California Department of Parks and Recreation
Natural Resources Division

Landbird Monitoring at Wilder Ranch State Park

Spring 2001

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By Sara Lee,
Environmental Services Intern
Natural Heritage Section
Inventory, Monitoring, and Assessment Program
1416 9th Street, Room 923
Sacramento, CA 95814
(916) 653-8656
Email: slee@parks.ca.gov

I.) Introduction

The preservation of natural biodiversity is of growing concern as urban areas continue to encroach upon wildlife habitats. The reserves and parks of California encompass important habitats, and it is the role of the California Department of Parks and Recreation to protect these natural resources. The Inventory, Monitoring, and Assessment Program (IMAP) addresses these concerns by monitoring the natural resources within the park system, assessing the data, and aiding the development of individual ecological management plans for each unit.

Monitoring a region's avifauna over time may yield much information about the health of the park unit. The Santa Cruz District indicated a need to monitor landbirds[1] at Wilder Ranch State Park (SP) to obtain information about species diversity, population trends, and population distribution. The IMAP team conducted a preliminary inventory of the birds at Wilder Ranch SP as a baseline for future monitoring in the same unit. The data collected from this survey should be considered "pilot" data, with the understanding that greater preciseness and accuracy can only be gained with repeated sampling and improved bird identification skills.

A variety of sampling methods have been developed for bird surveys, each catered to achieve the specific objectives of the study. For the inventory of landbirds at Wilder Ranch SP, the point count method was determined to be the best method for collecting abundance data by census because it was logistically feasible as well as being the recommended standard. The point count method does not yield demographic information (i.e.- breeding status, productivity) which provides a closer look at what drives population trends.

II.) Methods

A.) Sampling Objectives

The objective was to identify all diurnal non-marine birds found at Wilder Ranch SP, document their presence, and estimate their relative abundance. In this report, the birds are grouped as "passerines and non-raptors" and "raptors". The data collected at Wilder Ranch SP, Spring 2001, may be used as baseline data for comparison with future monitoring efforts. Included in this report are:

- a list of bird species seen at Wilder Ranch SP, Spring 2001;
- a checklist of bird species at Wilder Ranch SP, complete with four-letter alpha codes;
- corresponding audio recordings of bird calls/songs; and
- maps showing the point count stations, transects, and vegetation alliances.

[1] In this report, 'landbirds' refer to all diurnal non-marine birds. For example, passerines; hawks and falcons; and estuarine or inland ducks, herons, and egrets are included; but nocturnal owls, nightjars, and 'seabirds' such as gulls, pelicans, and cormorants are not.

B.) Sampling Design

1. Censusing Raptors

Since there were no specific raptor (bird of prey) species for which monitoring is a priority at Wilder Ranch SP, there was no separate sampling for raptors. There were raptor observations included in the point counts; however, since raptor sightings were less frequent, observations were not constrained to a five-minute limit, but began and ended upon entry and exit, respectively, to the unit.

2. Selection of Transect and Station Locations

For the census at Wilder Ranch SP the point count stations were placed following recommendations in the Handbook of Field Methods for Monitoring Landbirds (Ralph et al.1993). That is, they were placed systematically, rather than randomly, along transects throughout the park, and were not stratified by habitat. At Wilder Ranch SP the existing roads and trails cover most types of available habitat and adequately served as transects. The wider, generally unpaved roads and trails were mainly used because they allowed for vehicle access and, therefore, shortened travel time between point count stations and allowed for a greater number of stations to be censused within the given time. Although it is recommended that wide avenues be avoided (Ralph et al. 1993), the roads and trails within Wilder Ranch SP are not open to general public vehicle access and it was felt that the amount of vehicle traffic in the park would not significantly affect the number of birds observed. Smaller trails were also used to ensure even coverage of all areas and habitat types in the unit.

Point count stations were designated at regular intervals along these transects, at approximately every 500 meters (~0.3 mile). The distance traveled between each station was gauged by the odometer on a vehicle or paced by foot. Before beginning the census the primary observers, Sara Lee (S. Lee) and Krista Orr (K. Orr), gauged the length of their stride by walking along a 50-meter tape.

3. Location Documentation

The location of each point count station was recorded using a global positioning system (GPS), specifically, the Trimble GeoExplorer3 with external antenna (http://www.trimble.com/geoexplorer3.html). At each station, data points were recorded using the GPS unit, with a desired 180 to 200 positions collected at each point, and a minimum of four satellites. With the spatial data the point count stations were digitally mapped using a geographical information system (GIS), specifically, ESRI ArcView 3.1 (http://www.esri.com/software/arcview/index.html).

Digital photos of each point count station were also taken in each of the four cardinal directions: north (true), south, east, and west. Photo monitoring was used to document habitat structure, and vegetation composition and growth. Digital photos were taken with a Canon PowerShot S100 Digital ELPH camera (http://www.powershot.com/powershot2/home.html).

A data form was also completed for each photo and GPS data point collected. Included on the form were the transect name, start and end locations, camera and disk information, compass bearing and photo number, GPS data point filename, and corresponding rover file name.

4. Audio Recordings

Audio recordings were made of bird calls and songs during some point counts. Selected bird calls and songs have been burned onto a CD, which is included with this report and may help with identification in future monitoring. Special equipment was ordered from Stith Recording, Inc. (http://www.stithrecording.com), specifically, a Marantz PMD222 Portable Cassette Recorder, Sennheiser ME66 omni directional microphone, K6 power module, AKG headphones, and a standard microphone cable with XLR-type connector.

5. Vegetation Survey[2]

It is recommended that a basic vegetation survey be completed for each point count station (Ralph et al. 1993). This information can be used for habitat classification, which, then, may be used in bird-habitat analysis. Using a modified vegetation data form, general vegetation and habitat data were collected for each point count station. These included: general habitat types; trees, shrubs, and herbs (minimum 10% of habitat); and average height of canopy in meters.

C.) Point Count Method

The point count method (fixed radius) was used to census landbirds at Wilder Ranch SP. The method applied at Wilder Ranch SP in Spring 2001 is described here. For more information about the point count method refer to the Handbook of Field Methods for Monitoring Landbirds (Ralph et al. 1993).

[2] The vegetation data collected were not used in analysis, as there was already a more detailed vegetation alliance map of Wilder Ranch SP available. The vegetation alliance map is used as a base layer for point count stations in this report.

1. Time of Sampling

Sampling occurred in spring and summer (breeding season), when passerines, or songbirds, are most vocal. Identification was mainly from vocal cues. It is recommended that monitoring begin on or after May 1 and be completed by June 30 (Ralph et al. 1993). At Wilder Ranch SP censuses began on May 24 and ended June 14, 2001.

2. Training

In order to conduct bird point counts, S. Lee and K. Orr were trained in bird call and song identification. Outings with the Santa Cruz Bird Club and local avid birder, Mike Getty, helped with familiarization of local birds and their calls. S. Lee has had some prior training in bird call identification. In addition, the National Geographic Society Field Guide to Birds of North America and the Cornell Lab of Ornithology Guide to Songs of Birds of the Pacific States were available for reference.

3. Estimated Staffing

The survey team consisted of mainly two individuals, Sara Lee and Krista Orr. On a couple occasions, Craig Swolgaard, Roy Woodward, Gary Walter, and Gwen Walter volunteered as extra observers. K. Orr was primarily responsible for operating the audio equipment and making casual observations. S. Lee was the primary observer, timekeeper, and data recorder.

4. Estimated Field Time

The entire survey was completed in fourteen days: twelve (mornings) to do point counts with two people, plus another two days for collecting GPS and photo data. Point count stations were surveyed only once, as recommended in Monitoring Bird Populations by Point Counts (Ralph et al. 1995), during Spring 2001.

5. Procedure

a. Sampling was conducted in the mornings, generally beginning within an hour of local sunrise and ending no later than four hours from the start – approximately 6 am to 10 am. Birds tend to be more vocal and easier to detect in the early morning.

b. At Wilder Ranch SP the weather during the censuses was fairly mild and good for bird observations. If there had been heavy rain, wind, fog, or cold weather, the census would have been postponed to another day, as such elements can significantly interfere with

observations or reduce bird vocalizations.

c. Before starting a census transect all necessary equipment was gathered and/or prepared (see Equipment List below). This included recording the general location information (state, region, transect name, access notes), date, and names of the observers on the data form.[3]

d. The weather data – temperature, cloud cover, wind speed – were measured or estimated and recorded on the data form at the start and end of each transect.

e. Immediately upon arriving at a station all birds seen and heard within a five-minute time frame were recorded on the data form. A pair of 10x50 binoculars aided visual observations. The following data were recorded on the data form:
   - point count station number for that transect;
   - distance from start of transect (ie-0.3mi, 0.6mi, etc.);
   - time of observation of each species, avoiding recounting of same birds;
   - species, by four-letter alpha code;
   - at approximately what fixed distance it was from observer (50m or >50m). Fly-over (or flushed) birds, tallied in a separate column;
   - the number of individuals, tallied in the distance columns; and
   - any comments or details – such as sex, age, or behavior – recorded under "notes".

f. Raptor observations outside the five-minute census limit were recorded in the same manner as the other species observed in the point counts.

g. Concurrently, the bird songs and calls during the point count were recorded using special audio recording equipment.

h. Vegetation data were collected for each point count station, after the five-minute census was completed.

i. Digital photos were taken at each station, in each of the four cardinal directions: North (true), south, east, and west. [4]

[3] On the first two census transects the PRBO Point Count Data Form 2000 was used. For the rest of the censuses a modified data form was used to better suit the needs of this survey.

[4] Note: Both the GPS data and photos were taken on separate days from the actual census days.

j. Spatial data were captured using a GPS. At each station, a minimum of 180 to 200 positions were collected with at least four satellites for each data point. [4]

D.) Equipment

The following is a list of equipment used in this project:

- 4x4 vehicle with odometer
- gate access keys (if applicable)
- topographic maps and maps of the transects in the unit
- data forms[@]
- clipboards
- pencils with erasers
- binoculars (at least 7x35)
- watch/clock (preferably with timer)
- thermometer (weather)
- audio recording equipment[*]:
  - microphone (Sennheiser ME66, omni directional)
  - power module for microphone (Sennheiser K6)
  - microphone cable (standard, XLR connection)
  - portable cassette recorder (MarantzPMD222) with case
  - headphones (AKG)
  - carrying case for transport and storage (tackle bag or backpack)
  - blank tapes (Maxell high bias XLII, 60 min.)
  - extra batteries (3 sized "D" and 1 size "AA")
- compass (declinated 15 degrees east from true north)
- photo equipment[^]:
  - digital camera (Canon PowerShot S100 Digital ELPH)
  - camera battery charger
  - USB cable for downloading
  - extra digital camera batteries and memory cards (32 MB)
- GPS equipment :
  - GPS unit (Trimble GeoExplorer3)
  - antenna backpack
  - cradle for charging and downloading
- bird field identification guide book (National Geographic Society Field Guide to Birds of North America)
- bird call/song identification guide tapes/CDs

[@] Initial data form design was taken from PRBO data forms, but later was modified to suit IMAP needs.

[*] All audio equipment was ordered from Stith Recording, Inc.: http://www.stithrecording.com

[^] For more information on the photo equipment, visit: http://www.powershot.com/powershot2/home.html.

For more information on the GPS equipment, visit: http://www.trimble.com/geoexplorer3.html .

III. Findings

The site descriptions and summary statistics are presented in this section.

A.) Transect Descriptions

There were eleven transects, made up of a combination of roads, trails, and waytrails throughout the unit. The area not successfully sampled was the Gray Whale property north of Smith Grade Road. A census was started there but was aborted due to concerns for the health and safety of an observer. Due to time restraints there was no time to return to that site within the 2001 breeding season.

GPS data points were collected for most point count stations; however, on Enchanted Loop trail, satellite coverage or reception was inadequate and no data point was collected for point count station #2. Using ArcView GIS, the location of the station was estimated and manually added as a point to the map and database. All data points on the Wagon Wheel/Wild Boar trails were also manually added because the original spatial data was lost.

1. Location and Access Information

The following sections show access and route information for each transect. UTM coordinates for each station are listed in the tables. NOTE: Gate keys are needed to access Twin Gates entrance, Scaroni Road/water intake service road, and Brian Campbell's private road.

- Baldwin Loop (Lower) (4 stations) – Access by foot. From WRSP entrance continue on Hwy 1 North ~2mi. Trailhead is down driveway on north side of Hwy 1 (beach access on south side).
  Start: Baldwin Loop trailhead
  End: Baldwin Loop trailhead
  Length: 1.5 mi

Station #	UTM N	UTM E
1	4092106.274	578443.240
2	4092541.807	578612.099
3	4092451.650	578343.260
4	4092257.867	577987.360

- Bluff (pts. 1-6) (6 stations) – Access by vehicle. From WRSP entrance road turn right onto ag access road at mailboxes, before kiosk. Left fork, uphill. Cross RR tracks, continue straight ahead.
  Start: At edge of field via ag access road

End: Wilder Ranch SP visitor parking lot

Bluff (pts. 7-17) (11 stations) – Access by vehicle. From WRSP entrance road turn right onto ag access road at mailboxes, before kiosk. Cross RR tracks, turn Rt. and follow dirt track 300m to ag road, up near shed.
Start: Trailhead west of/to the sand-plant beach
End: 300m west of Three Mile Beach
Length: 6.3 mi (total)

Station #	UTM N	UTM E
1	4090649.595	581003.674
2	4090285.434	580966.493
3	4090253.226	581228.328
4	4090024.949	581398.320
5	4090023.289	581770.372
6	4090445.656	581638.605
7	4090346.628	580867.295
8	4090326.863	580536.814
9	4090289.510	580116.357
10	4090509.236	579926.761
11	4090422.738	579873.918
12	4090524.088	579489.637
13	4090804.934	579125.356
14	4090985.139	579178.335
15	4090089.505	579211.646
16	4091099.905	578938.088
17	4091116.591	578657.833

- Chinquapin (3 stations) – Access by vehicle. From Twin Gates entrance off of High St./Empire Grade Road.
  Start: A jcn. of Chinquapin and waytrail (past Woodcutters)
  End: End of Chinquapin (Jcn. w/Eucalyptus Loop)
  Length: 1.1 mi

Station #	UTM N	UTM E
1	4096473.463	581129.138
2	4096073.647	580952.947
3	4095567.397	580785.399

- Enchanted Loop (6 stations) – Access by foot. Drive to trailhead either via Chinquapin/Eucalyptus Loop or Wilder Ridge Loop Trails.
  Start: At north jcn. of Enchanted Loop and Eucalyptus Loop
  End: At north jcn. of Enchanted Loop and Eucalyptus Loop
  Length: 2 mi

Station #	**UTM N**	**UTM E**
1	4094357.550	579698.891
2	4094084.750	579319.100
3	4093913.397	579233.993
4	4093696.104	579173.502
5	4093898.024	579684.062
6	4094078.494	580064.304

- Long Meadow (7 stations) – Access by vehicle. Drive to trailhead via Chinquapin.
  Start: Jcn. of Long Meadow and Chinquapin
  End: Jcn. of Long Meadow and Wild Boar
  Length: 2.2 mi

Station #	**UTM N**	**UTM E**
1	4096288.061	581429.313
2	4095843.038	581480.482
3	4095416.867	581594.171
4	4095033.871	581776.311
5	4094562.854	581783.639
6	4094091.169	581743.051
7	4093779.183	582030.610

- Major's Creek (4 stations) – Access by vehicle. From WRSP entrance continue on Hwy 1 North ~2.75mi. Scaroni gate (faded green) is on north side of Hwy 1.
  Start: At west fork of Scaroni Rd down water intake service road
  End: At Major's creek dam
  Length: 1.1

Station #	**UTM N**	**UTM E**
1	4093820.376	577596.138
2	4094242.397	577808.079
3	4094535.267	578044.428
4	4094928.890	578189.564

- Scaroni Acquisition (7 stations) – Access by vehicle. From WRSP entrance continue on Hwy 1 North ~2.75mi. Scaroni gate (faded green) is on north side of Hwy 1.
  Start: At east fork of Scaroni Rd, continuing down Scaroni Rd
  End: At wooden gate/end of park property
  Length: 2.1 mi

Station #	**UTM N**	**UTM E**
1	4093004.088	577274.403
2	4093379.416	577485.452
3	4093781.840	577726.460
4	4094166.774	577992.708
5	4094536.589	578271.747
6	4094926.242	578481.194
7	4095165.867	578596.403

- Wagon Wheel / Wild Boar (6 stations) – Access by foot. Drive (via main park entrance, past cultural center) to Jcn. of Cowboy Loop and Wilder Ridge Loop; walk to trailhead off of Englesman Loop.
  Start: Wagon Wheel trailhead
  End: Jcn. of Wagon Wheel and Wild Boar (after looping around)
  Length: 2.3 mi

Station #	**UTM N**	**UTM E**
1	4091971.670	581545.630
2	4092374.870	581532.210
3	4092912.760	581451.660
4	4093209.010	581502.670
5	4093670.600	581808.090
6	4093323.120	581742.980

- Wilder Ridge Loop (Lower) (5 Stations) – Access by foot. Drive to Jcn. of Wilder Ridge and Enchanted Loop (via either main entrance or Twin Gates entrance).
  Start: Jcn. of Wilder Ridge and Enchanted Loop
  End: Jcn. of Wilder Ridge and Zane Gray
  Length: 1.8 mi

Station #	**UTM N**	**UTM E**
1	4093393.212	579758.484
2	4092755.669	579756.838
3	4092218.457	579776.512
4	4092117.811	580044.762
5	4092323.211	580303.367

- Wilder Ridge Loop (Upper)/Eucalyptus Loop (West) (13 stations) – Access by vehicle. Drive to Wilder Ridge Loop trailhead (from main entrance).
  Start: Wilder Ridge Loop trailhead (jcn. w/Englesman), base of first slope
  End: Jcn. of Eucalyptus Loop and Chinquapin
  Length: 4 mi

Station #	UTM N	UTM E
1	4091407.665	581245.279
2	4091867.462	581332.078
3	4092257.671	581434.536
4	4092690.431	581352.968
5	4092929.415	581142.060
6	4092888.579	580744.078
7	4093196.354	580377.166
8	4093577.323	580164.772
9	4093941.772	580082.876
10	4094183.059	580245.885
11	4094631.258	580223.614
12	4095054.991	580430.534
13	4095450.043	580663.962

- Woodcutter's (West) (3 stations) – Access by foot. Drive to Woodcutters trailhead via Brian's road; his gate is off of Smith Grade. From Empire Grade head east, pass Twin Gates entrance, and turn left onto Smith Grade. Gate is on the left.
  Start: Woodcutters trailhead from Brian Campbell's road (private)
  End: Jcn. of Woodcutters w/waytrail to south called "Major's creek vestra"
  Length: 1.1 mi

Station #	UTM N	UTM E
1	4097589.767	579822.977
2	4097768.094	580071.628
3	4097844.970	580454.081

- Woodcutter's (East) (5 stations) – Access by foot. Drive to trailhead via Chinquapin.
  Start: Waytrail 180m south from jcn. of Chinquapin and Woodcutters, on west side of trail
  End: Jcn. of Woodcutters w/Chinquapin
  Length: 1.7 mi

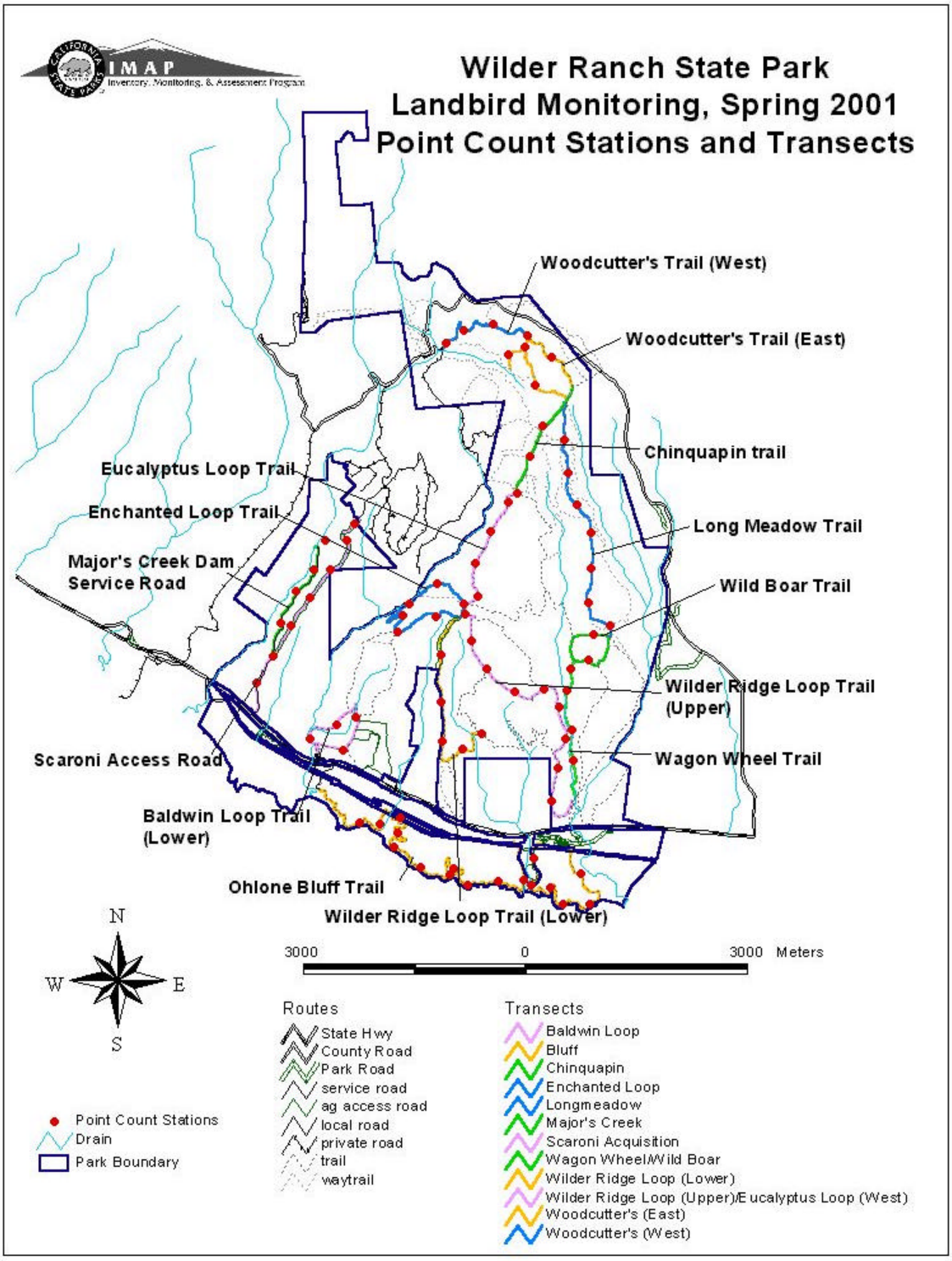
Station #	**UTM N**	**UTM E**
1	4097026.730	581030.290
2	4097547.044	580883.384
3	4097439.622	580664.770
4	4097699.298	580931.635
5	4097401.841	581247.235

B.) Maps of transects

The following pages include 14 maps showing:

- all the transects and the point count stations (1);
- a close-up view of each transect, route, and point count station (12);
- the point count stations over the vegetation alliances for Wilder Ranch SP (1).

Color paper copies of the maps are also included in Appendix D.


IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Point Count Stations and Transects
Woodcutter's Trail (West)
Woodcutter's Trail (East)
Chinquapin trail
Eucalyptus Loop Trail
Enchanted Loop Trail
Long Meadow Trail
Major's Creek Dam
Service Road
Wild Boar Trail
Wilder Ridge Loop Trail
(Upper)
Scaroni Access Road
Wagon Wheel Trail
Baldwin Loop Trail
(Lower)
Ohlone Bluff Trail
Wilder Ridge Loop Trail (Lower)
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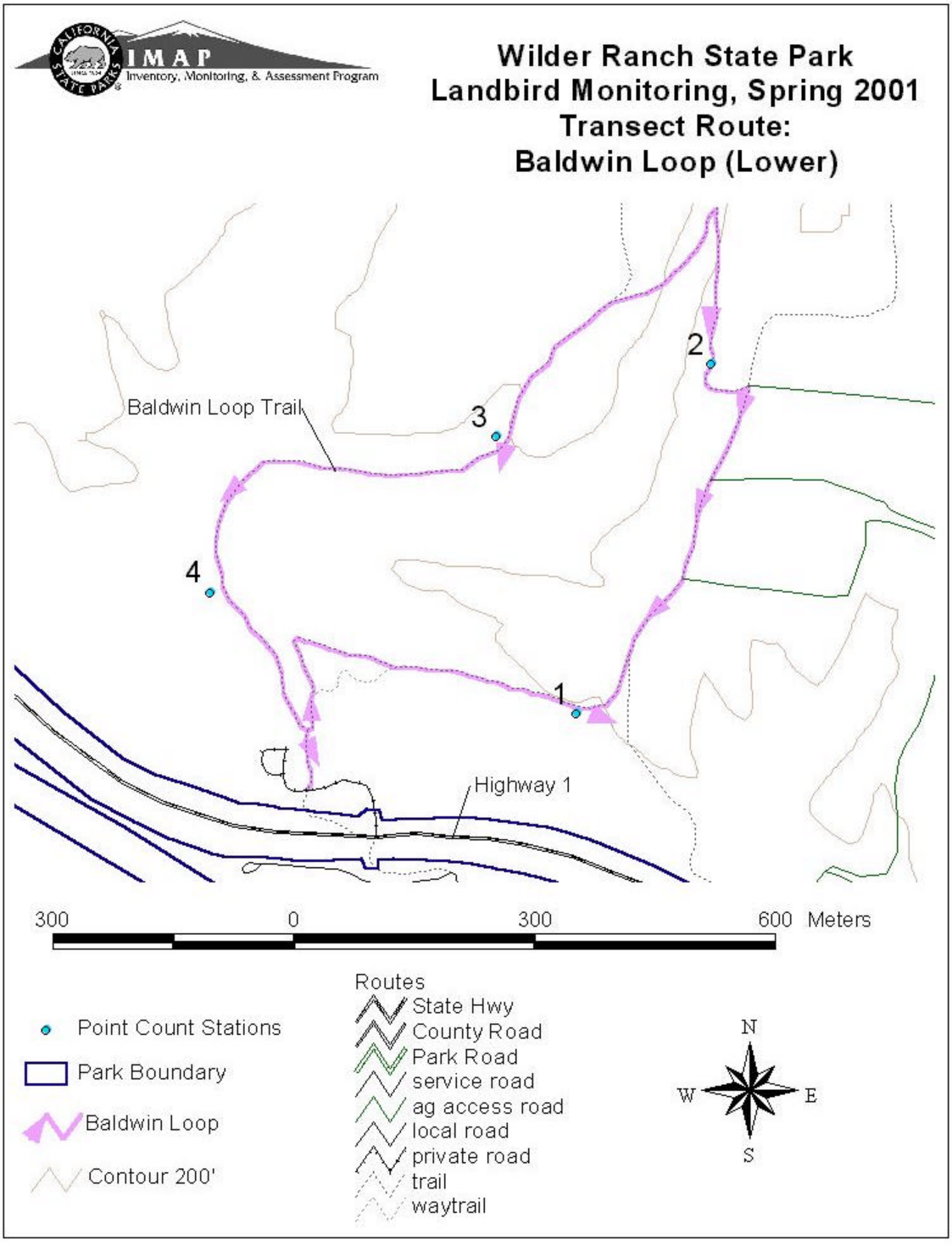
Park Boundary
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
Transects
Baldwin Loop
Bluff
Chinquapin
Enchanted Loop
Longmeadow
Major's Creek
Scaroni Acquisition
Wagon Wheel/Wild Boar
Wilder Ridge Loop (Lower)
Wilder Ridge Loop (Upper)/Eucalyptus Loop (West)
Woodcutter's (East)
Woodcutter's (West)


IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Baldwin Loop (Lower)
Baldwin Loop Trail
Highway 1
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Point Count Stations
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Baldwin Loop
Contour 200'
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Park Road
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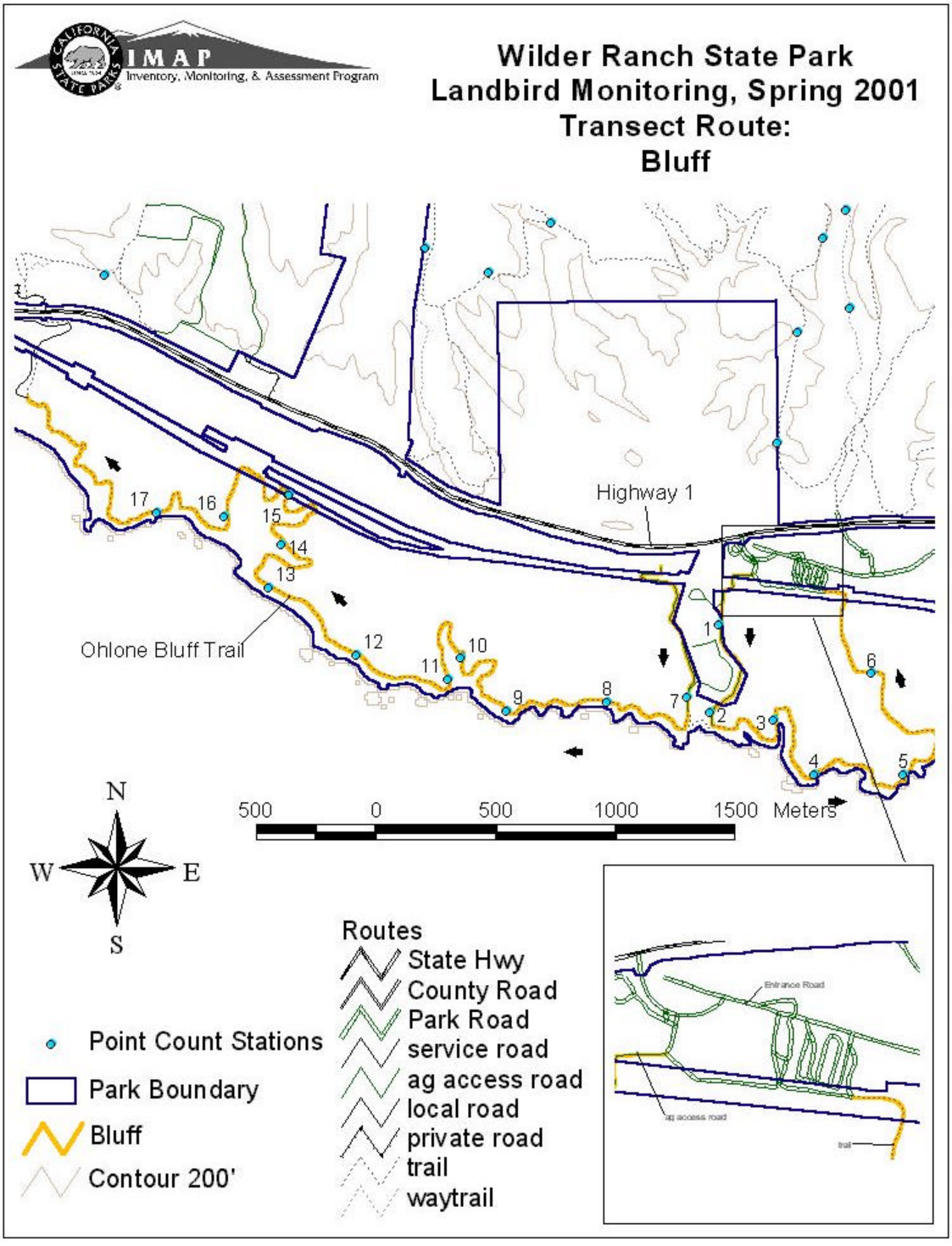
IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Bluff
Highway 1
Ohlone Bluff Trail
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Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
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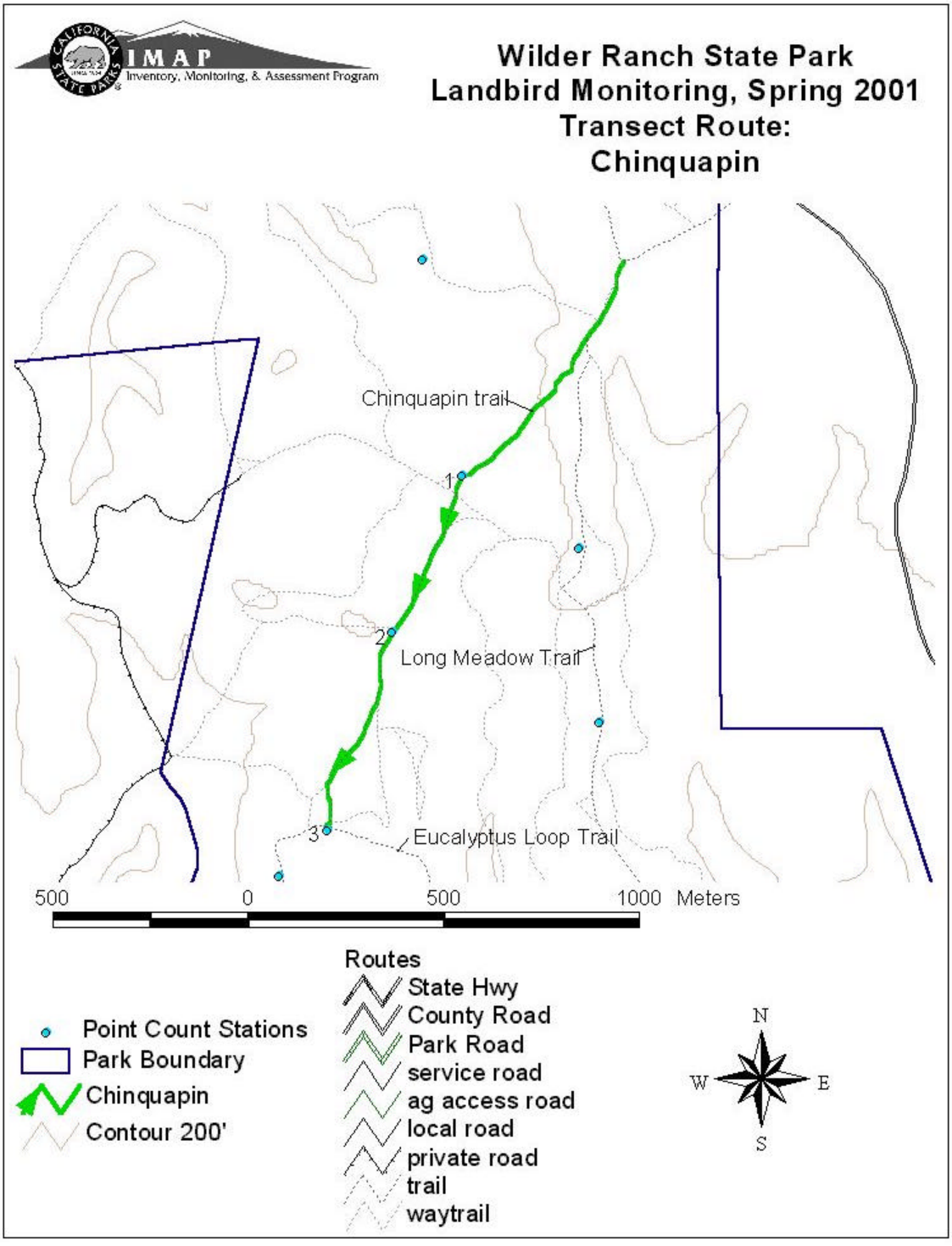
waytrail
Point Count Stations
Park Boundary
Bluff
Contour 200'
Entrance Road
ag access road
trail


IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Chinquapin
Chinquapin trail
1
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Long Meadow Trail
3
Eucalyptus Loop Trail
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1000 Meters
Routes
State Hwy
County Road
Park Road
service road
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local road
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Point Count Stations
Park Boundary
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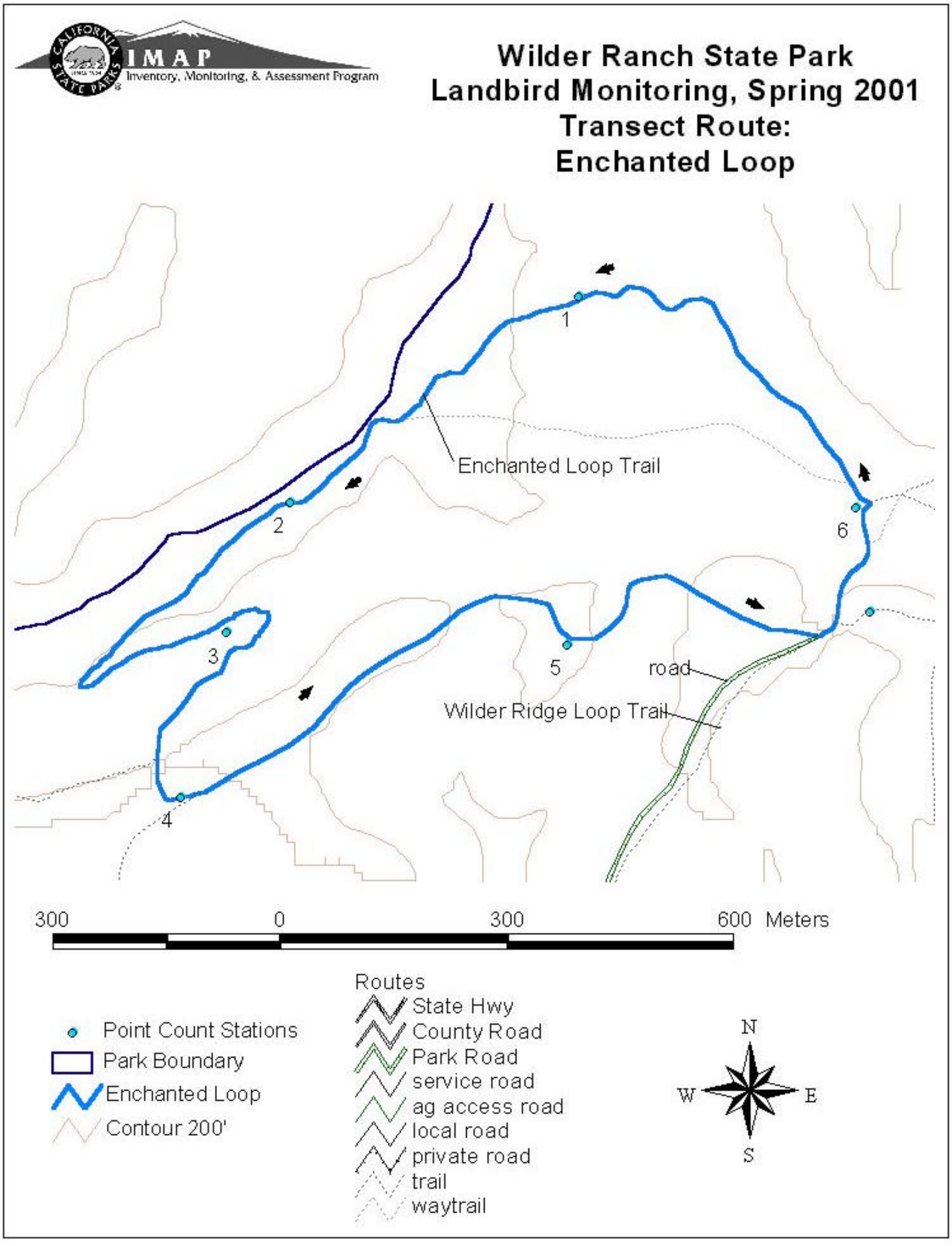
IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Enchanted Loop
Enchanted Loop Trail
Wilder Ridge Loop Trail
road
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County Road
Park Road
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local road
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Point Count Stations
Park Boundary
Enchanted Loop
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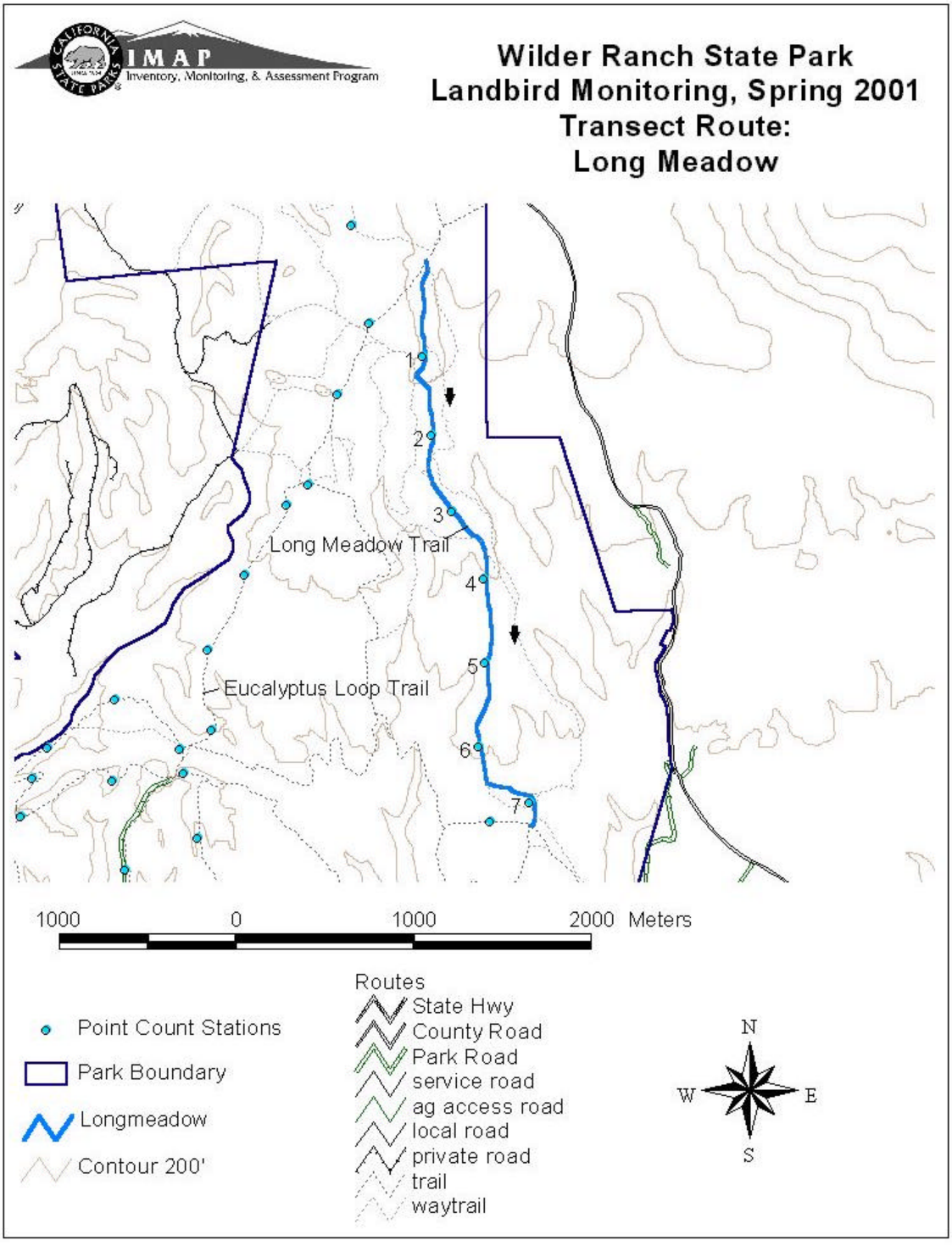
IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Long Meadow
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Long Meadow Trail
Eucalyptus Loop Trail
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Point Count Stations
Park Boundary
Longmeadow
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Park Road
service road
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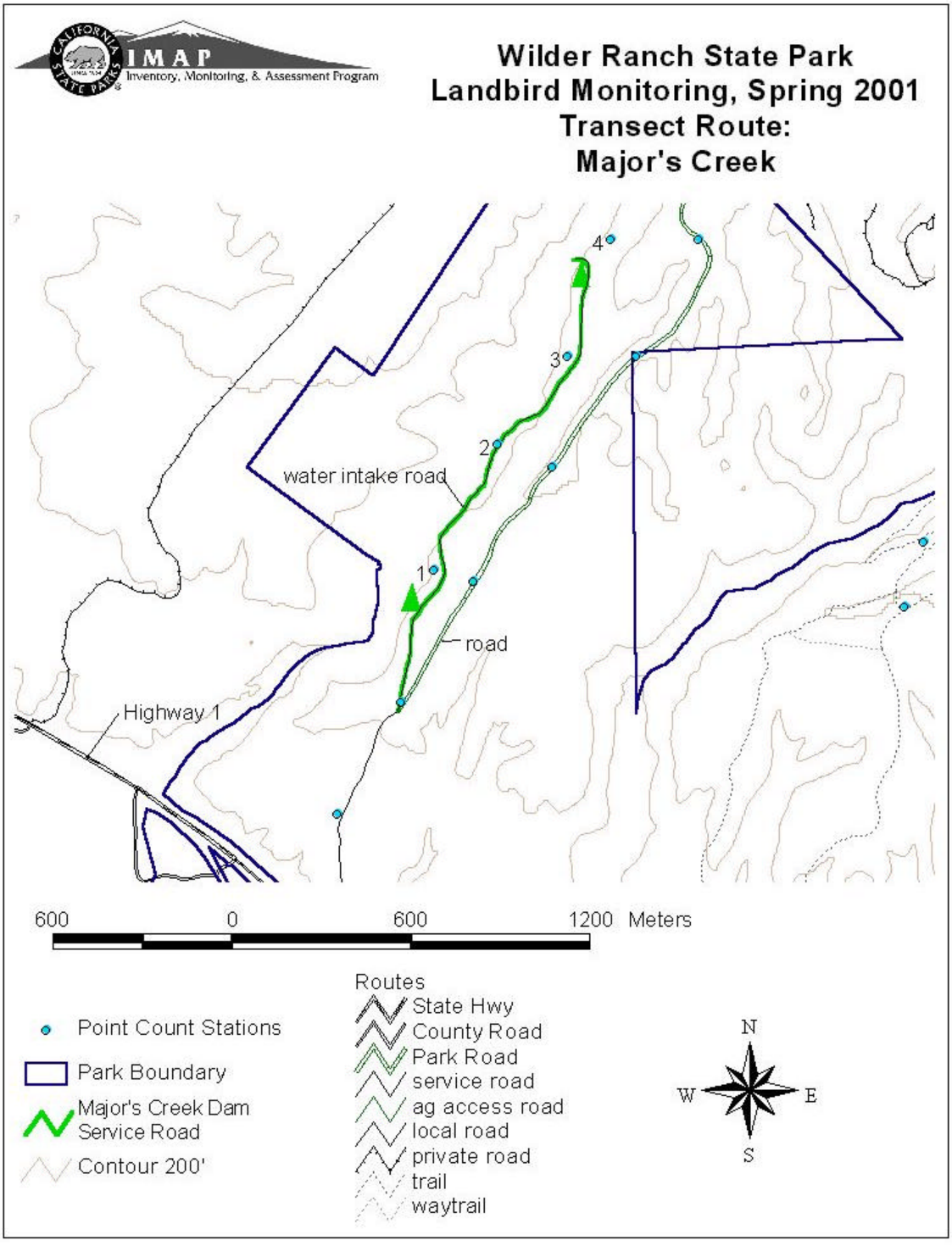
IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Major's Creek
4
3
2
1
water intake road
road
Highway 1
600
0
600
1200 Meters
Point Count Stations
Park Boundary
Major's Creek Dam
Service Road
Contour 200'
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
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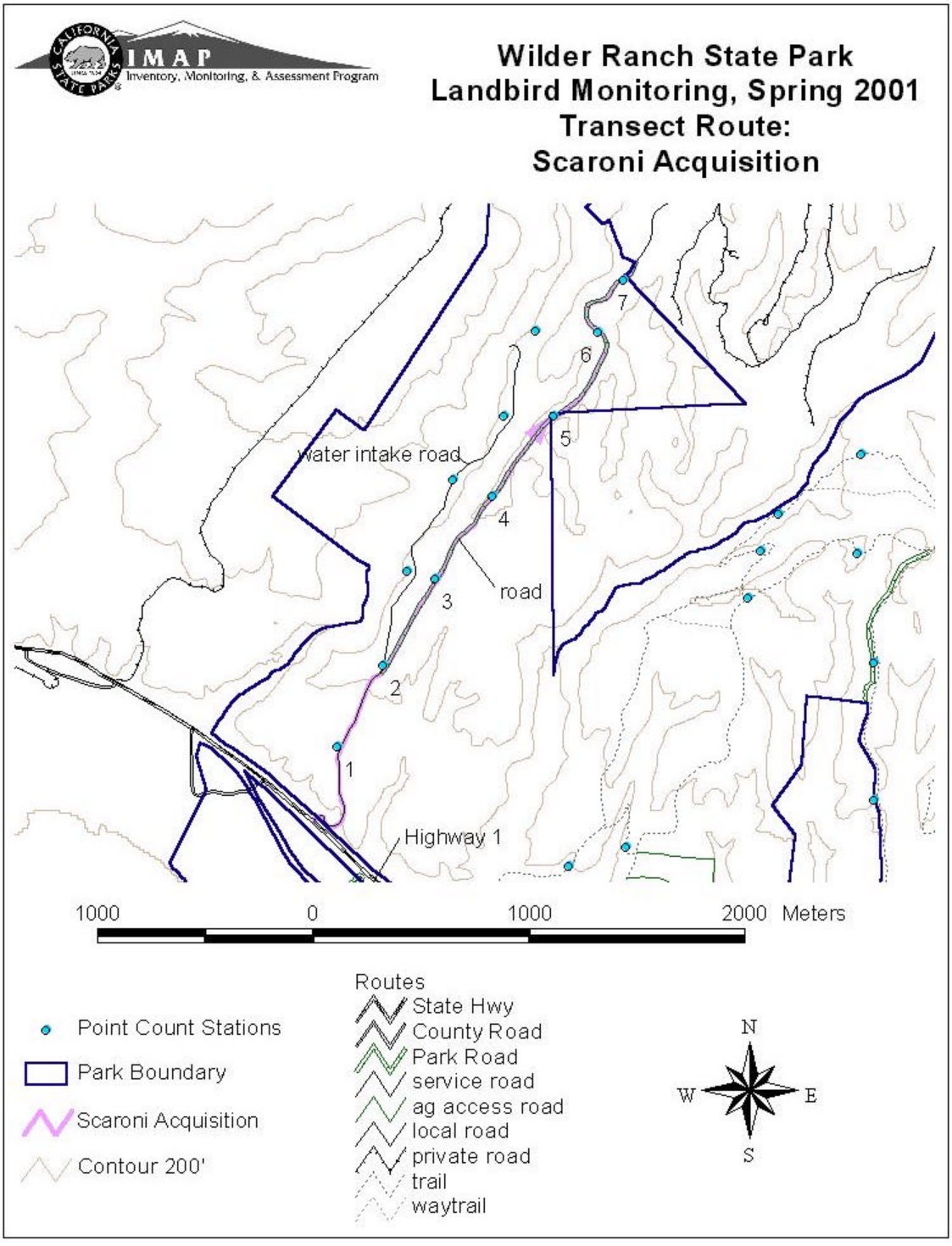
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Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Scaroni Acquisition
water intake road
road
Highway 1
1
2
3
4
5
6
7
1000
0
1000
2000 Meters
Point Count Stations
Park Boundary
Scaroni Acquisition
Contour 200'
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
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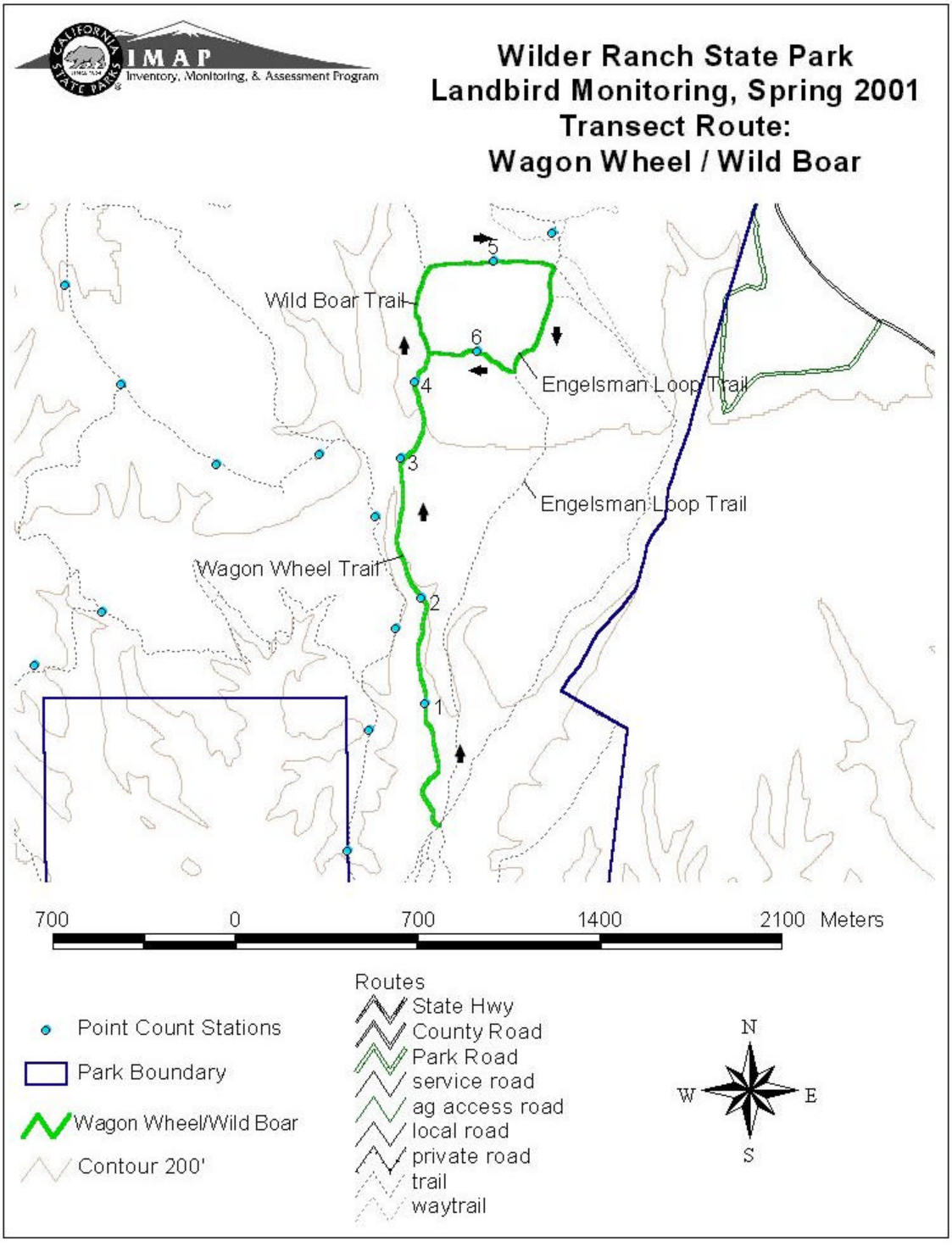
IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Wagon Wheel / Wild Boar
Wild Boar Trail
Engelsman Loop Trail
Engelsman Loop Trail
Wagon Wheel Trail
1
2
3
4
5
6
700
0
700
1400
2100 Meters
Point Count Stations
Park Boundary
Wagon Wheel/Wild Boar
Contour 200'
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
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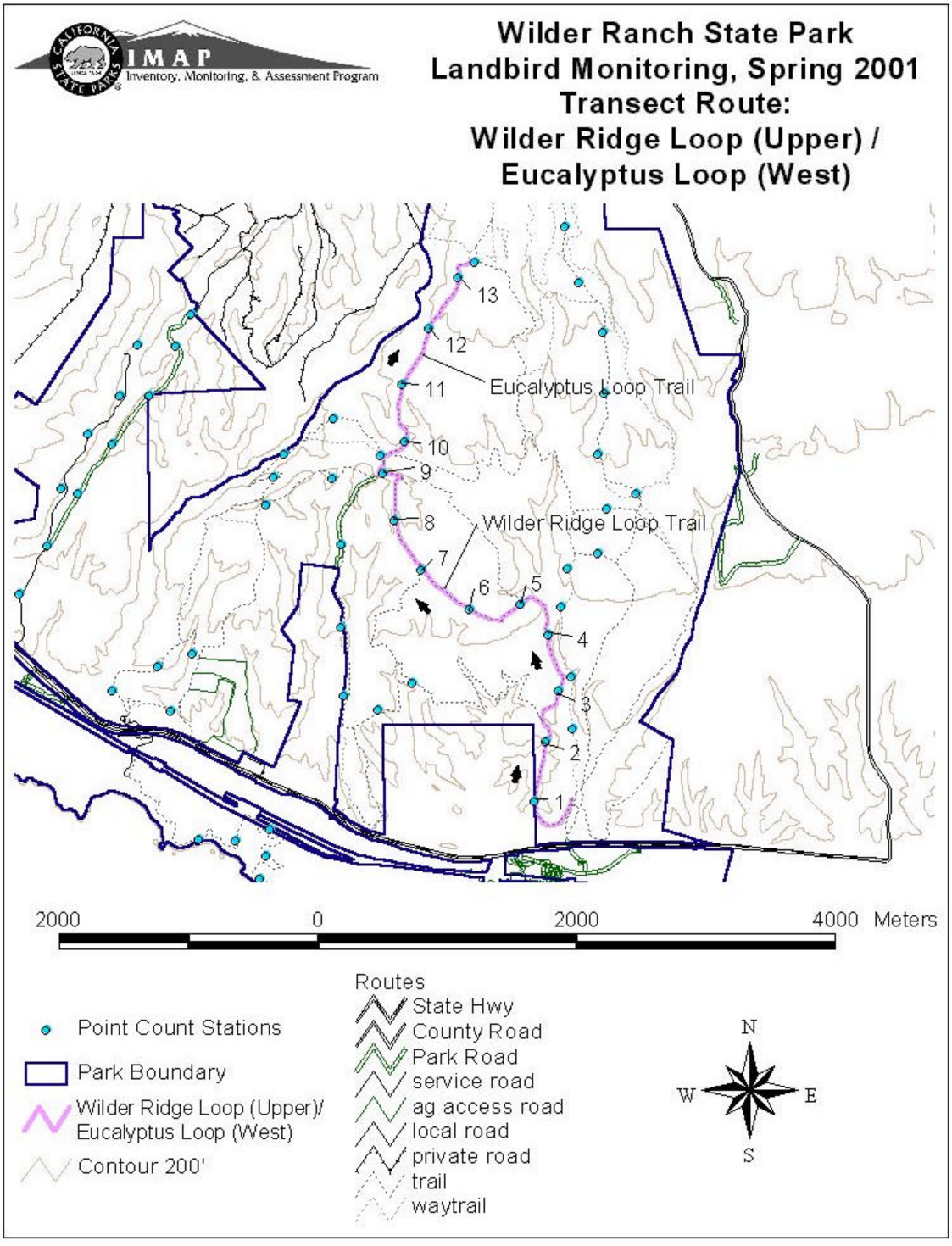
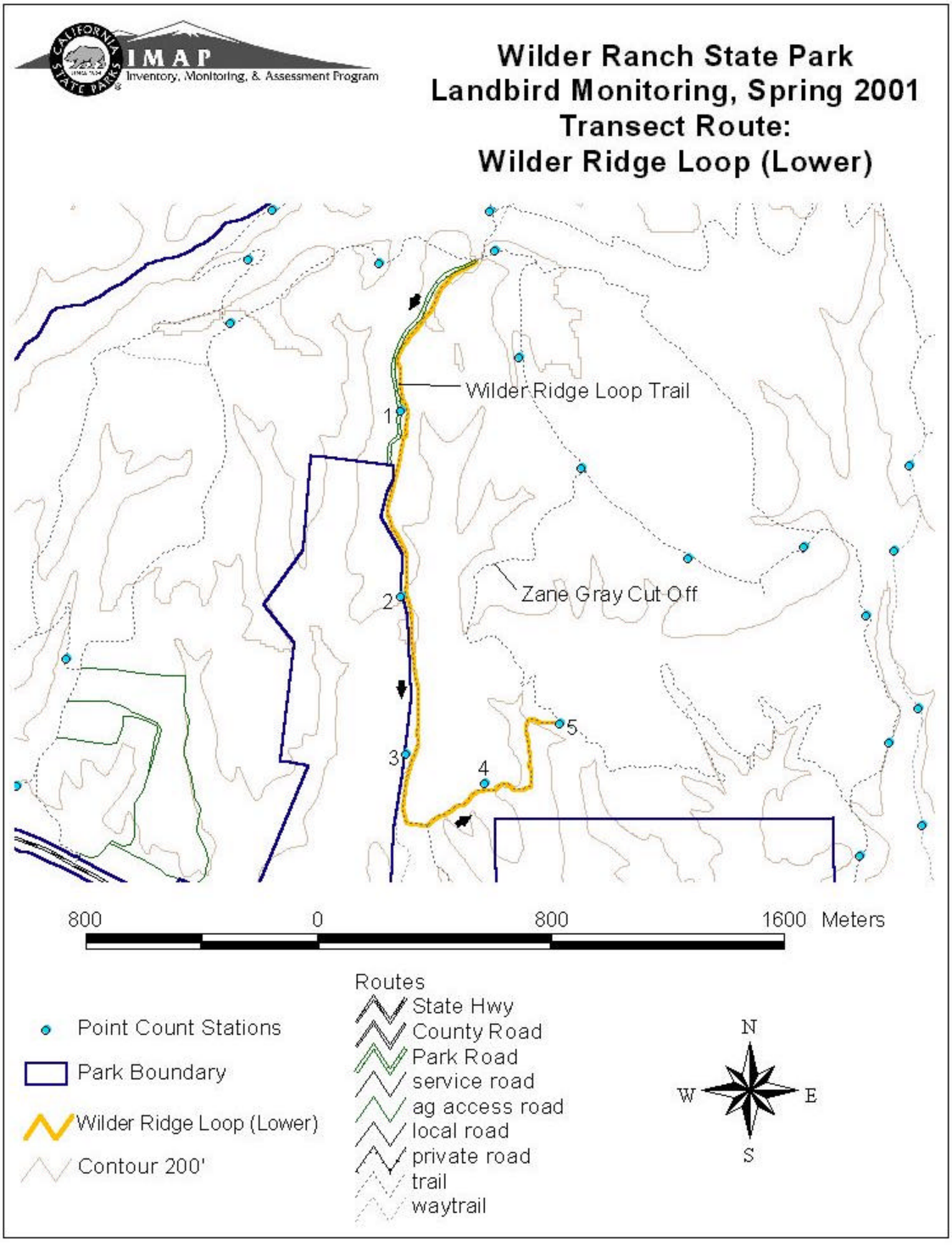

IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Wilder Ridge Loop (Upper) /
Eucalyptus Loop (West)
13
12
11
Eucalyptus Loop Trail
10
9
8
Wilder Ridge Loop Trail
7
6
5
4
3
2
1
2000
0
2000
4000 Meters
Point Count Stations
Park Boundary
Wilder Ridge Loop (Upper)/
Eucalyptus Loop (West)
Contour 200'
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
N
W
E
S


IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Wilder Ridge Loop (Lower)
Wilder Ridge Loop Trail
Zane Gray Cut Off
1
2
3
4
5
800
0
800
1600 Meters
Point Count Stations
Park Boundary
Wilder Ridge Loop (Lower)
Contour 200'
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
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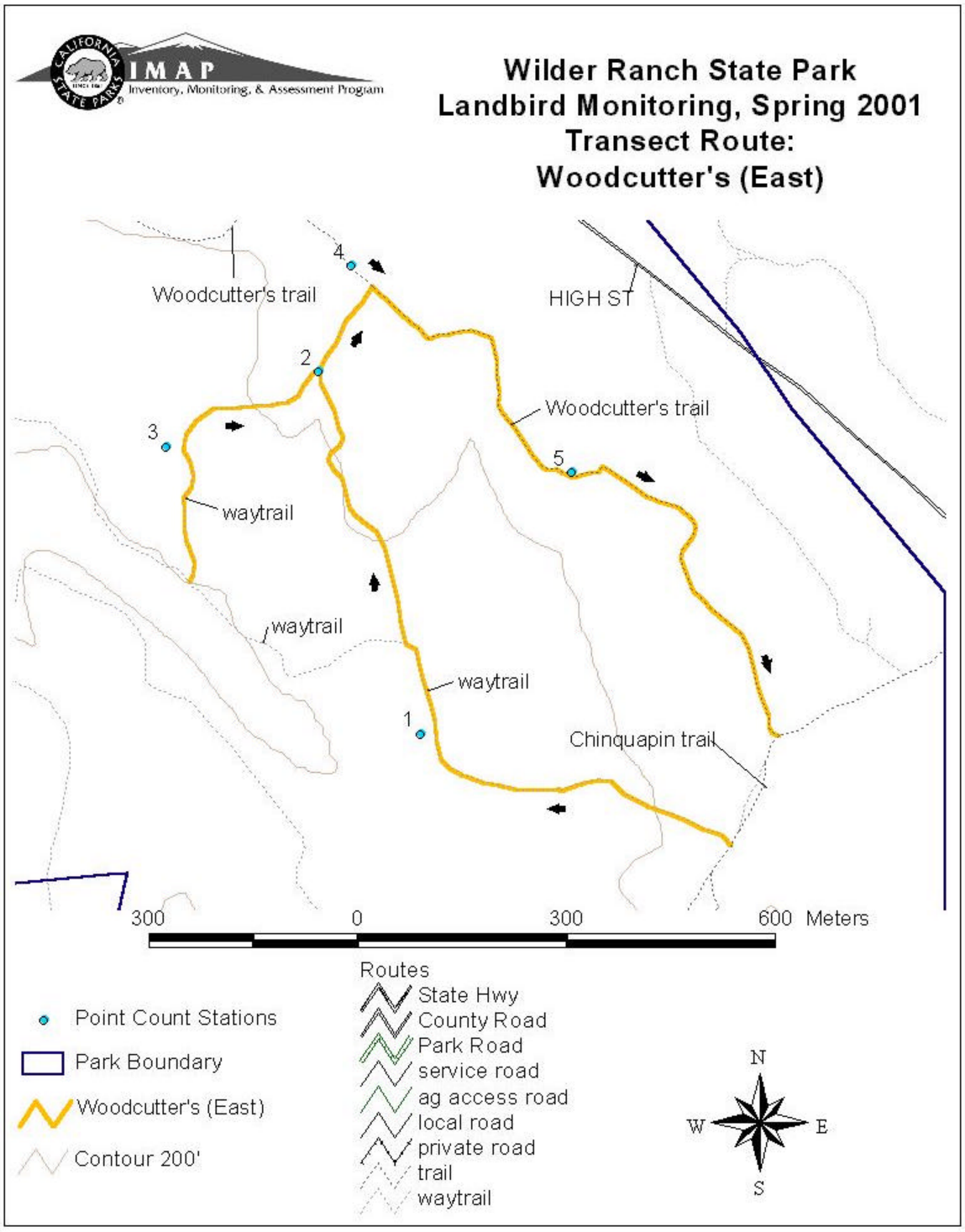
IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Woodcutter's (East)
Woodcutter's trail
HIGH ST
Woodcutter's trail
waytrail
waytrail
waytrail
Chinquapin trail
1
2
3
4
5
300
0
300
600 Meters
Point Count Stations
Park Boundary
Woodcutter's (East)
Contour 200'
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
N
W
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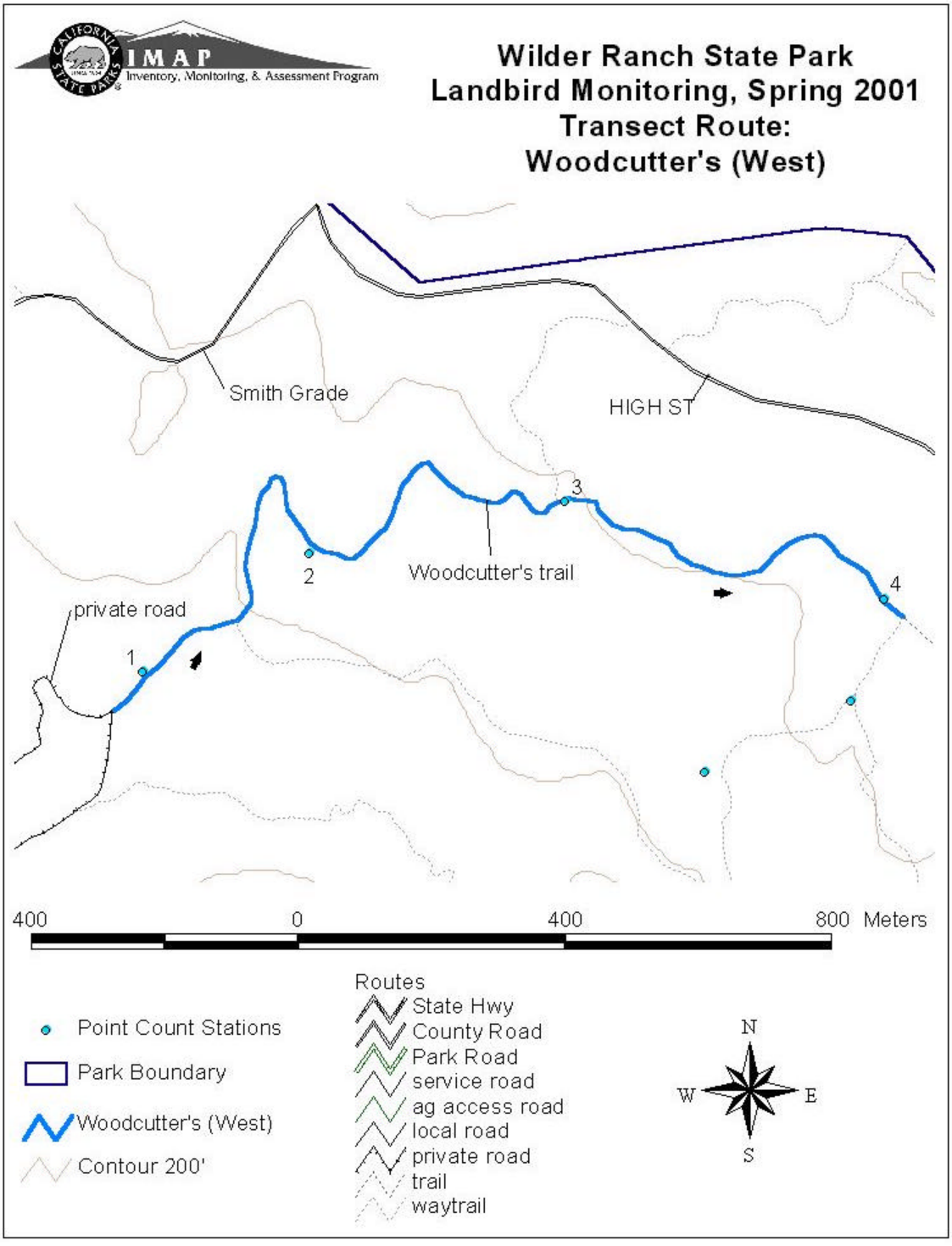
S


IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Transect Route:
Woodcutter's (West)
Smith Grade
HIGH ST
Woodcutter's trail
private road
1
2
3
4
400
0
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800 Meters
Point Count Stations
Park Boundary
Woodcutter's (West)
Contour 200'
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
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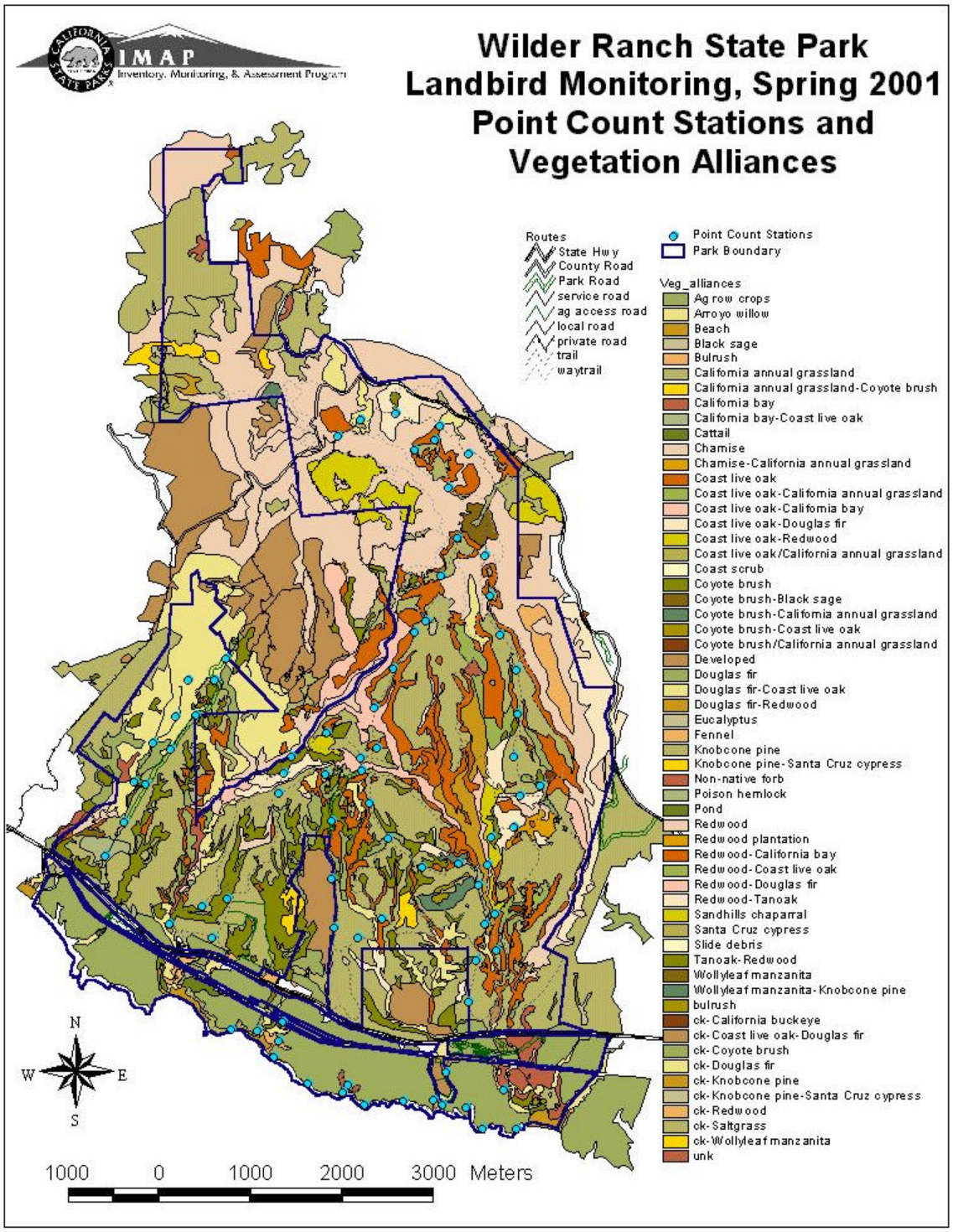
IMAP
Inventory, Monitoring, & Assessment Program
Wilder Ranch State Park
Landbird Monitoring, Spring 2001
Point Count Stations and
Vegetation Alliances
Routes
State Hwy
County Road
Park Road
service road
ag access road
local road
private road
trail
waytrail
Point Count Stations
Park Boundary
Veg_alliances
Ag row crops
Arroyo willow
Beach
Black sage
Bulrush
California annual grassland
California annual grassland-Coyote brush
California bay
California bay-Coast live oak
Cattail
Chamise
Chamise-California annual grassland
Coast live oak
Coast live oak-California annual grassland
Coast live oak-California bay
Coast live oak-Douglas fir
Coast live oak-Redwood
Coast live oak/California annual grassland
Coast scrub
Coyote brush
Coyote brush-Black sage
Coyote brush-California annual grassland
Coyote brush-Coast live oak
Coyote brush/California annual grassland
Developed
Douglas fir
Douglas fir-Coast live oak
Douglas fir-Redwood
Eucalyptus
Fennel
Knobcone pine
Knobcone pine-Santa Cruz cypress
Non-native forb
Poison hemlock
Pond
Redwood
Redwood plantation
Redwood-California bay
Redwood-Coast live oak
Redwood-Douglas fir
Redwood-Tanoak
Sandhills chaparral
Santa Cruz cypress
Slide debris
Tanoak-Redwood
Wollyleaf manzanita
Wollyleaf manzanita-Knobcone pine
bulrush
ck-California buckeye
ck-Coast live oak-Douglas fir
ck-Coyote brush
ck-Douglas fir
ck-Knobcone pine
ck-Knobcone pine-Santa Cruz cypress
ck-Redwood
ck-Saltgrass
ck-Wollyleaf manzanita
unk
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C.) Schedule of point counts

The following table shows the date, time, and sequence for each point count transect.

Sequence	Transect	Date	Time
1	Long Meadow	05/24/01	0641
2	Chinquapin	05/24/01	0840
3	Bluff	05/29/01	0625
4	Wilder Ridge Loop (Upper)	05/30/01	0620
5	Wagon Wheel / Wild Boar	05/31/01	0700
6	Scaroni Acquisition	06/07/01	0722
7	Baldwin Loop (Lower)	06/08/01	0718
8	Wilder Ridge Loop (Lower)	06/10/01	0631
9	Woodcutter's (East)	06/11/01	0708
10	Enchanted Loop	06/12/01	0650
11	Woodcutter's (West)	06/13/01	0722
12	Major's Creek	06/14/01	0639

D.) Data Summaries

The following reports list:

- Species and Abundance;
- Species and Abundance by Transect; and
- Species Richness by Transect.

Wilder Ranch State Park

Landbird Survey, Spring 2001: Species and Abundance

California Dept. of Parks and Recreation

Common Name	Code	Scientific Name	# of Individuals
Acorn Woodpecker	ACWO	Melanerpes formicivorus	1
Allen's Hummingbird	ALHU	Selasphorus sasin	1
American Crow	AMCR	Corvus brachyrhynchos	5
American Goldfinch	AMGO	Carduelis tristis	2
American Kestrel	MAKE	Falco sparverius	1
American Robin	AMRO	Turdus migratorius	14
Ash-throated Flycatcher	ATFL	Myiarchus cinerascens	8
Band-tailed Pigeon	BTPI	Columba fasciata	4
Barn Swallow	BARS	Hirundo rustica	7
Bewick's Wren	BEWR	Thryomanes bewickii	4
Black-headed Grosbeak	BHGR	Pheucticus melanocephalus	12
Brewer's Blackbird	BRBL	Euphagus cyanocephalus	11
Brown-headed Cowbird	BHCO	Molothrus ater	1
Bushtit	BUSH	Psaltriparus minimus	87
California Quail	CAQU	Callipepla californica	49
California Towhee	CALT	Pipilo crissalis	18
Chestnut-backed Chickadee	CBCH	Poecile rufescens	166
Cliff Swallow	CLSW	Hirundo pyrrhonota	31
Common Raven	CORA	Corvus corax	13
European Starling	EUST	Sturnus vulgaris	6
Hermit Thrush	HETH	Catharus guttatus	6

California Dept. of Parks and Recreation

Common Name	Code	Scientific Name	# of Individuals
House Finch	HOFI	Carpodacus mexicanus	88
Mallard	MALL	Anas platyrhynchos	2
Mourning Dove	MODO	Zenaida macroura	10
Northern Flicker	NOFL	Colaptes auratus	1
Northern Harrier	NOHA	Circus cyaneus	2
Oak Titmouse	OATI	Baeolophus inornatus	2
Olive-sided Flycatcher	OSFL	Contopus cooperi	11
Orange-crowned Warbler	OCWA	Vermivora celata	12
Pacific-slope Flycatcher	PSFL	Empidonax difficilis	27
Purple Finch	PUFI	Carpodacus purpureus	14
Red-tailed Hawk	RTHA	Buteo jamaicensis	15
Red-winged Blackbird	RWBL	Agelaius phoeniceus	64
Rufous Hummingbird	RUHU	Selasphorus rufus	2
Slate-colored Junco	SCJU	Junco hyemalis	12
Song Sparrow	SOSP	Melospiza melodia	86
Spotted Towhee	SPTO	Pipilo maculatus	48
Steller's Jay	STJA	Cyanocitta stelleri	36
Swainson's Thrush	SWTH	Catharus ustulatus	9
Tree Swallow	TRES	Tachycineta bicolor	1
Violet-green Swallow	VGSW	Tachycineta thalassina	4
Western Scrub-jay	WESJ	Aphelocoma californica	18
White-crowned Sparrow	WCSP	Zonotrichia leucophrys	25
White-tailed Kite	WTKI	Elanus leucurus	5
Wilson's Warbler	WIWA	Wilsonia pusilla	38

California Dept. of Parks and Recreation

Common Name	Code	Scientific Name	# of Individuals
Winter Wren	WIWR	Troglodytes troglodytes	3
Wrentit	WREN	Chamaea fasciata	26

Wilder Ranch State Park

Landbird Survey, Spring 2001: Species and Abundance by Transect

California Dept. of Parks and Recreation

Transect: **Baldwin Loop (Lower)**

Common Name	Code	Scientific Name
Ash-throated Flycatcher	ATFL	Myiarchus cinerascens
Barn Swallow	BARS	Hirundo rustica
Black-headed Grosbeak	BHGR	Pheucticus melanocephalus
Brewer's Blackbird	BRBL	Euphagus cyanocephalus
California Quail	CAQU	Callipepla californica
Common Raven	CORA	Corvus corax
House Finch	HOFI	Carpodacus mexicanus
Orange-crowned Warbler	OCWA	Vermivora celata
Red-tailed Hawk	RTHA	Buteo jamaicensis
Song Sparrow	SOSP	Melospiza melodia
Spotted Towhee	SPTO	Pipilo maculatus
Swainson's Thrush	SWTH	Catharus ustulatus
White-crowned Sparrow	WCSP	Zonotrichia leucophrys
Wilson's Warbler	WIWA	Wilsonia pusilla
Wrentit	WREN	Chamaea fasciata

Transect: **Bluff**

Common Name	Code	Scientific Name
American Robin	AMRO	Turdus migratorius
Barn Swallow	BARS	Hirundo rustica
Brown-headed Cowbird	BHCO	Molothrus ater

California Dept. of Parks and Recreation

California Quail	CAQU	Callipepla californica
Cliff Swallow	CLSW	Hirundo pyrrhonota
Common Raven	CORA	Corvus corax
European Starling	EUST	Sturnus vulgaris
House Finch	HOFI	Carpodacus mexicanus
Mallard	MALL	Anas platyrhynchos
Northern Harrier	NOHA	Circus cyaneus
Red-winged Blackbird	RWBL	Agelaius phoeniceus
Song Sparrow	SOSP	Melospiza melodia
Swainson's Thrush	SWTH	Catharus ustulatus
White-crowned Sparrow	WCSP	Zonotrichia leucophrys
Wilson's Warbler	WIWA	Wilsonia pusilla

Transect: **Chinquapin**

Common Name	**Code**	**Scientific Name**
Black-headed Grosbeak	BHGR	Pheucticus melanocephalus
Bushtit	BUSH	Psaltriparus minimus
California Quail	CAQU	Callipepla californica
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Mourning Dove	MODO	Zenaida macroura
Orange-crowned Warbler	OCWA	Vermivora celata
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Song Sparrow	SOSP	Melospiza melodia
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Western Scrub Jay	WSJA	Aphelocoma californica

California Dept. of Parks and Recreation

Wilson's Warbler	WIWA	Wilsonia pusilla
Wrentit	WREN	Chamaea fasciata

Transect: **Enchanted Loop**

Common Name	Code	Scientific Name
American Crow	AMCR	Corvus brachyrhynchos
Ash-throated Flycatcher	ATFL	Myiarchus cinerascens
Bushtit	BUSH	Psaltriparus minimus
California Quail	CAQU	Callipepla californica
California Towhee	CALT	Pipilo crissalis
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Common Raven	CORA	Corvus corax
Dark-eyed Junco	DEJU	Junco hyemalis
House Finch	HOFI	Carpodacus mexicanus
Olive-sided Flycatcher	OSFL	Contopus borealis cooperi
Orange-crowned Warbler	OCWA	Vermivora celata
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Purple Finch	PUFI	Carpodacus purpureus
Red-tailed Hawk	RTHA	Buteo jamaicensis
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Swainson's Thrush	SWTH	Catharus ustulatus
Western Scrub Jay	WSJA	Aphelocoma californica
White-tailed Kite	WTKI	Elanus leucurus
Wilson's Warbler	WIWA	Wilsonia pusilla
Winter Wren	WIWR	Troglodytes troglodytes

California Dept. of Parks and Recreation

Transect: **Long Meadow**

Common Name	Code	Scientific Name
Black-headed Grosbeak	BHGR	Pheucticus melanocephalus
Bushtit	BUSH	Psaltriparus minimus
California Quail	CAQU	Callipepla californica
California Towhee	CALT	Pipilo crissalis
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Purple Finch	PUFI	Carpodacus purpureus
Song Sparrow	SOSP	Melospiza melodia
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Western Scrub Jay	WSJA	Aphelocoma californica
Wilson's Warbler	WIWA	Wilsonia pusilla
Wrentit	WREN	Chamaea fasciata

Transect: **Major's Creek**

Common Name	Code	Scientific Name
Bewick's Wren	BEWR	Thryomanes bewickii
California Quail	CAQU	Callipepla californica
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Mourning Dove	MODO	Zenaida macroura
Olive-sided Flycatcher	OSFL	Contopus borealis cooperi
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Purple Finch	PUFI	Carpodacus purpureus
Red-tailed Hawk	RTHA	Buteo jamaicensis

California Dept. of Parks and Recreation

Steller's Jay	STJA	Cyanocitta stelleri
Swainson's Thrush	SWTH	Catharus ustulatus
Wilson's Warbler	WIWA	Wilsonia pusilla
Winter Wren	WIWR	Troglodytes troglodytes
Wrentit	WREN	Chamaea fasciata

Transect: **Scaroni Acquisition**

Common Name	Code	Scientific Name
California Quail	CAQU	Callipepla californica
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Hermit Thrush	HETH	Catharus guttatus
House Finch	HOFI	Carpodacus mexicanus
Olive-sided Flycatcher	OSFL	Contopus borealis cooperi
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Plain Oak Titmouse	OATI	Baeolophus inornatus
Purple Finch	PUFI	Carpodacus purpureus
Song Sparrow	SOSP	Melospiza melodia
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Wilson's Warbler	WIWA	Wilsonia pusilla
Wrentit	WREN	Chamaea fasciata

Transect: **Wagon Wheel / Wild Boar**

Common Name	Code	Scientific Name
American Robin	AMRO	Turdus migratorius
Ash-throated Flycatcher	ATFL	Myiarchus cinerascens
Band-tailed Pigeon	BTPI	Columba fasciata

California Dept. of Parks and Recreation

California Quail	CAQU	Callipepla californica
California Towhee	CALT	Pipilo crissalis
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Cliff Swallow	CLSW	Hirundo pyrrhonota
Hermit Thrush	HETH	Catharus guttatus
House Finch	HOFI	Carpodacus mexicanus
Olive-sided Flycatcher	OSFL	Contopus borealis cooperi
Orange-crowned Warbler	OCWA	Vermivora celata
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Plain Oak Titmouse	OATI	Baeolophus inornatus
Purple Finch	PUFI	Carpodacus purpureus
Red-tailed Hawk	RTHA	Buteo jamaicensis
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Western Scrub Jay	WSJA	Aphelocoma californica
White-tailed Kite	WTKI	Elanus leucurus
Wilson's Warbler	WIWA	Wilsonia pusilla
Winter Wren	WIWR	Troglodytes troglodytes
Wrentit	WREN	Chamaea fasciata

Transect: **Wilder Ridge Loop (Lower)**

Common Name	**Code**	**Scientific Name**
Allen's Hummingbird	ALHU	Selasphorus sasin
American Goldfinch	AMGO	Carduelis tristis
American Kestrel	AMKE	Falco sparverius
Barn Swallow	BARS	Hirundo rustica

California Dept. of Parks and Recreation

Black-headed Grosbeak	BHGR	Pheucticus melanocephalus
Brewer's Blackbird	BRBL	Euphagus cyanocephalus
Bushtit	BUSH	Psaltriparus minimus
California Quail	CAQU	Callipepla californica
California Towhee	CALT	Pipilo crissalis
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Common Raven	CORA	Corvus corax
House Finch	HOFI	Carpodacus mexicanus
Orange-crowned Warbler	OCWA	Vermivora celata
Red-tailed Hawk	RTHA	Buteo jamaicensis
Red-winged Blackbird	RWBL	Agelaius phoeniceus
Song Sparrow	SOSP	Melospiza melodia
Spotted Towhee	SPTO	Pipilo maculatus
Swainson's Thrush	SWTH	Catharus ustulatus
Western Scrub Jay	WSJA	Aphelocoma californica
Wrentit	WREN	Chamaea fasciata

Transect: **Wilder Ridge Loop (Upper) / Eucalyptus Loop (West)**

Common Name	**Code**	**Scientific Name**
American Crow	AMCR	Corvus brachyrhynchos
American Goldfinch	AMGO	Carduelis tristis
Ash-throated Flycatcher	ATFL	Myiarchus cinerascens
Band-tailed Pigeon	BTPI	Columba fasciata
Barn Swallow	BARS	Hirundo rustica
Bewick's Wren	BEWR	Thryomanes bewickii
Black-headed Grosbeak	BHGR	Pheucticus melanocephalus

California Dept. of Parks and Recreation

Bushtit	BUSH	Psaltriparus minimus
California Quail	CAQU	Callipepla californica
California Towhee	CALT	Pipilo crissalis
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Common Raven	CORA	Corvus corax
Dark-eyed Junco	DEJU	Junco hyemalis
European Starling	EUST	Sturnus vulgaris
House Finch	HOFI	Carpodacus mexicanus
Mourning Dove	MODO	Zenaida macroura
Northern Flicker	NOFL	Colaptes auratus
Olive-sided Flycatcher	OSFL	Contopus borealis cooperi
Orange-crowned Warbler	OCWA	Vermivora celata
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Red-tailed Hawk	RTHA	Buteo jamaicensis
Red-winged Blackbird	RWBL	Agelaius phoeniceus
Song Sparrow	SOSP	Melospiza melodia
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Tree Swallow	TRES	Tachycineta bicolor
Violet-green Swallow	VGSW	Tachycineta thalassina
Western Scrub Jay	WSJA	Aphelocoma californica
White-tailed Kite	WTKI	Elanus leucurus
Wilson's Warbler	WIWA	Wilsonia pusilla
Wrentit	WREN	Chamaea fasciata

California Dept. of Parks and Recreation

Transect: **Woodcutter's (East)**

Common Name	Code	Scientific Name
American Crow	AMCR	Corvus brachyrhynchos
American Robin	AMRO	Turdus migratorius
Bewick's Wren	BEWR	Thryomanes bewickii
Black-headed Grosbeak	BHGR	Pheucticus melanocephalus
California Quail	CAQU	Callipepla californica
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Dark-eyed Junco	DEJU	Junco hyemalis
Hermit Thrush	HETH	Catharus guttatus
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Western Scrub Jay	WSJA	Aphelocoma californica
Wilson's Warbler	WIWA	Wilsonia pusilla

Transect: **Woodcutter's (West)**

Common Name	Code	Scientific Name
Acorn Woodpecker	ACWO	Melanerpes formicivorus
American Robin	AMRO	Turdus migratorius
Band-tailed Pigeon	BTPI	Columba fasciata
Bewick's Wren	BEWR	Thryomanes bewickii
Bushtit	BUSH	Psaltriparus minimus
California Towhee	CALT	Pipilo crissalis
Chestnut-backed Chickadee	CBCH	Poecile rufescens
Dark-eyed Junco	DEJU	Junco hyemalis

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Hermit Thrush	HETH	Catharus guttatus
House Finch	HOFI	Carpodacus mexicanus
Olive-sided Flycatcher	OSFL	Contopus borealis cooperi
Pacific-slope Flycatcher	PSFL	Empidonax difficilis
Rufous Hummingbird	RUHU	Selasphorus rufus
Spotted Towhee	SPTO	Pipilo maculatus
Steller's Jay	STJA	Cyanocitta stelleri
Swainson's Thrush	SWTH	Catharus ustulatus
Wilson's Warbler	WIWA	Wilsonia pusilla
Wrentit	WREN	Chamaea fasciata

Wilder Ranch State Park

Landbird Survey, Spring 2001: Species Richness by Transect

California Dept. of Parks and Recreation

Transect	Species Richness	# of Stations
Baldwin Loop (Lower)	15	4
Bluff	15	17
Chinquapin	13	3
Enchanted Loop	21	6
Long Meadow	13	7
Major's Creek	13	4
Scaroni Acquisition	13	7
Wagon Wheel / Wild Boar	22	6
Wilder Ridge Loop (Lower)	20	5
Wilder Ridge Loop (Upper) / Eucalyptus (West)	49	13
Woodcutter's (East)	13	5
Woodcutter's (West)	18	3

E.) Statistical Analysis

The point count census data for Spring, 2001, were entered from the paper data forms into the IMAP database, created with Microsoft Access 2000. Using this software, the total number of individuals per bird species was calculated and lists of present bird species were generated. Species richness was calculated and entered by hand. Species richness is defined as the sum of the number of species per transect (Nur et al. 1999).

The objective of the Spring, 2001, bird census at Wilder Ranch SP was to gather baseline data, which can be used to develop future plans for bird monitoring. With the point counts a basic inventory of bird species present was obtained, as well as an idea of relative abundance and in which habitats they are found.

Species richness is defined as the total number of species detected (Nur et al. 1999). After 6-10 years of monitoring by single point counts (one count per station per season) significant results for population trend can be determined (Nur et al. 1999). Average species richness per transect was calculated by dividing the total number of species per transect by the total number of point count stations per transect.

Although a minimum sample size (number of stations) of 30 is suggested per habitat (Ralph et. Al. 1995), given the stations were not stratified by habitat, it was decided that the number of point count stations in the sample would be as many as could be counted throughout the unit while adhering to the constraints of the project. For the objectives of the study it was better to have more independent point count stations than to repeat a smaller set of stations (Ralph et al. 1995). In total, point counts were conducted at 80 stations in a 6000-acre (2400 ha) area.

F.) Graphs

The following graphs depict:

- Total species richness and relative abundance;
- Percent of raptors observed;
- Species richness by transect; and
- Relationship between the number of point count stations and species richness, per transect.

G.) Discussion

The species most relatively abundant was the Chestnut-backed chickadee (*Poecile rufescens*) with 166 individuals detected. The next top four species were the House finch (*Carpodacus mexicanus*), 88; Bushtit (*Psaltriparus minimus*), 87; Song sparrow (*Melospiza melodia*), 86; and Red-winged blackbird (*Agelaius phoeniceus*), 64. It is not surprising that these birds are all passerines that are conspicuously vocal and tend to flock or move in groups. These characteristics certainly aided their detection in the point counts.

Five species of raptors were observed during point counts: Red-tailed hawk *(Buteo jamaicensis)*, 15; White-tailed kite *(Elanus leucurus)*, 5; Northern harrier *(Circus cyaneus)*, 2; and American kestrel *(Falco sparverius)*, 1. There was one incidental sighting of a Cooper's hawk *(Accipiter cooperii)* by Roy Woodward and Craig Swolgaard, as well as incidental sightings of Red-shouldered hawk (*Buteo lineatus*) and Osprey (*Pandion haliaetus*) by Craig Swolgaard. All are native species in California and are fairly common.

The greatest species richness was 49 species observed on the Wilder Ridge Loop (Upper) / Eucalyptus Loop (West) transect. The factors affecting total species richness include the length of the transect, number of point count stations, and variety of habitats through which the transect winds. Note the Bluff transect is longer by 2 miles and has more stations, but covers less habitat (birds on/over the ocean were not counted).

Some similar calls/songs difficult to distinguish between species were those of the:

- Chestnut-backed chickadee and Plain Oak titmouse,
- Black-headed grosbeak and American Robin,
- Hermit thrush and Swainson's thrush,
- House finch and Purple finch.

No further analysis was done with this season's data.

IV.) Data Management

All point count data was recorded on paper data forms at the time of sampling and was entered into the database by hand. Copies were made of the original data forms upon returning to the office. Any errors are noted on the data forms themselves. Electronic copies of all files exist on the hard drive of the author as well as on the shared network drive of which back-ups are made regularly.

The files contained on the CD accompanying this report are:

- Landbird Monitoring WRSP (this report),
- Bird list of Alpha Codes,

- Data forms,
- Photos associated with each point count station,
- GPS data files, and
- Audio recordings of bird calls recorded at Wilder Ranch SP.

Relevant files located on the network shared drive (N:\I M A P\Bird Report):

- Everything on the CD, plus
- The ArcView .apr file for this project
- IMAP MS Access database where all the bird data is stored.

V.) Future Monitoring

A.) Sampling Design

For future landbird monitoring, at the very least, one sampling per year should be done. This means conducting a single point count at each point count station during breeding season. Data collected by private groups, such as the Santa Cruz Bird Club or local Audubon club, could be added to the District's data, creating a more robust data set.

The District should consider adding a transect in the Knobcone pine – Santa Cruz cypress area in the Gray Whale property north of Smith Grade, as it was the only area not sampled in this study. Also, including a demographic component (i.e.- mist netting or nest searches) in monitoring, although labor-intensive, would provide better insight to the health of population. This effort may be especially beneficial if a particular species or area needs scrutiny.

For a more intensive survey of birds of prey in the unit, consider doing separate raptor surveys throughout the entire park, in addition to any observed during the point count surveys. Also, include a nocturnal owl survey. Surveys for owls would use a different monitoring method and would probably involve playing-back recorded calls.

Continuation of training and improvement on the observer's bird identification skills is always one way to achieve better quality and more precise data.

B.) Field methods

Suggestions for conducting future point counts:

- Record start time of each point count, and tally birds under the 0-3 and 3-5 minute categories on the data form (rather than write the time for each new species observation).
- Include a column for indicating whether the bird was detected auditorially or visually.

- Record weather information at midpoint of census as well as at the beginning and end.
- Consider using a weather gauge (i.e.-digital).
- Flag census station locations and mark on a topo map so one can take more precise location data. GPS data and photos should be taken on the same day of the census, if possible.

VI. Contact Information

Document author:
Sara Lee, Environmental Services Intern
Natural Resources Division, 1416 9th Street, Rm. 923, Sacramento, CA 95814
Phone: Email:

Primary field crew:
Sara Lee (916) 653-8656 slee@parks.ca.gov
Krista Orr (916) 653-9608 korr@parks.ca.gov

Volunteers:
Craig Swolgaard
Roy Woodward
Gary Walter
Gwen Walter

VII. References

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VIII. Appendices

A. Bird Point Count Data Form
B. Bird List of Alpha Codes
C. GPS & Photo Monitoring Data Form
D. Color maps of Point Count Stations and Transects
E. Photo Database
F. Copies of original data forms

Appendix A

Bird Point Count Data Form

Appendix B

Bird List of Alpha Codes

Appendix C

GPS & Photo Monitoring Data Form

Appendix D

Color Maps of Point Count Stations and Transects

Appendix E

Photo Database

Appendix F

Copies of Original Data Forms