



Retreat Minutes

Dunes Restoration Task Force

Wednesday, February 11, 2009

9:00 am to 4:00 pm
Coast National Bank Conference Room
500 Marsh St.
San Luis Obispo, CA 93401

Restoration Task Force Retreat Attendees:

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| Dunes Center | Mario Castellanos, Dan McElhinney |
| Land Conservancy of San Luis Obispo: | Mark Skinner, Daniel Bohlman, Michael LeBrun, Bob Hill, Brian O'Sullivan, Brian Stark |
| California Department of State Parks: | Ronnie Glick Nancy La Grille |
| Guadalupe Dunes National Wildlife Refuge: | Glenn Greenwald |
| SAIC: | Lauren Brown |
| Chevron/Jenesis Eco Services: | Jenny Langford |
| Independent Consultant: | Jim Blecha, John Chesnut |
| Restoration Subcommittee | Melissa Boggs |

9:00-9:30am - Coffee and Tea Service.

9:15 – Introductions led by Daniel (DB)

With LC; Michael LeBrun, Mark Skinner, Brian O'Sullivan, Bob Hill
Dunes Center; Mario Castellanos, Dan McElhinney
Melissa Boggs
Jim Blecca
Jenny Langford
Lauren Brown

9:17 John Chesnut

9:30-10:00am - Introductions and Agenda Review.

DB: Overview of agenda.

MBoggs: How about working lunch? I am approaching spend down of endowment principal with an open mind. Basically, asking what is best for Dunes?

BHill: agrees and says that is what the day is about, let us get started....

9:30 Ronnie Glick

Recognition that a number of attendees were part of the programs initiation, including:

Melissa Boggs, John Chesnut, Lauren Brown, Jenny Langford, Mark Skinner, Jim Blecca, Ronnie Glick

**10:00-11:00am - Presentation of 2008 Management & Restoration Activities.
2008 Invasive Species Management and Monitoring Program**

DB: overview of data

Mapping accuracy of treatment area has improved greatly via the use of GPS to record and project actual locale and area rather than using ocular estimate and by land management unit (LMU).

MCastellanos: raster grid to increase accuracy and utility of data been considered?

DB: Possible approach as we consider changes to LMU mapping in general, afternoon discussion.

BH: Note the lack of political/ownership boundaries make ecosystem management a reality.

DB: herbicide use overview, GNDNWR discussion, Gly versus Fus, accuracy of sprayers. LCLSO employs pressurized backpack sprayers with applicator wands allowing for precise application.

RGlick: Has "Imazapyr" been considered? It is used by SParks Mendicino. Inference of higher kill success.

MSkinner: Imazapyr is a strong broad-spectrum chemical (not monocot specific).

ACTION: Email to RG about his contact at Mendocino 'Bill Muslock'.

JChesnut: Some LMUs should be restricted from use of broad spectrum; sensitive species, degree of native cover...

JLangford: Chevron goes broad spec on initial spray with grass specific follow up.

LBrown: 'Greg' goes after all weeds on first spray, then follow up with grass specific.

9:50 Nancy LaGrille

DB: Overview slide 5

DB: Slide 6, discussion of on the ground hours (5) versus hours in a workday (8). Hours presented reflect actual on-the-ground effort and not daily hours.

JBlecca: Does this reflect staff up?

MLeBrun: yes, staff up and CCC hours

DB: Questions?
Next

Coastal Dune Scrub Enhancement Project

DB: Overview (OV) of enhancement project purpose. Comparison to Chevrons \$100K/acre. Jenny?

JL: Will check into cost and get back

ACTION: Email to JL on chevron reported costs and get copy of Chevron's invasive species removal plan for the Guadalupe Oil Field.

MB: The overall program is more than eradication of invasives, it includes enhancing of natives.

DB: yes, early on the group recognized the 'field of dreams' approach was not working and that active restoration approaches needed to be studied

DB: OV slides 9-11; note restore site has received 6-years of invasives control prior to restoration

OV 12-13, native veg, monotypic SDL

OV 14-15,

RG: suggest changes to sensitive species acronyms.

ACTION: Daniel will make changes to the sensitive spp. abbreviations.

DB: OV, 16-17, numbers on slide 17 give some food for thought on management actions that will be considered this afternoon.

JL: Is there a way to graph reduction in veldt of an area over time/treatments to see if there is a point, at which further treatment is not benefiting? Maybe treatments could be every second or third year once a level of control is reached?

ACTION: Daniel will consider the above question and present findings in a future RTF meeting.

JL: Why whacking veldt?

MS: less chem., better kill

Whacker discussion, blades vs. line...

JC: the data says wait for a freeze to increase our kill.

RG: Funding does not follow freeze cycles.

JC: A program is required or need to be structured that is nimble to expand for cyclic weather events.

DB/BH: Yes, we were just discussing same idea prior to meeting.

Seed banks out last freezes.

Slide 18: Discussion of pulling slender leaf

RG: SL often dies if left alone

JL: Has seen acres of SL die off w/o treatment

DB: I have heard of this, yet not witnessed myself. Disturbance during removal may help new seedlings get hold.

DB: Overview of seed collection process and costs. LC collection 3X as expensive and no quality control assurance. S&S seed is sourced locally.

RG: Where is S&S gathering seed? S&S supplies State Parks, Chevron and LC efforts. With multiple groups collecting seed, we should know where they are collecting.

JL: Chevron pays S&S by the hour to collect seed on their site for redistribution on their site.

ACTION: DB to follow up with S&S (Gilbert) to see where seeds area being collected.

LB: Was quality of LC collected seed compared to S&S seed?

DB: No, no data collected. It 'appears' the S&S seed is superior likely due to storage and seed coat preparation methods.

Slide 19: DB discusses straw punching approach and purpose. Using S&S certified sterile native straw (*N. pulchra*).

NLeGrille: State parks ordered 'Certified' weed free straw and it had 'tumbleweed' seed in it. "Weed-free" is based on the provenience of the straw and what plants are considered weedy in the area of manufacture.

ACTION: DB, to check with S&S to see the cost and annual volume of native straw being produced.

Slide 20-21 overview by DB.

Restoration treatment zone approaches discussed. Four zones, plus a 'fifth' of veldt only treatment. Any easy 6th would be veldt treatment, seeding.

RG: What are the 'landscape' applicable approaches?

DB: Zone 2 (veldt grass and slender-leaved iceplant control along with straw punching) and & zone 3 (veldt grass and slender-leaved iceplant control along with straw punching and un-raked simple seed mix).

RG: Is the native seed bank available to the separate treatment zones?

DB: yes, the whole site has good exposure to native seed bank.

Slide 22

10:20 Brian Stark

JB: Review selection of transect selection methodology.

DB: Initially random selection then fixed points

10:36 Glenn Greenwald

Slide 23

LB: Container stock used?

DB: Yes, Zone 1

DB: Observing a level of native recruitment where SLeaf is pulled.

LB: Maybe the herbicide is suppressing surface seedbank even though it is not theoretically expected/reported.

DB: Yes, potential certainly exists. Many 'inactive' ingredients. Potential for synergistic effects....

JC: More likely, impact to near surface seed bank is from heat and exposure caused near surface in the dune environment. Note that scoured sheets of sand have naturally lower recruitment and only discrete species that recruit there.

Slide 24

BH: What are the early indications on best treatment approach?

DB: At this point only anecdotal, really too soon to say.

MC: Looking back at quadrant layout and approach.

Discussion on possibility for more transects. Is the data collection properly representing field response?

DB: Again, early in process. In 2008, the direction was to establish the four distinct treatment zones and observe.

MC: What is baseline?

DB: photo points and qualitative.

GGreenwald: Are other areas being monitoring in similar fashion?

DB: Yes

GG: Are you conducting similar trials elsewhere in dunes?

DB: No

GG: Could we benefit from that? How do we know these trails are not producing "type 1 error"?

DB: Yes, more trials in other areas would produce data that are more robust.

11:00-12:00pm - Presentation of 2008 Annual Monitoring Report.

Begins at 11am

Slide 26-27, Overview by DB

Slide 28, note LMU labels not legible (will be amended)

Show area of Control

Slide 29:

Veldt rebound.

RG: Where is control?

DB: 2035"C". side bar on 5 year data for Veldt and the freeze effect.

OV of slides 30-32

Slide 33:

JC: is cryptogrammic/moss classification included in BareGround?
DB: Yes, however it represents an insignificant fraction.

Slide 34: OV

Slide 35:

RG: Did you treat for Slender Leaf?

DB: Yes, some CCC work.

GG: We get free slender leaf treatment from pigs on the refuge.

Slide 36 – 37 OV

Slide 38 – OV

LB: What are the non-natives in beach grass treatment plots?

DB: Sea Rocket, ice plant...?

LB: Sea Rocket should not be, maybe JC has an opinion.

JC: It is everywhere.

LB: If veldt and beach grass were removed and only SRocket remained, would you consider this successful?

DB: Yes

GG: Data points represent the average of all the data, yes?

DB: Yes

GG: So you have many data to create these points?

DB: Yes

ACTION: Confirm Sea Rocket is NOT part of non-native. **RESULT:** Daniel has looked into what species are captured under the total non-native heading for beach grass treatment plots. The following species are captured:

Beach grass, Iceplant (*Carpobrotus* spp.), Slender-leafed iceplant, *Bromus* spp., & Sea Rocket. RTF needs to determine if sea rocket should be dropped from non-native list (despite the fact that this species is not native).

Slide 39 – OV

Slide 40 What are the Rare Plants? Need clarity.

FOLLOW-UP: the following species are recorded as “rare”:

In veldt grass plots:

Delphinium parryi ssp.

blochmaniae

Erigeron blochmaniae

Erysimum insulare var.

tomentosum

Horkelia cuneata ssp. *sericea*

Leptodactylon californicum

Lupinus nipomensis

Monardella frutescens

Monardella crispa

Mucronea californica

Prunus fasciculata var. *punctata*

Senecio blochmaniae

In beach grass plots:

Abronia maritima

Erigeron blochmaniae

Erysimum insulare var. *tomentosum*

Leptodactylon californicum

Malacothrix incana

Monardella crispera

Senecio blochmaniae

Slide 41

OV

Is bare ground a concern in fore dune?

LB: Hard to tell by the way percentages are presented. At Chevron, high quality dune scrub habitat is nearly 45% BGround.

Discussion on BG and BG goals continues.

NOTE: our goals for cover should be based on control or natural levels – eg. Cover to reach 80% of natural cover density within five years of install....

MC: Data analysis, regression? Standard deviation?

JB: There is enough data to calculate SD

DB: Yes

ACTION: More discussion on data presentation method. Presentation of ‘confidence’ interval (+/- one STD).

JC: How many transects can you monitor in a day?

DB: Generally 10-12 hours per area.

Slides 42-44: photo history overview

Slide 45, DB - With pampas, we are winning the war of attrition.

RG: Anyone know how long pampas seed bank lasts?

NO ONE

JL: We are still finding seedlings at Chevron after 10-years.

Slide 46 – Nipomo Lupine

DB: OV data, last two years represent more detailed data collection – thanks in part to small ConocoPhillips grant these past two years. Also, change in lead ecologist.

Slide 47 – OV. Aggressive veldt management. Single species management to some degree. Connie Rutherford is contact at USFWS and has been kept posted on this data and will be participating in the 2009 census as a part of the LUNI recovery plan update.

JC: Any work to control pocket gophers in area?

DB: No

JC: What is your anecdotal take on PGopher predation of NLupine?
DB High level
JC: Hawk Poles?
RG: State parks are actually controlling raptors in area to benefit snowy plover.
JC: Any feel for the relationship of pocket gophers and veldt?
DB: None
DB: 04/05 data 'robustness' or lack there of.
JC: lupine populations vary greatly in response to rain events/seasons, this is likely at play here as well.
RG: An endowment is in place for these plants, what actions are being taken?
DB: Overview of federal actions.
JC: out planting at Black Lake is very appropriate.
DB: LC would be all for it. A 'safe harbor' agreement might be appropriate.
JC: Questions about the census, time taken, area of effort.

Slide 49 –

12:00-12:30pm – Working Lunch

12:30-3:00pm - Review 5 year Management & Monitoring Trends

12:30 AFTERNOON Session begins after a ½ break.

Slide 2 - 4 OView. Priorities reflect an approach prioritized on saving the 'best of the best' areas... Discussion on what group was thinking when the priorities were created and need for newly defined priorities.

GG: There is a need to maintain progress – no back sliding – during the lean times.
RG: Need to consider faunal priorities and geographic/areal extent of a species prior to expanding efforts.

JC: The priorities are unwieldy already and should be grouped: 1, Richness and diversity; 2, Restoration potential; 3, maintenance

GG: Agree with RG and JC; devise some way to evaluate 'bang for buck' – both flora and fauna 'bang'.

MC: Is there any regional or aerial consideration currently?

DB: Yes; Fire walls etc... Questionable link between removal of invasives and return of native F&F.

JB: disagree; has observed return of F&F here and seen documentation of the relationship elsewhere. Also notes there are few cases of extinction of insect species.

JC: Coding priorities of restoration for faunal species suitability will broaden our funding opportunities.

JB: measures of bio-diversity such as diversity indices are difficult and debated.

LB: lots of time and money can be spent on diversity data collection and analysis.
Results remain debatable

DB: OV of Slides 6-8

RG: A daunting task to undertake by a handful of people with backpack sprayers.

Discussion on amount of entire complex that will ultimately require treatment, defining success and a timeline for success.

Monitoring Overview – Handout 1, Veldt and Beach Grass Management Objectives

DB: OV slides 9-12.

Slide 12-28: Group discussion on what data is telling us and what actions need to be taken.

RG: Is monitoring really representative?

JC: Transects, quadrants, selection discussion...

LB: Enough of a population to be robust, so the monitoring likely represents the treated landscape.

MC: Maybe the scientific sub-committee could consider some analysis – “I’d be willing to crunch some numbers”.

GG: We need more control sites to overcome some ‘demonic’ intrusion of the control. More type 1 error- alpha error, false positive....

JC: We need to understand what threshold of infestation results in deleterious impacts. In other words, veldt is here to stay, what level of veldt control can be achieved and how does this level compare to what is needed by natives.

ML: Summarize discussion, possibility for advanced analysis by scientific subcommittee.

JB: experience is that it is difficult to tease additional inferences out of existing data that was designed to collect specific information.

DB: Consider Management Responses

RG: Seems like the MRs are being carried out. Are we re-ranking LMUs?

DB: Not at this meeting.

LB: Should we review the Management Objectives?

DB: Yes, it is needed.

Open discussion on linking goals for control and restoration to control. e.g. a degree of improvement relative to control(s) versus measuring a site against itself one year to next or over five years.

LB: At chevron, we compare to high value/pristine sites.

RG: Is this control information available?

LB: Yes, but it may not be applicable. Will ask JL to forward the information.

ACTION: Chevron’s control data and performance results from JL

RG: Some of the MR’s call for drastic action.

JC: We need more information before taking these actions. Are animals influencing the results? The MR seems to assume herbicide collateral damage is cause of native plant reductions. Is it?

LB: The assumption when MRs were drafted is that native plant loss would be due to collateral damage by herbicide.

JC: Is density being considered?

DB: only on rare plants

JC: Density of invasives is also potentially important.

BH: 5 years of data does not begin to tell climate impacts

DB: What other measures of success?

GG: Active dune areas (versus un-naturally stable), bare dune.

LB: again, % BGround will differ in zones. In some settings, foredune, BG can have real value and should be incorporated in goal

DB: Overview of results

GG: More questions on transects and data points.

On rare plants, maybe we should be doing counts of actual occurrence.

DB: updating rare plant survey done in 2005 needs to be done. This may provide a better indication.

BH: Maybe aerial imagery would be useable for BGround analysis.

RG: Not likely useful for tracking rare plants.

DB: Agreed

JB: Basic assumption is that what is occurring in monitoring quadrants represents what is occurring in dunes in general. Discussion on more robust monitoring to track rare plant trends.

DB: Much discussion about monitoring protocol revisions. In the meantime, what will management approach be?

RG: Not looking for wholesale monitoring change, veldt population during 2007 freeze is most telling. (NOTE: veldt came back strong following freeze die off – what does that say about freeze control of veldt? – msl editorial)

JC: We are making many pronouncements about what is or isn't working based on this data. I would like to hear from the field people.

MS: Spray cocktail is effective at holding the line on veldt.

BO: But is it sustainable? Seems like we will be treating the same areas repeatedly, forever.

MS: We may need a more aggressive herbicide on beach grass to minimize retreatment. The thick infestations are just not feasible for backpack spray approach.

BO: seems like we are hardly making a dent. We are waging a war with an insufficient level of troops.

MB: Right! Are there other methods? Bulldozers, 500 people with backpack sprayers, helicopters?

LB: What is the % veldt/grass cover that is manageable for a limited number of 'troops' with sprayers?

Driving at the bigger question of what level of resources is needed to maintain our current progress/level of control.

BH – Handout 2, 10-month maintenance proposal.

2:15 BH depart to meeting with Supervisor Achadjian.

GG: LC needs a 'polaris' (Dune Utility Vehicle) – include purchase, fuel, storage, maintenance. This will provide much greater efficiency.

MB: Indicates that she would approve it.

LB: this equipment would be offset by crew savings

JB: economic stimulus – 20 people, 2 OHV crew carriers, 1-year of employment restoring dunes...

Slide 35 Discussion

DB: Approach may be equipment intensive for invasive removal followed by a restoration effort by ground troops.

LB: It would be instructive to see what happens to treated areas that are not maintained on a regular basis – will the veldt come back to previous levels in one, two, three years?

JC: It is pre-mature to continue with 'big push' efforts since we do not have an effective approach for veldt. Maybe occupancy by buckwheat to displace veldt. Maybe ready for a big push on beach grass since an active moving sand sheet is the desired outcome. What is actually working? Results from Oregon/Nor Cal efforts?

MS: Disagree (with no effective approach to veldt); Jack Lake is example of effective veldt removal.

DB: Site particulars may tell us why the approach is effective at some locals and not others.

JC: What is the minimum expectation for \$1/4 million a year? Might not get us much.

Discussion on Dozers and copters cost effectiveness.

LB Channel island mini-copters.

RG: Dozers have limited range of utility due to archeology and dune structure impact.

More discussion on use of ATV, where it would and would not increase efficiency.

Reference to "Greg Null", chevron lead man on ground.

Mike English is the local helicopter spray person.

RG: We need to prioritize where it is most important to hold the line on previous treatment progress.

Need for stronger monitoring approach and more efficient way to 'push' (attack non-natives).

GG: It is clear from my observation that the LC is having a significant impact with their efforts. There are areas of the Refuge that are being taken over by veldt.

Hill/Stark rejoin (3:15?)

Open Discussion:

Next 10-Months:

- Reassess monitoring approach, objectives, and priorities
- Evaluate mechanical methods for initial invasive control
- Prioritize area for maintaining treatment level
- Reevaluate LMUs and update mapping

RTF is key to getting at answers and meeting goals over next 10 months (or sooner).

RG: What are the priority sites for maintaining and what can/should be left alone?

JC: What will it take to mobilize in response to heavy freeze events?

Fire and Veldt analysis? Mt. DeOro, dune lupine responded well to fire.

JC: continued; Stratification disking – used at StatePark “powell property” effectively.

{? Are we talking about disking soil to bring viable seed to surface?}

Locate areas where heavy equipment can be used – trials.

RG: There was fire treatment at MDO?

JC: Again, the idea on site occupancy – what level of native occupancy represents a landscape that is health and headed in right direction?

Restrict seed mix to what is working.

GG: Veldt is controlled in the presence of stock grazing.

LB: yes/no, veldt is moving faster in absence of grazing, yet grazing does not 'control' veldt.

Questions on veldt control on heavily grazed areas of Conoco

DB: This area represents an area of single species (LUNI) management.

JB: Goat/sheep used at Rossi Property. Successful?

DB: ½ hour left; Do we have sufficient direction?

MC: How much seeding is envisioned?

LB: management plan for dunes complex needs updating in order to better guide these discussions.

DB: Management plan update is needed and is NOT part of our 10-month contract or budget.

Discussion on other plans for dunes and where to start.

BH: Updating plan should fall under the RTF contract.

JC: Agreed with need for dune utility vehicle – however the use of a vehicle brings up a number of concerns. Need to define access areas and off-limits areas, formalize access routes... These issues need to be priority in order to get the DUV on the ground.

BS/BH: Many other issues with OHV use; liability, training, operations.

LB: Revisions to monitoring approach are priority.

DB: will be dropping some treatment and monitoring.

JC/LB: Must identify reference (control) sites of pristine area.

SUMMARY OF PATH FORWARD: Prepare a Management Plan/Framework for Restoration Planning for the Guadalupe-Nipomo Dunes Complex that incorporates the following -

- Update dune complex management objectives taking into account both flora and fauna
- Revisit The Nature Conservancy Dunes Management Plan
- Take into account restoration potential, long-term maintenance needs, and flora/fauna richness and diversity
- Reevaluate monitoring program (approach, objectives, and priorities, e.g., ID new sites for monitoring/control sites that include good quality habitat [in terms of flora and fauna])
- Reevaluate success criteria
- Obtain experimental design expertise
- Evaluate/study what level of native occupancy represents a healthy dune ecosystem
- Evaluate new technologies/best mechanical methods for invasive spp removal (e.g., helicopter, fire, heavy equipment)
- Reprioritize areas for treatment/no treatment/active revegetation/other restoration actions
- Reevaluate LMUs
- Identify what level of invasive spp infestation is acceptable
- Evaluate new mapping options
- Incorporate adaptive management
- Evaluation of restoration needs in terms of getting the” best bang for our buck” – (evaluate restoration options; what is best biologically, to continue to do small piece-meal projects or to implement larger-scale project(s))

Adjourn – 4:15 ish. RIGHT ON TIME!