

# Dispersal of Bay checkerspot butterflies

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## Hostplants and Nectar Sources

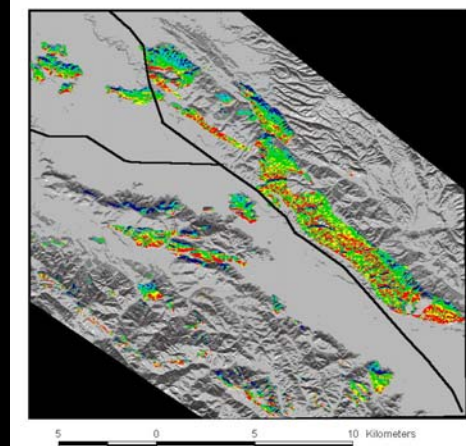


## Serpentinite forms discrete patches of habitat



## Observations

- Bay checkerspots have (at least) 2 modes of movement
- Everyday movement – “random walk” among nectar sources, hostplants, mates, thermal environment
- Dispersal-mode – more directional, fewer turns, faster flight
- Reluctance to leave true habitat, but switch modes when outside serpentine grassland
- Dispersal through suburbia is unknown



## Pattern and inference

- Core-satellite metapopulation, Coyote Ridge and smaller patches
- Small patches went extinct during 1975-1977 drought
- Distance to core best predictor of occupancy in 1987, also size and topography
- Population sizes ranged from 10 to 400, proportional to size and topography
- Inferred recolonization across Coyote Valley
- Harrison et al. 1988

## Edgewood



## Data 1

- Bay checkerspot sedentary within continuous habitat - <5% transfer over 500 m, <0.1% over 1500m (12,000 butterflies handled on Coyote Ridge 1986)
- < 5% transfer rate between JRH and JRC (500m apart separated by chaparral and oak woodland, some grassland)
- Females > males
- Butterflies cross I-280 at Edgewood, transfer at "expected" rates between patches of serpentine grassland separated by open grassland and chaparral
- Thomas Sisk Dissertation (1992, Stanford University)

## Data 2

- Releases near Gilroy in ag lands, dispersal to find isolated patch of serpentine, 1/100 female butterflies found on patch from 10 km away, more closer (Harrison 1989)
- Recolonization of Tulare Hill observed in 1995 (went extinct in 1990-1991 during drought) – likely source was North Metcalf "core population"
- Tulare population was ~2500 larvae in 2002 near extinction as of 2006 (lack of grazing on most of habitat)



