California Native Plant Society
East Bay Chapter
Rare Plant Committee

April 5, 2010

Steve Stewart
Senior Planner, Planning Division
City of Livermore
1052 South Livermore Avenue
Livermore, CA 94550

Re: Census of the Livermore Tarplant Springtown Wetlands Preserve Population, Livermore, California

Dear Steve:

The purpose of this letter is to present the census results conducted for the Springtown Wetlands Preserve population (EONDX # 44494) of Livermore tarplant (*Deinandra bacigalupii*). The goal of the sampling was to estimate the number of Livermore tarplant individuals present in the Springtown Wetlands Preserve owned by the City of Livermore. Sampling was carried out on August 7, 2009 by the East Bay Chapter of California Native Plant Society (CNPS). This sampling was lead by Rare Plant Chair Heath Bartosh and Plant Communities Chair Erin McDermott. Volunteers who assisted with the sampling include Mary Ann Hannon, Debbie Peterson, Christopher Thayer, Gregg Weber, Gretchen Hayes, and Regina Brinker (a teacher at Christensen Middle School) and three of her students.

Because counting each individual plant within this population was infeasible due to overall abundance, a portion of the population was sampled in order to extrapolate the total number of individuals. Sampling methodology followed a two-stage sampling design with ten 60 meter x 60 meter macroplots randomly placed throughout the sampling area (Attachment A). Twenty 1 meter x 2 meter rectangular quadrats were placed randomly within each macroplot. All Livermore tarplant individuals were counted within each quadrat and recorded on data sheets (Attachment B).

Based on statistical analysis, the population size of Livermore tarplant individuals in the Springtown Alkali Sink is estimated to be approximately 301,620 ± 63,931 individuals, with a 95% confidence interval. This results in an estimate of a population ranging from 237,690 to 365,552 and is likely around 300,000. A majority of these individuals were characterized as small plants less than ten centimeters tall. This is likely due to unseasonably high temperatures in the Livermore Valley that stressed young plants before they reached maturity. Many of these diminutive individuals were observed in flower or to have developed fruit. Photographs of the census are included in Attachment C.

Livermore tarplant is designated a CNPS List 1B.2 species, indicating it is fairly endangered in California (CNPS 2010). An annual species of the sunflower family (Asteraceae), Livermore tarplant grows from 10 to 40 cm in height and is stipitate-glandular. It has 6-9, usually 8, ray florets that are deep yellow and 10 to 21 yellow disk florets ('eFloras 2008). Its anthers range from yellow to brownish. Livermore tarplant is not in The Jepson Manual, as it was only described in 1999. Livermore tarplant blooms from June to October (CNPS 2010). The Type Locality for this species was collected in the Livermore Valley (Ferris 1960). The original collection of this species was made by Robert F. Hoover in 1966, which he identified as a northern outlier of *Hemizonia increscens* subsp. *increscens*.

Livermore tarplant occurs on alkaline substrates in alkali sink and alkali grassland habitat in Pescadero and Solano soils (CDFG 2010) and is only known from three occurrences all in the vicinity of Livermore between 150-185 meters (CNPS 2010). During the census the most common associates observed with Livermore tarplant were non-native grasses ripgut brome (*Bromus diandrus*) and soft chess (*Bromus hordeaceus*) along with native herbs alkali heath (*Frankenia salina*) and narrow tarplant (*Holocarpha virgata*). According to the microhabitat information provided by the CNDDB Livermore tarplant occurs in alkali swales and drainages however during the census few individuals were observed growing in the swales and drainages. Most of the individuals occupied the alkaline uplands between alkali swales and drainages. This population at Springtown Wetlands Preserve is the largest of the three known.

Sincerely,

Heath Bartosh
Rare Plant Committee Chairperson
East Bay Chapter
California Native Plant Society

Attachments

A – Livermore Tarplant Sampling Area Map
B – Census Data Form and Instructions
C – Census Photographs
D – CNDDB Field Survey Form

Cc: Nick Jensen, California Native Plant Society
Roxanne Bittman, California Department of Fish and Game
Bruce Baldwin, University of California, Berkeley
Mary Ann Hannon, Friends of Springtown Preserve

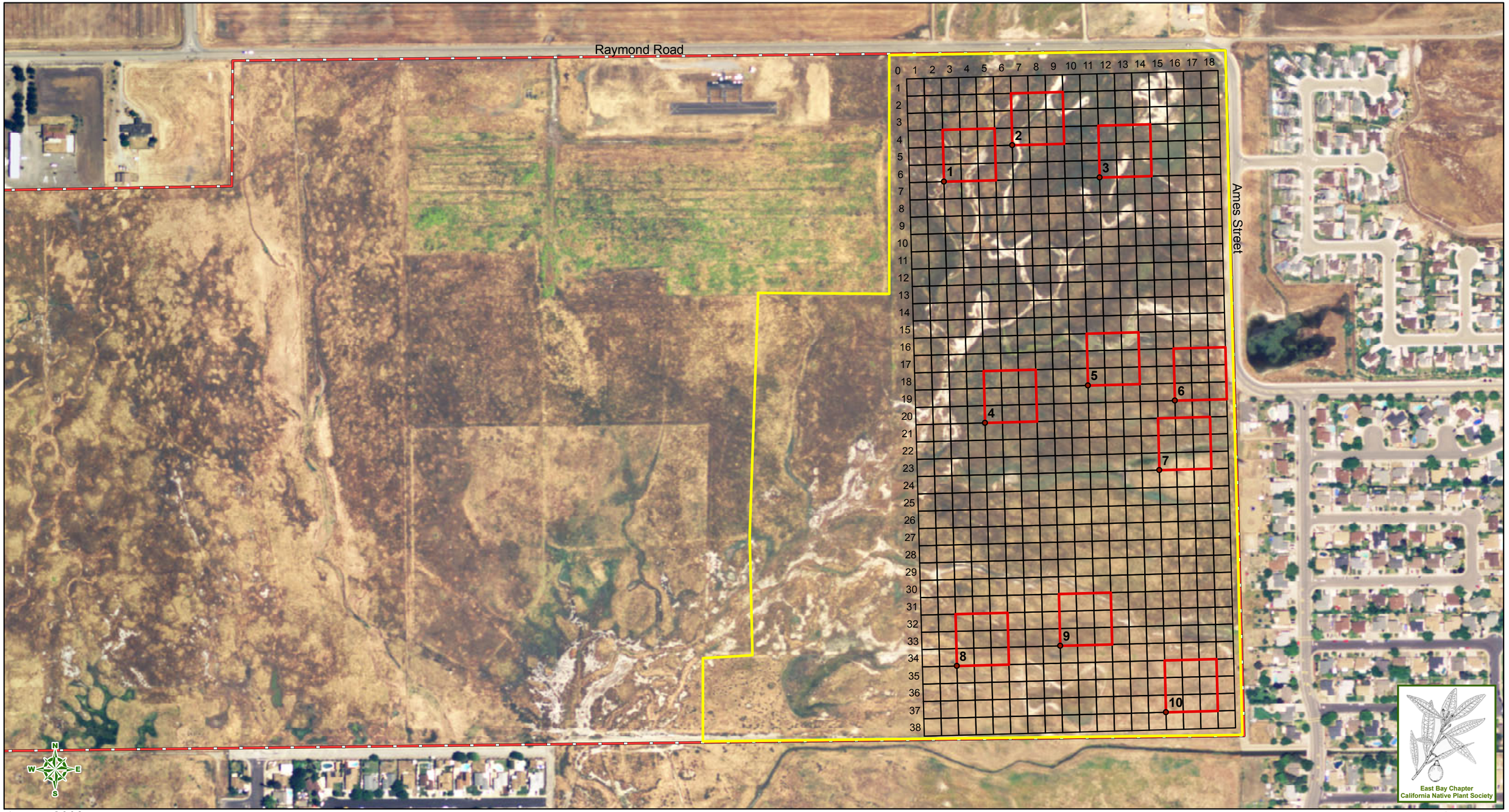
References

California Department of Fish and Game (CDFG). 2010. *California Natural Diversity Database* (CNDDB). Version 3.1.0. Wildlife and Habitat Data Analysis Branch. March.

California Native Plant Society (CNPS). 2010. Inventory of Rare and Endangered Plants (online edition, v7-10a). California Native Plant Society. Sacramento, CA. Accessed from http://www.cnps.org/inventory

'eFloras (2008). Published on the Internet http://www.efloras.org Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA.

Ferris, R.S. 1960. Illustrated Flora of the Pacific States: Washington, Oregon and California. Vol. IV. Bignoniaceae to Compositae. Stanford Univ. Press, Stanford, CA.



August 2009

Attachement A

Legend

- Southwest Corner of Macroplot
- Macroplots
- Boundary of Livermore Tarplant
- Springtown Wetlands Preserve Boundary

1:4,200

0 175 350

Feet

Livermore Tarplant Sampling

Springtown

Sources: National Agriculture Imagery Program, California Spatial Information Library, Green Info, ESRI.

North Livermore, Alameda County, California

Attachment B: Census Data Form

Livermore Tarplant Sampling

Macroplot #		Date:		Team Members:					
Quad Number	GPS Coordinates x	GPS Coordinates y	Photo Number and Person's Camera	Segment	Segment	Segment	Segment	Total	Notes
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

13									
14									
15									
16									
17									
18									
19									
20									

Livermore Tarplant Sampling Directions

1. Locate your Macroplot

    - We will be sampling 10 macroplots, each one is 60 meters by 60 meters.
    - Use your GPS unit to locate the southwest corner of the plot (see table below).
    - Run your tape measure 60 meters north from the point, using your compass.
    - Run your tape measure 60 meters east from the point, using your compass.
    - The tape measures are only 50 meters long, so you will need to mark the beginning with a pin flag and move the tape and mark the end with a pin flag.
    - Move your tape measures back to the southwest corner, with the 0 end of both the north and east running tape measures at the southwest corner.
    - You will use the tape measures to locate your quads within the plot.

2. Locate your Quads

    - We will be sampling 20 quads within each macroplot.
    - Use the table for your specific macroplot number to locate the southwest corner of quad #1
    - The table shows x, y coordinates. The point indicated by these coordinates is where you will place the southwest corner of your quad.
    - The east running tape measure is the x-axis. The north running tape measure is the y-axis. (ie if the coordinates are 10, 30, go to 10 meters east using tape measure and 30 meters north using tape measure. That is the southwest corner of the quad)
    - Once you locate the southwest corner of your quad, place the quad down with the long side (3 meter length) running north-south and short axis (1 meter length) running east west.
    - GPS the southwest corner of your quad.
    - Take a photo of your quad

3. Count all the individual plants in your quad

    - Count all the plants in the quad. Count only individuals that are rooted in the plot.
    - Use the rope to divide up the quad into segments if it helps to count. You can enter the number of plants for each segment into the segment section of the data sheet.
    - Be as accurate in counting as you can. Just do your best, if there are hundreds of plants your count doesn't have to be exact.

4. Continue on with the other quads.

Macroplot GPS Coordinates
Set your Coordinate System to UTM NAD 83

Macroplot		
1	6203886.4	2090357.2
2	6204148.9	2090488.4
3	6204477.0	2090357.2
4	6204017.7	2089438.6
5	6204411.4	2089569.8
6	6204739.4	2089504.2
7	6204673.8	2089241.7
8	6203886.4	2088519.9
9	6204280.1	2088585.5
10	6204673.8	2088323.1

Each team needs:

- map
- direction sheet
- data form sheet
- quad location coordinates sheet
- two 50 meter tape measures
- pin flags
- steel pins (to stake tape)
- GPS unit
- compass
- one 1 meter x 3 meter quad
- rope
- clipboard
- pen
- camera

Attachment C: Census Photographs

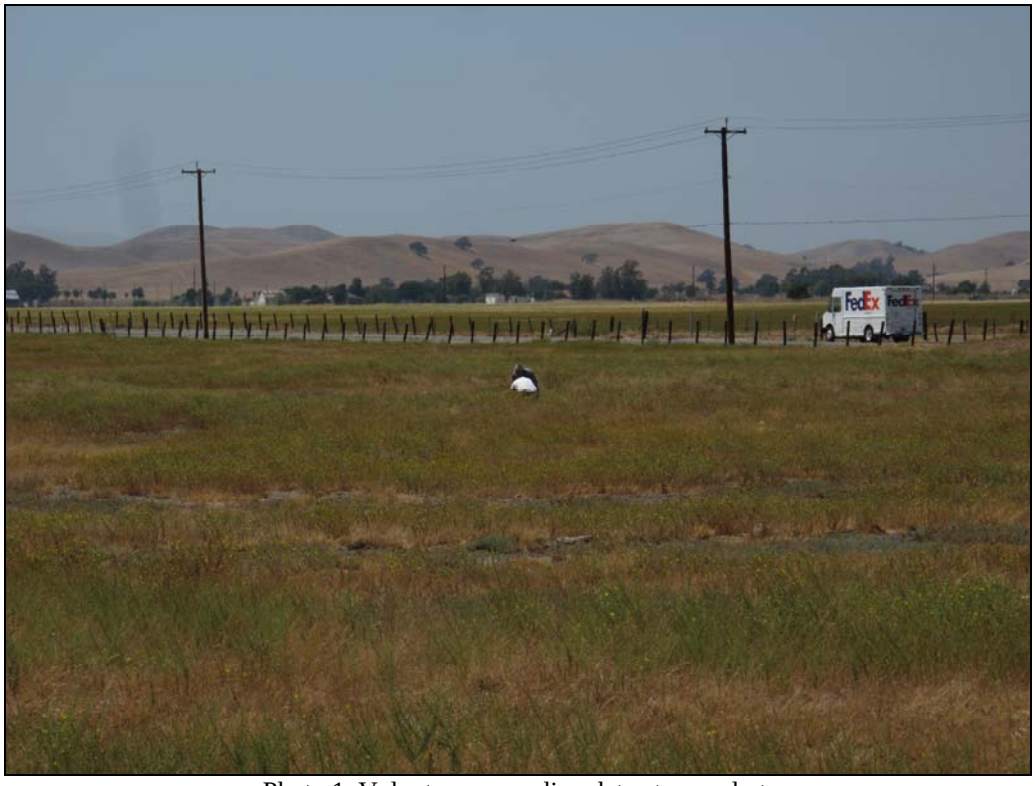


Photo 1. Volunteers recording data at a quadrat.

Photo 2. Livermore tarplant within a quadrat.

Photo 3. One meter by two meter quadrat.

Photo 3. Volunteer counting individuals within a quadrat.

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Date of Field Work (mm/dd/yyyy): 08/07/2009

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Deinandra bacigalupii*

Common Name: Livermore tarplant

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 300,000 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? 44,494 Yes, Occ. # ☐ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heath Bartosh

Address: 832 Escobar Street Martinez, CA 94553

E-mail Address: hbartosh@nomadecology.com

Phone: (925) 457-1161

Plant Information

Phenology: 10 % vegetative 75 % flowering 15 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

NEAR THE INTERSECTION OF AMES STREET AND RAYMOND ROAD, LIVERMORE. This visit was for the purpose of conducting a census of this population.

County: Alameda Landowner / Mgr.: City of Livermore

Quad Name: Altamont Elevation: 520

T 02S R 02E Sec 27, ____ ¼ of ____ ¼, Meridian: H☐ M☑ S☐ Source of Coordinates (GPS, topo. map & type): _____

T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☑ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☑

Coordinates: 37.72891º, -121.73433º

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

The previous information contained in this occurrences states that this species occurs in alkali swales and drainages however during the census few individuals were observed growing in the swales and drainages. Most of the individuals occupied the alkaline uplands between alkali swales and drainages. During the census the most common associates occurring with the Livermore tarplant were non-native grasses ripgut brome (Bromus diandrus) and soft chess (Bromus hordeaceus) along with native herbs alkali heath (Frankenia salina) and narrow tarplant (Holocarpha virgata).

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor

Immediate AND surrounding land use:

Visible disturbances:

Threats: Discing of firebreak along the perimeter of the preserve

Comments: This information was collected as a part of a census of this population. A majority of these individuals were characterized as small plants less than four inches tall. This is likely due to unseasonably high temperatures in the Livermore Valley that stressed young plants before they reached maturity. Many of these diminutive individuals were observed in flower or to have developed fruit.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☐ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐