POINT REYES NATIONAL SEASHORE
FIRE MONITORING PROGRAM
1997 YEAR-END REPORT

The monitoring workload at Point Reyes was very light in 1997 with only six transects located at MacDonald Ranch and McCurdy needing to be remonitored. Both of these burn units were burned in 1996 and one-year postburn monitoring of the transects located in each burn unit was completed.

The workload at Point Reyes will be much greater in 1998 with the following needing to be completed:

- five-year postburn monitoring of the grassland and coastal scrub plots burned in the 1993 Elk Range burn
- five-year postburn monitoring of the grassland and coastal scrub *control* plots for the 1993 Elk Range burn
- two-year postburn monitoring of the transects located on the MacDonald Ranch
- one-year postburn monitoring of the transects located at Divide Meadow, Strain Hill and McCurdy
- installation of several new forest plots in newly designated burn units on Mount Vision, Mount Wittenberg and Firtop.

A total of four prescribed burns were conducted at Point Reyes in 1997: Lime Kiln, McCurdy, Strain Hill and Divide Meadow. The Lime Kiln, McCurdy and Strain Hill burn units are three of several sites identified in the Olema Valley as part of a long term french broom control project. This was the second time the Lime Kiln and McCurdy units were burned. The Divide Meadow burn is part of a continuing scotch broom control project. This unit was last burned in 1994.

In order to control both french and scotch broom it is important that the areas be treated repeatedly. Preliminary analysis of the data collected from the fire effects monitoring transects in both the french and scotch broom monitoring types does show a decrease in cover of the two brooms postburn. However, in both monitoring types seedling densities are very high one-year postburn. Without repeated treatments, seedlings can mature, flower and produce new seed. Data collected from the MacDonald Ranch burn unit allows for the comparison of the effects of a single treatment versus multiple treatments. One half of the unit has been burned three times and the other half has been burned once. Data collected from the unit burned three times shows the cover and density of scotch broom to be much less then in the unit burned once.

Fire and resource management staff realized before initiating these broom control projects that neither species of broom would be eradicated with a single treatment. Though eradication may never be possible, continued treatment of these units over several years will contain the spread of present stands and prevent the addition of new seed into the seed bank.

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TABLE 1. PLOT SUMMARY	Plot Type			TOTAL
	G	B	F	
Number of **burn** plots installed in previous years	0	26	2	28
Number of **burn** plots installed in 1997	0	2	0	2
Total number of **burn** plots installed	0	28	2	30[i]
Total number of ***control*** plots installed	0	11	0	11[ii]
Total number of plots installed	**0**	**39**	**2**	**41**
Number of plots rejected to date	0	0	0	0
Total number of valid plots	**0**	**39**	**2**	**41**
Total number of plots burned in 1997	0	*5*	0	*5*
Total number of plots burned to date	**0**	**28**	**0**	**28[iii]**

TABLE 2. 1997 MONITORING SUMMARY	Plot Type			TOTAL
	G	B	F	
Number of plots installed in 1997	0	2	0	2
Number of **burn** plots read postburn in 1997	0	*5*	0	*5*
Number of ***control*** plots read postburn in 1997	0	1	0	1
Number of **burn** plots read immediate postburn in 1997	0	*5*	0	*5*
Number of **burn** plots reread preburn in 1997	0	0	0	0
Number of ***control*** plots reread preburn in 1997	0	0	0	0
Total number of plots visited in 1997	**0**	**13**	**0**	**13**

TABLE 3. 1998 MONITORING SUMMARY	Plot Type			TOTAL
	G	B	F	
Number of plots to be installed in 1998	0	4	6	10[iv]
Number of **burn** plots to read postburn in 1998	0	24	0	24
Number of ***control*** plots to read postburn in 1998	0	12	0	12
Number of **burn** plots to reread preburn in 1998	0	0	0	0
Number of ***control*** plots to reread preburn in 1998	0	0	0	0
Total number of plots to be visited in 1998	**0**	**40**	**6**	**46**

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TABLE 4. POSTBURN PLOT SUMMARY	Plot Type			TOTAL
	G	B	F	
Immediate Postburn 1 2 3	0	27[v] 11 4	0	42
1 Year Postburn 1 2 3	0	25 9 4	0	38
2 Year Postburn 1 2	0	24 5	0	29
3 Year Postburn (Control plots only)	0	11	0	11
5 Year Postburn	0	3	0	3

ENDNOTES

i.Four french broom (GEMO2) plots located at Strain Hill and McCurdy were removed from the plot totals for Golden Gate and added to Point Reyes.

ii.These eleven control plots were originally installed as burn plots. Four of these plots are located in the Chute Gulch burn unit, seven are located on Tomales Point. Since there are no plans to burn either of these units, the eleven plots will now serve as control plots.

iii.Though eleven plots have been burned more than once, each plot is counted only once in the plots burned to date totals. See #9 under "Monitoring Type Information".

iv.Estimated number only.

v.No immediate post data collected on LOPE 10.

PROGRAM INFORMATION

Staff Participants

The following persons participated in fire effects monitoring at Point Reyes National Seashore in 1997:

Jeanne Taylor, GOGA
Michael Clary, GOGA
Kristy Riggs, GOGA

Length of Season

All plot reading was completed in 2 days.

CHANGES IN PROTOCOL

In 1995, an average height of the vegetation at the sample point was recorded. In 1996, after consultation with Paul Reeberg, WRO Fire Effects Specialist, height was recorded at the highest point on the sampling rod where the vegetation touched. The protocol followed in 1996 was the same protocol used in all years other than 1995.

RECOMMENDED CHANGES IN PROTOCOL

None at this time.

Most of the information contained in the next two sections is repeated from the 1996 year-end report, however, some additions and corrections have been made. Changes made in 1997 are written below the previous year's statement in bold italics.

EQUIPMENT INFORMATION

1.All equipment, supplies and data are stored in Bldg. 1069 of the Fire Management Office at Golden Gate NRA. The FMH program software and data is located on the Vegetation Management Specialist's computer in the Resource Management Office at Point Reyes. A duplicate set of data is located at the Fire Management Office at Golden Gate NRA and with Paul Reeberg at WRO.

2.The original data sheets for each plot are located in the grey filing cabinet in Bldg. 1069, Fire Management Office, GGNRA. Plots are grouped by burn unit.

MONITORING TYPE INFORMATION

1.All future visits to the plots should follow the protocols as listed on the Monitoring type description sheets. These sheets are located in the top file drawer of the grey filing cabinet in Bldg. 1069.

2.The declination used in all mapping and compass work was 16° East. Although most of the problems with earlier compass directions, and plot azimuths, have been fixed there still might be some unforeseen problems. For this reason it should be noted that a declination of 23° East was used in the 1990 monitoring season.

3.The FMH species code list has been updated to correspond with the name changes found in The Jepson Manual. A list of all name changes has been made and can be found in the SPECIES CODE LIST file in the top drawer of the grey filing cabinet where the blank data forms are stored.

4.All BRDI1 plots have been changed to LOPE1 plots in Point Reyes. This is due to the greater frequency of *Lolium perenne* in the areas sampled. All of the index plot location data sheets and the computer files have been changed. No plot tags have been changed to date, however, all plots will be retagged by the summer of 1996.

New tags were attached to the stakes in 1996. The old tags have been left on for reference.

5.*Pinus remorata* has been changed back to *Pinus muricata* following the names changes in The Jepson Manual.

6.The brush belt width has been reduced from 3 meters to 2 meters in the LOPE monitoring type. In 1995, five-year postburn monitoring was completed on LOPE plots 1, 2 and 3. Since these plots had only 3 meter belt data, brush density was collected for both 2 and 3 meter.

7.Herbaceous data on PIMU1 plots should be collected on only the Q4-Q1 side of the transect. Belt density should be read 1 meter wide on the Q4-Q1 side of the plot. These changes were made due to the dense nature of the understory.

8.When measuring height on resprouting vegetation postburn, height should be measured on the new growth and not the old growth.

9.Those plots which have burned twice are distinguished by the number 2 after the species code. They are BAPI2 (9, 10), LOPE2 (4, 5, 6), CYSC2 (2, 4, 5, 6, 8). Those plots which have burned three times are distinguished by the number 3 in the species code. They are CYSC3 (2, 4, 5, 6).

10. Plots BBAPI3D05 55, 56 and BCYSC*4*D05 53 (in 1995, CYSC3) found in the PORE subdirectory of the FMH program are not FMH plots but range plots on which brush density data was collected following FMH protocols.

11. In the FMH program Point Reyes data is in the PORE subdirectory. Make sure you are in the correct directory when entering new data. It is hard to move data from one directory to another

12. Four french broom plots (GEMO2 1-4) were previously listed as part of the Golden Gate plot totals. Since these plots are on Golden Gate lands managed by Point Reyes and the burn units have been proposed by the resource management division at Point Reyes, they have been moved to the Point Reyes plot totals. All data entered into the FMH program is still located in the GOGA subdirectory and must be moved to the PORE subdirectory.

One of the GEMO2 plots has burned twice and is indicated by the Index code BGEMO3D05 in the FMH program.

STATUS OF FIVE-YEAR BURN PLAN

Point Reyes does not currently have a five-year burn plan. The Point Reyes Fire Management plan is currently in the process of being rewritten wherein a new five-year burn plan will be developed. Several new burn units have been proposed for 1998 and 1999 and are listed in Table 6. Prescribed burns completed since 1990 are listed in Table 7.

TABLE 6. PROPOSED BURNS 1998 - 1999

BURN NAME	ACRES	FMU	FIRE EFFECTS MONITORING TYPE	BURN OBJECTIVES
Limantour	60	II	none - monterey pine removal	Hazard fuel/Monterey pine reduction
Vision	20	II	Bishop Pine forest/ northern coastal scrub	Hazard fuel reduction along road switchbacks
MacDonald-Heims	450	II	non-native perennial grassland/ scotch broom scrub	Scotch broom reduction
HWY I Omnibus	355	III	grassland/french broom scrub	Hazard fuel reduction/ french broom reduction
Wittenburg	25	III	Doug Fir forest	Hazard fuel reduction
Firtop	55	III	Doug Fir forest	Hazard fuel reduction
Bird Observatory	35	II-B	northern coastal scrub w/ encroaching Doug Fir	Doug fir reduction
Grossi Ranch	390	II	Bishop Pine forest/ northern coastal scrub/ non-native grassland	Hazard fuel reduction/range improvement
Grossi West (Formerly Grossi A, B, C)	35	II	northern coastal scrub	Range improvement
BB Ranch	150	III	non-native grassland	Hazard fuel reduction/exotic species reduction
Bolinas Ridge	110	*	maritime chaparral	Hazard fuel reduction
K Ranch	50	II	non-native grassland	Range improvement
E Ranch	2	II	exotic species removal	Exotic species reduction

* On Golden Gate lands administered by Point Reyes.

TABLE 7. PRESCRIBED BURNS COMPLETED, 1990 - 1998

BURN DATE	BURN NAME	ACRES	FMU	FIRE EFFECTS MONITORING TYPE	BURN OBJECTIVES
11/07/90	RX9001	25	II	Non-native grassland/northern coastal scrub	Native grassland improvement/exotic grass reduction
11/08/90	RX9002 (Overlook burn)	26	II	Non-native grassland	Native grassland improvement/exotic grass reduction
10/25/93	RX9302 Elk Range 3	100	II	Non-native annual grassland/northern coastal scrub	Native grassland improvement/exotic grass reduction
09/14/93	RX-9303 MacDonald Ranch	100	II	Non-native perennial grassland/ northern coastal scrub/ scotch broom scrub	Scotch broom reduction
11/02/94	RX-9401 Heims Ranch, Phase II	100	II	Non-native perennial grassland northern coastal scrub/ scotch broom scrub	Scotch broom reduction
11/03/94	RX-9402 Heims Ranch	100	II	Non-native perennial grassland/ northern coastal scrub/ scotch broom scrub	Scotch broom reduction
11/03/94	RX-9403 Divide Meadow	0.5	III	Non-native annual grassland/ scotch broom scrub	Scotch broom reduction
08/22/95	RX-9501 Grossi 95C	3	II	Northern coastal scrub	Range improvement
06/21/96	RX-9601 Lime Kiln	1	III	Non-native annual grassland/ french broom scrub	French broom reduction
09/20/96	RX-9602 McCurdy	35	*	Non-native annual grassland/ french broom scrub	French broom reduction
10/16/96	RX-9603 Heims Ranch II	100	II	Non-native perennial grassland/ northern coastal scrub scotch broom scrub	Scotch broom reduction
10/22/96	RX-9604 McIssac	10	*	Northern coastal scrub (crushed)	Range improvement
07/07/97	RX-9701 Lime Kiln	2	III	Non-native annual grassland/ french broom scrub	French broom reduction
07/07/97	RX-9702 Divide Meadow	1	III	Non-native annual grassland/ scotch broom scrub	Scotch broom reduction
Sept/Oct '97	RX-9703 McCurdy	157.5	*	Non-native annual grassland/ french broom scrub	French broom reduction
10/24, 28, 29/97	RX-9704 Strain Hill	108	*	Non-native annual grassland/ french broom scrub	French broom reduction

BURN DATE	BURN NAME	ACRES	FMU	FIRE EFFECTS MONITORING TYPE	BURN OBJECTIVES
09/23/98	Limantour	60	II	None	Hazard fuel; Monterey Pine reduction
10/9 - 10/30/98	Hagmaier	186	III	Non-native grassland/french broom scrub	French broom/hazard fuel reduction
10/29/98	Comacho	20	III	Non-native grassland/french broom scrub	French broom/hazard fuel reduction
10/28/98	Dogtown	34	*	Non-native grassland/french broom scrub	French broom/hazard fuel reduction
	Hemlock	30	III	Hemlock	Hemlock/hazard fuel reduction
10/22 & 11/2/98	MacDonald	192	III	Non-native perennial grassland/scotch broom scrub	Scotch broom reduction

APPENDIX A. MINIMUM PLOT CALCULATIONS

BURN PLOTS

Monitoring Type	*Dominant Species*	# of plots	Minimum Plots	
			% confidence = 0.95	
			R= 20	R= 25
BAPI	*Baccharis pilularis*	10	17	11
CYSC	*Cytisus scoparius*	6	16	10
GEMO2	*Genista monspessulana*	4	52	33
LOPE	*Lolium perenne*	17	60	39
PIMU	*Pinus muricata*	2	43	28

For brush plots, the number of minimum plots is calculated on the % relative cover of the dominant species. For forest plots, overstory tree density is the variable used to calculate minimum plots. Minimum plot calculations have been made using preburn data from all plots installed per monitoring type except in the CYSC monitoring type. Two plots installed in 1994 (CYSC 07, 08) have been placed in this monitoring type because Scotch broom was the target species in the burn unit in which they were installed. However, the species composition on the two plots is not similar enough to the original six plots to be included when calculating minimum number of plots.

APPENDIX B. PLOTS CLASSIFIED BY BURN UNIT AND MONITORING TYPE

Monitoring Type	Vegetation Type	*Dominant Species*	PlotType	Current Plots
BAPI1	northern coastal scrub	*Baccharis pilularis*	B	8*
BAPI2	northern coastal scrub (burned twice)	*Baccharis pilularis*	B	2
CYSC1	scotch broom/northern coastal scrub/non-native grassland	*Cytisus scoparius/ Baccharis pilularis/ Holcus lanatus*	B	3
CYSC2	scotch broom/northern coastal scrub/non-native grassland (burned twice)	*Cytisus scoparius/ Baccharis pilularis/ Agrostis alba*	B	1
CYSC3	scotch broom/northern coastal scrub/non-native grassland (burned three times)	*Cytisus scoparius/ Baccharis pilularis/ Agrostis alba*	B	4
GEMO2	french broom/non-native grassland/native grassland	*Genista monspessulana/ Avena barbata/ Nassella pulchra*	B	3
GEMO3	french broom/non-native grassland/native grassland (burned twice)	*Genista monspessulana/ Avena barbata/ Nassella pulchra*	B	1
LOPE1	non-native grassland	*Lolium perenne*	B	14**
LOPE2	non-native grassland (twice burned)	*Lolium perenne*	B	3
PIMU1	bishop pine forest	*Pinus muricata*	F	2
TOTAL				**41**

*Four of the eight plots are serving as control plots
**Seven of the fourteen plots are serving as control plots

Of the two species, french broom is the more fire resistant plant and thus more difficult to treat. During the first series of burns in french broom it was found that standing french broom did not burn. Because of the density of the broom canopy within a stand, there is often little fine fuel to carry the fire. Even with a significant fine fuel understory the french broom plants are not particularly flammable. This fact has necessitated first mowing the broom and allowing it to cure prior to burning. Though these combined treatments kill adult plants they do not prevent seedling establishment the following year. Data collected from the fire effects transects established within the burn units have shown very high seedling counts postburn. Treating the mature broom does prevent the yearly addition of new seed to the seed bank and the continued spread of current stands.

Of the two broom species, scotch broom appears to be more sensitive to fire. From observations made postburn on the MacDonald Ranch it appears the mature Scotch broom plants can be killed by scorching without completely consuming the canopy.

Though the focus is on the increase or decrease of broom, it must be considered what is happening overall to plant community. All of the stands be treated so far are found in grassland. In some areas there is a considerable native grass

As always the is the secondary interest of enhancing the native grass and forb composition. The monitorig transects will monitoring whether this is the case and also detect the shift to non-natives.