Effects of OHV Trails on Desert Vegetation in the Western Mojave Desert

October, 2003

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In 2001, a Desert Monitoring Team was hired by the California State Office of the Bureau of Land Management (BLM) to monitor the effects of Off-Highway Vehicles (OHVs) on lands managed by the BLM. The team has been working out of the Ridgecrest Field Office. One of their tasks was to study and monitor the vegetation along OHV trails. In the fall of 2002, they developed a protocol for this monitoring in conjunction with an existent study that had been monitoring the effects of cattle grazing. During the winter of 2002-2003, the team carried out the first year of monitoring.

This document contains the protocol that was developed, a summary of the results from the first year, and some of the raw data.

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Part I: The Protocol

Protocol for the Study of the Effects of OHV Trails on Desert Vegetation in the Jawbone-Butterbrecht ACEC

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Purpose

The purpose of this monitoring is to quantify the effects of OHV trails on desert vegetation. Many kinds of disturbance can affect both the diversity and abundance of vegetation. OHV trails are linear disturbances where all vegetation has been removed. Besides the obvious loss of vegetation in the trail itself, there may also be subtler changes along the edge of the trail. These changes may include differences in total plant cover, as well as changes in the relative abundance of different species. OHV trails (many of them illegal) are one of the most obvious human disturbances in the Jawbone-Butterbrecht ACEC. They are very easy to create (one rider can create a new trail), and very difficult to eliminate. This is a problem throughout the BLM Desert District, and, indeed, wherever motorized recreation takes place in the desert. This monitoring will help managers understand how these trails affect vegetation.

Questions to be Answered

This monitoring will gather data that will allow for statistical analysis to answer the following questions:

- Are there differences in plant diversity between the edge of OHV trails and sites away from the trails?
- Are there differences in total plant cover between the edge of OHV trails and sites away from the trail?
- Are there differences in plant cover for individual species between the edge of OHV trails and sites away from the trail?
- Are there differences in the relative abundance of different species between the edge of OHV trails and sites away from the trail?

Sampling Design

The monitoring will take place along 6 different OHV trail segments; each segment is between 0.5 and 1.5 kilometers long. These segments were chosen based on their proximity to long-term cattle exclosures so that vegetation data from these cattle exclosures can be compared to the data collected for this monitoring. Table 1 lists these 6 sites:

Table 1: Monitoring Sites for OHV Trail Effects on Vegetation:

Site	OHV Trail	Exclosure	Location	Number of Plots
1	SC5	Aqueduct #8	N3931613 E411829 N3931383 E411709	30
2	SC51	Aqueduct #1	N3934656 E415133 N3935078 E414438	30
3	SC51	Canyons #2	N3938893 E410147 N3938633 E410312	30
4	SC56	Canyons #5	N3935448 E408526 N3935231 E408846	30
5	SC65	Aqueduct #9	N3928092 E412018 N3928635 E411221	30
6	SC175	Dove Sp. #17,18	N3917374 E405101 N3916135 E404745	30

At each site, there are 30 randomly-selected plots. Each plot is located at the edge of the OHV trail and measures 10 meters by 11 meters, the plots are oriented so that one 10-meter edge of each plot runs along the edge of the OHV trail, and the 11-meter edges are perpendicular to the OHV trail.

For measuring vegetation, each plot is divided into 4 belt transects. The belt transects are all parallel to the OHV trail and measure 1 meter by 10 meters. Within each plot, belt transects are located at 4 different distances from the OHV trail: from 0 to 1 meter, from 1 to 2 meters, from 2 to 3 meters, and from 10 to 11 meters. All perennial vegetation within these belt transects is key to species and measured. See below for details on data collection.

Establishing the Plots

The plots were established in the following manner. Each side of the OHV trail segment was divided into 10-meter sections. Any segments with trail intersections or other large bare areas along the trail (such as campgrounds or cattle wallows), were excluded. Each 10-meter section represented a possible plot. A subset of 100 plots was created by choosing the 100 possible plots that were closest to the corresponding cattle exclosure. From this subset, 30 plots were randomly selected.

Monumenting the Plots

Each plot is permanently marked with 4 pieces of rebar. Two pieces of rebar are located at the corners of the plot furthest from the trail, i.e. at 11 meters from the trail. Where this was made impossible by the presence of vegetation, the 2 pieces of rebar were placed at a distance of 10 meters from the trail; this placement corresponds to the nearer edge of the belt transect from 10 to 11 meters.

The other two pieces of rebar were placed along the edges of the plot at a distance of 3 meters from the OHV trail. Where this placement was made impossible by the presence of vegetation, the 2 pieces of rebar were instead placed at a distance of 2 meters (or, in very rare cases, 1 meter) from the OHV trail.

Of the 4 pieces of rebar, 2 were topped with aluminum caps: one at 11 meters (or 10 meters) from the OHV trail and one at 3 meters (or 2 or 1 meters) from the OHV trail. These caps say "BLM" and have the plot number (e.g. "263") and the distance from the trail for that particular piece of rebar (e.g. "11 M").

All 30 plots along a particular trail were capped consistently; that is, if the OHV trail ran North/South, the 2 pieces of rebar on the North side were always capped, or if the OHV trail ran East/West, the 2 pieces of rebar on the West side were always capped. All of the rebar was buried between 1 and 2 inches below the ground to avoid injuring unwary cattle or unsuspecting miscreant OHV riders.

Data Collection

All of the perennial shrubs that are rooted within a 1-m by 10-m belt transect are counted and measured. Three measurements are taken: the longest diameter across the shrub from a bird-eye's view, the diameter across the shrub that is the perpendicular bisector of the first measurement, and the height of the shrub. To expedite data collection, these measurements are taken using the following size classes:

Measurement:	Size Class:
0-10 cm.	0
10-20 cm.	1
20-30 cm.	2
30-40 cm.	3
40-50, 50-60, etc.	4,5,etc.

A 1-meter long piece of PVC pipe ($\frac{1}{2}$ inch diameter) marked at 10-centimeter intervals is very useful to quickly make these 3 measurements. A 2-meter long piece of PVC pipe is also useful to measure larger shrubs (such as creosote).

The entire canopy of a shrub is measured (including any branches that are outside the belt transect) as long as the shrub is rooted in the belt transect. Conversely, shrubs whose branches enter the belt transect but whose roots are outside the belt transect are excluded from that transect.

If a shrub is rooted exactly on the perimeter of the belt transect, it may or may not be counted based on which transect edges the roots cross: two of the edges (one 10-meter edge and one 1-meter edge) are considered "out", and the other two edges are "in". The long edge of the belt transect closer to the OHV trail is always "in" and the edge further from the OHV trail is always "out". So if a shrub is rooted on the line between the 1-2 meter belt transect and the

2-3 meter belt transect, it would be counted in the 2-3 meter transect but not in the 1-2 meter transect (See Diagram 1). For the short edges, the right edge (standing on the OHV trail looking at the plot) is "in" and the left edge is "out". Using these rules, no single shrub should be counted in more than one belt transect.

Datasheets

A single datasheet is used for each plot; the data for all 4 belt transects within a single plot are recorded on the same sheet. See Appendix A for an example. At the top of the datasheet, the following information is recorded: the date, the field scientists, the OHV trail, the corresponding cattle enclosure (this is particularly important for SC51 because there are two sets of plots on different segments of the trail near two different enclosures), and the plot number. The rest of the datasheet is divided into 3 columns. The first column is titled "Interval". This is where the belt transect number is recorded (i.e. "0-1", "1-2", "2-3", or "10-11"). The second column is the species name; 4-letter codes are used made up of the first two letters of the genus and the first two letters of the species. See Appendix B for a list of these codes. The third column is where the three measurements for each shrub are recorded, separated by slashes. The first number of each triplet is the longest diameter of the shrub, the second number is the perpendicular diameter and the third number is the height. For example, "6/4/3" would indicate a longest diameter between 60 and 70 centimeters (size class 6), a perpendicular diameter between 40 and 50 centimeters (size class 4) and a height between 30 and 40 centimeters (size class 3).

The measurements for all of the shrubs of a single species within a single belt transect are recorded on the same line, and separated by commas. An example of this is on the sample data sheet in Appendix A; on that plot, there are 5 Golden Heads (ACSP) and one Goldenbush (ERCO) in the first belt transect from 0 to 1 meters from the OHV trail. In the second belt transect from 1 to 2 meters, there are 3 Golden Heads (ACSP), 1 Burro bush (AMDU), 1 Creosote (LATR), 1 Standing Dead Shrub (St. Dead) and 2 Cheesebush (HYSA).

Re-sampling the Plots

The plots are re-sampled every 5 years. Field scientists re-locate a plot using a GPS and a metal detector to find the 4 pieces of rebar. The UTM's for the location of the rebar for all the plots are in the Access Database "OHV_Trail_Effects"; the database also notes the distance of the rebar from the OHV trail. (Generally, the rebar was buried at 3 meters and 11 meters from the OHV trail, but where this placement would have been in a shrub, the rebar was buried 1 meter closer to the trail (i.e. at 10 meters or 2 meters).)

Small flags are placed at each rebar location. Then the other corners of the belt transects are located and flags are used to mark all the corners of the 4 belt transects. If the rebar is buried at a distance of 3 meters from the OHV trail, then the field scientist would measure in 1 meter directly towards the trail and place a flag; this would be the near corner of the transect from 2 to 3 meters from the road and the far corner of the transect from 1 to 2 meters from the road. From this flag, the field scientist would measure in another meter and place another flag, and

then measure in one more meter and place another flag at the road edge. To mark the corners of all 4 belt transects, 12 flags are used: 4 flags to mark the corners of the belt transect that is located between 10 and 11 meters from the road, and 8 flags to mark the corners of the 3 belt transects adjacent to each other and the trail.

Once the belt transects have been located, the perennial vegetation is measured as described above in "Data Collection" and recorded as described above in "Datasheets". It is useful to place a tape measure or a piece of rope along the long edges of the belt transect to delineate the transect edge in order to easily see which shrubs are in the belt transect and which shrubs are outside of the belt transect. After the 4 belt transects have been sampled, the flags are removed, and the researchers proceed to the next plot.

The Database

The Access Database "OHV_Trail_Effects" consists of 4 tables, which are named Plant list, Plots, Visits, and Shrubs. The table "Plant list" is a list of the plants with their 4-letter codes. The table "Plots" has the exact locations for the 4 pieces of rebar which mark each plot. The table "Visits" has the date of the sampling and the names of the field scientists who did the sampling for each visit to each plot. The table "Shrubs" lists all the shrubs that were sampled and their measurements. The tables contain the following fields:

Table: Plant list

Code – Four-letter code used in the field, usually consisting of the first two letters of the genus followed by the first two letters of the species name.

Common – Common name(s) of the plant.

Latin – Latin name of the plant, Genus species.

Table: Plots

Route – The designated OHV route along which the plot is located.

Plot – The plot number.

Datum – The datum in which the UTM's were recorded.

Zone – The UTM Zone (i.e. "11N").

N1 – The northing for rebar 1.

E1 – The easting for rebar 1.

D1 – The distance (in meters) from the OHV trail of rebar 1.

N2 – The northing for rebar 2.

E2 – The easting for rebar 2.

D2 – The distance (in meters) from the OHV trail of rebar 2.

N3 – The northing for rebar 3.

E3 – The easting for rebar 3.

D3 – The distance (in meters) from the OHV trail of rebar 3.

N4 – The northing for rebar 4.

E4 – The easting for rebar 4.

D4 – The distance (in meters) from the OHV trail of rebar 4.

Notes – Any special notes on the location of this plot.

Table: Visits

Route – The designated OHV route along which the plot is located.

Plot – The plot number.

Date – The date the plot was sampled.

Field Scientist 1 – The name of the scientist who sampled the plot.

Field Scientist 2 – If 2 people did the sampling together, the name of the other scientist who sampled the plot.

Table: Shrubs

Route – The designated OHV route along which the plot is located.

Plot – The plot number.

Interval – The distance from the OHV trail of the belt transect in which the shrub is located.

Species – The 4-letter code for species of the shrub.

Diameter – The size class for the longest diameter of the shrub.

Diameter2 – The size class for the diameter perpendicular to the first diameter at its midpoint.

Height – The size class for the maximum height of the shrub.

Statistical Analysis

Necessary Equipment

Metal Detector

GPS unit

Small (2-3 feet high) flags

Metric measuring tape

1-meter stick (or PVC pipe) marked at 10-cm intervals

2-meter stick (or PVC pipe)

Rebar

Mallet

Datasheets

Sheet with locations (UTMs) of all rebar

Pens

Appendix A: Sample Data Sheet

Shrub Characterization - Edge Effects of OHV Trails

Date: Observers: Plot Number: Cattle Exclosure:
OHV Trail:

Interval	Species	Longest Diameter/Perpendicular Diameter/Maximum Height (by size class)
0-1	ACSP	4/3/3, 1/0/1, 1/1/1, 2/1/1, 1/1/1
	ERCO	5/4/2
	1-2	ACSP 5/5/4, 2/1/2,
6/4/4	AMDU	5/5/4
	LATR	20/19/14
	St. Dead	7/4/4
8/7/5	2-3	ACSP 2/1/2, 2/1/2, 4/3/4, 1/1/3, 6/3/3, 3/2/4, 5/2/3
	AMDU	3/2/3, 5/4/3, 5/3/4,
4/4/4	St. Dead	4/2/2
	LATR	10/8/11, 33/31/11
	10-11	AMDU 3/2/2
LATR	17/11/14	

Intervals: Size classes: 0-1 meter 0-10 cm 0 1-2 meters 10-20 cm 1 2-3 meters 20-30 cm 2
10-11 meters *Appendix B: Codes for desert shrubs of the Ridgcrest area*

Code	Common	Latin
ACSP	Golden head	<i>Acamptopappus sphaerocephalus</i>
AMDU	Burro bush	<i>Ambrosia dumosa</i>
ATCA	Four-wing saltbush	<i>Atriplex canescens</i>
SEAR	Desert senna	<i>Senna armata</i>
CORA	Blackbush	<i>Coleogyne ramosissima</i>
EPNE	Mormon tea	<i>Epedra nevadensis</i>
ERCO	Goldenbush	<i>Ericameria cooperi</i>
ERFA	California buckwheat	<i>Eriogonum fasciculatum</i>
GRSP	Spiny hop sage	<i>Grayia spinosa</i>
GUMI	Matchstick weed	<i>Gutierrezia microcephala</i>
HYSA	Cheesebush	<i>Hymenoclea salsola</i>
KRLA	Winterfat	<i>Krascheninnikovia lanata</i>
LATR	Creosote	<i>Larrea tridentata</i>
LEFR	Desert alyssum	<i>Lepidium freemontii</i>
LY sp	Wolfberry	<i>Lycium (species)</i>
LYAN	Anderson's thornbush	<i>Lycium andersonii</i>
LYCO	Cooper's thornbush	<i>Lycium cooperi</i>
MIBI	Wishbone bush	<i>Mirabilis bigelovii</i>
OP sp		<i>Opuntia (species)</i>
OPBA	Beavertail cactus	<i>Opuntia basilaris</i>
OPEC	Silver cholla	<i>Opuntia echinocarpa</i>
PS sp	Indigo bush	<i>Psoralea (species)</i>
SAME	Paper bag bush	<i>Salazaria mexicana</i>
St. Dead	Standing dead/litter	Standing dead shrub
STEL	Prince's plume	<i>Stanleya elata</i>
TE sp		<i>Tetradymia (species)</i>
TEST	Horsebrush	<i>Tetradymia stenolepis</i>
XYTO	Mojave aster	<i>Xylorhiza tortifolia</i>

YUBR	Joshua tree	Yucca brevifolia
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Diagram 1

Trail

Belt
Transect
Between 2
and 3
meters from
the road

The following 12 tables summarize the results for the first year of sampling (2003). For each OHV trail segment (SC5, SC51 Ex.1, SC51 Ex.2, SC56, SC65, SC175), there are two tables: one table with the number of plants of each species in each belt transect and one table with the percent coverage of each species in each belt transect.

[illegible]

Results: SC5

Per Cent Coverage of Live Shrubs in Each Belt Transect

	0 Meters to 1 Meter	1 Meter to 2 Meters	2 Meters to 3 Meters	10 Meters to 11 Meters
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Plot

ACSPAMDUHYSALATROtherALLACSPAMDUHYSALATROtherALLACSPAMDUHYSALATROtherALLACSPAMD
 UHYSALATROtherALL 124100000101181900381114123407031210015125
 300003920200049071520601150270441281100032313000361017027053360009.1 133
 0100013300060601371015361600021137143000161333016062010000107600114202
 00000000000012500017612000172040000000130001312190003101800018205
 060006590001312001.5023311032046211012000126500010417000204800011216
 23100601700017050004.9015019033217040004418000222260002891500023223
 01500015215011029810000184200002422400000024000706087093112051063225
 010001012000121290510720140500642284000045300088201120122260008.3234
 02000220133605116015003116400020236100001300003168000242800010241
 00000000000026101003714000.9015242100001240006510000156001340140243
 1711600016250850101418131003223000557000122510400049211002241180024153371092261
 0200028700015191340036670001327227100102210000331439002519400024273
 400004167010231120001317308801072760000007000073001501830065068288
 00000020179004618184003977021035Avg.23000579320218922404469019035Other Species: ERCO (1), GRSP
 (1)

Results: SC51 Ex.1

Number of Live Shrubs in Each Belt Transect

	0 Meters to 1 Meter	1 Meter to 2 Meters	2 Meters to 3 Meters	10 Meters to 11 Meters
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Plot
ACSPAMDUERCOHYALATROtherALLACSPAMDUERCOHYALATROtherALLACSPAMDUERCOHYALATRO
therALLACSPAMDUERCOHYALATROtherALL113020000201000010560001134500012
1150003003041000505410010010900019127020000200040045116101491030013
13001110030011002012600982000010132020000202031062213201036320014206000000001050060
105006043120102080004004020600811140075621001421001012001300010001005116002235411014
214013600100001000100008008002010321501120040103004001501734301011
21602070090303006022610117410001221805040090301004012220713600111
2190204006030800111324001004210072210100100110500005020000208300011
2230101002040320904000040271101122401020030701008062300110340119
2270301004010000103121180572011522901020030106007031310804401110
231001500605020070210003018010102720023106002110013000300300721111
274001600701014001502310170031037277010700800006006015721160144003212791502008060300905051
1121188012302800110002010500604390218082020122850100001060000607010080510107
28706070013013000013082406200125000172930744001502841013402242012900720110
294010030013048601190108401230701008297000100101010001102030160203005
310071200100204403310102411180110002Avg.021300604140090424011115410012"Other" species: ERFA (9),
GRSP (2), MIBI (17), OPEC (4), TEST (4)

Results: SC51 Ex.1

Per Cent Coverage of Live Shrubs in Each Belt Transect

	0 Meters to 1 Meter	1 Meter to 2 Meters	2 Meters to 3 Meters	10 Meters to 11 Meters
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Plot
ACSPAMDUERCOHYSALATROtherALLACSPAMDUERCOHYSALATROtherALLACSPAMDUERCOHYSALATRO
therALLACSPAMDUERCOHYSALATROtherALL11301000010000000045000949700019
1150001001050000603830014014180003112701000010002000201723201043113040018
13000000010023005010224003616300002013200000000208101151221 303239660024
2060000000030600063010220023036131042208000170017030310033310110015618110027
210020370039000250025075240036431231023214036110020000170017000150015004015019
215031110015040160020003170121121250002292160502200270302005053181027179200028
2180800008030900110263560671314002202190201003040160020110230016032100015
2210300003050000504000040143000172230001001030070100100001001412017
224000000104050010086300170130116227030100400000000011215078101430
22905070012000170017094520200290101123100216001800090090600006011109021
27200423503100035003500070070012460222740022000220205200540340029003201116
277030800110003400 3405411102101120092227911605002207050011010061420117801431
2800210003010300031014319013709203714928502000020170000170603009052025032
2870002200230500005014115023201890002729304980021099003200492011500650617
294060200804611012109167003209020010297000200202090011000130115030100012
31001002001203254095001239400640130004Avg.031700110411400191539402236624222*Other* species:
ERFA (9), GRSP (2), MIBI (17), OPEC (4), TEST (4)

Number of Live Shrubs in Each Belt Transect

PlotACSPAMDUEPNEERCGRSPYSAKRLA YANOHERALLACSPAMDUEPNEERCGRSPYSAKRLA
 LYANOHERALLACSPAMDUEPNEERCGRSPYSAKRLA YANOHERALLACSPAMDUEPNEERCGRSPYSAKRLA YANOHERALL
 1290601523002701101020620179030200804112404002513001605314130801507025002901709131007092151030030134020
 1311100180231270001001030109071001018037311001513002011002001503911200710010721122201101300301
 14001040010080411320530280101310420011019204101813401120140123021094010752111010020080150030026
 1520317250018090143010120808112010102309091005193206133001502011280102402012011001611071010020
 15170196000100170111300010068510015036800311316001009100190418602001201966150007040900443121
 1610204014100210409181002301062501015015023005021516200102804371122105506242226016412513100
 1655200000163007311330303015144001814161050181671510130020028004030017605332400634031330122
 71041200002570072400020033615010205313030161824231312000238221210001670030410168410200015
 185302140001152223120022810220401047313010221876411010022264050680403927401700221513120024
 1889110209100323100040103132905323002405122040411946411010020267120142002640190001700270500014
 1975401001023521436010224111100101910011800310240023011152012001005016000125500200141
 20230011525017300142180192016011001170001310012204600011000011710200100362030200115120342110023
 2053000010011159001151302050300300112503500201021510105250102612354010128012120009021400008
 21400000100010011481201700002050180100101282152010021080230440215830442050202101241009
 0221300131010000501016501421010140011110014Avg.23041611018341525110222415131101835151220019*Other species:
 A (8). LATR (1). SAME (6). XYTO (1). YUHR (9)

Results: SC51 Ex.2

Per Cent Coverage of Live Shrubs in Each Belt Transect

	0 Meters to 1 Meter	1 Meter to 2 Meters	2 Meters to 3 Meters	10 Meters to 11 Meters
	PlotACSPAMDUEPNEERCGRSPHYSAKRLA LYANOtherALLACSPAMDUEPNEERCGRSPHYSAKRLA LYANOtherALLACSPAMDUEPNEERCGRSPHYSAKRLA LYANOtherALL			
	12905019033003001102601300410601000700230131114020031130011071029003903013006002308089320029073200090040			
	1340101941100250020151235130690406600201802078330023138010280010030011113312003104012141115854080150030123			
	1400004001005022221008100540101220101027022111106403614303013025002300211107002102910200023020140060022			
	1520139210000240301360104164 01812500403104049000017153020102230020030171461004101018011002006085020021			
	15701121301800041010104300018000112100023403080040116160000150204003902513042002603109210000350301700619246			
	16101070300011020111040002701081313020380807701000311620101704100230321133291346052110375114309082460230			
	165300002000570075385110733008135002014113603002816720140800015700100440024803391368007681721420125			
	17270018011303011052105000429084202002541040037322179170073150004280079400028431735002286543020027			
	18262211230000521835131000318003062012016610300002618560615100020110261414002369304020100129321106410027			
	187931820906954109150041500533580952003211418207003418816120208100387 80005990329091436004203033070016			
	1944724027000442106806100337202111200033004160120003219711603422050519215147020391106214018042260201200030			
	20026009904417109021100002208001600016136400500129202500421531604550028211603502790330023170000510023			
	2041600041700037190300100018491401605300140290664130049205900002302236140021508636706006001332604140030027			
	210310114201503651961430250635360520002030314400002421400000500050321248212078000014220044020011510011544			
	2155010010040201013014106035908012001504406006720022219804541801040210000180404270963003028220021410030Avg.			
	42282912232523867243423256642213253274231128*Other species: ERFA (18), LATR (1), SAME (6), XYTO (1), YUBR (9)			

Results: SC56

Per Cent Coverage of Live Shrubs in Each Belt Transect

	0 Meters to 1 Meter	1 Meter to 2 Meters	2 Meters to 3 Meters	10 Meters to 11 Meters
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Plot
ACSPAMDUECOGRSPHYSALATROtherALLACSPAMDUECOGRSPHYSALATROtherALL
PHYSALATROtherALLACSPAMDUECOGRSPHYSALATROtherALL
107017000802592700000360150110002619050001511303030017010090470660904000130805013026
11401050000150110000011040600090800023032116010000010500044049011710001907100007
1250100001802802500031157290000012312000001512601000001036050064742700000321700031342
1292190007028580001602902000068088129000002213800000000015000001501200000120160000016
139013000001301801000028390003104301160000171400200000202000002002600000267120100020
14200000000040102803401700032353050200061440200000202200010234015080140370100000010
146100000010150401603603000000301110004016147030000031270000028214100390565110000016
15203000003470000012090001320141780000015153010001401501600017032015000700855901700132
1550120000112022000430659110200123011010201315908055001802801101405302109000290130609027
1600130300016025051003101000043558016050702816108045001831501130032115215000320152700226
1620704038149025884024701831460040080250003316423105001001907500310200729.50300534031043
480003101406000201810800100941401025008008111001210813100022
1840210300541110000150199680042040318002618502000002013320001362138000022069400019
188000000000420001016062700223705690001919000000000014004001801230002174105500227
20101000001012210001409210001201060018Avg.0501130101171411313711514115137291414021*Other species:
EPNE (7), KRLA (12), LYAN (6), LYCO (1), XYTO (2), YUBR (1)

Results: SC65

Number of Live Shrubs in Each Belt Transect												
0 Meters to 1 Meter				1 Meter to 2 Meters				2 Meters to 3 Meters				10 Meters to 11 Meters
Plot	ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA	LATR	Other	ALL
ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP
AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU
HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA
LATR	Other	ALL	ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA	LATR
Other	ALL	ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA	LATR	Other
ALL	ACSP	AMDU	HYSA	LATR	Other	ALL	ACSP	AMDU	HYSA	LATR	Other	ALL
98	000	19	331	108	880	20180	10102	10570				
00	121	220	164	301	191	10002	125	10006	64100	11854	10182	11004
14	500005											
91	110	121	100	203	422	008	193	0100	481100	10603	20114	00105
23	22200	6821										
01	122	131	073	310	18	243	00003	53210	11622	10119	00009	291000011
16	008											
21	31185	2500	12	324	440	214	11031	116	72201	12441	0110	330120034030076
35	00143	10015	340	32005	11100	3502108	001203	360	3200510	120215	1213	
01	171000	1011	415	12008	620008	101110	13140005	530	0310472	300129	330	
01	5810009	5830100	472100	1024304	13510006	6331201	7531009	4210291				
30	00464	1100135	21008	5422215	422008	6760200850300880	2001040101					
67	130000032	1110531	1100531	1106	7302000225200975	10013223007	751					
43	00821000353	20010050005	80042006063101004	300701510117	81041							
00	50800190600	1701311116	84002002324009144009313108	850020021								
37	0011032027215008	91040004093101318111122	1600422	92131005113								
20	01616101921700019	983720012011010122	132011801500015	99321006								
55	2001204400801100112	10021100443300103910013	260008									
Avg. 22100643200104421111341009												
*Other species: ERCO (4), GRSP (16), KRLA (4), LYAN (14), LYCO (1), MIBI (1)												

Results: SC65

Per Cent Coverage of Live Shrubs in Each Belt Transect					Plot
0 Meters to 1 Meter	1 Meter to 2 Meters	2 Meters to 3 Meters	10 Meters to 11 Meters		
ACSPAMDUHYSALATROtherALLACSPAMDUHYSALATROtherALLACSPAMDUHYSALATROtherALLACSPAMDUHY					
SALATROtherALL92000245523104361209001070101601710130004610701243301021108210002					
12120003560001116680.7030227001114300003202353078100550551290012					
1930700101512001891109201125007012233110001318330327121214.10384690928					
241000011751346080103255070110000112900000040410045218231145131110025					
32421018170616301031205304122022033013003709001624314004021002933					
34035008501100161603116013400131480161360414001840140125623240103926001026					
41404008218000292131800105112000125300120320211003319840031 15400019					
580000012011002228100244493000126362309182271003012460931250006					
64170021031530040145061384727001667203005100140024320120045300025710000002310900105					
53300118039020730900096141900395103001863170026751150071425000394640014000000					
80031003061745068035007.70241022781090009021006270160031901506525					
8400200283190030213360051914210358500200229230034014120833231660021					
91060006020241063491323481130092392201003436500450170001731100015					
98130004026033059024002270120001299000001233008091200200110011210000000112712003162210029270009					
Avg.122006118811139976243485537222*Other species: ERCO (4), GRSP (16), KRLA (4), LYAN (14), LYCO (1),					
MIBI (1)					

[illegible]

Results: SC175

Per Cent Coverage of Live Shrubs in Each Belt Transect

	0 Meters to 1 Meter	1 Meter to 2 Meters	2 Meters to 3 Meters	10 Meters to 11 Meters
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Plot AMDU CORA ERFO ERFA HYSA LATR Other ALL AMDU CORA ERFO ERFA HYSA LATR Other ALL
 AMDU CORA ERFO ERFA HYSA LATR Other ALL AMDU CORA ERFO ERFA HYSA LATR Other ALL 125 0
 0 23 0 0 0 0 23 0 9 43 0 0 0 0 52 0 15 27 0 0 0 0 43 3 23 0 0 0 0 0 27 127 1 0 5 0 0 0 0 6 5 0 8 1 0 0 0 15 1 12 0 0 0 18
 0 31 1 7 2 2 0 0 0 12 206 3 0 0 0 1 0 0 4 11 13 5 0 0 104 11 145 1 24 2 0 1 0 0 27 3 10 0 0 0 0 0 12 207 0 0 20 0 0 0 0
 20 0 2 11 0 0 0 0 14 5 8 14 0 0 0 15 42 0 9 2 0 0 19 0 29 209 0 0 5 0 0 0 0 5 131 3 0 0 0 15 50 2 20 2 0 0 0 0 25 1 6 0
 0 0 0 0 7 1 210 0 0 4 0 0 0 0 4 3 35 0 0 0 104 0 142 6 9 1 0 0 0 0 16 13 23 0 0 0 0 0 36 217 0 0 15 0 0 0 0 15 0 46 22
 0 0 0 11 79 1 21 26 0 0 0 2 50 4 19 0 0 0 0 0 23 221 1 0 9 0 0 0 0 10 8 0 30 0 0 0 0 38 5 11 6 0 0 0 0 22 0 26 2 0 0 0 0
 28 224 0 0 18 0 0 0 0 18 5 0 15 0 0 41 3 64 0 30 0 0 2 63 3 97 4 27 1 0 0 68 15 115 231 0 0 31 0 0 0 0 31 0 1 15 0 3
 88 1 107 0 2 8 0 6 0 1 17 0 10 8 0 0 0 0 19 235 0 0 1 0 1 0 0 2 0 0 8 0 0 166 0 174 0 13 0 0 0 27 3 43 0 29 1 0 5 0 0 36
 236 0 0 13 3 2 0 0 17 1 49 8 0 8 0 3 69 0 15 8 0 0 0 16 40 0 19 8 0 0 40 0 66 247 0 0 25 6 0 0 0 30 2 0 4 0 0 6 4 0 12 5
 15 7 1 0 0 0 27 0 3 6 0 0 10 0 19 250 0 0 10 0 0 0 0 10 0 18 4 0 0 0 0 21 0 10 3 0 0 0 0 13 2 28 0 0 0 0 0 30 252 2 3 0
 04 0 0 9 0 23 1 0 4 0 0 28 0 16 3 0 7 65 0 91 2 21 0 0 0 0 0 23 253 0 0 0 0 8 0 0 8 0 42 8 0 5 0 0 55 4 39 0 0 19 0 0 62
 4 27 8 0 0 0 0 39 254 0 0 0 0 9 0 0 9 8 10 2 0 18 0 0 39 1 19 0 0 5 0 0 25 6 8 0 0 5 0 0 18 258 0 0 0 0 0 0 0 0 1 15 6 0
 9 0 0 31 0 43 0 0 16 0 0 59 0 54 0 0 0 0 106 3 261 0 0 10 0 0 0 0 10 0 6 22 2 0 0 0 31 0 4 7 2 2 0 0 14 2 18 5 0 0 13 0
 37 266 0 0 9 0 7 0 0 16 0 0 29 2 0 12 0 43 0 3 9 0 5 38 0 55 0 22 0 0 9 0 0 31 268 0 0 2 0 8 0 0 10 0 5 9 0 3 0 0 17 0
 24 0 0 0 0 0 25 0 24 0 0 0 0 0 24 271 0 3 3 0 17 0 0 23 0 3 14 0 16 0 0 33 0 3 7 0 1 2 18 31 0 5 0 0 1 0 0 5 5 272 0 0 1
 0 2 0 0 3 0 5 20 0 19 0 2 0 4 5 0 2 4 3 1 0 0 9 0 6 2 0 5 27 0 41 275 0 0 0 0 9 0 0 9 0 0 24 0 24 0 0 49 0 11 14 0 14 0 0
 38 0 26 0 0 5 13 8 53 276 0 0 8 0 32 0 0 40 0 21 13 18 0 0 44 0 7 0 0 21 0 0 28 0 19 0 2 10 0 29 60 278 0 0 5 1 7 3 0
 16 0 0 22 2 3 6 8 0 34 0 0 9 4 8 0 3 24 1 14 2 4 1 0 0 21 280 0 0 9 0 9 0 0 18 0 50 5 0 0 0 0 55 0 17 0 0 12 0 23 1 0 10
 0 0 1 0 0 11 282 0 0 8 0 0 0 0 8 2 3 2 5 0 0 0 13 0 11 3 2 7 0 0 23 6 4 1 3 0 18 0 32 285 3 9 6 8 0 0 0 26 0 12 23 8 1 0
 0 44 0 5 12 1 11 0 0 29 0 25 1 0 0 0 0 25 293 0 0 0 0 0 0 0 0 3 15 0 3 17 0 0 37 7 3 0 0 2 21 0 33 0 17 0 0 0 0 0 17
 Avg. 0 1 8 1 4 0 0 13 2 14 12 15 18 2 53 1 14 6 0 5 8 2 36 2 18 2 0 1 7 2 32 *Other Species: EPNE (5), GRSP (2),
 LYAN (12), MIBI (2), SAME (6)

Part III: Raw Data

Rebar Locations for All Plots

This table lists the four locations where rebar was buried for each plot. The UTM's (Northings and Eastings) are in map datum NAD83. The "D" columns list the distances (in meters) that the rebar was buried from the OHV trail (see protocol).

Route Plot N1 E1 D1 N2 E2 D2 N3 E3 D3 N4 E4 D4 SC5 251 3931843.7 411943.8 3 3931852.8 411948.7 3
 3931859.2 411941.0 11 3931850.0 411936.3 11 SC5 250 3931835.3 411938.9 3 3931844.1 411943.9 3 3931842.2
 411931.8 3 3931849.5 411936.4 11 SC5 247 3931819.4 411929.5 3 3931811.2 411924.8 3 3931814.5 411916.8 11
 3931824.2 411921.9 11 SC5 245 3931791.2 411916.0 3 3931800.6 411920.1 3 3931795.7 411908.0 11 3931808.0
 411911.5 11 SC5 243 3931781.3 411911.2 3 3931772.7 411906.7 3 3931776.5 411899.9 11 3931785.8 411904.3 11
 SC5 242 3931773.0 411907.1 3 3931764.3 411902.6 3 3931768.6 411895.6 11 3931776.5 411899.7 11 SC5 241
 3931763.8 411903.3 3 3931755.2 411898.1 3 3931759.2 411891.1 11 3931768.3 411896.0 11 SC5 276 3931747.4
 411894.3 3 3931738.3 411889.5 3 3931742.6 411880.9 11 3931751.1 411886.7 11 SC5 236 3931720.8 411880.4 2
 3931712.0 411875.1 2 3931716.0 411868.1 11 3931725.0 411873.0 11 SC5 234 3931703.4 411871.6 2 3931694.5
 411867.1 2 3931698.8 411859.4 11 3931707.7 411863.8 11 SC5 228 3931649.8 411843.2 2 3931640.5 411838.4 2
 3931653.9 411836.6 10 3931645.0 411831.5 10 SC5 225 3931622.7 411825.8 2 3931613.7 411823.5 2 3931618.0
 411815.9 11 3931626.8 411820.2 11 SC5 224 3931613.5 411824.1 2 3931604.7 411819.4 2 3931618.3 411815.9 11
 3931609.2 411811.6 11 SC5 223 3931604.7 411819.4 2 3931596.1 411815.0 2 3931609.7 411811.7 11 3931600.8
 411807.0 11 SC5 217 3931517.0 411772.6 3 3931508.1 411768.3 3 3931510.8 411760.8 11 3931519.9 411765.3 11
 SC5 216 3931508.2 411768.2 3 3931499.0 411763.5 3 3931511.3 411760.6 11 3931502.1 411756.0 11 SC5 211
 3931463.3 411746.6 3 3931454.2 411741.8 3 3931458.5 411735.1 11 3931467.4 411739.7 11 SC5 205 3931411.4
 411717.0 3 3931402.7 411712.3 3 3931406.4 411706.0 10 3931414.9 411711.4 10 SC5 204 3931402.9 411712.3 3
 3931393.6 411708.1 3 3931397.3 411702.3 10 3931406.5 411705.8 10 SC5 202 3931384.1 411704.5 2 3931375.3
 411700.1 2 3931379.7 411691.8 11 3931388.3 411696.2 11 SC5 124 3931380.5 411710.9 3 3931371.7 411706.8 3
 3931368.1 411714.1 11 3931376.8 411718.7 11 SC5 125 3931389.6 411715.3 3 3931380.4 411711.1 3 3931376.8
 411718.2 11 3931385.8 411722.4 11 SC5 127 3931407.7 411722.7 1 3931398.8 411718.2 1 3931394.2 411726.5 11
 3931402.2 4117130.9 11 SC5 128 3931415.8 411729.4 3 3931406.9 411724.7 3 3931402.2 411730.9 11 3931411.0
 411735.9 11 SC5 133 3931458.4 411751.1 3 3931449.6 411748.9 3 3931454.5 411760.6 11 3931445.5 411756.0 11
 SC5 261 3931611.6 411831.3 3 3931602.4 411826.2 3 3931598.5 411833.4 11 3931607.7 411838.2 11 SC5 137
 3931495.3 411770.6 3 3931486.0 411766.5 3 3931482.7 411772.4 10 3931491.7 411776.8 10 SC5 272 3931710.2
 411882.4 2 3931701.1 411877.0 2 3931704.3 411890.0 11 3931695.6 411885.2 11 SC5 273 3931718.7 411887.2 2
 3931710.2 411882.4 2 3931705.2 411890.7 11 3931714.0 411895.1 11 SC5 288 3931848.7 411955.2 2 3931840.1
 411949.8 2 3931844.2 411964.0 11 3931835.7 411958.8 11 SC51-Ex1 310 3934458.3 415446.5 3 3934463.6
 415438.0 3 3934456.5 415434.0 11 3934451.4 415442.6 11 SC51-Ex1 297 3934525.2 415335.5 3 3934530.7
 415326.7 3 3934518.9 415330.8 11 3934524.2 415321.9 11 SC51-Ex1 294 3934541.0 415310.0 3 3934546.4
 415301.5 3 3934539.9 415297.0 11 3934534.4 415305.6 11 SC51-Ex1 293 3934546.3 415302.3 3 3934551.8
 415293.7 3 3934539.6 415297.3 11 3934545.1 415288.8 11 SC51-Ex1 287 3934581.7 415249.9 3 3934583.9
 415241.5 3 3934577.1 415237.0 11 3934571.7 415245.5 11 SC51-Ex1 285 3934588.8 415232.7 3 3934594.0
 415224.1 3 3934581.7 415229.0 11 3934587.0 415220.3 11 SC51-Ex1 280 3934614.2 415191.0 2 3934619.3
 415182.9 2 3934611.6 415177.4 11 3934606.4 415186.3 11 SC51-Ex1 279 3934619.6 415182.9 2 3934624.8
 415174.1 2 3934611.9 415177.6 11 3934617.3 415168.8 11 SC51-Ex1 277 3934628.9 415165.2 3 3934634.4
 415157.0 3 3934628.2 415151.7 11 3934622.6 415160.5 11 SC51-Ex1 274 3934646.2 415138.8 3 3934650.9
 415131.5 3 3934639.1 415134.6 11 3934644.9 415126.1 11 SC51-Ex1 216 3934809.9 414874.0 3 3934815.0
 414865.2 3 3934802.7 414869.8 11 3934808.2 414861.1 11 SC51-Ex1 272 3934657.7 415122.3 3 3934663.4
 415113.9 3 3934655.7 415109.6 11 3934650.6 415118.5 11 SC51-Ex1 231 3934709.7 415036.4 3 3934715.4
 415027.7 3 3934708.9 415022.6 11 3934703.2 415031.2 11 SC51-Ex1 229 3934719.8 415019.3 3 3934725.2
 415011.0 3 3934713.2 415015.1 11 3934718.5 415006.4 11 SC51-Ex1 227 3934730.8 415003.3 3 3934736.3
 414994.7 2 3934728.5 414990.0 11 3934723.0 414999.0 11 SC51-Ex1 224 3934746.8 414975.6 3 3934752.3
 414967.0 3 3934739.7 414971.4 11 3934745.0 414962.8 11 SC51-Ex1 223 3934751.7 414966.9 3 3934757.9
 414958.7 3 3934751.3 414954.4 11 3934745.3 414962.7 11 SC51-Ex1 221 3934762.2 414950.2 3 3934767.7
 414941.8 3 3934760.9 414937.4 11 3934755.5 414946.1 11 SC51-Ex1 219 3934793.7 414899.3 3 3934798.9
 414890.5 3 3934786.9 414894.5 11 3934792.1 414886.0 11 SC51-Ex1 218 3934799.3 414891.2 3 3934804.8
 414882.5 3 3934798.1 414878.0 11 3934792.4 414886.6 11 SC51-Ex1 215 3934815.3 414865.7 3 3934820.8

414857.2 3 3934813.8 414853.0 11 3934808.5 414861.6 11 SC51-Ex1 214 3934820.8 414857.2 3 3934826.5
 414848.5 3 3934819.6 414844.5 11 3934813.8 414853.0 11 SC51-Ex1 210 3934842.6 414823.1 3 3934848.3
 414814.4 3 3934841.5 414810.1 11 3934836.1 414818.9 11 SC51-Ex1 208 3934853.9 414806.2 3 3934859.4
 414796.9 3 3934852.8 414792.3 11 3934847.0 414800.7 11 SC51-Ex1 206 3934865.5 414789.0 2 3934871.2
 414780.5 2 3934858.1 414784.2 11 3934863.4 414775.6 11 SC51-Ex1 132 3934975.0 414597.7 3 3934980.5
 414589.5 3 3934973.8 414584.6 11 3934968.3 414593.5 11 SC51-Ex1 130 3934988.0 414579.9 2 3934991.8
 414572.5 2 3934978.9 414576.8 11 3934983.9 414568.0 11 SC51-Ex1 127 3935000.9 414556.0 3 3935006.4
 414547.4 3 3934999.4 414543.5 11 3934993.8 414552.2 11 SC51-Ex1 115 3935063.7 414453.8 3 3935069.1
 414445.2 2 3935057.0 414449.7 11 3935062.1 414441.1 11 SC51-Ex1 113 3935074.4 414435.6 3 3935079.7
 414427.2 3 3935072.9 414422.7 11 3935067.5 414431.4 11 SC51-Ex2 129 3938635.1 410321.1 3 3938627.0
 410332.3 3 3938632.2 410338.4 11 3938639.9 410332.2 11 SC51-Ex2 130 3938642.0 410319.0 3 3938634.1
 410325.7 3 3938647.4 410325.5 11 3938639.4 410332.0 11 SC51-Ex2 134 3938672.3 410285.1 3 3938666.4
 410294.2 3 3938672.3 410299.8 11 3938679.0 410292.7 11 SC51-Ex2 138 3938706.4 410256.9 3 3938698.8
 410263.4 3 3938703.6 410269.9 11 3938711.0 410263.5 11 SC51-Ex2 140 3938721.2 410243.7 3 3938713.3
 410250.3 3 3938726.5 410250.0 11 3938718.4 410256.4 11 SC51-Ex2 143 3938744.0 410221.8 3 3938736.3
 410229.9 3 3938741.7 410235.9 11 3938748.9 410228.6 11 SC51-Ex2 160 3938792.2 410188.5 3 3938783.3
 410193.0 3 3938796.1 410195.7 11 3938787.0 410200.1 11 SC51-Ex2 161 3938801.9 410184.5 3 3938792.2
 410188.3 3 3938795.9 410195.5 11 3938805.3 410191.7 11 SC51-Ex2 162 3938811.4 410180.2 3 3938802.3
 410184.0 3 3938814.8 410187.9 11 3938806.1 410191.2 11 SC51-Ex2 157 3938693.0 410257.1 3 3938700.8
 410250.2 3 3938687.6 410251.1 11 3938695.2 410244.3 11 SC51-Ex2 153 3938663.0 410286.2 3 3938670.4
 410279.1 3 3938657.2 410280.3 11 3938664.7 410273.2 11 SC51-Ex2 152 3938655.7 410293.3 3 3938662.8
 410286.3 3 3938657.5 410280.3 11 3938650.1 410287.1 11 SC51-Ex2 165 3938830.1 410172.6 3 3938839.8
 410168.7 3 3938842.6 410176.3 11 3938832.8 410180.1 11 SC51-Ex2 167 3938858.0 410163.3 3 3938846.6
 410166.2 3 3938860.7 410170.6 11 3938851.5 410173.6 11 SC51-Ex2 187 3938985.3 410115.6 3 3938975.9
 410119.0 3 3938988.3 410122.8 11 3938978.8 410126.4 11 SC51-Ex2 188 3938995.0 410111.9 3 3938985.6
 410115.5 3 3938997.7 410119.6 11 3938988.6 410123.0 11 SC51-Ex2 172 3938825.1 410163.3 3 3938834.7
 410161.7 3 3938822.9 410156.1 11 3938832.3 410153.7 11 SC51-Ex2 179 3938892.2 410140.4 3 3938901.7
 410136.4 11 SC51-Ex2 182 3938921.8 410124.2 3 3938929.0 410131.2 3 3938916.9 410128.3 11 3938925.8
 410124.0 11 SC51-Ex2 185 3938947.5 410121.3 3 3938956.9 410117.4 3 3938953.9 410110.0 11 3938944.6
 410114.4 11 SC51-Ex2 194 3939004.1 410100.5 3 3939013.5 410097.0 3 3939001.3 410092.7 11 3939010.9
 410089.3 11 SC51-Ex2 197 3939031.9 410091.1 1 3939041.6 410087.7 3 3939029.3 410083.4 11 3939039.2
 410080.1 11 SC51-Ex2 200 3939060.7 410082.8 3 3939069.4 410079.8 3 3939057.3 410075.2 11 3939067.0
 410072.0 11 SC51-Ex2 202 3939080.0 410075.4 3 3939088.9 410072.5 3 3939086.9 410064.9 11 3939077.3
 410068.3 11 SC51-Ex2 204 3939098.6 410069.1 3 3939108.5 410066.4 3 3939096.9 410060.9 11 3939106.9
 410058.5 11 SC51-Ex2 205 3939110.8 410064.7 3 3939117.6 410064.1 3 3939110.6 410058.8 11 3939115.9
 410056.2 11 SC51-Ex2 210 3939038.5 410097.9 3 3939048.0 410095.1 3 3939051.9 410102.3 11 3939042.0
 410105.5 11 SC51-Ex2 214 3939085.0 410082.5 3 3939075.4 410086.3 3 3939088.6 410090.0 11 3939079.9
 410093.6 11 SC51-Ex2 215 3939085.1 410081.5 2 3939094.4 410078.1 3 3939098.2 410086.3 11 3939088.9
 410090.0 11 SC51-Ex2 219 3939132.6 410069.3 3 3939123.1 410072.1 3 3939134.5 410077.2 11 3939124.8
 410079.6 11 SC65 9 3928110.4 412013.0 3 3928097.5 412020.6 3 3928110.4 412018.5 11 3928104.1 412025.9 11
 SC65 10 3928110.9 412005.3 3 3928104.0 412013.2 3 3928116.8 412010.8 11 3928110.1 412018.5 11 SC65 12
 3928125.4 411987.2 3 3928118.8 411995.4 3 3928131.4 411992.5 11 3928125.1 412000.5 11 SC65 14 3928137.6
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 411578.1 2 3928435.7 411574.5 11 3928430.5 411583.1 11 SC65 64 3928433.1 411560.3 2 3928428.3 411569.1 2

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 404892.6 11 3916684.8 404895.3 11 SC175 252 3916600.2 404878.8 3 3916590.4 404875.5 3 3916592.7 404867.6
 11 3916602.7 404870.6 11 SC175 253 3916581.2 404872.9 3 3916590.5 404875.5 3 3916583.4 404864.9 11
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 404864.8 11 SC175 125 3917365.6 405095.6 3 3917374.0 405101.0 3 3917366.3 405090.6 11 3917376.1 405093.3
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Sampling Dates and Scientists

Date	Route	Plots	Field Scientist 1	Field Scientist 2
20021009SC5		243, 245, 247, 250, 251, 288	K.Keith	H.McAllister
20021010SC5		236, 241, 242, 276, 273	H.McAllister	S.Asselta
20021016SC5		133, 211, 216, 217, 223, 224, 225, 228, 234, 261, 272	K.Keith	H.McAllister
20021018SC5		124, 125, 127, 128, 137, 202, 204, 205	H.McAllister	M.Ruelle
20021101SC51-Ex1		274, 277, 279, 280, 285, 287, 293, 294, 297, 310	H.McAllister	K.Keith
20021106SC51-Ex1		216, 218, 219, 221, 223, 224, 227, 229, 231, 272	H.McAllister	K.Keith
20021107SC51-Ex1		113, 115, 127, 130, 132, 206, 208, 210, 214, 215	H.McAllister	K.Keith
20021111SC51-Ex2		129, 130, 134, 138, 140, 143, 152, 153, 157, 160, 161, 162	H.McAllister	K.Keith
20021112SC51-Ex2		165, 167, 172, 179, 182, 185, 187, 188	K.Keith	M.Ruelle
20030113SC51-Ex2		194, 197, 200, 202, 204, 205, 210, 214, 215, 219	H.McAllister	K.Keith
20030114SC65		9, 10, 12, 14, 19, 23, 24, 29, 32, 33, 34	K.Keith	H.McAllister
20030116SC65		36, 41, 53, 58, 63, 64, 67, 71, 73, 75, 80, 81	H.McAllister	K.Keith
20030117SC65		84, 85, 91, 92, 98, 99, 100	K.Keith	H.McAllister
20030121SC56		107, 113, 114, 116, 125, 126, 139, 140, 142, 144, 146, 147	H.McAllister	K.Keith
20030124SC56		129, 138, 152, 153, 155, 159, 160, 161, 162, 177, 178	K.Keith	H.McAllister
20030127SC56		164, 181, 184, 185, 188, 190, 201	H.McAllister	K.Keith
20030128SC175		125, 127, 206, 207, 209, 210, 217, 221, 224, 231, 236, 247, 250, 252, 253, 254	H.McAllister	K.Keith
20030129SC175		235, 258, 261, 266, 268, 271, 272, 275, 276, 278, 280, 282, 285, 293	K.Keith	H.McAllister