

Appendix B.
Element Occurrence Records
for *Gaura neomexicana ssp. coloradensis*
on Warren Air Force Base

WYOMING NATURAL DIVERSITY DATABASE
-Element Occurrence Record-

GAURA NEOMEXICANA SSP COLORADENSIS

Number: 015

Common Name: COLORADO BUTTERFLY PLANT PDONA080F1
Data Sensitive?: N Identification verified: Y
TNC Global Rank: G3T2 WYNDD State Rank: S2
Federal Status: PT WY Distribution Note: REGIONAL ENDEMIC
Management Status:

County: Laramie
USGS Quad Name: CHEYENNE NORTH
ROUND TOP LAKE

Latitude: 410900N Longitude: 1045220W
South Lat: 410835N East Long: 1045150W
North Lat: 410930N West Long: 1045300W
Map Accuracy: Precise; location is within a 75 foot radius of point
on USGS topo map.

Town/Range: Section: T/R/S Comments:
014N067W 26-27,34 SEC 26 SW4SW4; SEC 27 E2; SEC
34 N2NW4

Location: Southeastern Plains, Crow and Diamond Creeks on FE
Warren Air Force Base from west boundary to just below
confluence at Frontier Avenue.

Last Observed: 1998-09-03 First Observed: 1978-08-19
Occurrence Rank: AB
Rank Comments: Largest known population, protected within
Colorado Butterfly Research Natural Area;
habitat degraded by heavy infestations of
noxious weeds and by dense growth of willows.

Data: 1998-08-25/09-03: 8517 flowering and fruiting
plants observed in survey by W. Fertig, L. Welp,
B. Rodgers, K. McGrath, K. Allen, and M. Allen
(6809 on Diamond Creek and 1708 on Crow Creek).
1997-09-12: 7274 flowering and fruiting plants
observed in survey by Fertig and Welp (5926 on
Diamond Creek and 1348 on Crow Creek). Unusual
"mutant" plants observed along Diamond Creek (Sec
34 N2NW4) with flower buds replaced by vegetative
shoots and many flowers with leaf-like parts in
place of petals and stamens.
1996-09-05/12: 4817 flowering and fruiting plants
observed in survey by Fertig, Marriott,
Struttmann, and Neighbours (3850 on Diamond Creek
and 967 on Crow Creek).
1995-09-11: 8105 flowering and fruiting plants
observed in survey by Fertig, Mills, and
Neighbours (5664 on Diamond Creek and 2441 on Crow
Creek).
1994-09-14: 5882 flowering and fruiting plants
observed in survey by Fertig, Walford, and
Peterson (3865 on Diamond Creek and 2017 on Crow

Creek).

1993-08-20: 5585 flowering and fruiting plants and 11666 rosettes observed by Fertig, Walford, and Neighbours (4650 flowering plants and 8346 rosettes on Diamond Creek and 935 flowering plants and 3320 rosettes).

1992-09-03: 4624 flowering plants and 16324 rosettes observed in survey by Marriott and Floyd (3627 flowering plants and 13656 rosettes on Diamond Creek and 997 flowering plants and 2668 rosettes on Crow Creek).

1991-09-10: 3429 flowering plants and 6352 rosettes observed in survey by Marriott and Horning (2673 flowering plants and 5301 rosettes on Diamond Creek and 756 flowering plants and 1231 rosettes on Crow Creek).

1990-08-20: 4201 flowering and fruiting plants and 5993 rosettes observed in survey by Marriott, Patton, and Neighbours (2171 flowering plants and 3121 rosettes on Diamond Creek and 2030 flowering plants and 2872 rosettes on Crow Creek).

1989-08-23: 4079 flowering plants and 8435 rosettes observed (1684 flowering plants on Diamond Creek [5560 rosettes] and 2395 flowering plants on Crow Creek [2875 rosettes]).

1988-08: 2607 flowering plants observed in survey by Marriott. Crow Creek subpopulation down 33% from previous year and Diamond Creek subpopulation down 63%.

1986-08: 5311 flowering plants (plus numerous rosettes) observed in survey by Marriott.

1985-08: Significant decline observed in numbers of rosettes and flowering in 2 of 3 main sites.

1984-08: 45 plots established at 3 sites on Crow and Diamond creeks.

1981-08-10: In flower and fruit. With AGROSTIS, SALIX, GLYCERIA, and CIRSIUM.

1978-08-19: In flower and fruit, petals pink. With CAREX and GLYCYRRHIZA.

Habitat: Occurs in 2 main habitats: (1) Moist, subirrigated or streamside meadows dominated by POA PRATENSIS and AGROSTIS STOLONIFERA along stream meanders and low banks. These sites may also be dominated by dense stands of CIRSIUM ARVENSE and EUPHORBIA ESULA. (2) SALIX EXIGUA/S. BEBBIANA and POPULUS ANGUSTIFOLIA thickets in riparian bottoms along perennial or intermittent streams. Soils mostly moist, sandy loam on Diamond Creek and better drained sandy gravels along Crow Creek. Also occasionally found at the edge of semi-open savannas of FRAXINUS PENNSYLVANICUS near seeps.

Elevation: 6125- feet **Size:** 125 acres

Comments: Monitoring has taken place at this site since 1984 and is on-going. Sandy Floyd (graduate student, Univ. Colorado) conducted demographic research and weed control studies here from 1992-95.

Managed Area:

COLORADO BUTTERFLY PLANT RESEARCH NATURAL AREA
F. E. WARREN AIR FORCE BASE

Ownership:

Mgmt Comments: Continued monitoring needed to determine long term population trends and refine management needs. EO is within Research Natural Area. Experimental weed control program is being developed for Canada thistle and leafy spurge. Evidence of the establishment of biological control agents has been observed since 1996. Canada thistle plants have been observed with large galls, reduced vigor, and no flowers and leafy spurge plants have been observed with dead, inrolled leaf tips.

Specimens: Dorn, R.D. (3191). 1978. RM.
Lichvar, R.W. (4725, 4729, 4730). 1981. RM.
Neese, E., T. Andrews, and S. Peterson (15984). 1984. RM.
Fertig, W., L. Welp, and I. Thien (18054). 1997. RM.

Sources: Marriott, H.J. 1989. Census of Colorado Butterfly Plant (*Gaura neomexicana* ssp. *coloradensis*) on F.E. Warren Air Force Base, 1989. Prepared for the US Air Force by the Wyoming Natural Diversity Database.
Marriott, H.J. 1987. A report on the status of *Gaura neomexicana* ssp. *coloradensis*, a Candidate Threatened species. Prepared for the US Fish and Wildlife Service by the Wyoming Natural Diversity Database, The Nature Conservancy.
Marriott, H.J. 1991. Census of Colorado Butterfly Plant (*Gaura neomexicana* ssp. *coloradensis*) on FE Warren Air Force Base, 1991. Prepared for the US Air Force by the Wyoming Natural Diversity Database, The Nature Conservancy.
Marriott, H. 1993. Census of Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) on F. E. Warren Air Force Base, 1992.
Fertig, W. 1993. Census of Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) on F. E. Warren Air Force Base, 1993. Prepared for the US Air Force by the Wyoming Natural Diversity Database.
Fertig, W. 1994. Status report on *Gaura neomexicana* ssp. *coloradensis*, a candidate Threatened species. Unpublished report prepared for the US Fish and Wildlife Service, Region 6.
Fertig, W. 1995. Census of Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) on F. E. Warren Air Force Base, 1994. Unpublished report prepared for the US Air Force by the Wyoming Natural Diversity Database, Laramie, WY. 37 pp.
Floyd, S. K. 1995. Population structure, dynamics, and genetics of *Gaura neomexicana* ssp. *coloradensis* (Onagraceae), a rare semelparous perennial. Unpublished

MA thesis, University of Colorado, Dept. of Environmental, Population, and Organismic Biology. 90 pp.

Floyd, S. K. 1995. Experimental control of Canada thistle within the *Gaura neomexicana* ssp. *coloradensis* Research Natural Area on F. E. Warren Air Force Base and recommendations for continued monitoring of the *Gaura* population. Unpublished report prepared for the Wyoming Nature Conservancy.

Fertig, W. 1995. Rare plants of F. E. Warren Air Force Base, Cheyenne, Wyoming. Unpublished report prepared for the US Air Force by the Wyoming Natural Diversity Database, Laramie, WY. 39 pp.

Fertig, W. 1996. Census of Colorado butterfly plant (*GAURA NEOMEXICANA* SSP. *COLORADENSIS*) on F.E. Warren Air Force Base. Unpublished report prepared by the Wyoming Natural Diversity Database for the US Air Force, 18 March 1996. 22 pp.

Fertig, W. 1997. Census of Colorado butterfly plant (*GAURA NEOMEXICANA* SSP *COLORADENSIS*) on FE Warren Air Force Base, 1996. Unpublished report prepared for the US Air Force by the Wyoming Natural Diversity Database, Laramie, WY. 40 pp.

Fertig, W. 1998. Census of Colorado butterfly plant (*GAURA NEOMEXICANA* SSP *COLORADENSIS*) on F. E. Warren Air Force Base, 1997. Prepared for the US Air Force by the Wyoming Natural Diversity Database, Laramie, WY. 42 pp.

Floyd, S.K. and T.A. Ranker. 1998. Analysis of a transition matrix model for *Gaura neomexicana* ssp. *coloradensis* (Onagraceae) reveals spatial and temporal demographic variability. *Int. J. Plant Sci.* 159(5): 853-863.

Fertig, W. 1998. Status review of the Colorado butterfly plant (*GAURA NEOMEXICANA* SSP *COLORADENSIS*). Report prepared for the US Fish and Wildlife Service by the Wyoming Natural Diversity Database, Laramie, WY.

Author: Walter Fertig

Edition Date: 97-09-30

Wyoming Natural Diversity Database, 1604 Grand Ave., Laramie, WY 82070 - 1999

WYOMING NATURAL DIVERSITY DATABASE
-Element Occurrence Record-

GAURA NEOMEXICANA SSP COLORADENSIS

Number: 016

Common Name: COLORADO BUTTERFLY PLANT PDONA080F1
Data Sensitive?: N Identification verified: Y
TNC Global Rank: G3T2 WYNDD State Rank: S2
Federal Status: PT WY Distribution Note: REGIONAL ENDEMIC
Management Status:

County: Laramie
USGS Quad Name: CHEYENNE NORTH
ROUND TOP LAKE

Latitude: 410807N Longitude: 1045215W
South Lat: 410802N East Long: 1045200W
North Lat: 410812N West Long: 1045230W
Map Accuracy: Precise; location is within a 75 foot radius of point
on USGS topo map.

Town/Range: Section: T/R/S Comments:
014N067W 34 S2 OF SE4

Location: Southeastern plains, east of Cheyenne on FE Warren Air
Force Base, "Unnamed Drainage", first drainage south
of high security area compound, from southwest
boundary of the Base east-northeast across Cheyenne
Road to Douglas Street.

Last Observed: 1998-08-25 First Observed: 1986-08
Occurrence Rank: A

Rank Comments: Medium-size population that has been growing in
recent years; habitat in excellent condition at
east end, being invaded by woody shrubs and
exotics at west end.

Data: 1998-08-25: 2372 flowering and fruiting plants
observed in survey by W. Fertig. Plants found in 6
main subpopulations, with the largest colonies on
the east side of the Cheyenne Road from the road
to the first large bend in the drainage.
1997-09-09: 1820 flowering and fruiting stems
observed in survey by W. Fertig and L. Welp.
Occurs with POA PRATENSIS, GLYCYRRHIZA LEPIDOTA,
SOLIDAGO CANADENSIS, HELIANTHUS NUTTALLII, SALIX
EXIGUA, AGROSTIS STOLONIFERA, CIRSIUM ARVENSE, and
C. FLODMANII.
1996-09-09: 777 flowering and fruiting plants
observed.
1995-08-30: 1822 flowering and fruiting plants
observed.
1994-09-12: 1393 flowering and fruiting plants
observed.
1993-08-31: 1503 flowering plants and 3656
rosettes observed.
1992-09-03: 1669 flowering plants and 4228
rosettes observed.

1991-09-11: 1354 flowering plants and 2580
rosettes observed.
1990-08-30: 851 flowering plants and 1891 rosettes
observed.
1989-08-23: 734 flowering plants and 1744 rosettes
observed.
1988-08: 452 flowering plants observed.
1986-08: 565 flowering plants observed.

Habitat: Mesic AGROSTIS STOLONIFERA-JUNCUS BALTICUS meadow along
banks of stream on subirrigated, alluvial soil.

Elevation: 6175- feet Size: 26 acres

Comments:

Managed Area:

F. E. WARREN AIR FORCE BASE

Ownership:

Mgmt Comments: Ongoing monitoring is needed to determine
population trends and management needs. High
density of willow and Canada thistle are
present on the west side of the Cheyenne Road
in potential GAURA habitat. Linda Munk, a
graduate student at the University of
Wyoming, has established treatment plots in
this area to assess the response of
vegetation to different management
treatments.

Specimens: Fertig, W. and S. Mills (16368). 1995. RM.

Sources: Marriott, H.J. 1989. Census of Colorado Butterfly Plant
(*Gaura neomexicana* ssp. *coloradensis*) on F.E. Warren
Air Force Base, 1989. Prepared for the US Air Force by
the Wyoming Natural Diversity Database.
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neomexicana ssp. *coloradensis*, a Candidate Threatened
species. Prepared for the US Fish and Wildlife Service
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Conservancy.
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ssp. *coloradensis*, a candidate Threatened species.
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Wildlife Service, Region 6.

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