

Appendix 4: A Natural History of the Mount Vision Fire

by Jules Evens, biologist & EAC board member

FIRE HAS BEEN HERE A VERY LONG TIME INDEED. The Miwok, who inhabited this place for at least 3,000 years, set fires periodically to open up the forest and scrub, promote vigorous growth, and attract animals. Inverness Ridge has burned a hundred times and will burn a hundred more. The very structure of the bishop pine forest is the result of that fire history, and there is little we can do to forestall its recurrence, try though we will. The perennial advent of fire may be of little comfort to those who lost their homes and precious belongings in a blaze of flames in October 1995, but perhaps the acknowledgment of fire's place in the landscape is integral to our own regeneration of spirit.

Many people who live here have asked: "What has been the impact of this firestorm on the natural environment?" and "What about the animals? Which species were affected and will they ever return?" These questions are as complex as the causes and consequences of the fire itself, and answers and predictions are largely speculative. We can, however, make some sense out of the fate of the plants and animals that were affected, based on our knowledge of their natural history before the burn as well as some subsequent observations.

The fire consumed about 12,400 acres, of which about half was coastal scrub and open woodland, and about a quarter was forest - either Douglas fir, bishop pine, or riparian hardwood. The bulk of the burn was within the Point Reyes National Seashore, and, in total, about 18% of the park was impacted. According to the Burn Area Emergency Rehabilitation (BAER) Plan: "Due to higher than normal fuel loads, extreme fire behavior, and wind patterns during the incident, about 70% of the vegetative cover was removed" within the burn perimeter. The Douglas fir forest (-1500 acres burned) ranges in age from about 30 to 115 years in age; due to past fire suppression, the younger trees have encroached onto areas previously occupied by coastal scrub and grassland. The bishop pine forest (-1000 acres burned), of uniform age with most trees about 60 years old, had developed as the result of past fires. The riparian corridor encompasses about 500 acres within the burn perimeter, occurring as narrow ribbons of habitat along intermittent and perennial watercourses. The riparian - with its associated swales, ponds, and marshes - was a critical refuge for animals during the heart of the firestorm.

The fire area in the Seashore was assessed according to levels of intensity: 70% burned at low intensity, 20% moderate, and 10% high intensity. Post fire estimates of mortality of vegetation in forested habitats found the highest impacts to bishop pine, with 82-94% mortality. Douglas fir experienced 28-46% mortality, and only about 5% of the riparian suffered high mortality. The pines grow on shallow soils that are derived from granite and are inherently drier than the shales that underlie the fir forest and much of the coastal scrub. Bishop pine seeds were scattered across the forest floor after the burn, and if these seeds find "bare mineral seedbed relatively free of competing vegetation" they should germinate vigorously. The riparian corridor, mostly singed along its outer edge, is expected to recover in the first growing season. The Douglas fir forest will take longer, however, and will depend on variables like rainfall and seed crop production (of surviving firs) over the next few years.

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Much of the information in this essay was gleaned from the 300-page report prepared by the "BAER Team" within an incredible 72 hours after containment of the fire. The BAER team is employed by the Department of the Interior as a quick response unit to wildfire events. They arrived on the scene as soon as the Vision Fire was declared "out of control" and began assessment, enlisting the aid of personnel from Point Reyes National Seashore, Tomales Bay State Park and the California State Parks, Marin County Department of Public Works, the Natural Resources Conservation Service, Petaluma District, as well as many local residents with particular knowledge of the natural and historic resources within the burn zone. Copies of the BAER Report are available in public library branches, and one resides in the office of Environmental Action Committee of West Marin.

Plants

The BAER Plan identifies several species of threatened and endangered plants within the burn area that may suffer population declines. Several of these species (e.g. north coast bird's beak, Marin knotweed) grow in tidal saltmarsh or swales and are not expected to be impacted severely, if at all. Other species restricted to drier habitats may have been damaged; these include fragrant fritillary, San Francisco owl's clover, Marin manzanita, and Mount Vision ceonothus. The fritillary is "bulberiferous" and therefore protected underground during the burn. The known local population of owl's clover occurs entirely within areas of moderate to high burn intensity within the fire zone. Their seeds should have survived, but the 25 acres where owl's clover occurs will be monitored during the spring of 1996. The manzanita and ceonothus are fire-adapted; although they reproduce via seeds, nor by resprouting, they are expected to reestablish themselves.

Animals

Within the heart of the burn, refuge for animals was scarce, with many individuals crowding into the riparian corridors that wind through the canyon bottoms as well as the few ponds (Muddy Hollow, Glenbrook, Laguna canyons) and their associated wetlands too damp to burn. Even after the fire, species normally found in coyote brush (like wrentits) were flocking through the alders.

Surprisingly some animals survived even the high intensity burn areas. Shortly after the fire Gary Fellers and other Park Service naturalists discovered numbers of slender salamanders in their usual haunts. The timing of the fire was serendipitous for salamanders, which were in the right place at the right time. Because the fire occurred before the onset of the winter rains, these amphibians were still aestivating (resting during summer conditions) underground. For some reptiles and amphibians, the fire must have roared over without raising their core temperature more than a degree.

Luckily this fire did not happen during the nesting season when most birds are far more territorial than they are in autumn. The timing of the fire was also fortunate for most neotropical migrants; most of them - warblers, thrushes, grosbeaks, swallows - tend to leave on their migratory track by the end of September, not returning until March or April. Flocking birds that winter here - nuthatches, kinglets, chickadees - probably were able to move out in time.

Rich Stallcup found numerous deer tracks near Drakes Beach at a spot where escaping deer apparently swam across the mouth of Drakes Estero to the safe territory to the north. Survival by individuals of these large mobile species was largely a matter of luck - being in the right place at the right time.

But certainly, many animals lost their lives. The highest mortality was suffered by those with the least mobility; sedentary rodents like mountain beavers, woodrats, and deer mice; birds who are poor fliers like quail, wrens, and towhees. Some carcasses of larger mammals - deer, foxes, bobcats - were found in the ashes, but at least some of these were able to find routes of escape. Less fortunate were burrowing mammals. They tend to burrow not as deeply as salamanders and construct their tunnel systems for ventilation and multiple routes of access and egress. Perhaps most severely impacted was the Point Reyes mountain beaver, a rare and primitive rodent that was fairly common within the burn area. The Point Reyes subspecies is known only to occur in the western Marin County, mostly within the Seashore and restricted in its distribution to relatively damp loamy soils in close proximity to a perennial water source. The isolated and restricted distribution of this subspecies qualifies it as a candidate for endangered status. Two days after the fire I walked-up a canyon in the heart of the burn, where skeletons of coyote bush limbs, twisted and awry, were silhouetted against the sky. The ground crunched underfoot the surface of the soil baked to a crisp patina by the oils of incinerated plants of the soft chaparral. I stop at a once ferny hillside next to a creek that used to house a colony of mountain beavers; their oval burrows are visible beneath the blackened burls of ferns. The beavers must have been asphyxiated as the smoke ventilated through their burrow systems. For those who may have survived, there are no fronds left for forage. The fire incinerated about 40% of the habitat of this species and "could lead to its immediate listing as an endangered species."1

Appendix: Natural History

Surely the heat and smoke proved fatal to many individual animals that did not die directly in the flames. Rangers reported carcasses of animals found in the middle of Limantour Road - woodrats, brush rabbits, and skunks. They likely found the road a fire-free refuge within the inferno, then succumbed to the smoke or the heat. One wonders, also, just what impact the loss of habitat and associated food will have on the breeding success of the survivors, at least in the first year after the fire. Reduced reproductive success is anticipated for those species that forage primarily in the coastal scrub and prairie habitats. If there is no habitat left for a brush rabbit, there will be no prey for the gray fox or the bobcat. Without woodrats, any spotted owls that may have escaped the flames will be without their preferred prey. Without a toyon and huckleberry season, there will be no fruit for thrushes and robins. With few field voles left in once seed wealthy grasslands, the kestrel and kite will have less food to carry to the nest.

Some species may actually benefit from the burn. For example, the Myrtle's silverspot butterfly, a rare local species that breeds on outer Point Reyes: may wander into the burn as its primary foraging plants (thistles, gum plant, buckwheat, and coyote mine) colonize the barren hillsides once covered in coyote brush. The regeneration of plants, already underway, should be accompanied by a superabundance of insects and seeds, if not this spring, then in the near future. The decaying wood of the forest and shrub will also generate its own ecology driven by the gluttony of decomposers. Bark beetles and wood borers will become abundant and thereby provide a bonanza for woodpeckers and other wood-probing species. We should expect healthy populations of flickers and pileated, hairy, and downy woodpeckers. Flycatchers may cash in on a plethora of aerial insects emerging from the pulpy windfall. As always, jays will thrive.

But perhaps the truest prediction we can make is that the effects of the fire will be multifarious. For example, surely large numbers of bars, sequestered under bark or within park buildings, were consumed by the flames. At the same time, the number of snags left standing, and the insects they will generate, provide future habitat for future colonies. The loss of understory thickets will exclude large numbers of wrens and woodrats for a few years, but species that thrive on the planers that colonize disturbed areas - butterflies, goldfinches, and siskins - will likely proliferate. Like all events in nature, there are those who benefit and those who suffer, but over the long view, all niches will be filled.

Anecdotes

Some anecdotes from the fire are worth telling. Here's a brief collection.

Naturalist Rich Stallcup found a covey of quail foraging in Muddy Hollow shortly after the fire. He noticed they were mostly adults, suggesting that juveniles, perhaps, suffered higher mortality. Some of the males had their top knots singed off.

At the top of Inverness Ridge, we walked along the Bayview Trail, through the highest intensity area of the burn. The soil was still smoldering as we collected soil samples for analysis. Standing in the silent forest, I was surprised to hear a sharp "chip." Nearby, within ten feet, a chipmunk balanced on a charry limb, chattering and rail flicking. We guessed he had been attracted by our voices, a sign of life in a silent forest. Where had he survived the firestorm?

Just five days after the fire, the pond at Muddy Hollow hosted about 800 waterfowl, foraging and swimming, apparently oblivious to the devastation of the hillsides surrounding them. Interestingly, after the rains commenced, the waters clouded up with ashy silt and the birds, probably unable to find food in the cloudy water, disappeared. What affect might that silt have on the red-legged frogs and California newts that breed here?

Within the first week, people were reporting green root sprouts around the base of coyote brush, toyon, and elderberry. Within the second week, the first green fronds were reaching our of scorched fern burls.

Mid-March, and five months have passed since the fire. The winter has been generous - rainfall above average. Rich Stallcup and I walk from Limantour down toward Laguna Canyon. Flowers are well into bloom - paintbrush, hairy star tulip, lupine, marsh monkey flower. We find some fritillary on a dry slope, the succulent stem in odd contrast to the parched earth. Three black-railed deer - a female and two grown does - watch us from the hillside. In the riparian thicker, the alders are in full leaf; we see a pair of

Wilson's warblers in an aerial territorial feud. An orange-crowned warbler sings from deep in the thicket. Other signs of life - racoon tracks, a salamander under a rock, fresh woodpecker borings, an owl feather on the trail. Where the bridge crosses the creek, a pair of red-legged frogs stare at us with golden eyes unblinking. On the hillside above, wildflowers - *Castilleja*, *Calacortis*, *Fritillaria* - with names nearly as beautiful as their showy inflorescence, have broken through the charry soil. A hummingbird hovers, at a scarlet paintbrush, sipping its nectar with quiet intensity. The sun, breaking through the cloud cover, flashes of his throat in a fiery crimson blaze. .

References

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Where fire comes from

by Jules Evens

(ADAPTED FROM DAWN OF THE WORLD: MITH AND TALES OF THE MIWOK INDIANS OF CALIFORNIA.)

In the early days, the only fire anyone knew about was kept by Starwoman, who lived near an elderberry brake to the East, beyond the Great Valley. She kept her bright treasure in a box she had carved from the burl of a buckeye tree.

In those clays it was cold and dreary here near the coast. Coyote decided to remedy that situation, so one day he sent little Hummingbird out to steal the fire from Starwoman. Hummingbird flew in a quick straight line right to the elderberry brake and found Starwoman guarding her fire box. He perched in the branches above her camp waiting for an opportunity to steal an ember. Starwoman, dressed in a bark skirt and bunchgrass blouse, was busy straightening up her camp. As Hummingbird watched her movements, he couldn't help but notice a resemblance between Starwoman and Old Man Coyote - maybe it was the hunched shoulders, or the smirkish smile. Hummingbird wasn't sure and didn't spend much thought on the problem; he had a task to complete. Finally, Hummingbird was rewarded for his attention. Starwoman eventually cracked open the box to check on her fire. Just at that moment, Hummingbird darted down from his perch and stole a spark of fire. He tucked it under his throat and flew directly back home. When he arrived at the coast, Coyote was nowhere to be found, so Hummingbird stashed the fire in the buckeye tree.

The Hoo'-koo-e'-ko, who used to live along these shores, always went to the buckeye tree when they wanted fire. The dried sticks turned easily to ember after a little rubbing. The Hoo_koo-e'-ko are no longer here - they have followed the East wind, the path of ghosts, out to the Farallones. But fire is here to stay. Even today you can see the blaze on Hummingbirds throat.