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STATUS OF THE MARTEN IN CALIFORNIA

by

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INTRODUCTION

Taxonomy and Distribution. Grinnell, et al. (1937) described two subspecies of martens occurring in California. These are the Sierra pine marten (Martes americana sierrae), which occurs in the Sierra Nevada and Cascade mountains, and the Humboldt pine marten (M. a. humboltensis), a slightly smaller and darker subspecies occurring in the coastal ranges of northern California (Figure 1).

Legal Status. Concern over the decline of martens in California began during the 1920's. Dixon (1925) proposed a closed season for fisher, marten and wolverine in California when figures from trapping reports showed a drastic decline in numbers. However, the closures were not approved.

Grinnell, et al. (1937) supported a closed season for the Marten, and stated:

Reports of the trappers of California show a marked decline, amounting to fully 75 percent, the number of Martens trapped in a four year period. The reported catch for each of these years is as follows: 1920, 452; 1921, 227; 1923, 137; 1924, 121.

In 1947, Twining and Hensley (California Department of Fish and Game) reported on the status of pine martens in the state after a two year trapper survey. The result of the survey was a closure of the season in northwestern California where the Humboldt pine marten was scarce; in the Sierra Nevada the season remained open.

It was assumed that martens would not be extirpated because the steep, rugged terrain which marten inhabit provided an effective barrier to trapping pressure. However, subsequent trapping data displayed a further reduction in marten numbers (Table 1), and season closures were recommended in several areas of the State. A program to relocate martens was considered but not implemented.

In 1953, a "no management policy" was adopted by the California Department of Fish and Game which provided total protection of the species and allowed for a natural recovery to former numbers. The take of martens in California has been prohibited since 1953.

## LIFE HISTORY

Habitat. Grinnell, et al. (1937) found the Sierra pine marten occurring between 4,000 feet and 10,600 feet in California, and the Humboldt subspecies occurring at significantly lower elevations. In general, marten inhabit forested areas in this elevation range. The Sierran race also is found during the snow-free part of the year hunting among rockslides and talus slopes.

The Humboldt marten is most commonly found in the Douglas-fir, pine, and hardwood Forests of the north coast. It is seldom reported in redwood forests (Grinnell et al. 1937). The Sierra Nevada marten is closely associated with the red fir forests found in the higher mountains; it also frequents lodgepole pine and other conifer stands which occur at high elevations (Schempf and White 1977).

Recent research on habitat use by martens in California (Simon 1976, Andrews 1979, Zielinski 1981, Hargis 1982) indicate major elements utilized by martens within a forested habitat. Areas of mature forest, particularly riparian zones, are the most heavily travelled, and mixed species associations are selected against when stands of a single species are present. Generally, meadows and open areas are avoided, although the forest-meadow ecotone is often of significant importance for hunting. High densities of logs, stumps, and snags are significant as rest sites.

Koehler, et al. (1975) express the importance of the marten as an indicator species of forest habitat quality, and demonstrate a need for marten population data. Previous concern of marten declines due to overtrapping has shifted to land use practices, particularly clear cut logging. Simon (1976) states:

The areas inhabited by the radio collared martens included both logged and unlogged lands. Areas that had been heavily logged were avoided in winter, probably because of inadequate cover. However, these areas were important foraging sites during the summer months if sufficient slash and canopy cover were available for protection---the edge effect created between logged and unlogged areas was believed to be beneficial to marten populations in increasing the "availability" of prey species. However, edge effect is just that; without the adjacent forest areas with suitable cover it is believed martens would not survive.

Soutiere (1978), completing work on martens in Maine, came to similar conclusions. However, Simon (1976) expresses doubt as to the survival of suitable marten habitat outside of the designated boundaries of national parks, forests and wilderness areas. Most current timber management practices are deleterious to marten populations (Kochler, et al. 1975, Soutiere 1978).

Food Habits. Several detailed studies have been conducted on the food habits of martens in California (Simon 1976, Zielinski 1981, Hargis 1982). Martens eat a great variety of items depending on their availability. The majority of the marten's diet consists of rodents, tree squirrels generally comprising the largest percentage. Rabbits, smaller rodents, and birds are other regular food items. During the spring and summer seasons, martens also will eat insects and vegetative matter, but the importance value of these items to the diet is negligible (Simon, 1976).

Reproduction. Reproductive timing of the marten puzzled early naturalists. Grinnell, et al. (1937) obtained reproductive organs from 38 female martens caught between October and February, none of which contained embryos. The circumstance was not easily explained, as martens were observed to breed in midsummer, which resulted in gestation periods of up to 285 days.

The lengthy gestation period and lack of breeding evidence is attributed to delayed implantation (Marshall 1951). Blastocysts of 300-500 cells remain inactive in the uterine horns from at least October through January. Breeding occurs in July and August, the majority of parturition occurs during April. The average number of young is three; females do not breed until their second summer and bear young during their third year. The combination of small litter size and two year lag before reproduction means that marten populations are slow in building up or recovering from excessive harvest (Marshall 1951).

Movements. Martens are rarely observed in the wild. They are considered both nocturnal and diurnal (Grinnell, et al. 1937). Activity during the snow-free period is strongly diurnal, whereas winter activity is largely nocturnal (Zielenski 1980).

Home range size is variable, depending on the quality of habitat. Simon (1980) found the amount of atypical habitat, i.e., meadows, influenced the home range size of the marten in the Tahoe National Forest, California.

For males the mean home range size was 285 ha (703 acres) including meadows and 267 ha (659 acres) excluding meadows, and for females 308 ha (762 acres) including meadows, and 280 ha (693 acres) excluding meadows.

Marten movements are influenced by cover, topographic features, and other martens. Territorial behavior is exhibited among adults, yet territorial boundaries seem to break down during the late fall, winter and early spring months (Simon 1980).

During the winter months, martens apparently travel alone, but sometimes are found in groups of two to six (Grinnell, et al. 1937, Marshall 1951). Also, they may utilize the same home range, but space themselves temporally (Simon 1980).

Denning activity of martens is variable, depending upon the season of the year. Except for the natal den, they do not use one denning site exclusively. Martens seem to use more individual resting sites, and revisit sites less often in summer than in winter (Spencer 1981).

#### DENSITY AND DISTRIBUTION

Martens now appear to be quite abundant in suitable habitat (Andrews 1979, Hargis 1980), yet current land use practices pose a new threat to marten populations.

Population estimates of martens have not been well documented. Simon (1976) working in the Tahoe National Forest, estimated at least 2.8 adult martens per 1.1 square miles.

The Humboldt marten is found in much of Del Norte, Humboldt, and Mendocino counties, and into the northwest corners of Lake and Sonoma counties. The Sierra Nevada marten occurs in the northern half of Trinity County, and most of Siskiyou and Shasta counties. The distribution then extends southward from this area through the Sierra Nevada to Kern County (Figure 1) (Shempf and White, 1977).

#### HARVEST

Fur Trapping. Marten cannot be hunted or trapped because of their protected status which has been in effect since 1953. Prior to 1953 martens were regularly taken (Table 2). The record of the highest price paid per pelt and the most marten trapped was in the 1945-1946 season in which 338 marten were trapped and the average price per pelt was \$28.48. The reported take of the 1952-1953 season was a low of 38 and the average price paid per pelt dropped to \$8.00 (Table 1).

Animal Control. Martens do not cause depredation problems because their distribution and habits rarely coincide with human activities.

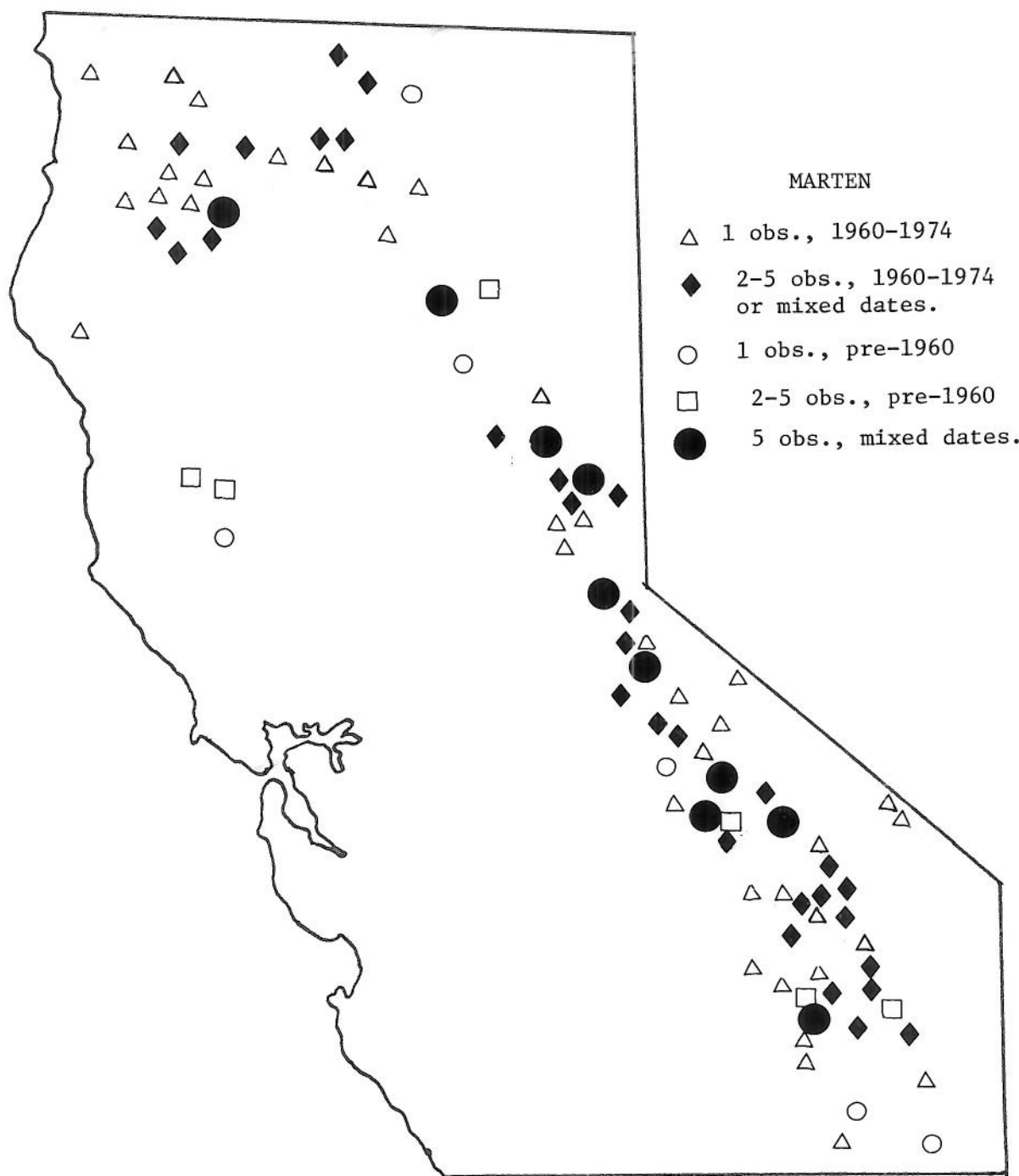


Figure 1. Distribution of marten reports.

From Schempf and White, 1977.

TABLE 1 MARTEN HARVEST, 1930-1952

<u>SEASON</u>	<u>MARTEN HARVEST</u>	<u>AVERAGE PRICE PER PELT</u>
1930-31	267	\$ 8.39
1931-32	94	\$ 5.45
1932-33	147	\$ 6.00
1933-34	98	\$ 6.95
1934-35	140	\$ 6.70
1935-36	141	\$ 9.78
1936-37	129	\$ 10.36
1937-38	200	\$ 8.32
1938-39	295	\$ 10.03
1939-40	510	\$ 12.84
1940-41	402	\$ 15.64
1941-42	543	\$ 14.87
1942-43	136	\$ 14.27
1943-44	165	\$ 21.22
1944-45	198	\$ 22.23
1945-46	338	\$ 28.48
1946-47	395	\$ 14.77
1947-48	213	\$ 16.77
1948-49	138	\$ 18.07
1949-50	95	\$ 10.32
1950-51	204	\$ 17.34
1951-52	104	\$ 18.52
1952-53	38	\$ 8.00

Table 2. Distribution of Marten and Their Take in California

Licensed Trapper Take 1938-1953

<u>County</u>	<u>Average Annual Take Per County</u>	<u>Range of Take</u>	<u>No. Seasons Marten Taken</u>
Alpine	2.8	1-31	4
Amador	4.7	8-31	4
Butte	4.4	1-24	7
Del Norte	5.1	1-19	9
El Dorado	13.6	5-58	14
Fresno	34.2	1-113	14
Humboldt	3.0	1-12	7
Inyo	21.9	6-43	15
Lake <u>2/</u>			
Lassen	16.5	1-119	9
Madera	1.4	21	1
Mariposa	.07	1	1
Mendocino <u>2/</u>			
Mono	35.3	7-89	15
Nevada	10.1	1-59	13
Placer	5.7	1-19	12
Plumas	6.8	1-46	6
Shasta	14.2	1-74	12
Sierra	10.3	1-52	10
Siskiyou	20.1	3-98	9
Tehama	10.7	1-110	7
Trinity	3.0	7-24	3
Tulare	11.4	8-45	6
Tuolumne	15.5	4-68	8

1/ Reported take divided by 15 seasons of trapping records.

2/ Recent sightings, Fish and Game furbearer observation reports.

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