

A PHOTOGRAPHIC FIELD GUIDE TO FISHER REST AND DEN SITES IN THE SIERRA NATIONAL FOREST

R. Green, K. Purcell, and C. Thompson
Kings River Fisher Project
PSW Research Station
USDA Forest Service
(22 Sept 2013 version)



FISHERS AND FOREST HABITAT

■ What is a fisher?

- A mid-sized carnivore in the Mustelid (weasel) family
- Fishers are excellent tree climbers with a varied diet (*e.g.*, small mammals, birds, lizards, berries)

■ Why the interest in fishers and their habitat?

- Historical fur trapping and loss of mature forest habitat led to population declines in western states
- Fishers are associated with extensive canopy cover, large trees, and forest features (*e.g.*, cavities) that take time and unique conditions to develop
- As a result, conservation of suitable habitat often involves planning on managed lands

■ Purpose of this guide:

- Provide examples of actual structures used by fishers as reproductive dens and rest sites
- Give field crews clues about the microsites, structures, and habitat that fishers might use





FISHER REST & DEN SITES

■ What are fisher Rest Sites?

Places where fishers takes refuge from the weather and/or potential predators to rest when they are not traveling or foraging

■ Examples include:

- Large live trees with cavities, branch clusters, or large limbs
- Snags with cavities, broken tops, and/or basal hollows
- And structures near the ground – such as hollow logs, rock piles, and ground burrows

■ What are Reproductive Dens?

Trees with a cavities where females give birth and keep kits in spring

- Natal Dens: trees where females give birth and initially keep kits
- Maternal Dens: structures used after natal dens to house young kits that are still nursing

■ How many Rest and Den Sites do fishers use?

- Males and females use numerous rest sites during the year. Some sites are re-used, but apparently not frequently.
- All females with kits use 1 natal den, but # of maternal dens ranges (1 to 5).

MICROSITES

Fishers use a variety of microsites for thermal and physical protection. Characteristics associated with typical microsites may be useful in recognizing whether a particular structure or site might be used by a fisher. Microsite types include:

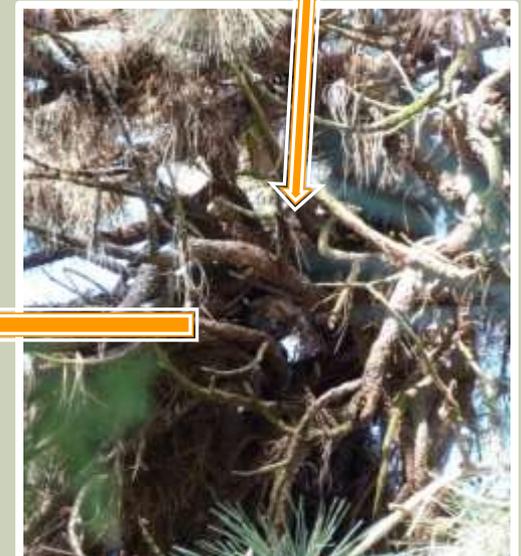
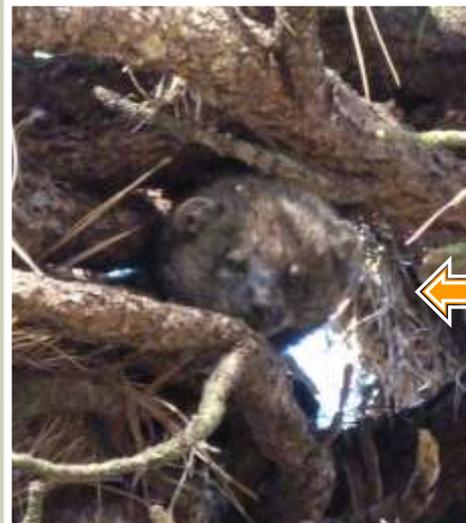
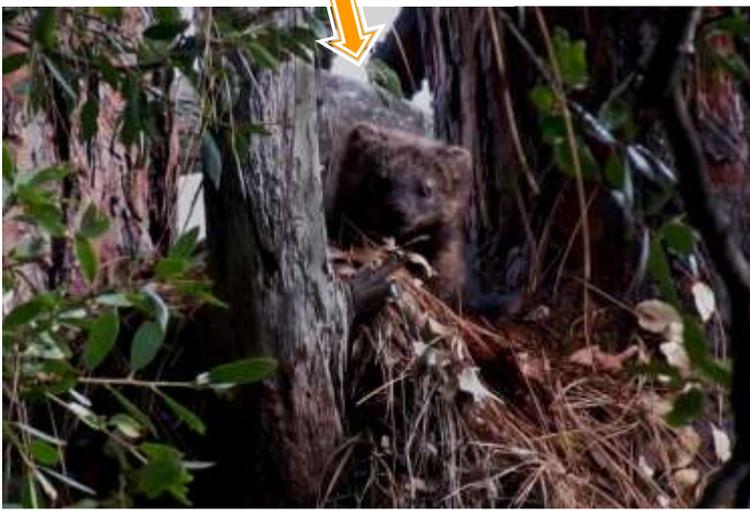
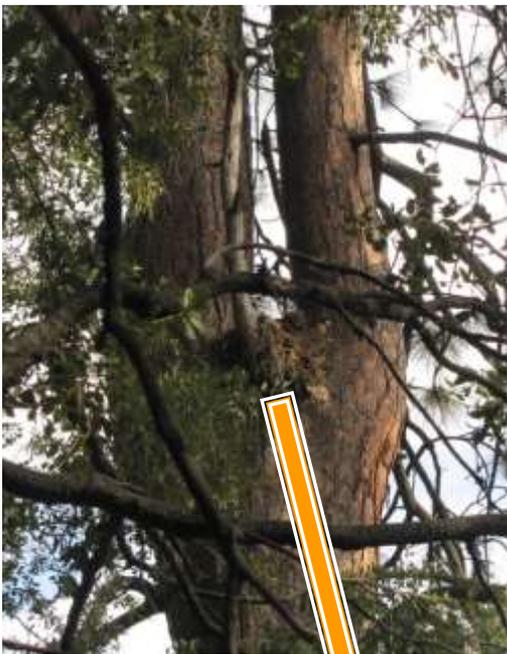


- Cavities in tree boles or logs
 - Often accessed by broken limbs, woodpecker holes, scars or cracks

- Broken tops of snags

MORE MICROSITE EXAMPLES

- Branch clusters or deformities often associated with mistletoe
- Nests (pine needles, sticks)
- Large branches generally $\geq 6''$, often with flat platform
- Ground burrows/caverns in rocks



GUIDE AND TERM CLARIFICATION

This guide contains a variety of example rest and den sites used by fishers, but it does not fully represent the diversity of structures that they may use in the field. Den site examples are presented first followed by rest sites, with two consecutive slides per site. Slides for each den or rest site contain photos that should provide a general feel for the microsite, structure, and surrounding habitat. Relevant measurements are on the right hand side of the first slide. Orange arrows in photos are used to point out the fisher actually in the structure and/or the known microsite.

TERM CLARIFICATION:

- Structure type: used to denote whether the structure was a conifer or a hardwood, alive or dead, or some type of alternative structure
- DBH: diameter at breast height (~4.5 ft or 1.4 m)
- California Wildlife Habitat Relationship (CWHR) Classifications: habitat type followed by tree size class and canopy cover category (see below)

- Tree Size Classes:

- 1(seedling, <1")
- 2(sapling, 1-5.9")
- 3(pole, 6-10.9")
- 4(small, 11-23.9")
- 5(medium/large, ≥24")
- 6(multi-layered, 5's and 4 or 3's and D cc)

- Canopy cover classes (%)

- B = barren (<10)
- S = sparse (10-24.9)
- P = open (25-39.9)
- M = moderate (39-59.9)
- D = dense (60-100)



NATAL DEN

#244

FEMALE FISHER

Structure Type:
Live Hardwood

Tree Species:
Black Oak

DBH:
27in (69cm)

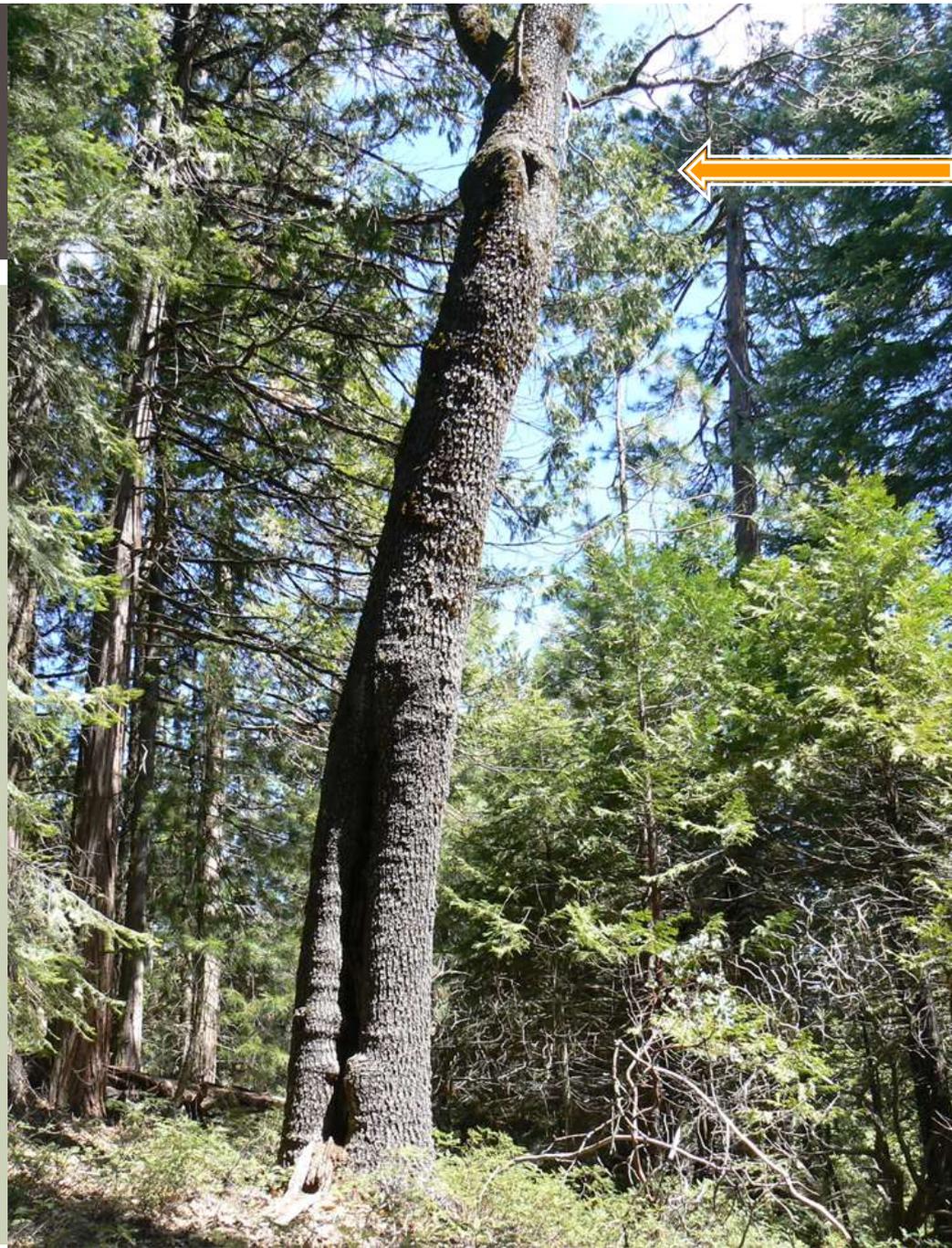
Height:
74ft (23m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 4D

Elevation:
4600ft (1400m)

NATAL DEN #244: Live Black Oak





NATAL DEN

#1597

FEMALE FISHER

Structure Type:
Live Conifer

Tree Species:
White Fir

DBH:
47in (119cm)

Height:
108ft (33m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 5 M
(upslope 4 P)

Elevation:
5200ft (1590m)

NATAL DEN #1597: Live White Fir





NATAL DEN

#482

FEMALE FISHER

Structure Type:
Live Conifer

Tree Species:
Ponderosa Pine

DBH:
52in (132cm)

Height:
160ft (49m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 5 D
(upslope 5 M)

Elevation:
6800ft (2070m)

NATAL DEN #482: Live Ponderosa Pine



NATAL DEN

#578

FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
Ponderosa Pine

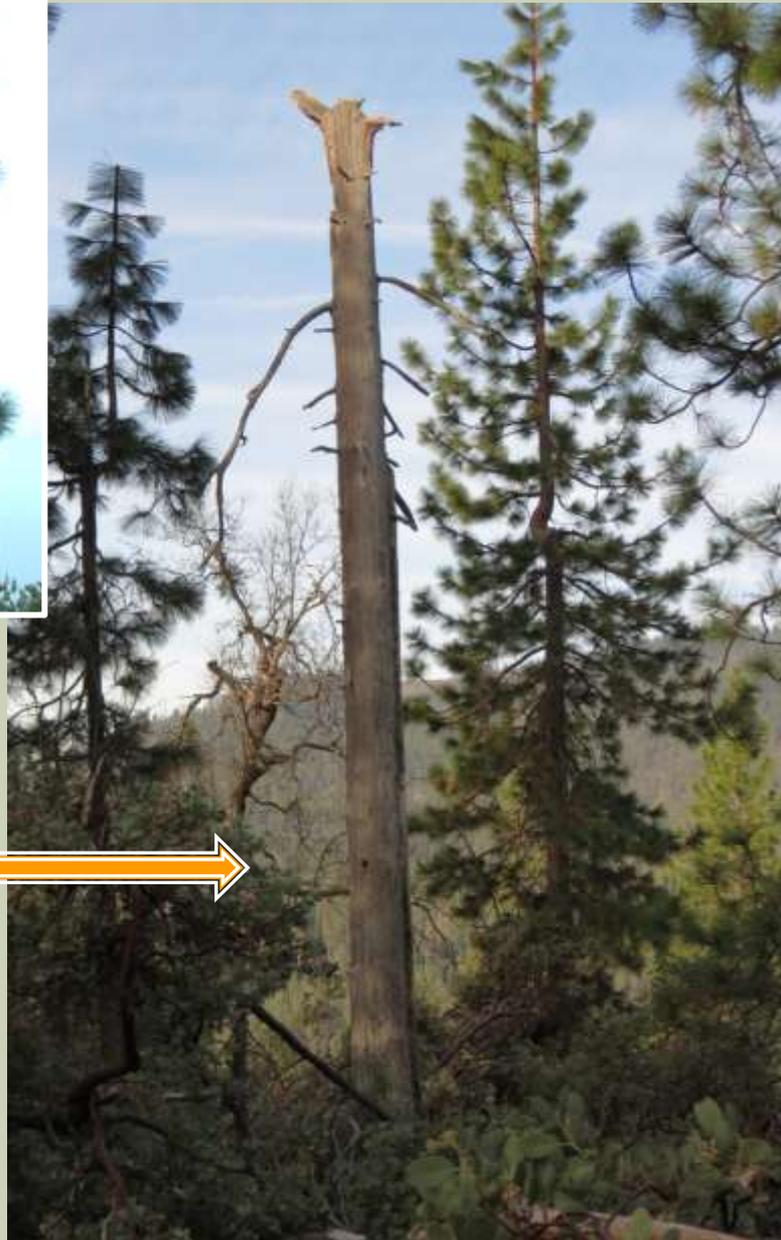
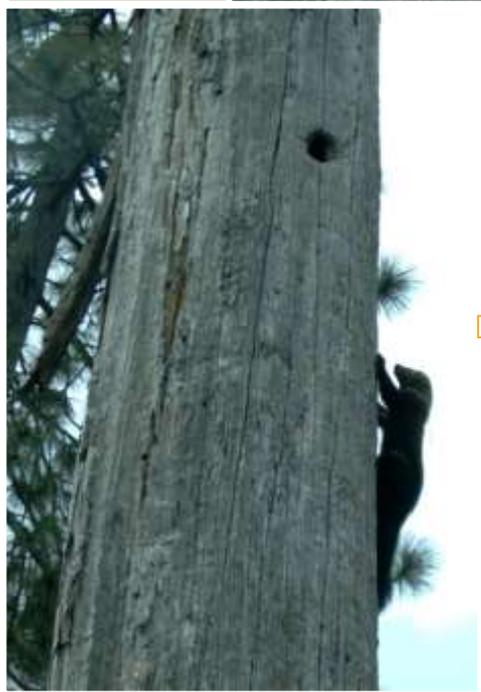
DBH:
39in (99cm)

Height:
50ft (15m)

Microsite:
Cavity

CWHR: Montane
Hardwood Conifer 4P
w/ very tall shrubs
(surrounding area 4M)

Elevation:
4200ft (1280m)



NATAL DEN #578: Ponderosa Pine Snag





NATAL DEN

#642

FEMALE FISHER

Structure Type:
Live Hardwood

Tree Species:
Canyon Live Oak

DBH:
39in (98cm)

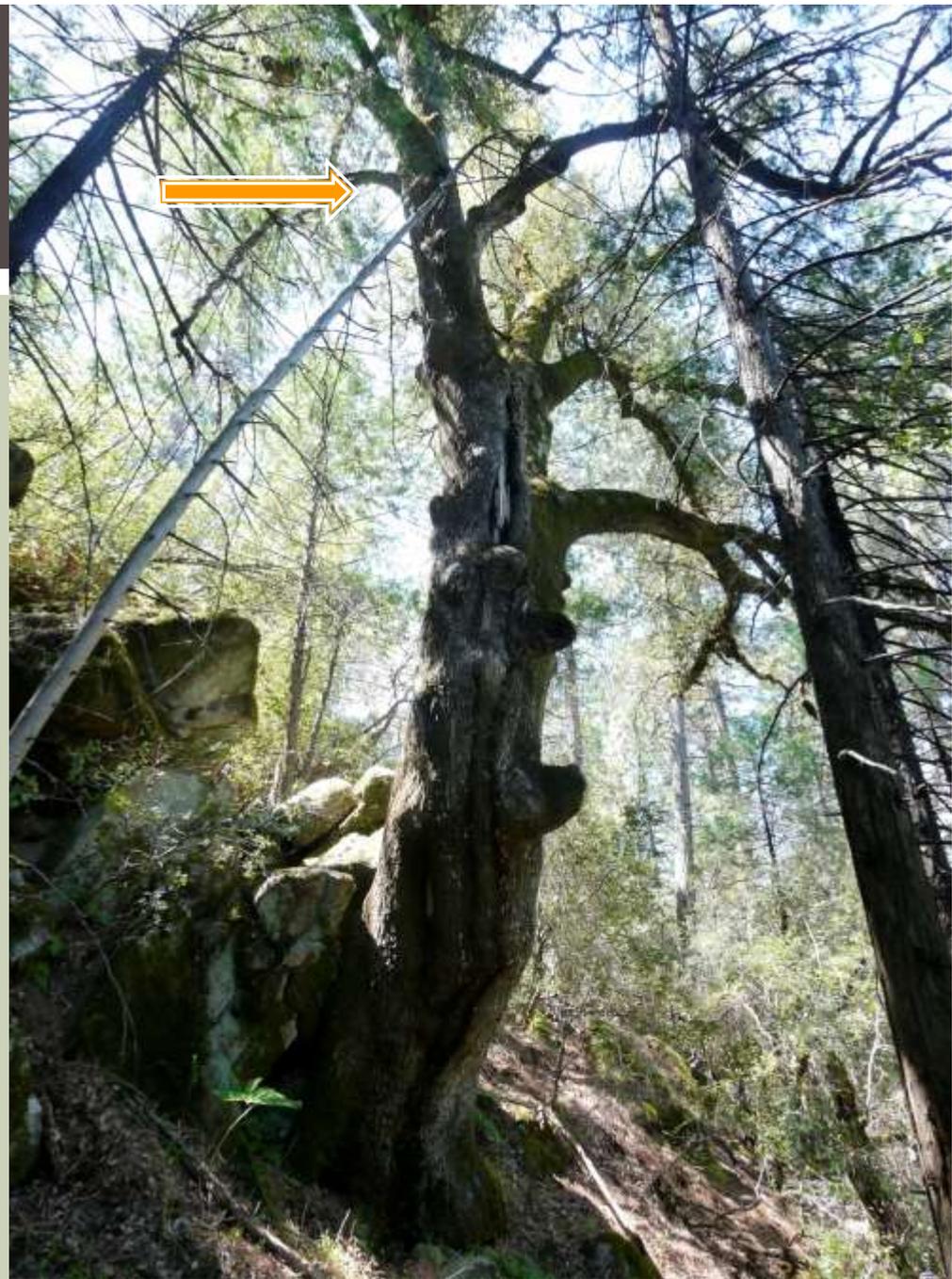
Height:
63ft (19m)

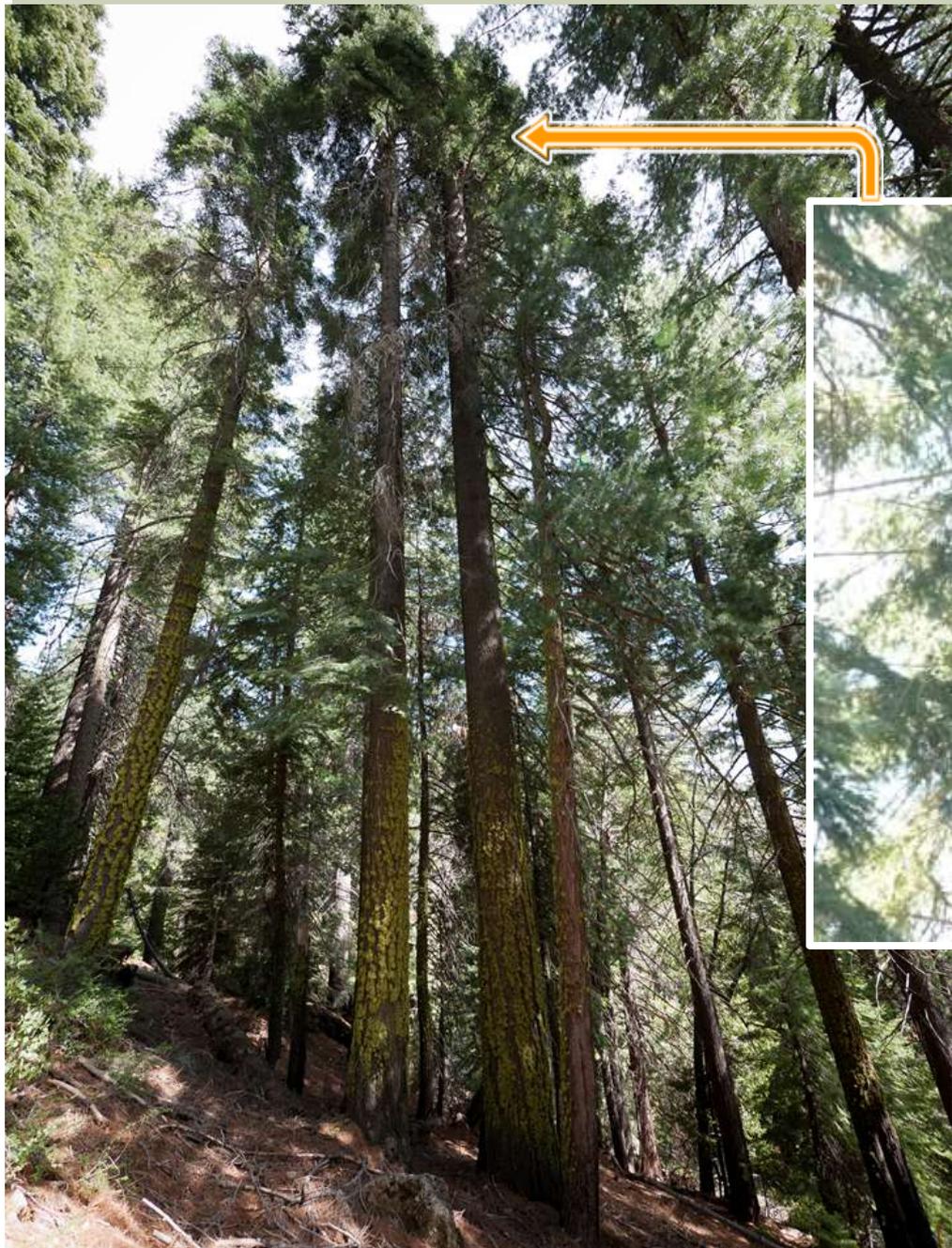
Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 6D

Elevation:
3700ft (1130m)

NATAL DEN #642: Canyon Live Oak





MATERNAL

DEN #802

FEMALE FISHER

Structure Type:
Live Conifer

Tree Species:
White Fir

DBH:
40in (102cm)

Height:
118ft (36m)

Microsite:
Cavity

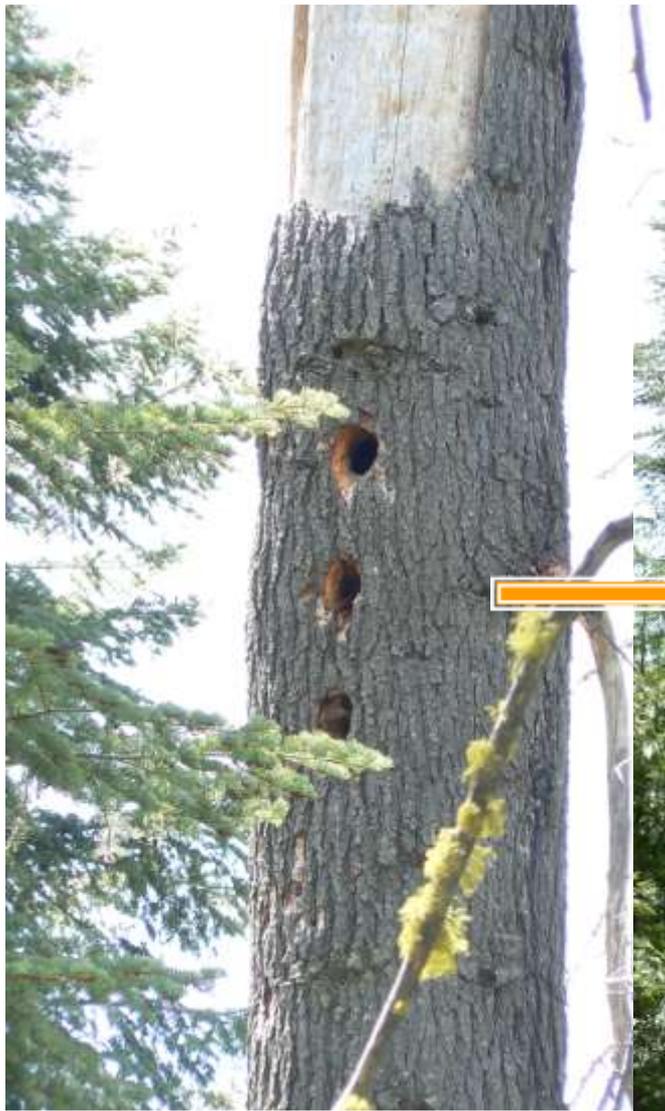
CWHR:
Sierran Mixed
Conifer 6D
(close to 5M)

Elevation:
6400ft (1950m)

MATERNAL DEN

#802: Live White Fir





MATERNAL

DEN #762

FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
White Fir

DBH:
45in (113cm)

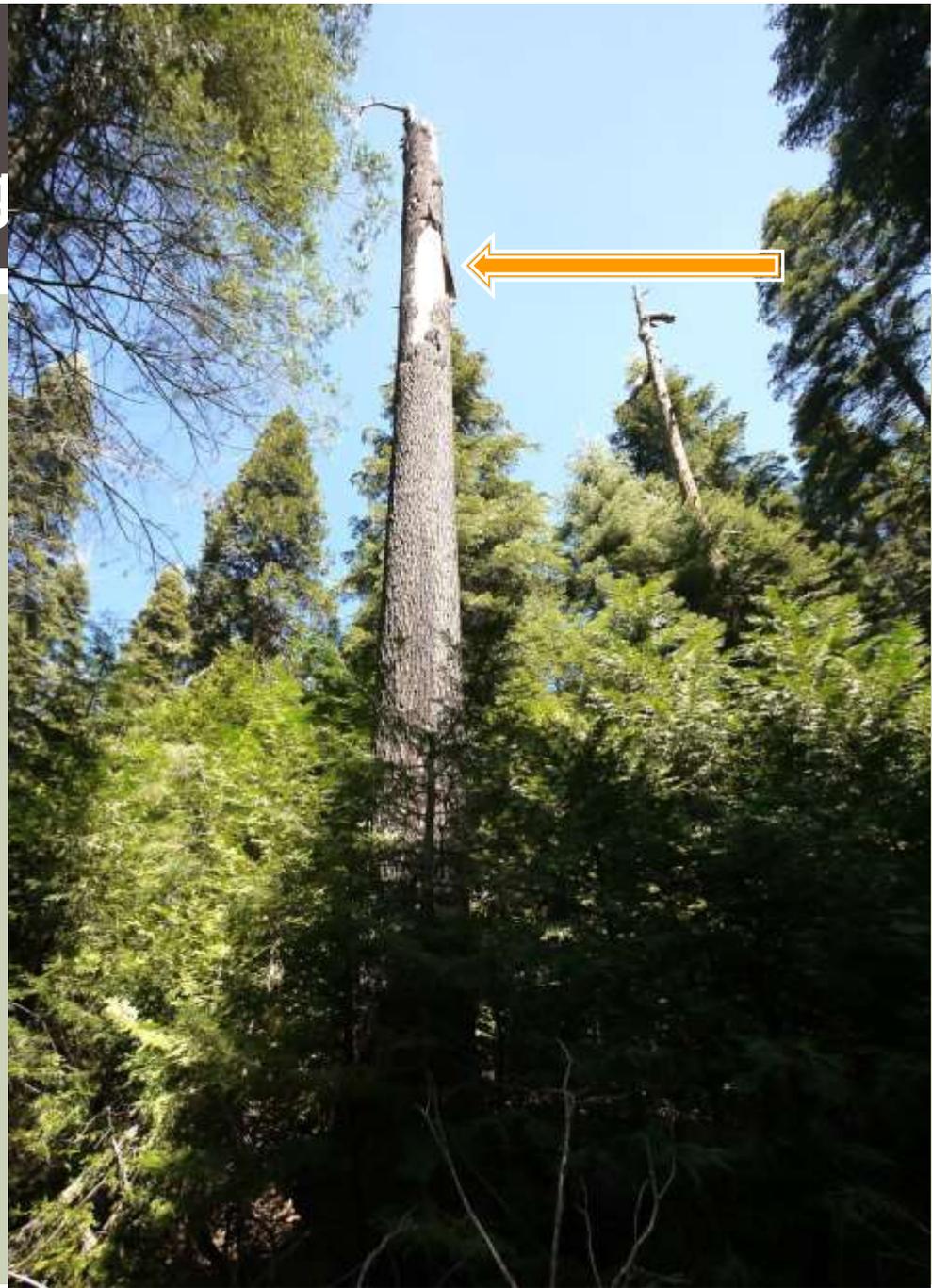
Height:
78ft (24m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 5D

Elevation:
5400ft (1650m)

MATERNAL DEN #762: White Fir Snag





MATERNAL

DEN #700

FEMALE FISHER

Structure Type:
Live Hardwood

Tree Species:
Black Oak

DBH:
31in (78cm)

Height:
92ft (28m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 5D

Elevation:
3700ft (1130m)

MATERNAL DEN

#700:

Live Black Oak





MATERNAL

DEN #391

FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
Ponderosa Pine

DBH:
38in (97cm)

Height:
29ft (9m)

Microsite: Cavity

CWHR:
Sierran Mixed
Conifer 4M

Elevation:
5500ft (1680m)

MATERNAL DEN #391: Ponderosa Pine Snag





MATERNAL
DEN #48
FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
Incense Cedar

DBH:
56in (143cm)

Height:
80ft (25m)

Microsite: Cavity

CWHR:
Sierran Mixed
Conifer 5D

Elevation:
5800ft (1770m)

MATERNAL DEN #48: Incense Cedar Snag



Surrounding habitat with coarse woody debris



REST SITE

#256

FEMALE FISHER

Structure Type:
Live Hardwood

Tree Species:
Black Oak

DBH:
27in (68cm)

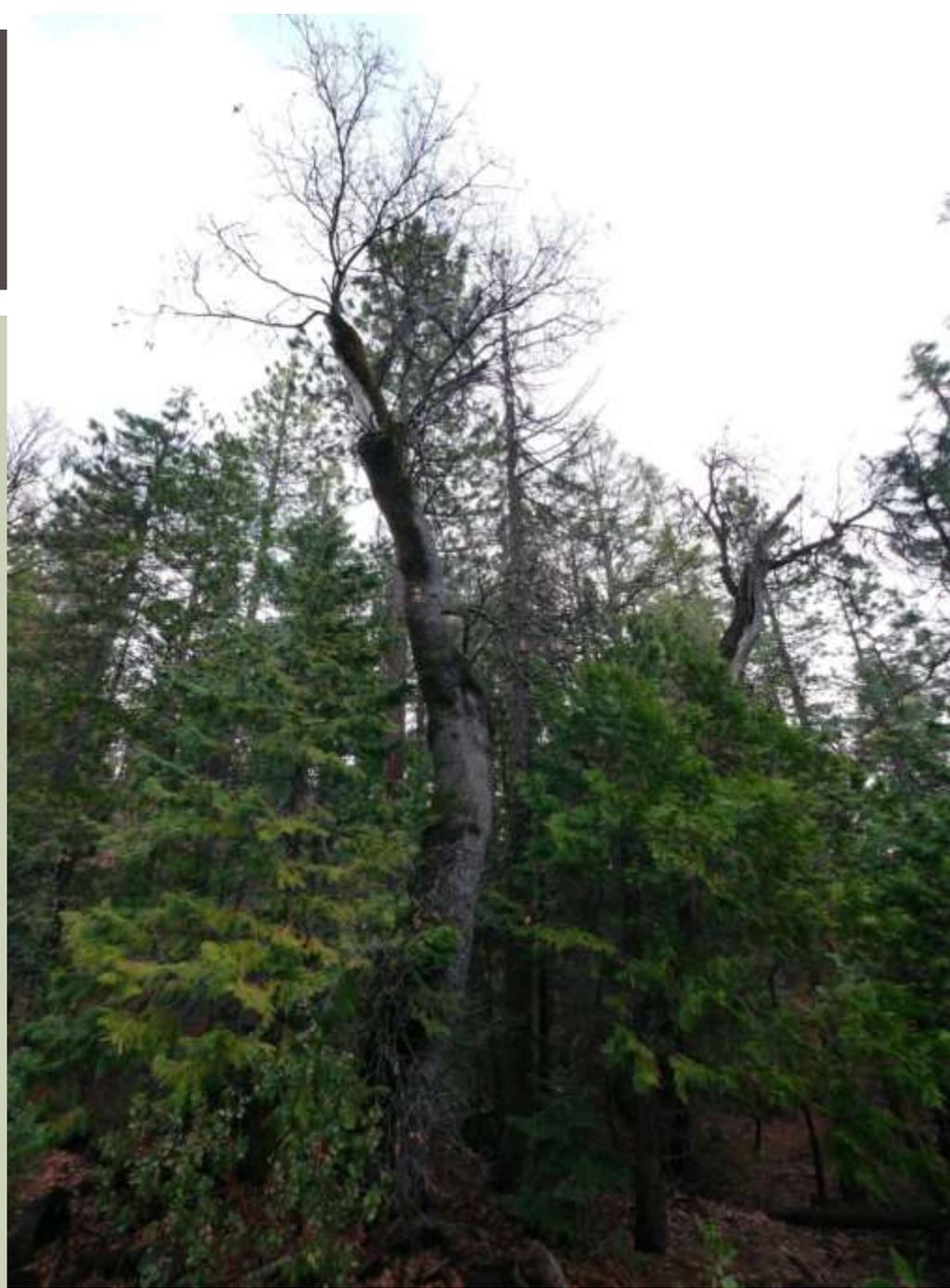
Height:
46ft (14m)

Microsite: Cavity
in broken trunk

CWHR:
Sierran Mixed
Conifer 4M

Elevation:
5800ft (1770m)

REST SITE #256: Live Black Oak





REST SITE

#637

FEMALE FISHER

Structure Type:
Live Hardwood

Tree Species:
Black Oak

DBH:
29in (74cm)

Height:
68ft (21m)

Microsite:
Cavity

CWHR: Sierran
Mixed Conifer 4D

Elevation:
4500ft (1370m)

REST SITE #637: Live Black Oak





REST SITE

#593

MALE FISHER

Structure Type:
Live Conifer

Tree Species:
White Fir

DBH:
73in (185cm)

Height:
138ft (42m)

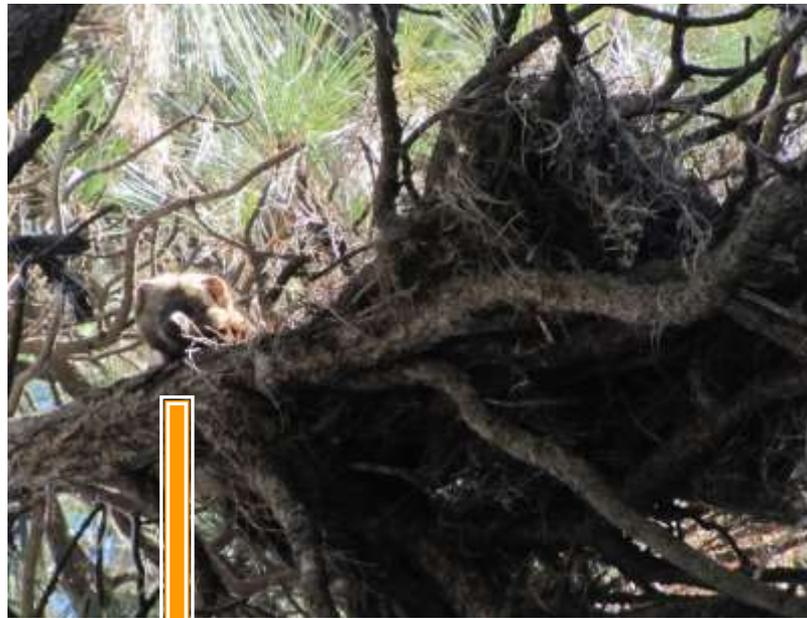
Microsite: Large limb/broken fork

CWHR:
Sierran Mixed
Conifer 6D (on an
edge of P canopy)

Elevation:
5800ft (1770m)

REST SITE #593: Live White Fir





REST SITE

#1018

MALE FISHER

Structure Type:
Live Conifer

Tree Species:
Ponderosa Pine

DBH:
35in (89cm)

Height:
157ft (48m)

Microsite: Branch
cluster/needle
clump

CWHR: Sierran
Mixed Conifer 6D

Elevation:
3600ft (1100m)

REST SITE #1018: Live Ponderosa Pine





REST SITE

#435

FEMALE FISHER

Structure Type:
Live Conifer

Tree Species:
Sugar Pine

DBH:
59in (150cm)

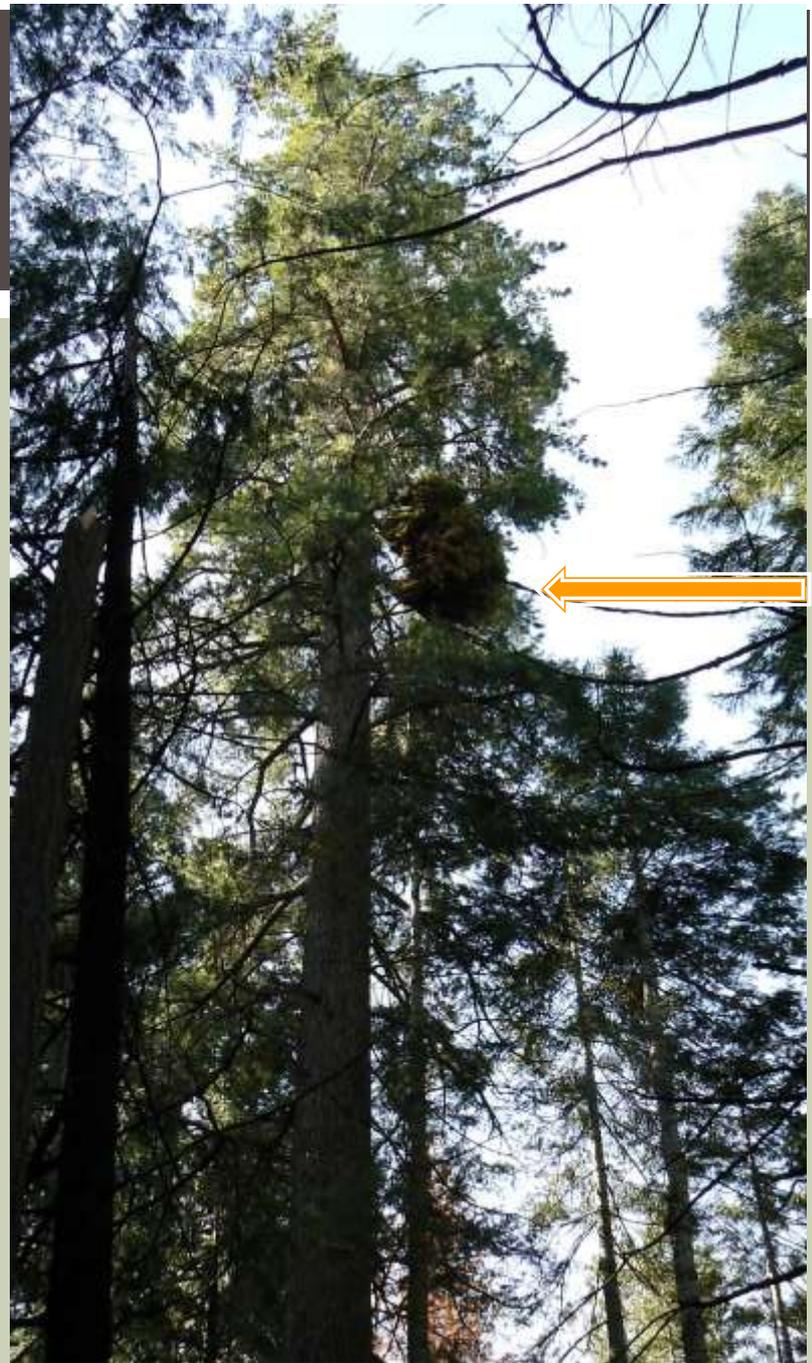
Height:
182ft (56m)

Microsite:
Mistletoe/branch
cluster

CWHR:
Sierran Mixed
Conifer 4M

Elevation:
4400ft (1340m)

REST SITE #435: Live Sugar Pine





REST SITE

#197

FEMALE FISHER

Structure Type:
Live Conifer

Tree Species:
Ponderosa Pine

DBH:
22in (57cm)

Height:
75ft (23m)

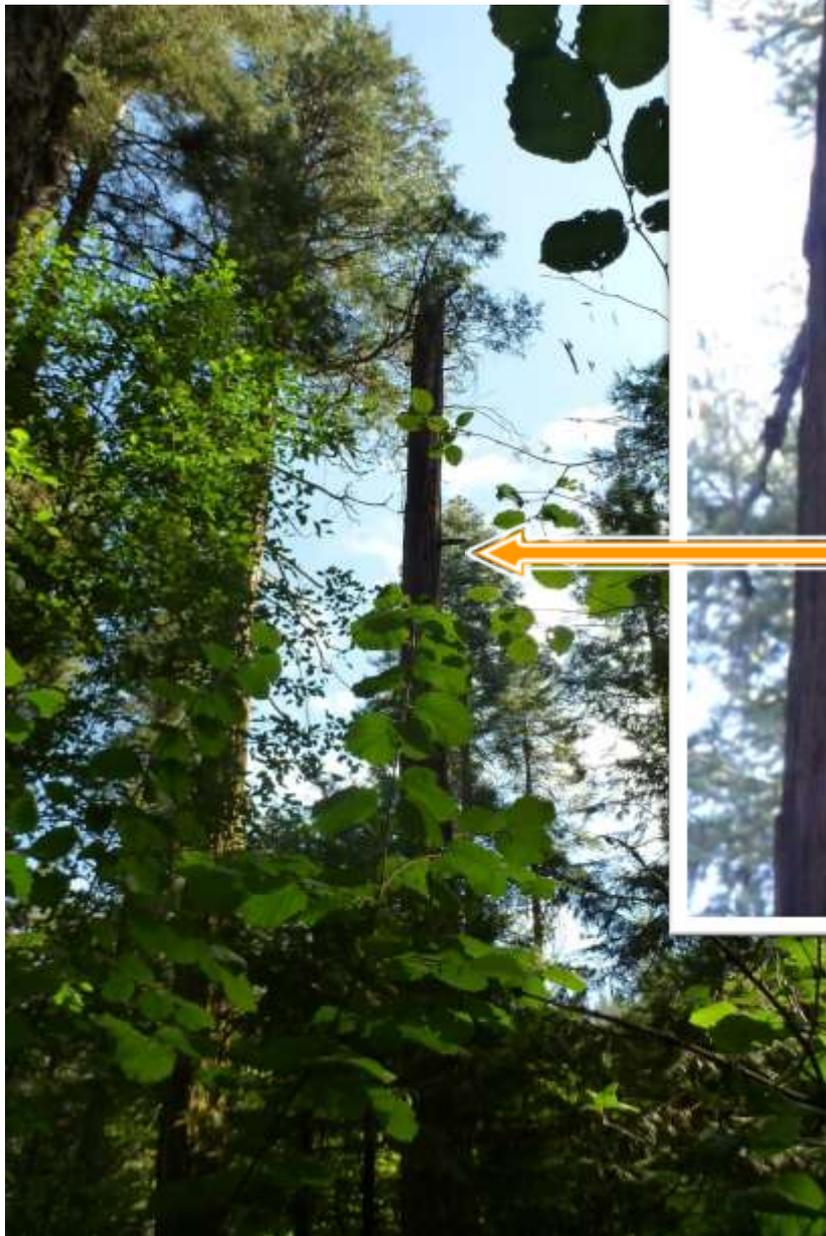
Microsite:
Stick nest

CWHR:
Ponderosa Pine
(patchy 3P and 4M)

Elevation:
4800ft (1460m)

REST SITE #197: Live Ponderosa Pine





REST SITE

#776

FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
Incense Cedar

DBH:
54in (136cm)

Height:
102ft (31m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 6D
(in riparian area)

Elevation:
4800ft (1460m)

REST SITE #776 : Incense Cedar Snag





REST SITE

#277

FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
Incense Cedar

DBH:
78in (199cm)

Height:

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 6D

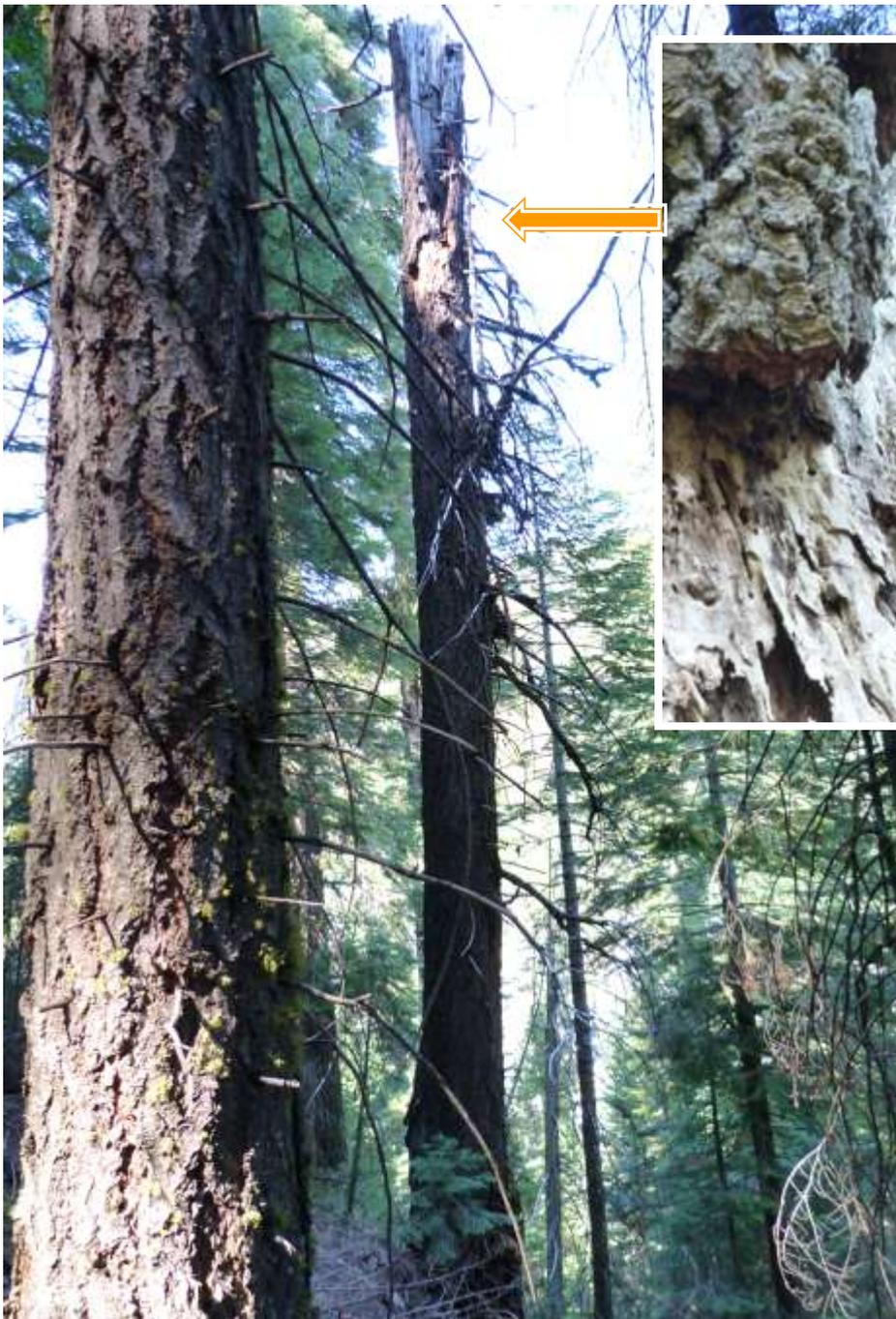
Elevation:
6500ft (1980m)

REST SITE #277: Incense Cedar Snag



Note the photo above was taken after a forest treatment.





REST SITE

#518

FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
White Fir

DBH:
36in (92cm)

Height:
48ft (15m)

Microsite:
Cavity/broken top

CWHR:
White Fir 4D

Elevation:
5300ft (1620m)

REST SITE #518: White Fir Snag



REST SITE

#1106

FEMALE FISHER

Structure Type:
Hardwood Snag

Tree Species:
Black Oak

DBH:
22in (57cm)

Height:
41ft (12m)

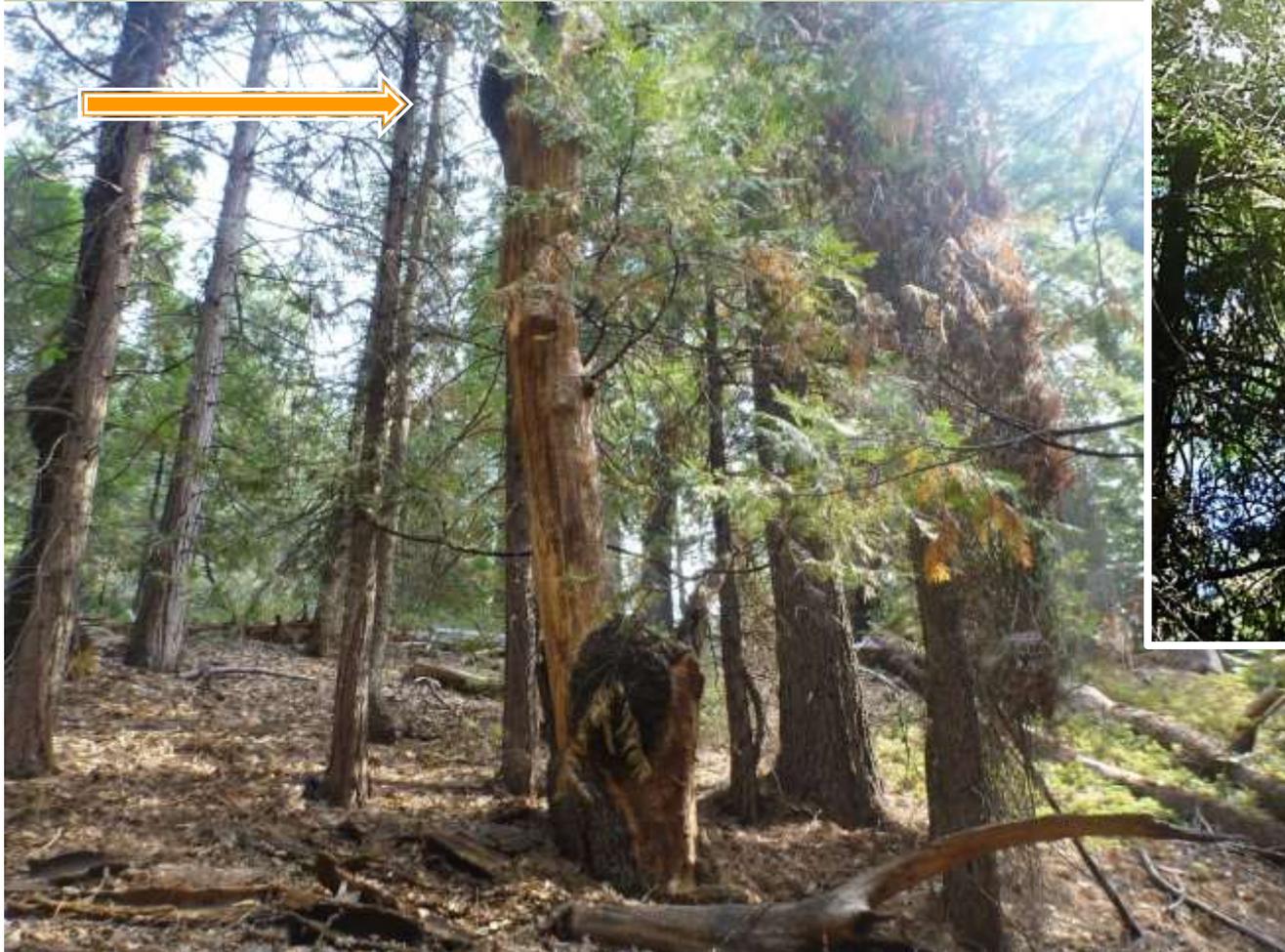
Microsite:
Cavity

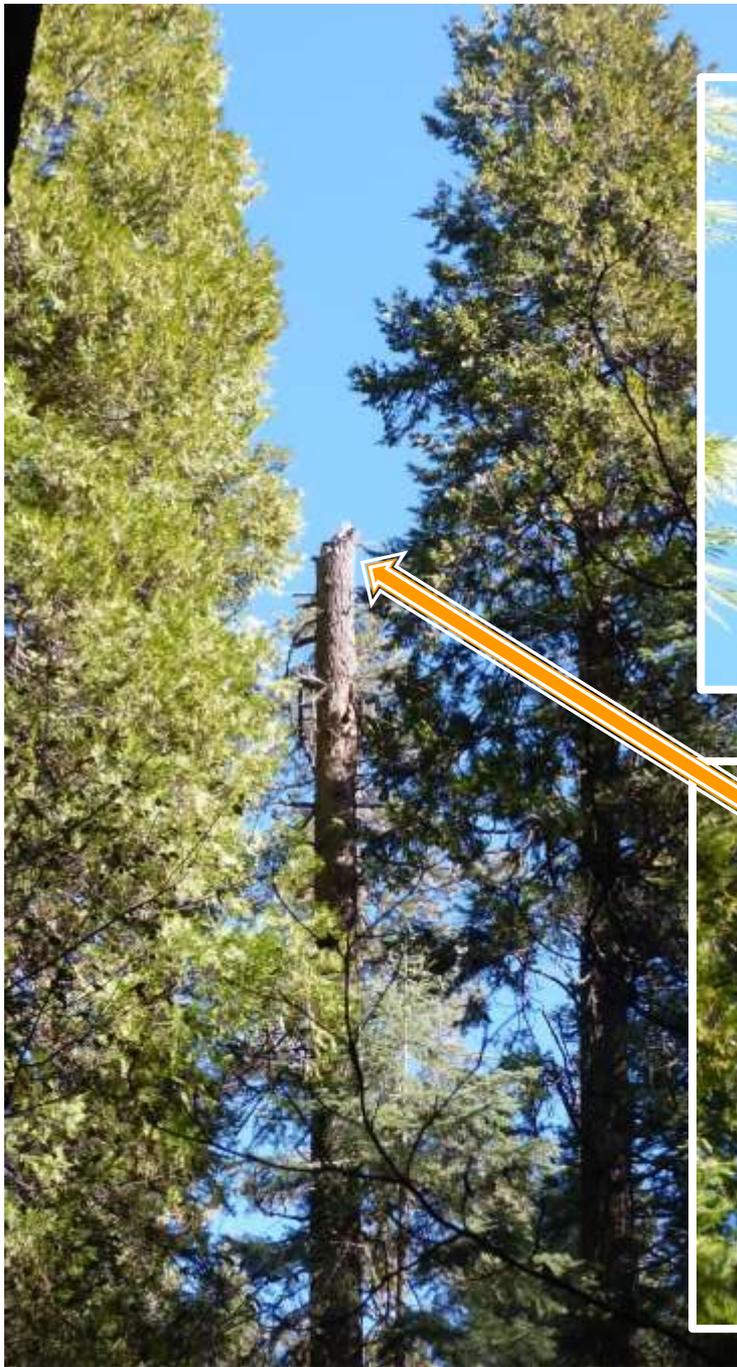
CWHR:
Sierran Mixed
Conifer 4D

Elevation:
4900ft (1490m)



REST SITE #1106: Black Oak Snag





REST SITE

#539

FEMALE FISHER

Structure Type:
Conifer Snag

Tree Species:
White Fir

DBH:
45 in (114 cm)

Height:
77 ft (24 m)

Microsite:
Broken Top

CWHR:
Sierran Mixed
Conifer 6D

Elevation:
4500ft (1370m)

REST SITE #539: White Fir Snag



REST SITE

#780

FEMALE W/ KITS

Structure Type:
Live Hardwood

Tree Species:
Black Oak

DBH:
28in (71cm)

Height:
46ft (14m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 6D

Elevation:
5500ft (1680m)



REST SITE #780: Live Black Oak





REST SITE

#722

FEMALE W/ KITS

Structure Type:
Hardwood Log

Tree Species:
Black Oak

DBH:
25in (63cm)

Length:
57ft (17m)

Microsite:
Cavity

CWHR:
Montane Hardwood
Conifer 4M

Elevation:
3800ft (1160m)

REST SITE #722: Black Oak Log





REST SITE

#131

FEMALE W/ KITS

Structure Type:
Conifer Log

Tree Species:
Incense Cedar

DBH:
31 in (79 cm)

Length:
75 ft (23 m)

Microsite:
Cavity

CWHR:
Sierran Mixed
Conifer 6D
(riparian area)

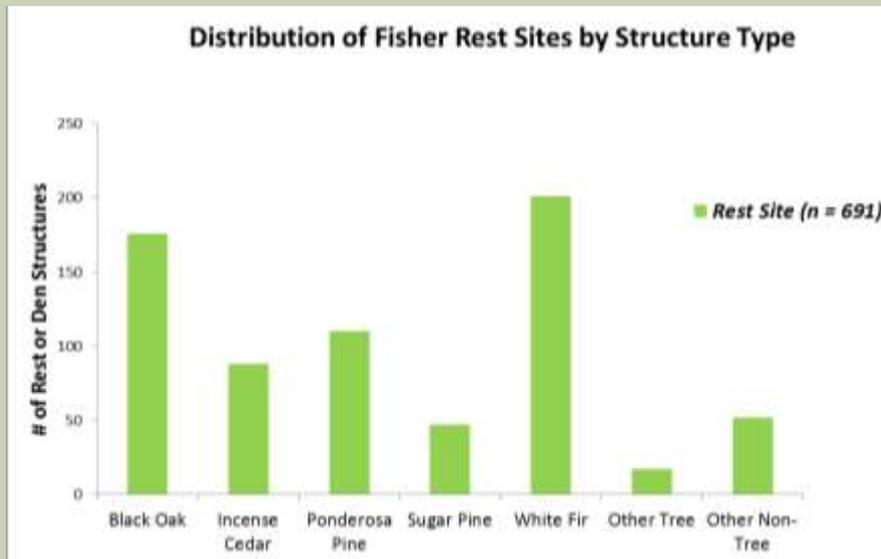
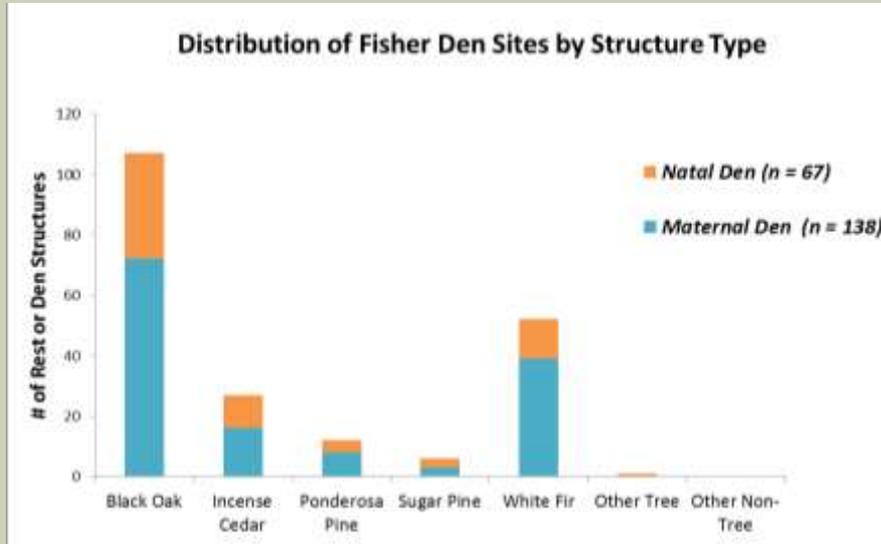
Elevation:
4800ft (1460m)

REST SITE #131: Incense Cedar Log



Surrounding riparian habitat

The data presented here represent a preliminary summary of the structures used by fishers in the Kings River study area as reproductive dens and daily resting sites. California black oaks were selected most often for dens. Fishers used a variety of tree species and other structures as rest sites, but white fir, California black oak, ponderosa pine and incense cedar were the tree species used most frequently.



Tree Species or Other Structure	Type	Natal Den (n = 67)	Maternal Den (n = 138)	Rest Site (n = 691)
Alder	live			2
Big Leaf Maple	live			2
Black Oak	live	31	65	153
	snag	4	6	18
	log		1	5
Canyon Live Oak	live	1		5
Douglas Fir	live			1
Giant Sequoia	log			1
Incense Cedar	live	10	4	42
	snag	1	11	24
	log		1	22
Jeffrey Pine	live			3
	snag			1
Ponderosa Pine	live	2	4	88
	snag	2	4	14
	log			8
Red Fir	snag			2
Sugar Pine	live	1	1	31
	snag	2	2	14
	log			2
White Fir	live	10	20	98
	snag	3	19	97
	log			6
Rock Pile/Ground Burrow	n/a			41
Stump/Snow Burrow/Other	n/a			11

Preliminary summary of tree diameter measurements of fisher rest and den sites in the Kings River study area

DEN SITES				
Structure		<i>n</i>	Mean dbh	stdev (in)
Hardwood	live tree	105	30.9 in (78.3 cm)	7.7
	snag	10	27.8 in (70.5 cm)	5.3
	log	1	25.6 in (65 cm)	n/a
Conifer	live tree	54	43.1 in (109.3 cm)	9.6
	snag	43	41.7 in (105.9 cm)	12.1
	log	1	48.1 in (122 cm)	n/a
REST SITES				
Structure		<i>n</i>	Mean dbh	stdev (in)
Hardwood	live tree	81	30.8 in (78.2 cm)	8.5
	snag	9	33.2 in (84.2 cm)	10.2
	log	2	20.1 in (51.1 cm)	6.4
Conifer	live tree	112	37.3 in (94.6 cm)	14.0
	snag	11	44.0 in (111.6 cm)	12.2
	log	78	36.8 in (93.3 cm)	14.6

Note: This table will be updated as additional structures are found and measured. Please see previous slide for distribution of hardwood and conifer tree species used by fishers in the Kings River area.

ACKNOWLEDGMENTS

Many Kings River Fisher Project Crew members helped to collect this data and take some incredible photos, including:

Jason Banaszak, Jessica Braunstein, Theresa Brickley, Jim Garner, Nathan Hebert, Cori Indelicato, Zane Miller, Brad Nichols, Shawn Rossler, Jon Schneiderman, Brad Smith, Tessa Smith, Wes Watts and Zack Stoll.

THANKS!