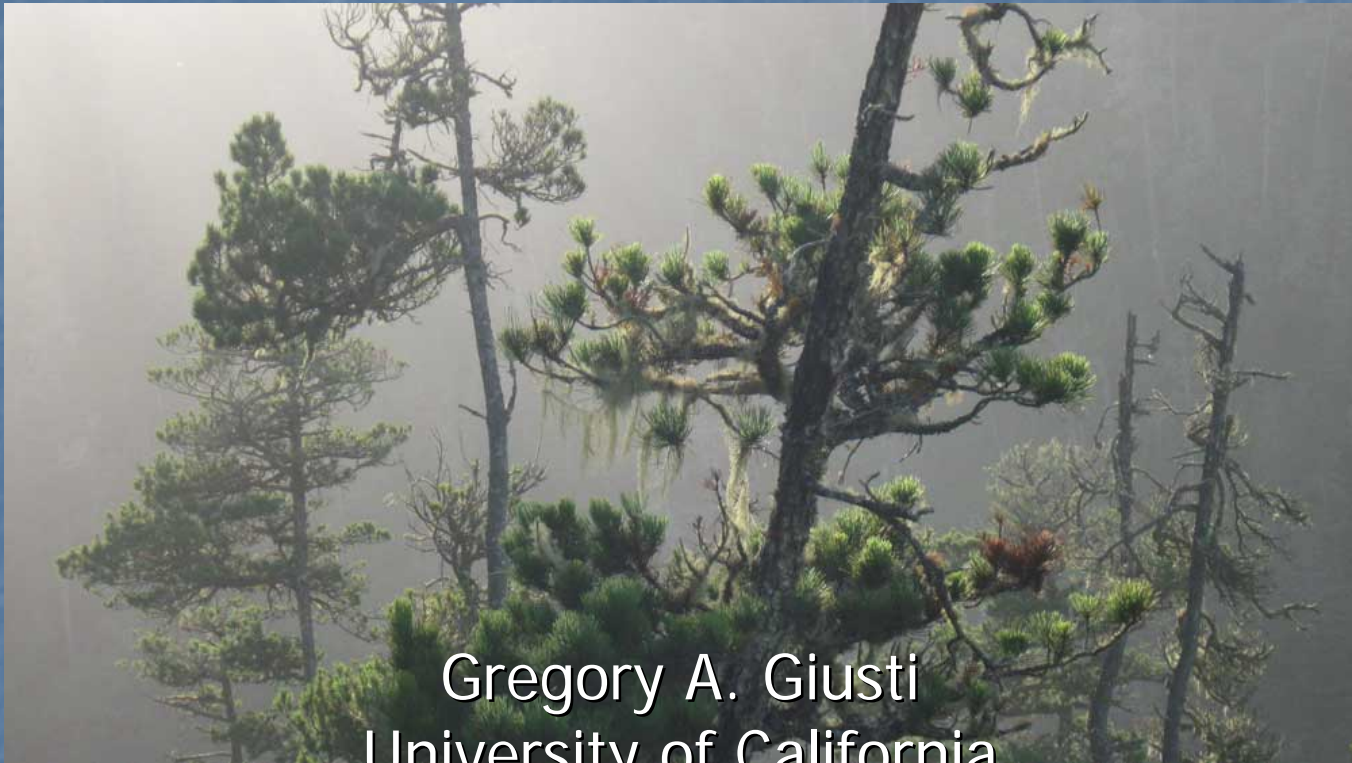


Some thoughts on the decline of the  
northern Bishop pine (*Pinus muricata*)  
forests



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**Common names** - Bishop, prickleccone, dwarf marine, Obispo, umbrella, bull, pitch, or Santa Cruz Island pine (Peattie 1950, Little 1980).





# Forests types with Bishop Pine



- Bishop –Shore Pine (immediate coast)
- Bishop- Doug Fir (on old dunes)
- Bishop-chinquapin (on old dunes)
- Pygmy cypress-bishop pine (old terrace deposits)

# Ecology of Bishop Pine

- 9 disjunct populations (Millar 1988)
- 49 to 50 feet (15-25 m) needles are 3 to 6 inches (10-15 cm) long and persist for 2 to 3 years
- Produce seed at the age of 5 to 6 years
- Serotiny is somewhat variable;
- A fire-free period of 80 years or more results in greatly increased susceptibility to disease





# Growth patterns

Coastal



Inland



# Decline of bishop Pine Forest



- Limited distribution
- Seedling regeneration limited by lack of fire
- Most populations are at the end of their short life span (80-100 years)
- Most population are even aged stands
- Development
- Lack of fire results in higher pathogen numbers
- Increased planting of Monterey Pine



# Pest & Disease Impacts

**COASTAL DWARF MISTLETOE**  
*Arceuthobium littorum*



# Western gall rust

*Endocronartium harknessii*





■ *Phellinus pini*



Bark beetles  
*Dendroctonus sp*

# Solutions? Strategies?

- Controlled burns
- Protection of extant seedlings
- Limit forest conversions
- Increase public awareness and involvement

