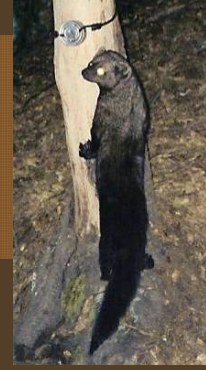
DISTRIBUTION OF AMERICAN MARTEN (*Martes americana*) AND FISHER (*Martes pennanti*) IN SEQUOIA AND KINGS CANYON NATIONAL PARKS



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BACKGROUND

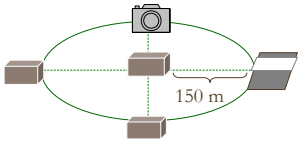
- Overexploitation of American marten and fisher by fur trappers led to population declines in California[1]
- These mature forest specialists were then faced with loss and alteration of habitat from logging and development[2]
- Concern for marten and fisher has prompted efforts to identify their distribution and habitat associations[1,3,4]
- Detections of these species in the relatively undisturbed habitats of reserves offer valuable comparisons to historic records and recent surveys of neighboring lands[1,3,4]

STUDY AREA

- Sequoia-Kings Canyon National Parks are located in the southern Sierra Nevada, CA
- Area: 350,160 ha, 84% of which is designated wilderness
- Elevation range: 500 to 4,400 m
- Habitat types include: chaparral and hardwood forest in the foothills, mixed conifer and red fir forest at mid-elevations, with subalpine forest, alpine lakes and talus slopes at high elevations

METHODS

- 5 km grid used to locate potential sample units (sites)[5]
  - A subset of safely accessible sites were surveyed across different geographic areas and habitat types
- Each site had 5 stations:
  3 track plate boxes,
  1 open plate, and
  1 remote camera[6]



- Stations were baited with canned cat food and a skunk-scented lure (Gusto™), checked every 3 days for 15 days
- California Wildlife Habitat Relationship (CWHR) system vegetation characteristics were recorded at each station[7]: Habitat Type, Tree Size Class, and Canopy Cover

RESULTS

- 79 sites (395 stations) surveyed from 2002 to 2004
- 17 CWHR habitat types surveyed between 600 and 3,500 m
- Martens detected at 29 sites (67 stations) from 1,800 to 3,340 m
- Fishers detected at 9 sites (13 stations) from 1,000 to 2,870 m

Martes pennanti

- Martens were detected most often in Sierran mixed conifer and red fir forests in the southwest corner of the parks, but they were also detected in forested riparian corridors, subalpine forest, and high elevation areas with boulder cover to the north and east (Figure 1, Table 1).
- Fishers were detected in Sierran mixed conifer and montane hardwood-conifer forests in the western half of the parks. They appear to be less common and more restricted in distribution than marten (Figure 1, Table 1).
- Both martens and fishers were detected most frequently at stations with large diameter trees (≥ 24 dbh") and moderate to dense canopy cover (Table 1).

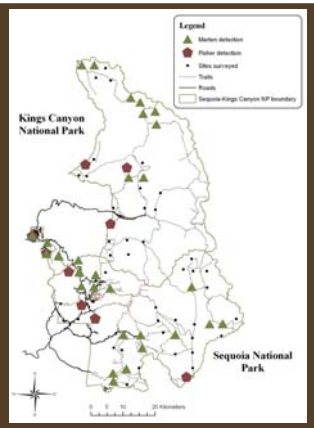
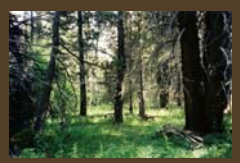


Figure 1. American marten were detected at 29 (36.7%) and fisher at 9 (11.4%) of 79 sites surveyed in the Parks.

CWHR Habitat Classifications	Stations with Marten Detections	Stations with Fisher Detections
Habitat type		
Barren	5 (7.5)	-
Subalpine	7 (10.4)	1 (7.7)
Lodgepole	8 (11.9)	-
Aspen	1 (1.5)	-
Red fir	14 (20.9)	-
Montane riparian	7 (10.4)	-
Sierran mixed conifer	25 (37.3)	8 (61.5)
White fir	-	1 (7.7)
Montane hardwood-conifer	-	2 (15.4)
Foothill hardwood	-	1 (7.7)
Tree size class		
6: ≥ 24" dbh, multilayered	27 (40.3)	5 (38.5)
5: ≥ 24" dbh	18 (26.9)	4 (30.8)
4: 11.0 – 23.9" dbh	16 (23.9)	3 (23.1)
3: 6.0 – 10.9" dbh	1 (1.5)	1 (7.7)
No size class (barren)	5 (7.5)	-
Canopy cover		
Dense: >60%	44 (65.7)	10 (76.9)
Moderate: 40.0 -59.9%	11 (16.4)	3 (23.1)
Open: 25.0 - 39.9%	4 (6.0)	-
Sparse: 10.0 - 24.9%	3 (4.5)	-
<10%	5 (7.5)	-

Table 1. CWHR classifications at stations with marten (67) and fisher (13) detections. Percent of total detections shown in parentheses.

Sierran mixed conifer



Lodgepole

Red fir

Subalpine

DISCUSSION

- Distribution of both marten and fisher show many similarities to historic records in the Parks[1,3] – potentially a result of long-term protection of these areas
- Results reinforce claims of these species' association with mature forest with large trees and extensive canopy cover
- Sierran mixed conifer (SMC) forest appears important to both species – why?
  - Presence of giant sequoia groves within SMC in the southern Sierra Nevada may increase its suitability
  - Conservation of giant sequoias may have indirectly protected other tree and wildlife species in SMC for 100 years +
  - Optimal elevation zone (1,520–2,350 m)
  - Regardless of why – SMC warrants consideration in future conservation plans
- Martens in boulder dominated habitats…
  - Further work needed to understand martens' use of these areas: seasonality, proximity to forest, dispersal corridors?

Martes americana

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