JDSF Newsletter
Jackson Demonstration State Forest
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STUDY OF SMALL MAMMAL POPULATIONS USING LIVE TRAPPING TECHNIQUE IN SIX AGE CLASSES OF CLEARCUT UNITS

By Norm Henry 1/

Acquiring site specific resource information resulting from management activity is important for evaluating current best management practices (BMP's). One current application in the timber harvest plan development process is addressing wildlife resources as one important component of the cumulative effects analysis. Specifically, how harvesting activities and post harvest conditions affect small mammal populations and vegetative conditions. The results of such activities may have significant effects as related to the prey base and foraging ability for listed endangered species such as the Northern Spotted Owl.

To further our understanding regarding effects of currently applied even-aged silvicultural techniques on small mammal populations, a study was implemented through the California Department of Fish and Game. Sonoma State Professor of Biology Dr. Philip Northen and Master's Candidate Kim Fitts contracted to do a study with the objective of learning how relative abundances of the small mammal species change as clearcut sites evolve through various vegetation successional stages. Small mammals were defined in this study as those mammals which could be captured with seed and fruit-based live traps of rat size or smaller. Rodents and insectivores are included under this definition.

Using various aged clearcuts, the researchers were able to simulate a time trend of approximately 80 years. An important consideration in developing the study design was the ability to analyze and evaluate the longer term effects of harvesting activities on this resource base. An ongoing study conducted by another researcher, also from Sonoma State assisted in providing the necessary vegetative information for the study sites.

STUDY SITE SELECTION

Five clearcut sites, aged 2, 4, 7, 11, 27 plus a site clearcut 80 years ago representing an unlogged control, were selected using time-since-cutting as the primary site variable. A site-age of about ten years following harvest was judged important for showing trends in this study so all the selected sites had north-west aspects and medium slopes, similar to the eleven year old site (Hare Creek 80). Two other criteria used in selecting the sites were: 1) sufficient acreage to obtain an accurate measure of plant and animal species and 2) natural ecological succession except for tree seedling planting immediately following the harvest.

The clearcut harvest units were all unburned, ranging from 9 to 50 acres with slopes ranging from 25 to 40 percent. All the units were inter-planted between existing redwood sprout clumps, primarily with redwood seedlings.

TRAPPING METHODS

Fifteen locator points spaced 20 meters apart along a transect were installed on each site. A fire crew from the Parlin Fork Conservation Camp assisted by brushing a narrow pathway through the vegetated cut units along the transect location. This was instrumental in getting timely access to the trapping sta-

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tions with the boxes of traps that had to be hand carried. From each locator point two permanent trapping station sites were selected on either side of the transect at random distances between 5 and 15 meters. Each site was trapped six times at approximately monthly intervals during the study; three during the winter period and the balance during the summer. Trapping was limited to the new moon period since small mammals are less active during periods of high moonlight.

The trap used in this study was designed by Dr. Donald E. Isaac of Sonoma State University and named the Sonoma Live Trap. It is designed to minimize mortality of the captured animals during their occupancy in the trap. Two sizes were used on this study, the larger made to accommodate the rat sized mammals. Both size traps were installed at all stations with each containing toilet tissue for use as bedding material. Seed and slices of apple with rolled oats serving as the bait were put in the trap. The traps were set in the early evening and serviced at dawn. Because of time constraints and the number of available traps, only one site was trapped each night.

Weather conditions were recorded during each trapping session and four categories were defined for the study. All except six of the nights were dry. Snow fell on two nights and rain on the remaining four nights.

ANIMAL DATA OBSERVATIONS

Kim did the trapping work using one assistant on each trapping session. Determined to minimize any fatalities during the trapping process, she left plenty of food in the trap and removed, measured and released the animal quickly as possible early the next morning. These small mammals, besides having an extremely high metabolic rate and needing a constant food supply, are extremely intolerant of the heat conditions which can be generated in the trap enclosure during daylight hours.

The procedure used in measuring the animal involved putting a sack over the trap and gently shaking the trap to get the animal into the sack. Once the animal was in the bag, Kim would hold the animal by the nape of the neck through the bag revealing enough to measure it but keeping the bag over the eyes to minimize it's agitation. Measurements of the animal's ear length, hind foot length, tail length and body length were taken using standardized methodology and it's weight was determined with a Pescola scale. The sex and reproductive status of the animal were also determined. Other observable conditions were recorded and the animal was marked on the underside of the tail with a permanent marker for tallying recapture and then released.

Figure 1. Kim measuring length of small mammal that was trapped in the 1989 unit.

VEGETATION DATA

Kim combined these into seven plant classes, three of which were then subdivided into height classes.

RESULTS

Ten small mammal species were captured over the life of the study. Nine of the ten species showed some trend in site age preference. The jumping mouse was the exception to this. Chi-square statistical testing was done on the four species with the most capture data (Sonoma Chipmunk, White-footed Deer Mouse, Dusky- footed Woodrat, California Red-backed Vole). Results indicated that each species was found significantly more often in some sites than in others. Capture data showed that the first two species listed were significantly more prevalent on the youngest clearcuts while the woodrat was predominant on the 1984 and 1980 (relatively mid-aged sites)and the red-backed vole increasingly dominated the three oldest sites. The remaining five species had too little capture data to permit statistical analysis but observable trends indicated that the Oregon vole were most prevalent in the youngest sites followed by the California Meadow Vole in the early to mid- aged units. The remaining three species, Trowbridge Shrew, Pacific Shrew and the Shrew Mole were most abundant in the intermediate aged units.

Biomass data presents some different perspectives on individual species dominance. Due to the varying sizes of the species, a smaller capture rate of a generally larger species may correspond to as much or more biomass as a capture total of a smaller sized species. For example, a comparison of Woodrats versus Red-backed Voles on average body weight shows that Woodrats are on the average, over 10 times heavier than the vole (290 grams vs. 27 grams). According to this index of abundance, the Chipmunk's percent of the total biomass increased across all the sites and the Woodrat dramatically increased in the 1980-87 sites. The

total capture value and biomass value for the four youngest sites, however, were both about twice the corresponding values for the two oldest sites.

Assessment of small mammal productivity based on these two criteria must take into account that a considerable number of various unidentified species of animals were at the trap as indicated by eaten bait or scat but not captured. Evidence of this ranged from 46 to 87 of the capture value over the six sites. A more important consideration is that the standing crop value in any one period even if accurately estimated does not represent total annual production due to different rates of biomass production and population turnover. Woodrats had a recapture rate over twice that of the Deer Mouse or Red-backed Vole, ranging from 17 to 55 percent. This might be due to less turnover in the Woodrat population and possibly a greater tendency for specific animals to remain in the areas where the traps are set.

Correlation with Vegetative Patterns and Other Site Factors

An important aspect of the study was to examine the major habitat associations of the species encountered. The winter period plant data was used in this analyses. Forty-four plant species were identified that had sufficient abundance to be included individually in the cover estimates. Plant cover increased consistently with age on the four youngest sites as evidenced in table 1. The plant cover evolved from herb cover to larger shrub species and sprouting tanoak clumps. The two oldest sites differ in vegetation occupancy patterns between themselves and the younger sites. The 1964 site has little understory because of dense tree overstory shade and a heavy matted layer of branch debris, accumulated both from the 1964 harvest and subsequent litter drop. The control site which was burned during the historical clearcut harvest, currently has the highest cover value (121.5%), but in contrast, has an open shaded understory dominated by ferns with few shrubs.

One would expect certain variables of those shown in table 1 to peak in different stages as part of the successional process and indeed that is what is seen. At least one tested variable has its mode (highest frequency of occurrence) in each of the six sites. Four of the sites had more than one variable mode. For example, the 1984 site (age 7) had the most variables (eight) peak in frequency of occurrence . In the 1980 site (age 11), only plant characteristic related variables had modal values. The number of plant species was also the highest in this unit and there was a dense ground cover of herbs, grasses and shrubs. Vigorous redwood, Douglas-fir and tanoak were also numerous on this site. The remaining two sites each had only one variable mode. The deer mouse was the only variable which had a modal

Table 1. Summary of site factors and their mean values in each site. All site characteristic and plant units are in percent cover.

SITE CHARACTERISTICS	1989	1987	1984	1980	1964	Control
Site Age years	2	4	7	11	27	80
Slope percent	33.1	40.0	16.7	38.8	24.6	46.9
Bare Ground	8.8	2.6	10.0	4.3	2.2	0.9
Stump	7.2	5.1	3.5	4.2	4.0	0.5
Small Slash	40.9	32.0	11.7	8.4	22.0	7.2
Small Slash Depth	23.7	22.6	9.5	9.1	34.1	6.2
Medium Slash	31.5	30.1	18.3	7.4	7.7	3.5
Medium Slash Depth	35.2	28.5	21.9	12.7	12.0	7.8
Large Slash	10.5	11.6	3.4	2.1	5.7	5.9
Large Slash Depth	19.7	19.2	12.3	13.8	14.4	19.6
Total Slash	81.0	75.0	33.4	17.9	35.3	16.5
PLANT DATA						
No. Species/Station	4.1	5.6	8.4	9.8	3.4	3.4
Ferns	3.4	6.4	2.5	3.8	4.9	17.6
Herbs	3.5	5.1	29.1	34.6	0.3	4.9
Grasses	0.1	2.4	2.2	4.2	0.7	0.4
Wetland Species	0.3	0.0	9.2	0.0	0.0	0.0
Shrubs 0 to 1 m	2.0	5.5	3.9	6.1	1.3	1.2
Shrubs 1 to 5 m	0.0	0.0	13.1	11.6	0.0	0.0
Broadlv. Trees 0 to 1 m	0.0	0.7	5.5	18.3	0.0	0.6
Broadlv. Trees 1 to 5 m	0.3	1.8	0.3	0.9	2.7	0.6
Broadlv. Trees >5 m	0.0	0.0	0.0	0.7	0.0	0.0
Conifers 0 to 1 m	4.1	8.0	21.4	25.4	0.3	1.7
Conifers 1 to 5 m	0.6	1.0	2.7	1.8	0.3	1.1
Conifers >5 m	0.0	0.0	0.3	4.9	89.3	93.5
Total Cover	17.2	31.0	88.9	112.6	99.8	121.5

WINTER TRAPPING DATA	1989	1987	1984	1980	1964	Control
Evidence	37	34	55	44	15	29
Total Species	7	4	7	5	3	3
Red-backed Vole	6	0	2	18	29	34
Deer Mouse	21	44	17	32	4	3
Woodrat	2	8	16	11	0	0
Pacific Shrew	1	0	4	2	0	1
Trowbridge Shrew	0	0	4	2	0	0
Shrew Mole	0	0	0	0	0	0
Oregon Vole	4	1	0	0	0	0
Jumping Mouse	0	0	0	0	0	0
Chipmunk	2	0	0	0	2	0
Meadow Vole	3	2	3	0	0	0
SUMMER TRAPPING DATA						
Evidence	28	25	25	35	30	25
Total Species	7	6	7	8	4	4
Red-backed Vole	4	0	0	18	15	20
Deer Mouse	41	44	18	30	0	2
Woodrat	3	8	29	11	0	0
Pacific Shrew	2	1	2	1	0	1
Trowbridge Shrew	2	3	3	1	6	0
Shrew Mole	0	0	2	1	0	0
Oregon Vole	1	2	0	1	0	0
Jumping Mouse	0	0	0	0	1	0
Chipmunk	17	13	4	6	6	1
Meadow Vole	0	0	2	0	0	0

value in the 1987 site (age class 4) and the broadleaf trees 0-1 meter category, peaked in frequency in the 1964 site. These were tanoak seedlings growing slowly under dense conifer cover. The control site had five modal values from variables which characterize a community with large conifers dominating and forming a nearly closed canopy with a scattered ground cover of Sword Fern. The one small mammal having a mode in this site age was the Red-Backed Vole.

Most of the variables measured in the study (table 1) were used in the statistical analysis. Some, like the slash component were modified to better represent the site. Most of the variables tested did not meet normality criteria and transformation techniques did not work on the key variables so a non-parametric, distribution independent statistical method (Spearman's Coefficient of Rank Correlation) was used to identify and test the significance of correlations between pairs of factors.

The four species positively correlated with early age sites (Chipmunk, Oregon vole, Deer Mouse, and Meadow Vole) were also positively correlated with medium slash volume and negatively correlated with the several of the late age site factors. The Deer Mouse was the most abundant species trapped in the study and also had a good correlation with some medium age variables indicating its occupancy of a broader range of conditions than the Chipmunk or Oregon Vole.

The woodrat had a significant correlation with most of the mid- aged site characteristics (ages 7-11). These abiotic or non- species factors were those that represent development of increasingly dense vegetative cover. The two shrew species showed a similar trend but with fewer significant correlations.

The Red-backed Vole significantly correlated with the factors characterizing older stands, specifically the total cover variable and conifers greater than 5 meters tall, both of which had their mode occur in the control site. It was the only species having a negative correlation with the early and middle age site factors.

Small Mammal Diversity Among Sites

Two indices of species diversity were used to compare the small mammal species diversity between the sites. The Simpson and Shannon Indices which combine the "richness and "evenness" of a site both indicated that the 1984 site was three times as diverse as the Control site with 1980 and 1989 sites similar to the 84 site. In species richness alone, these three sites had twice the number of species trapped as the control site.

Discussion of Trends

A number of other studies have examined site conditions in relationship to populations of those trapped here or at least similar species of small mammals. Generally, the findings presented in this report are consistent with these prior studies. The Deer Mouse quickly builds to high population levels in clearcuts as it is adaptable to many types of cover and can eat a variety of both plants and animals. The Chipmunk likes more xeric sites with downed wood which it may use for a runway system. The Oregon Vole also invades early once herbaceous plants reoccupy the site, providing it with a food base. The Woodrat, in contrast, needs young woody plants for food, thus remaining at lower populations until these species develop. They will peak while these plant species are relatively abundant but when conifers dominate the site with less small woody understory species, the woodrats will again decline in population. The Oregon vole and Deer mouse decline also in the later stages, probably due more to competitive pressure with the Red-Backed vole. This species, which is heavily dependent on ectomycorrhizal fungi of mature conifers, becomes a superior competitor once these fungi are available from the timber stand. The shrews, being insectivores, are not strongly affected by coexistence with the other rodents, responding more to the abundance of insects. The higher populations in the mid-aged stands probably reflect the improved seasonal availability of insects due to increased plant species diversity

MANGEMENT IMPLICATIONS

SPECIES DIVERSITY

The overall trend as indicated by both analyses of plant and animal species diversity showed the relatively younger sites having the most diversity of both plants and animals. The animal species diversity is probably dependent on the diverse plant communities that were established by natural invasion and successional patterns after harvesting had taken place.

The intensity of management with regard to suppression of certain plant species might reduce small mammal diversity. Management actions such as herbicide treatment to suppress hardwoods or other plant species might have an adverse affect on some species of small mammals such as woodrats. Additional data in timber stands treated in this manner is needed to verify this possibility. Since the oldest stand in the data set is 80-90 years old, one cannot generalize that clearcutting is the only way to enhance diversity. Old-growth stands may have higher diversity than the Control stand used in this study. Another study (Raphael 1988) shows both Woodrat and Deer Mouse populations rising to higher levels in the old-growth than in than in the mid-age stands (equivalent to the Control site) although the Deer Mouse still has higher populations in young clearcut sites.

Predator Prey Base

The study showed that the young and open stands created by the clearcutting provided the habitat for a notably higher biomass of small mammals, indicating also that such cuts can provide a much greater potential food source for predators. Specifically, it is known, Thomas et al.(1990) that Woodrats generally comprise 30-45 percent of the Northern Spotted Owl diet in Northern Califor-

nia. The abundance of the Woodrat occurred on the four youngest sites which makes a good case for the usefulness of creating this habitat type through clearcutting if the prey base is a limiting factor for Spotted Owl populations in the area.

An important aspect of prey populations and availability concerns the size of the opening created by the clearcutting. Certain size openings may be required before some species will invade the area. If the prey species do occupy an area too small, it is possible their population will be too small to provide an reliable food source and therefore not utilized well by a predator such as the Spotted Owl. Study data showed that the two smallest clearcuts (9 and 11 acres), included in the group of the four youngest cuts, had the two highest populations of Woodrats. There is consensus that Spotted Owls require some amount of canopy cover (30-40 % +)in their foraging area. Oversized openings could reduce the important edge area where rodents would venture and be available prey.

Determining the avenues of small mammal movement to these openings was not an objective of this study, although this and other studies seem to indicate it is not a significant problem for the rodents. More focused work on this aspect of small mammal occupancy of various sites would provide valuable information as future harvesting operations will change the spatial distribution of habitat types and movement corridors on the state forest.

The study data has a age gap of 11 to 27 years which prevents knowing more precisely when a crossover occurs from a habitat capable of sustaining a diverse and abundant prey population to a single species dominated habitat type at a lower population level. However, 15-20 years seems a reasonable estimate of the point where the shift in habitat characteristics occur.

The dominant theme of the data showed a relatively short interval -20 years- of small mammal diversity and abundance, followed by a relatively long period in which diversity and abundance are low. The endpoint of this phase was not determined in this study as an old-growth stand was not included as a study site for comparison. A prudent recommendation would be to enhance diversity of small mammal populations in various areas designated for wood production by the inclusion of occasional 5-15 acre clearcuts.

JDSF's Contrary Owls

by Forest Tilley 1/

Within the last five years a small unobtrusive owl has gained national prominence. It is cursed by some and loved by others. It's a friendly little bird and usually answers when called. This bird is *Strix occidentalis cauresea*, the Northern Spotted Owl. The reason for this notoriety is the owls reported preference for valuable old growth forest habitat and large range size requirement. Initial research in the Pacific Northwest indicated that the Northern Spotted Owl's prime habitat was in the old growth type having multi-layered canopies, multiple tree species, snags to nest in and of course a prey base upon which to feed. Due to listing of this species as endangered, logging has been significantly reduced or stopped on many commercial timberland areas. Much controversy has been generated over timber supply, jobs and owl habitat.

As one element of the forest management program on Jackson Demonstration State Forest (JDSF), operating under regulations of the California Forest Practice Act, the staff is required to analyze the effect of the timber sale harvests on the Spotted Owl populations. Over the last three years much effort has been expended in surveying for Spotted Owls on the Forest and adjacent industry lands. These surveys have had a dual purpose. First; all timber harvest sites must be surveyed for the presence of Spotted Owl due to it's protected status as a listed endangered species and second; forest managers want to know more about the species for management purposes.

JDSF and the surrounding area has been harvested continuously since the mid 1800's hence most timber stands are 100 years or less in age. There are a few small pockets of old growth and occasional large residual trees scattered across the ownership but most of the forest stands are dense young 60 to 90 year old timber, many with a understory of tanoak. Managed stands have a somewhat more open character resulting from the selection cuts of the 1960's, 70's and 80's. There are also some young "plantation" areas resulting from clearcuts of the mid to late 1980's.

SURVEY PROCEDURES

Owl surveys began in March 1991 and continued through the first half of September (Wooster et al. 1991). The owl nest tree sites were located by May, using various calling techniques and "mousing". During mid June, adults and juveniles were temporarily captured using a noosepole, banded for identification and measured for various physical attributes. Nest sites were revisited in August to tally characteristics such as elevation, slope, aspect, nest height, species and size of nest tree and surrounding trees and type of nest structure.

CONTACTS

In total, ten sites were monitored. Contact with owls was made on nine of

1/ Forest Manager, Jackson Demonstration State Forest

these sites during the 1991 season. Four of the sites were home for successful nesting pairs. Three sites appeared to be home territory for paired owls but no nesting activity was observed. In two locations a second female was observed roosting or in close proximity to a non- nesting pair. A single female seemed to utilize portions of two adjacent watersheds as home range and a aggressive male was located once early in the season in an area along the southern boundary of the forest but could not be recontacted in subsequent visits.

RESULTS

Using the early research as a habitat guideline, one would think the areas in the middle of the Forest would be good owl habitat having been relatively undisturbed since the original harvest in the 1900 - 1920 period. The characteristics of territories inhabited by the northern spotted owl on JDSF and adjacent lands however, do not correspond with the classic habitat type listed for this species. Large areas of what would seem to have all or most of the reported necessary components for Spotted Owl occupancy appear to be void of owls. The preferred areas seem to be the more fragmented areas where management activities have occurred on a relatively frequent basis over the last 30 years. The occurrence of a third owl in occupied territory would seem to indicate there are sufficient numbers to move into available territory if desired.

Predominately activity centers are characterized by an understory of small redwood and tan oak with an over story composed of large fir and redwood of varying density. Foresters and biologists believe one of the main factors in owl distribution on JDSF is the prev base.

The dusky footed wood rat has been shown to be the primary food source for spotted owls in northern California. Research has also shown that wood rat populations seem to be positively correlated with the amount of forest management activity. This is especially true in Douglas fir stands with a hardwood component. Wood rats are also abundant in intermediate age redwood forests.

Wood rat densities related to management activities appear to be a major factor in location of owl populations on JDSF. Rapid regeneration of redwood and a resilient tan oak component, scattered overstory, sheltered riparian zones, and woody debris (slash) left from harvest activities on JDSF seem in combination to provide both good wood rat habitat and owl habitat. Foraging success may be dependent on a structure that provides both food and shelter for the wood rat such as acorns and wood debris but at the same time provides hunting perches, low branches and open ground for the owl to spot and capture its prey.

These surveys on JDSF and its neighbors have certainly raised some interesting hypothesis that warrant continued study and that point to the possibility that spotted owls and forest land managers may be able to occupy and utilize the same territory for differing purposes.

Survey reports were prepared for the California Department of Fish and Game, Georgia-Pacific Corporation, Louisiana-Pacific Corporation, and U.S. Fish and Wildlife Service. Further information on these surveys can be obtained from CDF&G from two recent reports. They are entitled "Diet Composition of Spotted Owls in Managed Redwood/Douglas-fir Forests, California" authored by Malcom Pious, and J.M. Ambrose in March 1992 and "Status of Spotted Owls in Managed Redwood/Douglas-fir Forests, California " authored by Malcom Pious in March 1992.

Literature Cited

Wooster, T., S. Bunnell and K. Roberts. 1991. Summary on the Activities and Distribution of the Northern Spotted Owl (*Strix occidentalis caurina*) in Jackson Demonstration State Forest, Mendocino County, California, February-August 1991. Unpublished Report.

TIMBER SALES UPDATE

In the works for 1992

23 - Gulch Timber Sale

Approx. 8,000 Mbf of shelterwood-seed step, clearcut, & commercial thinning on 300 acres. Bid opening expected in mid-summer.

Hare Creek '92 Timber Sale

Approx. 8,000 to 10,000 Mbf of single tree & group selection on 700 acres. Bid opening expected in mid-summer.

Berry Gulch '92 Timber Sale

This sale is under evaluation while spotted owl habitat considerations are addressed.

JDSF STAFF ATTENDS RECREATION SYMPOSIUM

by Tess Albin-Smith 1/

The Jackson Demonstration State Forest (JDSF) is delving into a new research area called the "social aspects of recreation".

As some of you may already know, JDSF is actively involved in implementing the second year of a five year recreation enhancement plan. Last February JDSF hired two Forestry Technicians, Pam Linstedt and Robert Byers, who have taken on the JDSF recreation plan in earnest. In one year, with the help of Parlin Fork Conservation Camp fire crews, Pam and Robert have constructed 13 new campsites, a new trail, helped develop new brochures and signs, and repaired countless outhouses.

For a change of pace, the recreation program took an exciting venture into social science. On the first anniversary of the recreation program start, JDSF Recreation program director Tess Albin-Smith signed Pam and herself up to participate in a symposium on the "Social Aspects of Recreation Research", held in Ontario, Calif. on February 19-22. The USFS Pacific Southwest Forest and Range Experiment Station from Riverside hosted about 200 participants from all over the United States.

WHO GOES TO A RECREATION SYMPOSIUM?

Symposium participants included university and government socio-economists, recreation special interest groups, recreation and land use managers like us (private, local, state, and federal government), and a wide variety of researchers who are interested in recreation. This symposium sparked our interest because JDSF has been keeping statistics on forest visitors for a few years now. JDSF's first attempt at social aspects research actually began in 1987 with a survey of campers conducted by Marcia McNally of Community Development by Design (authors of the Recreation Master Plan for JDSF).

Figure 1. Pam (left) and Tess pose in front of their poster display. Tess holds a bullet-ridden research area sign, one of the many "targets" which forest abusers enjoy.

The findings of the survey had a major impact on the formation of the 1990 recreation plan. For example, the JDSF camper survey showed that local inhabitants comprise only one-half of the 15-17,000 annual visitors to the State Forest. Many locals have roots in the timber industry and enjoy camping in the old logging camps they lived in as children. Rules and government intervention are not appreciated by many of the old timers. Compared to locals, the fifty percent "out-of-towners" have completely different expectations. According to the surveys, most tourist campers expect JDSF to be managed as a State Park having strict use regulations. Many do not understand why the forest allows logging, or the mission of JDSF as a "working forest". The opposing viewpoints made the recreation plan a challenging document to prepare and implement.

The above visitor/local conflict was part of the subject theme presented in a poster session at the symposium by Pam and Tess. The poster was entitled "Recreation and Land Use Conflicts on the Jackson Demonstration State Forest", and it pictorially presented the conflict issues addressed above: "ideal" recreation versus how it really is; and our efforts to improve the situation.

JDSF's close proximity to urban development is another problem area. Pam and Tess attended the symposium to learn how to better deal with recreation use conflicts. Problems common to the State Forest include conflicts between equestrians and hunters, off-road vehicle abuses, dumping, target shooting, and homeless families. Our staff heard many case histories of forests with similar problems, they attended a field trip to the San Gabriel Canyon recreation area (50,000 visitors/weekend!), and they studied the extensive research presented by socio-economists.

1/ Assistant Forest Manager, Jackson Demonstration State Forest

THINGS TO CONSIDER

The symposium generated many ideas to use on the State Forest. For example, a consideration to remember in forming recreation plans is that different socio-economic groups have different expectations. It was shown that some view camping as something poor people do, instead of the healthy back-to-nature experience you might look forward to in your camping experience. Some never recreate because they don't know what to do or where to go. We should not assume that one concept of "ideal recreation" is the same for all people.

Some ideas were interesting if not completely relevant: we're not quite ready for a K-9 unit in patrol, although dogs were shown to be very useful in breaking up unlawful gatherings. The Forest Service demonstrated their "sand washing" unit, which can remove graffiti on rocks and structures. Fortunately JDSF does not usually have this kind of problem.

The most relevant message came on the last day of the Symposium during a round-table discussion on recreation attitudes. During this discussion, the park and outdoor recreation managers emphasized how clean trails and camps lead to better attitudes about keeping them clean. Our Recreation staff was already following this philosophy in hopes that as soon as the visually unattractive areas are beautified, the dumping and destruction would ease off. This symposium validated the staff's direction and gave us new energy in our quest for providing quality recreation.

Staff Notes

A number of staff changes are anticipated in the coming months. Sales officer **Mike Risso** will be transferring to the Humboldt-Del Norte Forest Practices staff. The sales officer vacancy created by this transfer will be filled by **Brian Barrette.** The State Forest is pleased to add **Bill Baxter** as our much needed Silviculturalist. **Hugh Scanlon** will be leaving his position on the Demonstrations and Experiments staff in a promotion to Forest Asst. II in timber sales preparation on JDSF. And finally, congratulations to **Tom Larsen** and **Robert Byers** on their successful completion of training at the Academy. Tom finished first in the Basic Firefighter phase of the Basic Fire Control training and Robert finished third in CDF's peace officer training course. Welcome back!

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