MSCP MONITORING AND MANAGEMENT IN THE CITY OF SAN DIEGO

Monitoring and Management Coordination Group

January 26, 2011

CURRENT PROCESS

- Rare plant monitoring per McEachern et al.
  - Annual monitoring
    - Rare species presence/absence
    - Habitat assessment
    - Photo plot
    - GPS boundary of population
  - DOES provide habitat quality and threats assessment
  - DOES NOT provide quanitative population counts

CURRENT PROCESS

Posted to City Website	BIOS/City Database
Target species presence/absence	GPS files
Habitat/threats assessment	
Photo plots	
GPS maps of population area	

- Review threats annually
  - Note changes, trends, correlate to events
  - Identify management actions to alleviate threats
- Implement management actions where possible
  - Tests and record outcomes
  - Scale up or choose different action

PROJECT 1:
LIMITING THE THREAT OF *BRACHPODIUM DISTACHYON* AT *ACANTHOMINTHA ILICIFOLIA* SITES

Multiple Species Conservation Program (MSCP) Rare Plant Field Survey Form

Scientific Name:	Acanthomintha ilicifolia	*Common Name:*	San Diego Thornmint
Site Name:	Sabre Springs-S Subpop	*Management Unit #:*	TBD
Date: 5/12/10		*Management Regime:*	TBD
Surveyors and Affiliation/Agency:	Toby Miller, Dave Bilkey - City of San Diego		

Species Found? ☑ Yes ☐ No _____ If not, why (if reason known or suspected)?

Total No. Individuals: ~200 ☐ Exact ☑ Estimate (use orders of 10, 100 and 1000 for estimates)

Population/Subpopulation Area: 240.8 m² (Units) ☒ Exact (based on GPS mapping) Estimate

Collection (if not collected previously)? ☐ Yes ☑ No ☐ Collected Previously

If yes: _____ (Collector) _____ (Collection Number) _____ (Museum/Herbarium)

I. OBSERVATION AREA/MANAGEMENT UNIT LOCATION

Accuracy of Coordinates/GPS Error: +/- <1 ☑ meters ☐ feet

Observation Location: 6303165.84 1923485.4 ☑ State Plane (feet) ☐ UTM

II. GENERAL HABITAT DESCRIPTION AND THREATS ASSESSMENT

Vegetation Community: non-native grassland within scrub oak chaparral

Landowner/Manager: City of San Diego Park and Recreation Open Space

Overall Site Quality** ☐ Very Good-Excellent ☐ Fair to Good ☑ Poor ☐ Very Poor

Surrounding land use: open space, residential, industrial

Disturbances and/or threats (be specific, include extent of disturbance or percent cover of disturbance if possible):	Management Recommendation/s:
non-native grassland	continue weeding efforts

III. ASSOCIATED SPECIES

List dominant, subdominant and invasive species in/near target species observation area/management unit.

*Species'=List all species (scl. name). Use * to indicate non-native species; 'Cover'= % cover of species; Note if collected by checking 'Coll.' column; if submitted to herbarium, note collection number (submit to SDNHM unless otherwise noted).*

Species	Cover	Coll?	Coll. #	Species	Cover	Coll?	Coll. #
Acanthomintha ilicifolia	2			Bloomeria crocea	1		
Calochortus splendens	1			* Erodium spp.	3		
Hyptis emoryi	25			Rhus integrifolia	3		
* Avena spp.	10			Zigadenus fremontii	1		
Hesperocnide sparsifolia	3			Quercus dumosa	10		
Adolphia californica	3			* Brachis diandra	1		
* Picris sp.	2			* Brassica nigra	5		
Stachys ajugoides var. rigida	1			* Avena sp.	40		

IV. SITE PHOTOMONITORING

Camera type: Nikon Coolpix S560

Location [State Plane (ft)]		Direction (facing)	Height	Camera Angle	Photo #	File location/s
6303165.84	1923485.4	SE, S, SW	1.1 m	5° down	2691-2694	S/OS/MSCP

V. OTHER FIELD NOTES

Other Field Notes/Comments: _____

** Use Trudgen & Keighery Vegetation Condition Scale Descriptions (see back of form or instructions)

Continue on back if needed.

Very Good-Excellent	[illegible]
Fair to Good	51-80% Native Flora Composition Vegetation structure modified to some degree Low [illegible] exceeds 5-20% [illegible] Possible minor signs of disturbance
Poor	20-50% Native Flora Composition Vegetation structure modified Low [illegible] exceeds 20-50% [illegible] Disturbance evidence high
Very Poor	0-20% Native Flora Composition Vegetation Structure destroyed Low [illegible] Disturbance evidence very high

Species	% cover
* Centaurea melitensis	2
* Bromus madritensis	5
* Trachypodium distachyon	5
* Bromus hordeaceus	5
unk plant	10
* Gastridium ventricosum	1
* Phalaris minor	5

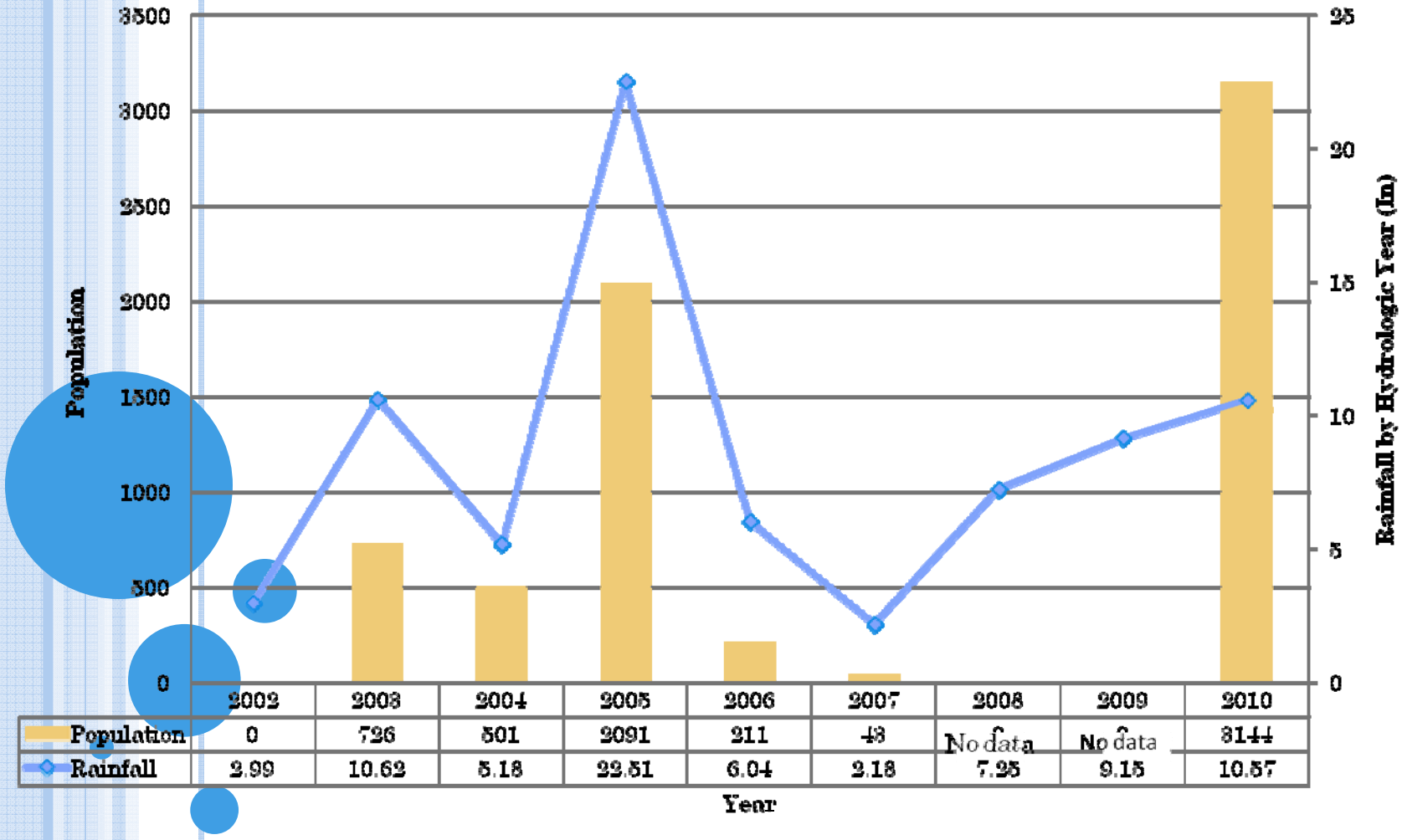
Photo 10. *Acanthomintha ilicifolia* (San Diego Thornmint) Sabre Springs Southern Subpopulation # 3

Panorama from Southwestern edge of subpopulation, facing Southeast, South, Southwest.
Panorama location is 6303165.7 1923485.4 NAD83 State Plane California Zone 6 (feet)
Photos merged using ArcSoft Panorama Maker 4.


Acanthomintha ilicifolia - Sabre Springs
West Subpop
Area: 39.6 sq. m.
East Subpop
Area: 1.6 sq. m.
South Subpop
Area: 240.8 sq. m.
2010 Area: 282.1 sq. m
2010 Population Area
Pop. Area 2006 - 2010
Max Area: 282.1 sq m.
Min Area: 54.8 sq. ft.
0 4.5 9 18
Meters
Source: San GIS & City of San Diego Park & Rec
Created by: Tyler Friesen
10/15/2010
SanGIS

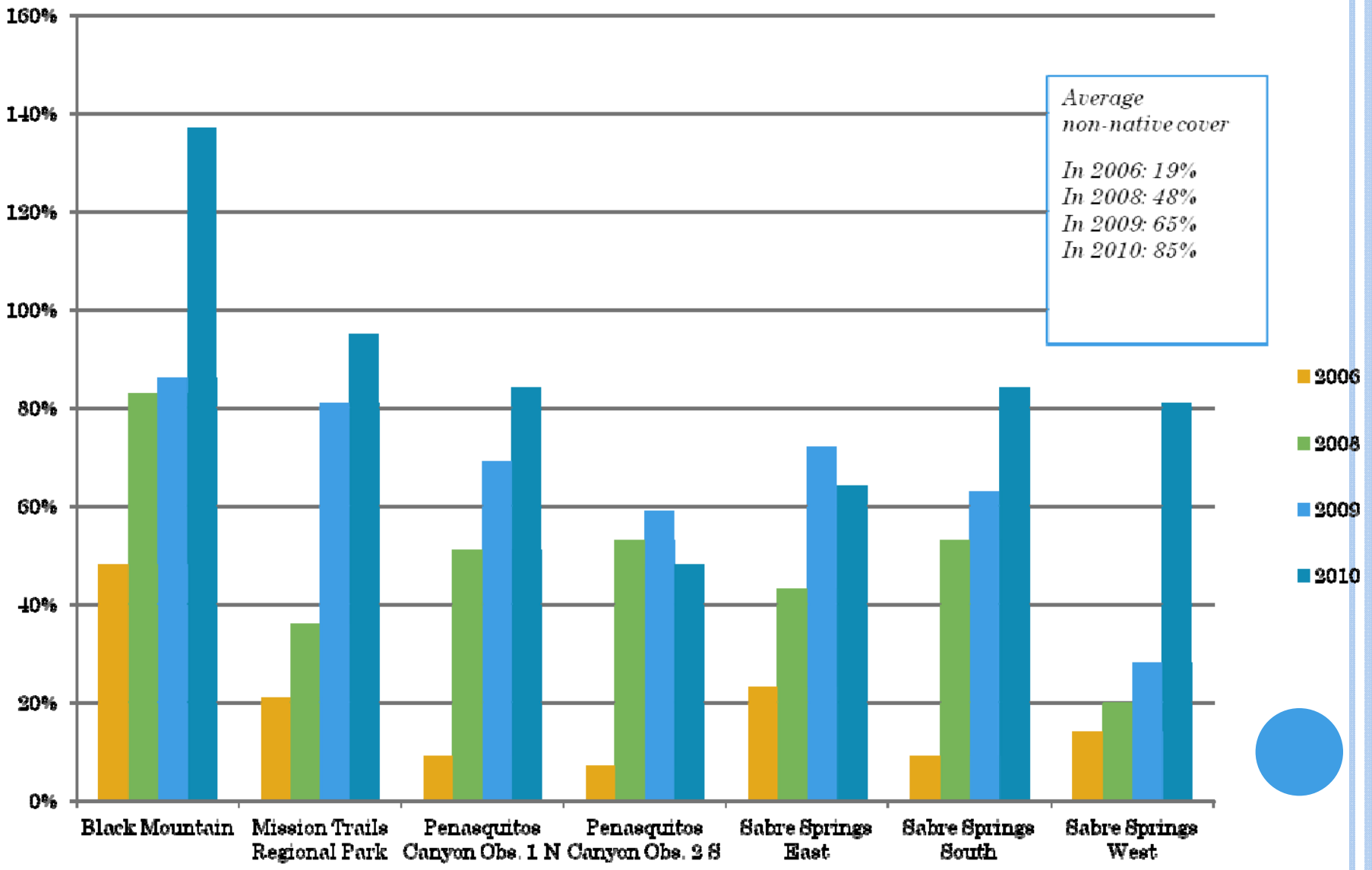
ANNUAL THREATS ASSESSMENT

Acanthomintha ilicifolia Totals at Los Penasquitos With Rainfall Data 2002-2010



	2002	2003	2004	2005	2006	2007	2008	2009	2010
Population	0	726	501	2091	211	43	No data	No data	3144
Rainfall	2.99	10.62	5.18	22.51	6.04	2.18	7.25	9.15	10.57

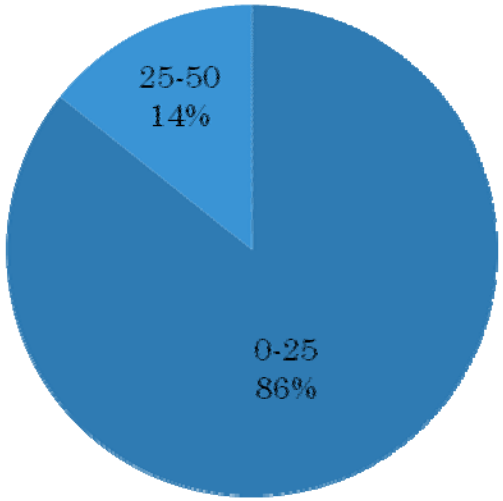
Non-Native Cover at *Acanothomintha ilicifolia* Populations 2006, 2008, 2009, 2010



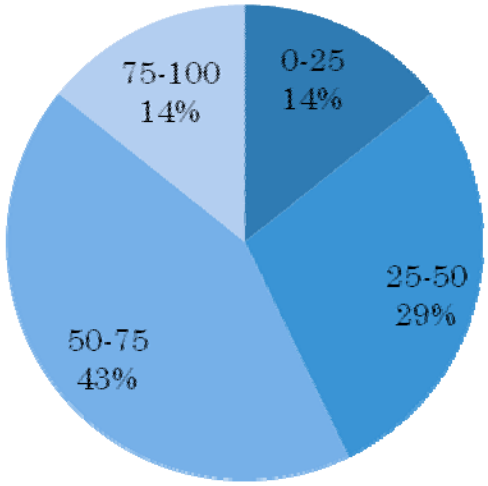
Average non-native cover

In 2006: 19%
In 2008: 48%
In 2009: 65%
In 2010: 85%

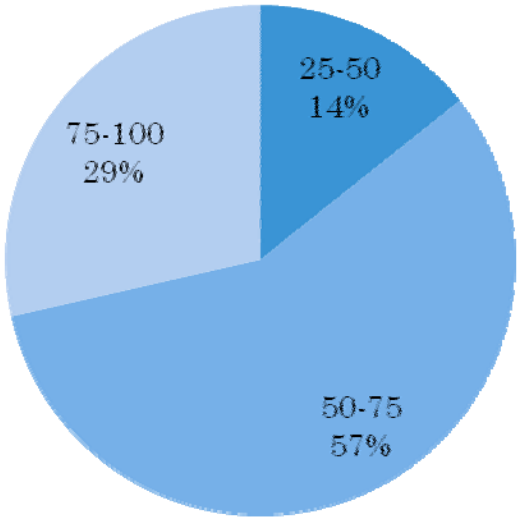
Year 2006



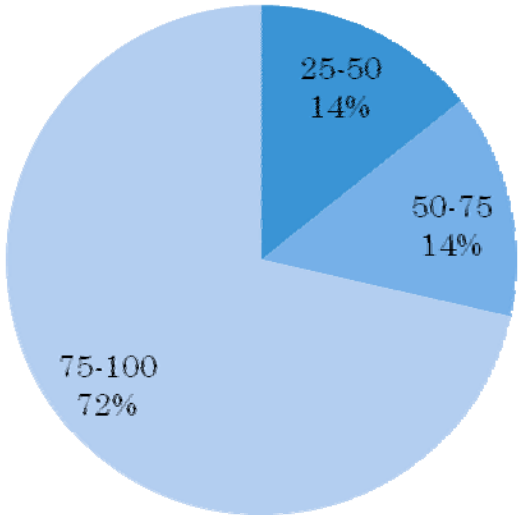
Year 2008



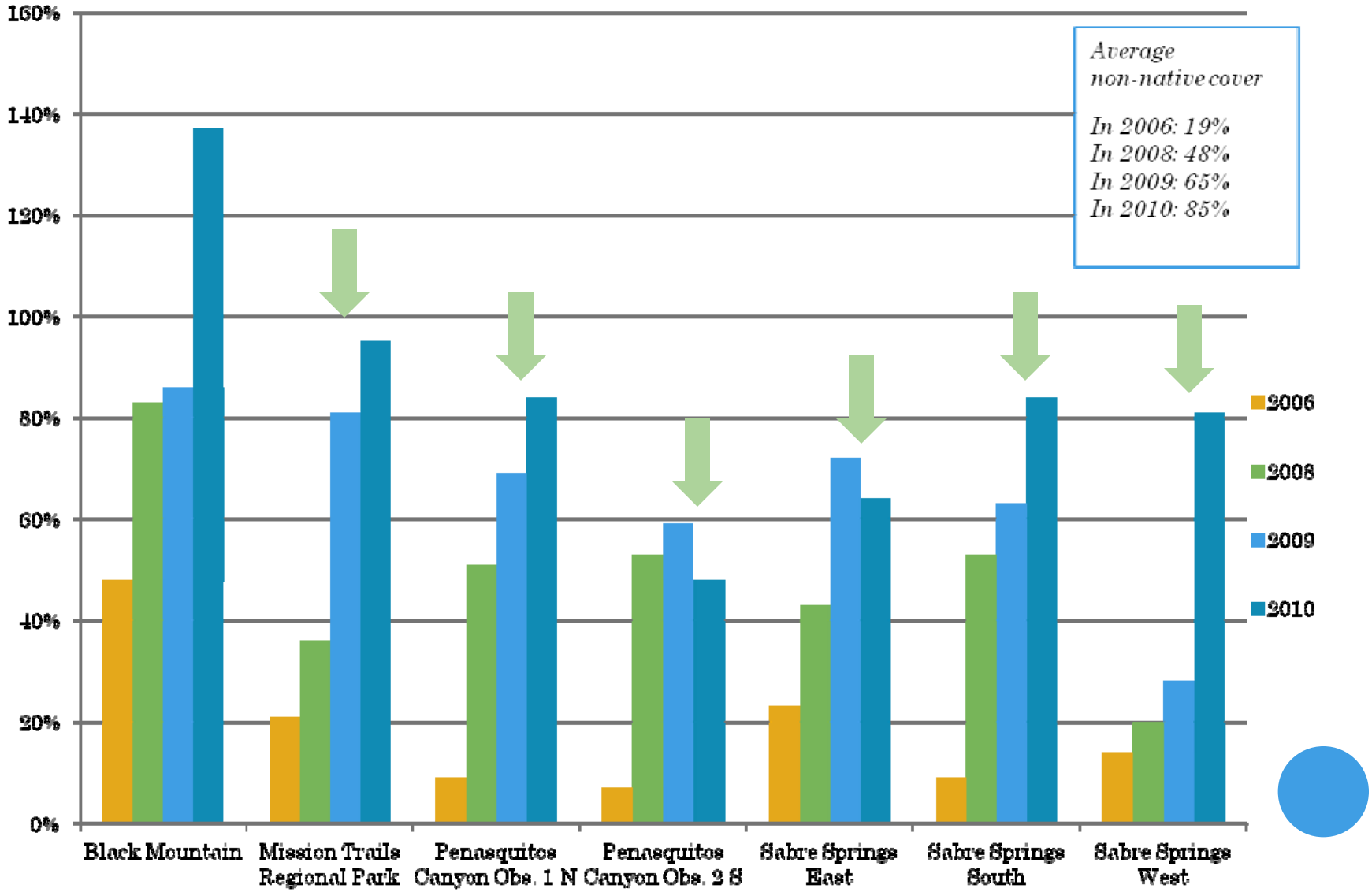
Year 2009



Year 2010



Non-Native Cover at *Acanothomintha ilicifolia* Populations 2006, 2008, 2009, 2010



	Brachypodium distachyon	*Brassica nigra*	*Avena fatua*	*Sonchus sp.*	*Centauria melitensis*	*Anagallus arvensis*	*Euphorbia peplis*	*Cynara cardunculus*	*Filago gallica*
2006	40	4	1	1	1	0	0	0	0
2008	80	1	1	0	0	0	0	0	0
2009	80	3	2	0	0	1	0	0	0
2010	90	40	1	1	0	0	1	1	1

Non-native Cover by Species at *Acanthomintha ilicifolia* Population in Black Mountain Ranch

	Brachypodium distachyon	*Brassica nigra*	*Sonchus sp.*	*Anagallus arvensis*	*Centaurea melitensis*	*Erodium sp.*	*Bromus madritensis ssp. rubens*	*Filago gallica*	*Lepidium sp.*	*Erodium sp.*	*Gastridium ventrucosum*	*Bromus hordaceous*
2006	15	1	1	1	1	1	1	0	0	0	0	0
2008	25	5	0	1	0	0	2	1	1	0	0	0
2009	70	3	0	1	2	0	1	0	0	2	1	1
2010	80	5	1	0	3	0	2	1	0	3	0	0

Non-native Cover by Species at *Acanthomintha ilicifolia* Population in Mission Trails Regional Park

REFINING MANAGEMENT ACTIONS

- Sites need *Brachypodium distachyon* control
  - General non-natives control ineffective
- Coordinate with other groups managing for *Brachypodium distachyon*
- Pilot study phase
  - Kelly testing herbicide effects on ACIL seedlings
  - City and CBI conducting randomized block design treatments with herbicide, thatch removal, control

PROJECT 2: LIMITING NON-NATIVE GRASSES AND THATCH AT THE *AMBROSIA PUMILA* POPULATION AT MISSION TRAILS

RARE PLANT MONITORING

Multiple Species Conservation Program (MSCP) Rare Plant Field Survey Form

Scientific Name:	Ambrosia pumila	*Common Name:*	San Diego Ambrosia
Site Name:	MTRP-Kumeyaay Lake	*Management Unit #:*	TBD
Date: 4/12/10		*Management Regime:*	TBD

Surveyors and Affiliation/Agency: Betsy Miller City of San Diego; Nicole Priesholt volunteer

Species Found? ☑ Yes ☐ No _____ If not, why (if reason known or suspected)?

Total No. Individuals: 3000 ☐ Exact ☑ Estimate (use orders of 10, 100 and 1000 for estimates)

Population/Subpopulation Area: 16809.08 m^2 Units ☑ Exact (based on GPS mapping) ☐ Estimate

Collection (if not collected previously)? ☐ Yes ☑ No ☐ Collected Previously

If yes: _____ Collector _____ Collection Number _____ Museum/Herbarium

I. OBSERVATION AREA/MANAGEMENT UNIT LOCATION

Accuracy of Coordinates/GPS Error: +/- <1 ☑ meters ☐ feet

Observation Location: 6321443.021 1886016.476 ☑ State Plane (feet) ☐ UTM

II. GENERAL HABITAT DESCRIPTION AND THREATS ASSESSMENT

Vegetation Community: non-native grassland

Landowner/Manager: City of San Diego Park and Recreation Open Space

Overall Site Quality** ☐ Very Good-Excellent ☐ Fair to Good ☑ Poor ☐ Very Poor

Surrounding land use: open space, campground, transportation

Disturbances and/or threats (be specific, include extent of disturbance or percent cover of disturbance if possible):	Management Recommendation/s:
high cover invasive weeds	weed management

III. ASSOCIATED SPECIES

List dominant, subdominant and invasive species in/near target species observation area/management unit.

*Species'=List all species (sci. name). Use * to indicate non-native species; 'Cover'= % cover of species; Note if collected by checking 'Coll.' column; if submitted to herbarium, note collection number (submit to SDNHM unless otherwise noted).*

Species	Cover	Coll?	Coll. #	Species	Cover	Coll?	Coll. #
Ambrosia pumila	2			* Vulpia myuros	70		
Lotus heermannii	1			* Avena sp.	2		
Eriogonum fasciculatum	10			Isocoma menziesii	8		
* Erodium sp.	3			Lessingia filaginifolia	2		
* Hypochaeris glabra	5			Daucus pusillus	1		
* Centaurea melitensis	5			* Bromus diandrus	1		
* Bromus madritensis ssp. rubens	2			Eremocarpus setigerus	1		
* Bromus hordeaceus	10			Distichlis spicata	1		

IV. SITE PHOTOMONITORING

Camera type: Nikon Coolpix S560

Location [State Plane (ft)]		Direction (facing)	Height	Camera Angle	Photo #	File location/s
6321443.021	1886016.476	NW, N, NE, E	1.1 m	5° down	2854-2859	S/OS/MSCP

V. OTHER FIELD NOTES

Other Field Notes/Comments: _____

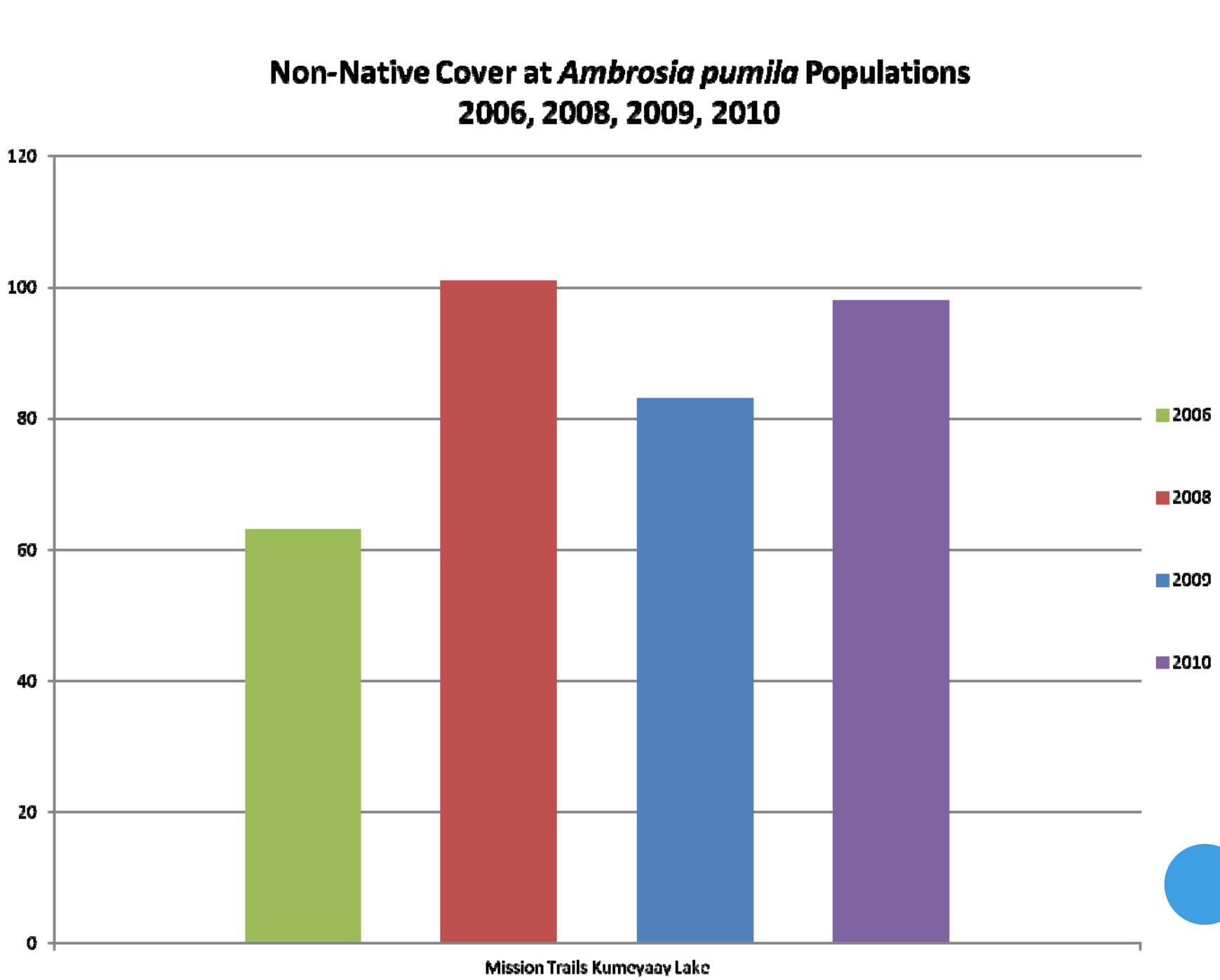
** Use Trudgen & Keighery Vegetation Condition Scale Descriptions (see back of form or instructions)

Continue on back if needed.

Photo 11. *Ambrosia pumila* (San Diego Ambrosia) Mission Trails Regional Park - Kumeyaay Lake

Panorama from Northeastern edge of population, facing Northwest, North, Northeast, East.
Panorama location is 6321443.021 1886016.476 State Plane California Zone 6 (feet)
Photos merged using ArcSoft Panorama Maker 4.

ANNUAL THREATS ASSESSMENT


Non-Native Cover at *Ambrosia pumila* Populations
2006, 2008, 2009, 2010
120
100
80
60
40
20
0
2006
2008
2009
2010
Mission Trails
Kumeyaay Lake

MANAGEMENT ACTIONS

RECORD OUTCOMES

REFINING MANAGEMENT ACTIONS

- Pilot studies on invasive removal in thornmint populations conducted by Kelly, Burrascano and Rocks (2008) and CNLM (2009)
  - Methods effective
- Scaling up project to majority of population area
  - Monitoring outcomes in treatment and control areas
  - Monitoring cost
  - Utilizing project as a training project for in-house QAC-certified staff

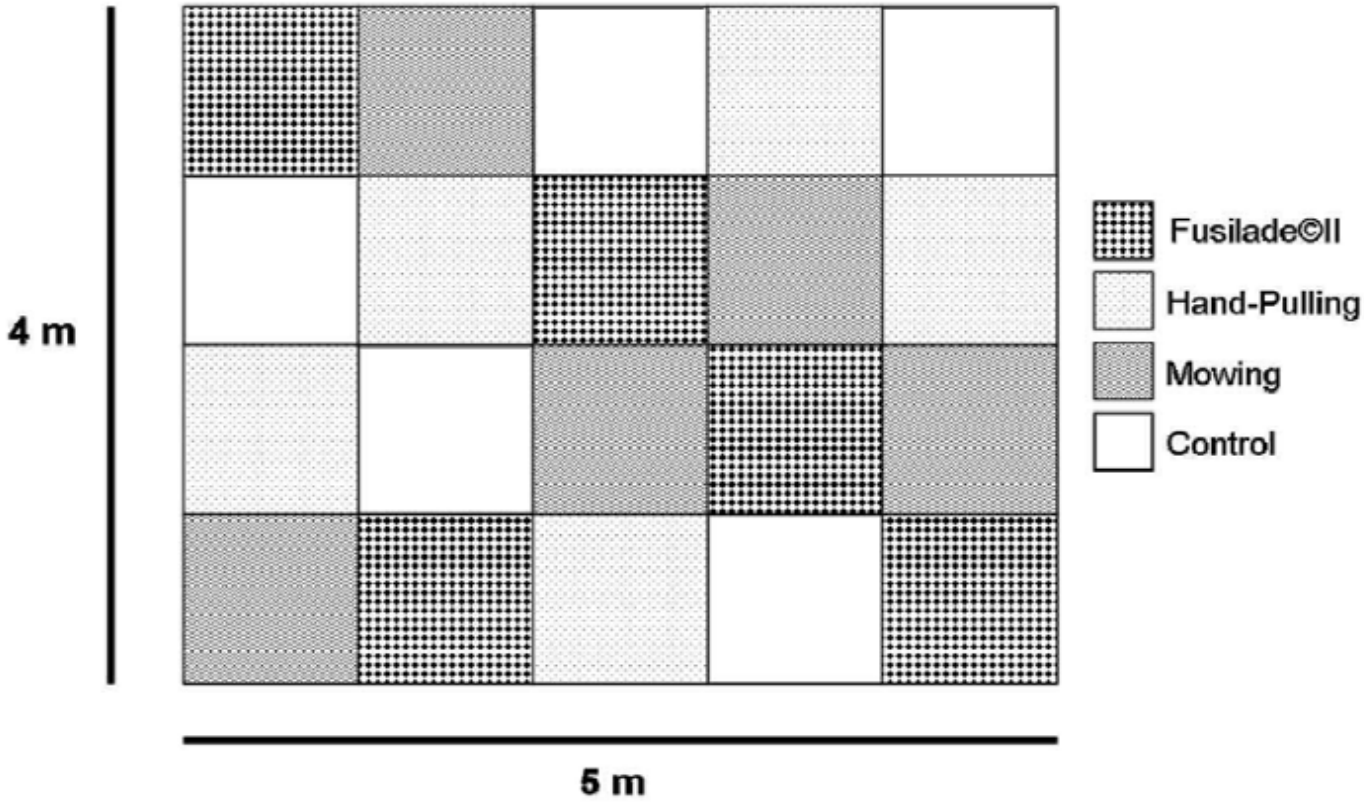


Figure 5. Diagram of one of the replicated blocks used at MT and SDNWR. Each block consisted of 20, 1-m^2 plots with four treatments replicated five times. Treatments included hand-pulling, application of Fusilade ©II, mowing, and a control. At SH, Fusilade ©II was not applied and therefore replicated blocks there consisted of 15, 1-m^2 plots. There were a total of five replicated blocks at each site.

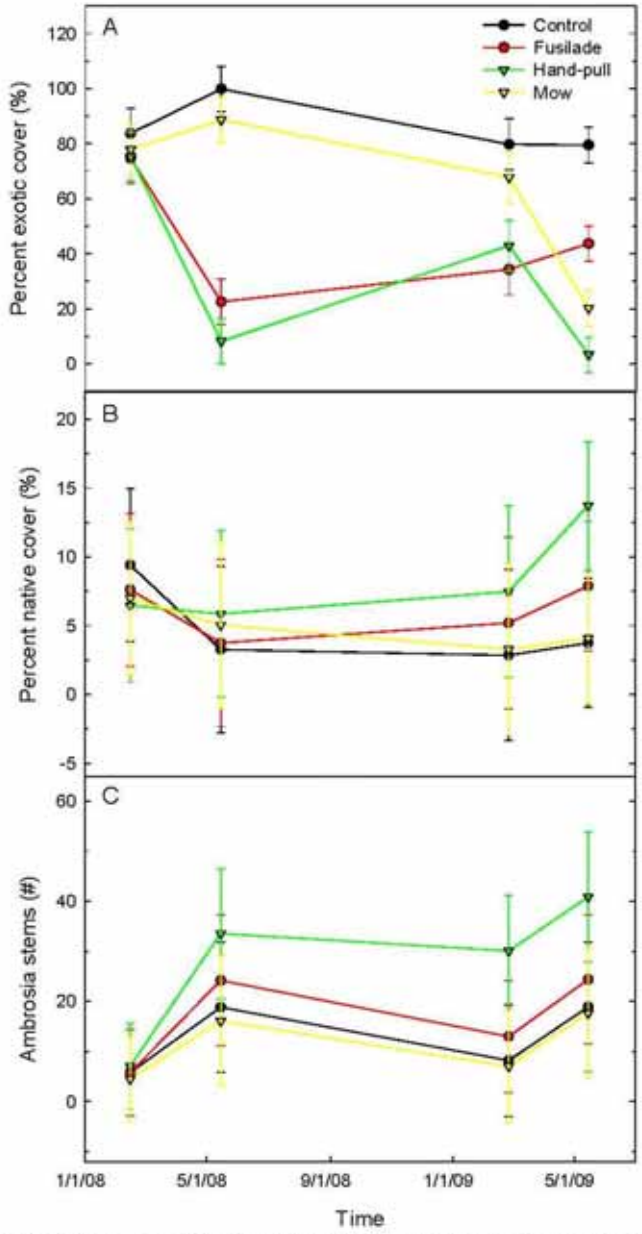


Figure 9. Change in (A) percent exotic cover, (B) percent native cover, and (C) the number of *A. pumila* stems at Mission Trails. Treatments included a control, application of Fusilade ©II, hand-pulling of exotic species, and mowing. Treatments were applied in late February/early March of 2008 and 2009. Values represent mean and 95% confidence intervals (N = 5 per sampling date); thus, if confidence intervals overlap, values are not significantly different ($\alpha = 0.05$).