nectar BBD feeds on), but heavy cattle grazing and disturbance can damage native plants the butterfly uses. Additionally, if the wetlands that BBD occupies dry out because of man-made alterations, natural weather events, or climate change, the butterfly loses primary habitat. And, over-collecting of BBD is a threat because of the vulnerable condition of the species' status.

Species Description

The wings of BBD are dark, each with a somewhat diamond-shaped patch of yellow. The pattern on the male's forewings has dark stigma under yellow. The forewings of the female have yellowish spotting in a crescent shape. Some of the spots are translucent. The BBD wingspan is 1-1.4 in (2.5-3.5 cm) (Walton 2012). BBD can sometimes be mistaken with the similar Dion Skipper, a rare butterfly with Natural Legacy Tier II designation (Dankert et al. 2005, Panella 2010). Information is lacking on how to identify the egg, larva, and pupa (Walton 2012).

Area Requirements

Black Dash is non-migratory (NatureServe 2009). It occurs near wetland habitats (Walton 2012). Records of BBD occurrences reveal that they use eastern sedge wet meadow and adults seem to prefer boggy areas (Schneider et al. 2011). Evidence suggests that BBD may search for nectar in upland habitats as well (Cech 2005, Walton 2012) and may travel more than half a mile (up to a kilometer) (NatureServe 2009). However, there are no precise data from mark-recapture studies to know how far BBD disperse (S. M. Spomer, pers. comm.), and it is important to note that there is no evidence that BBD is an active colonizer (Stichter 2012). *E. conspicua* may tolerate shrubby or partially wooded conditions but not heavy woodland (NatureServe 2009, Stichter 2012). BBD is found in northeastern Nebraska, including the Calamus River and Elkhorn Confluence landscapes (Schneider et al. 2011). There are additional records from Iowa and Oklahoma (S. M. Spomer, pers. comm.).

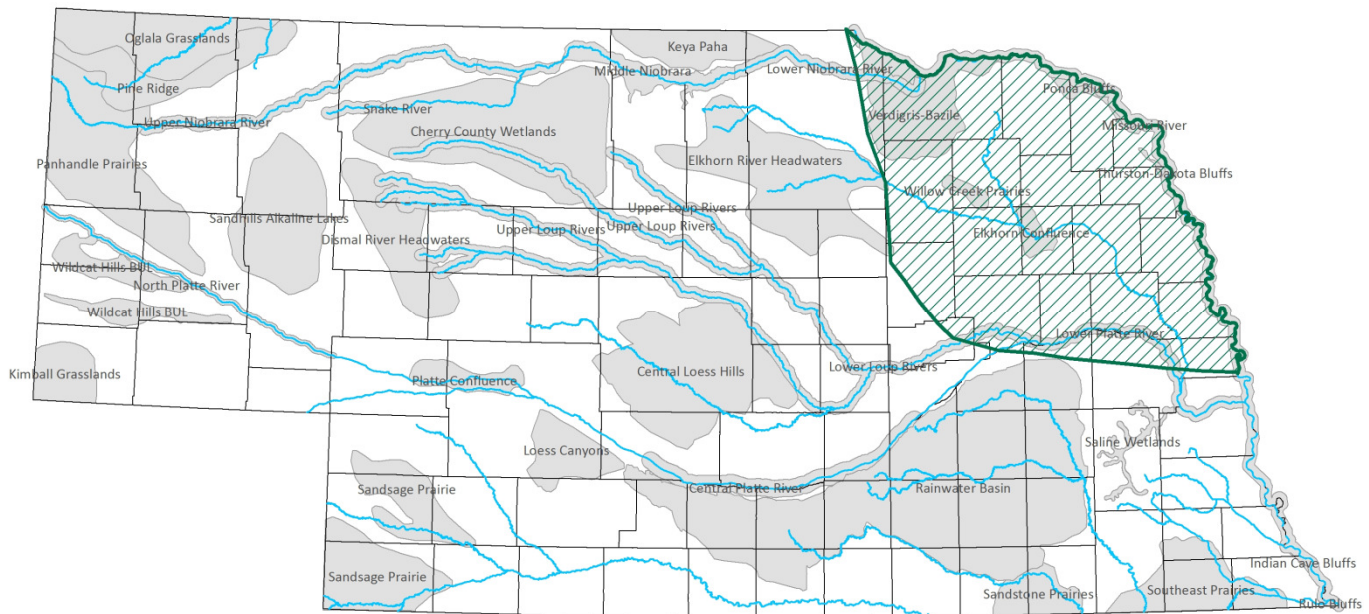


FIGURE 1. Current range of BBD in Nebraska based on field observations, museum specimens, and expert knowledge. Map courtesy of Nebraska Natural Heritage Program, Nebraska Game and Parks Commission.

Diet

Adults take nectar from flowering plants, especially milkweeds *Asclepias syriaca* and *Asclepias incarnata* (Walton 2012), native plant species of Nebraska (USDA – NRCS 2012). Larvae and eggs have been observed on tussock-sedge or upright sedge (*Carex stricta*) (Walton 2012, O’Donnell et al. 2007, Strichter 2012). *C. stricta* also has native status in Nebraska (USDA – NRCS 2012). BBD likely can use other sedge species, but more research is needed as to its preferences (Stichter 2012).

Life Cycle

Relatively little information is known about the egg, larva, and pupa of this species. The overwintering larvae hibernate. The BBD flight period peaks in July (Panella 2010, Stichter 2012). *E. conspicua* has one brood per year (Stichter 2012).

Research and Conservation Strategies

A multitude of factors should be considered before implementing any conservation actions for species. Within the guidelines of state and federal law, the Nebraska Natural Legacy Project recommends: 1) consider, but do not limit management to, scenarios that benefit both the species of interest and property owners, 2) consider species dispersal and landscape context, 3) plan for multiple years, and 4) do no harm. Conservation considerations should be made for BBD in at least two Biologically Unique Landscapes: Elkhorn Confluence and Elkhorn River Headwaters. These landscapes offer the best opportunities for BBD based on current

knowledge. Given the identified principal threats, conservation efforts for BBD may want to employ the following management strategies:

1. Records of BBD are lacking, and it is unclear if this is because the skippers have become extirpated from their habitats or because researchers just haven't actively been seeking them out and finding them. Inventory work for BBD should include diagnostic photographs that show both wing surfaces (NatureServe 2009). In some instances, collection of a single specimen (voucher) may be appropriate for positive identification. However, over-collecting of species can decimate rare populations. Because BBD is a Tier I at-risk species, it should not be collected except as necessary for scientific research whose findings can be advantageous to the overall recovery of the species.
2. In order to understand how to best maintain or rehabilitate habitat suitability for the Nebraskan subspecies of *E. conspicua*, some basic landcover metrics are needed because BBD may have requirements that differ from the species in other parts of its range. During presence/absence surveys for BBD, habitat variables should also be measured. Documentation of food plants for larvae and adults would be helpful. Survey design should include estimates of tree counts, diameter-breast-height (dbh, possibly for trees over 6 in diameter), and vegetation plots.
3. BBD is a habitat specialist (Stichter 2012). Conservation of its wetlands in suitable condition (e.g., limited trees /invasives) is needed in order to ensure that BBD has adequate habitat. Discourage drainage and development of wetland areas. Document wetlands that currently support BBD and any protections in place. Implement clearing of invasive vegetation as needed to maintain open landscape conditions. Recommendations of maximum tree density tolerated by BBD are not yet available. For details on general wetland management practices, refer to Wetland Management Guidelines for Nebraska's Wildlife Management Areas (LaGrange and Stutheit 2011).
4. Sources of nectar for BBD may be sparse in parts of its range. Common milkweed (*Asclepias syriaca*), swamp milkweed (*Asclepias incarnata*), and joe pye weed (*Eutrochium maculatum*) (S. M. Spomer, pers. comm.) can be planted and maintained for nectaring BBD (Panella 2010, MBC 2012, Walton 2012). As more is learned about BBD host plants, additional specific plantings can occur and food plants can be used to increase connectivity between habitat patches (NatureServe 2009). A Conservation Stewardship Program (CSP) that may benefit BBD and be of interest to farmers and ranchers is the USDA – NRCS Animal Enhancement Activity - ANM23 (Multi-species native perennials for biomass/wildlife habitat). This program provides assistance with management plans and annual land use payments to producers. This program is compatible with grazing that occurs outside May 1 to July 15 (the primary nesting and fawning season for wildlife).
5. Climate change is expected to impact BBD (Schneider et al. 2011, Stichter 2012). In fact, a Climate Change Vulnerability Index assessed risk to BBD as highly vulnerable to climate change (Young et al. 2010). Warming temperatures may constrict the range of *E. conspicua* in the southern portion and cause expansions northward (Stichter 2012). Facilitated relocations into novel, suitable patches and captive propagation may be viable alternatives for BBD if its dispersal ability becomes insufficient in allowing it to reach proper habitat.

Information Gaps

Survey work is needed to better assess the distribution, abundance, and population dynamics of the BBD. Without focused inventory, BBD may be easily overlooked because of its inaccessible habitat, small size, and physical similarity to other related skippers. Research could identify preferred habitat variables and a set of host plant species, such as various sedges. Because BBD will likely be extremely vulnerable to climate change, it is worthwhile to think about ways to facilitate its movement across the landscape into suitable environments as climactic conditions affect its primary habitats. Further information is needed to refine management strategies to benefit the BBD.

Considerations for Additional Species

At-risk species that inhabit the same Biologically Unique Landscapes as BBD may need to be considered when making management plans for the butterfly. Table 1 lists a sample of at-risk species you may want to consider while planning habitat for BBD. This list will not apply to all sites the BBD occupies nor is the list all-inclusive.

TABLE 1. At-risk species identified in the Nebraska Natural Legacy Project that inhabit biologically unique landscapes with BBD (Schneider et al. 2011) may necessitate consideration in habitat management plans.

<p><u>Animals</u></p> <p>American Burying Beetle (<i>Nicrophorus americanus</i>) Ghost Tiger Beetle (<i>Cicindela lepida</i>) Married Underwing (<i>Catocala nuptialis</i>) Regal Fritillary (<i>Speyeria idalia</i>) Whitney Underwing (<i>Catocala whitneyi</i>) Blanding's Turtle (<i>Emydoidea blandingii</i>) Bell's Vireo (<i>Vireo bellii</i>) Burrowing Owl (<i>Athene cunicularia</i>) Greater Prairie-Chicken (<i>Tympanuchus cupido</i>) Henslow's Sparrow (<i>Ammodramus henslowii</i>) Loggerhead Shrike (<i>Lanius ludovicianus</i>) Trumpeter Swan (<i>Cygnus buccinator</i>) Whooping Crane (<i>Grus americana</i>) Northern River Otter (<i>Lontra Canadensis</i>) Plains Harvest Mouse (<i>Reithrodontomys montanus griseus</i>) Plains Pocket Mouse (<i>Perognathus flavescens perniger</i>)</p> <p><u>Plants</u></p> <p>Hall's Bulrush (<i>Schoenoplectus hallii</i>) Small White Lady's-slipper (<i>Cypripedium candidum</i>) Western Prairie Fringed Orchid (<i>Platanthera praeclara</i>) Wolf's Spikerush (<i>Eleocharis wolfii</i>)</p>
--

TABLE 2. Summary of suggested management for the Buchholz Black Dash in Nebraska. The following should be interpreted as general guidelines based on the best available knowledge at the time of this publication. See the Research and Conservation Strategies section of this document for more detail and Reference section for sources of additional information.

FOCUS	STRATEGIES	MITIGATION and CONSIDERATIONS
Species inventory and detailed description of habitat parameters	Document presence and absence of BBD and design survey transects or plots to describe associated vegetation (species, density, dbh)	Maximum tree density that BBD will tolerate is unknown
Provide sources of nectar	Plant/maintain common milkweed (<i>Asclepias syriaca</i>), swamp milkweed (<i>Asclepias incarnata</i>), and joe pye weed (<i>Eutrochium maculatum</i>). Try to establish corridors of connectivity.	Other native food plants may be appropriate. Document observations of BBD feeding from plant species. Some sedges might be suitable host plants.
Wetland/habitat rehabilitation and conservation	Discourage drainage/filling of wetlands. Document wetlands that support BBD and consider appropriate protection measures. Clear invasive vegetation.	BBD needs wetlands and open landscape
Investigate reintroduction of BBD into appropriate habitat	Consider captive propagation and assisting BBD expansion into novel locations of suitable habitat	BBD is highly vulnerable to climate change. Its range is likely to become restricted and shift.

Acknowledgments

Stephen Spomer, Department of Entomology, University of Nebraska – Lincoln provided helpful review and comments for this document.

References

- CECH, R. AND G. TUDOR. 2005. Butterflies of the east coast: an observer's guide. Princeton and Oxford. Princeton University Press.
- DANKERT, N., M. L. BRUST, H. NAGEL, AND S. M. SPOMER. 2005. Butterflies of Nebraska. University of Nebraska, Kearney, NE. Available from www.unk.edu (Version 5APR2005).
- LAGRANGE, T. AND R. STUTHEIT. 2011. Wetland management guidelines for Nebraska's wildlife management areas. Nebraska Game and Parks Commission. Lincoln, NE.
- MA BUTTERFLY CLUB (MBC). 2012. Black dash (*Euphyes conspicua*). Available from www.naba.org/chapters/nabambc/construct-species-page.asp?sp=Euphyes-conspicua#top (Accessed 09 February 2012).
- MORRIS, W., D. DOAK, M. GROOM, P. KARUEVA, J. FIEGERG, L. GERBER, P. MURPHY, AND D. THOMSON. 1999. A practical handbook for population viability analysis. The Nature Conservancy, Arlington, USA.
- NATURESERVE. 2009. An online encyclopedia of life (Version 7.1). Available from www.natureserve.org/explorer/index.htm
- O'DONNELLI, J. E., L. F. GALL, D. L. WAGNER. 2007. The Connecticut Butterfly Atlas. State Geological and Natural History Survey, Department of Environmental Protection, Hartford, Ct.
- PANELLA, M. J. 2010. Nebraska's at-risk wildlife: conserving species and their habitats. Nebraska Game and Parks Commission. Mennonite Press, Inc., Newton, KS. 196 pps.
- SCHNEIDER, R., K. STONER, G. STEINAUER, M. PANELLA, AND M. HUMPERT. 2011. The Nebraska Natural Legacy Project: State Wildlife Action Plan. 2nd ed. The Nebraska Game and Parks Commission, Lincoln, NE. 344 pps.
- STICHTER, S. 2012. Black dash: *Euphyes conspicua* (W. H. Edwards, 1863). The butterflies of Massachusetts. Available from www.butterfliesofmassachusetts.net/black-dash.htm
- US DEPT OF AGRICULTURE – NATURAL RESOURCE CONSERVATION SERVICE (USDA – NRCS). 2012. PLANTS Profile *Carex stricta* Lam. upright sedge. Plants Database. Available from plants.usda.gov/java/ (Accessed 09 February 2012).
- WALTON, R. K. 2012. Black dash: *Euphyes conspicua* (Edwards), 1863. Butterfly Atlas. Massachusetts Audubon. Available from www.massaudubon.org/butterflyatlas/index.php?id=123 (Accessed 09 February 2012).
- YOUNG, B., E. BYERS, K. GRAVUER, K. HALL, G. HAMMERSON, AND A. REDDER. 2010. Guidelines for using the NatureServe climate change vulnerability index. NatureServe, Arlington, VA.