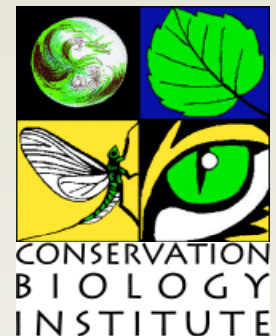


# Regional Framework and Strategy for Management of Invasive Plants San Diego County

Dendra Inc.

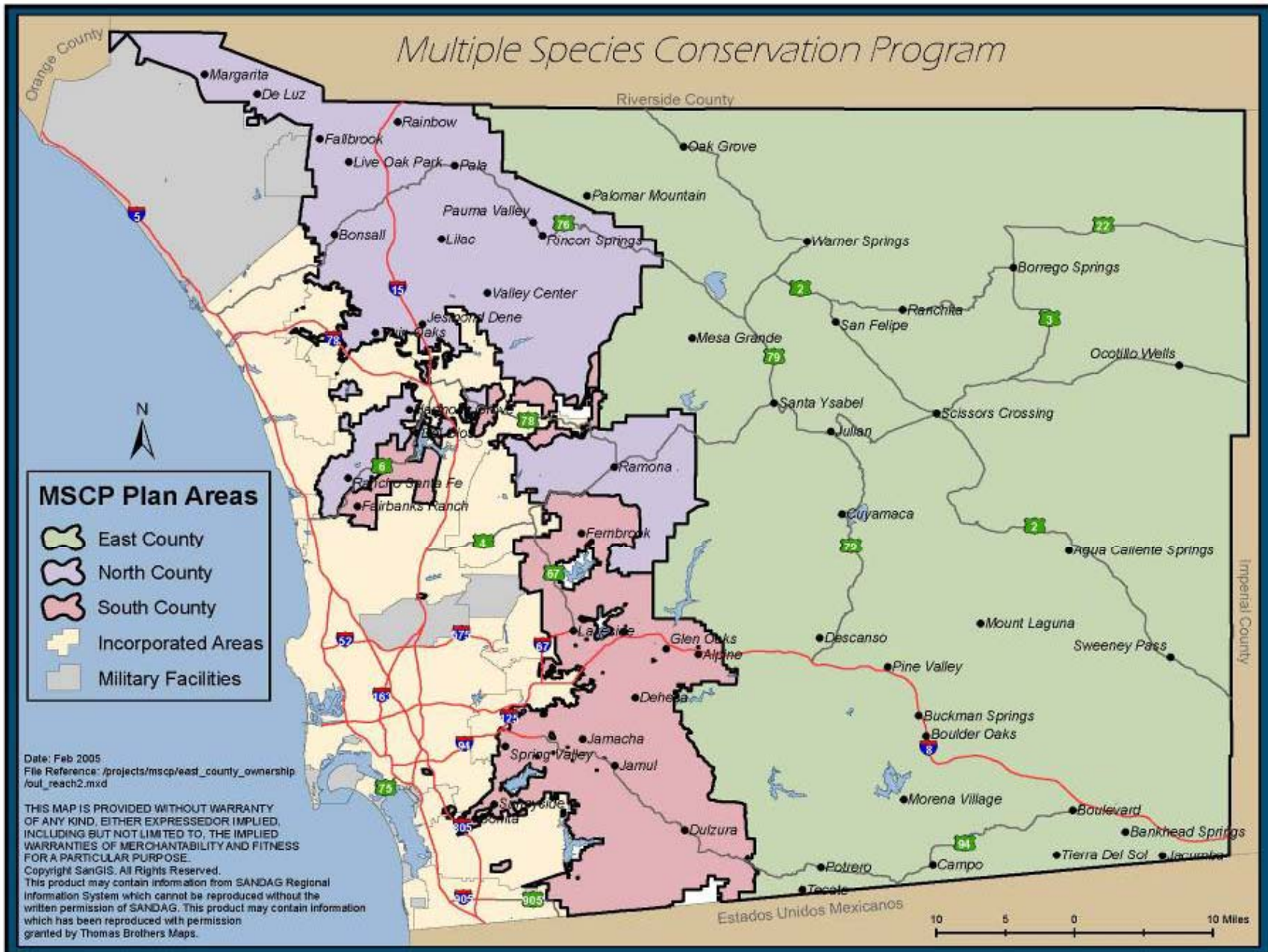


# *Introduction*

- **Project Goal:** Create a regional framework for management of invasive plant species, using a science-based assessment that follows Cal-IPC guidelines.



# Multiple Species Conservation Program



# *Objectives*

1. Develop **Priority List** of Invasive Species
2. Integrate existing data into a single database/guide additional species mapping
3. Assess threats and management feasibility
4. Prioritize species for management
5. Propose invasive plant control priorities for short-term (5-year) implementation
6. Propose a regional infrastructure for invasive species management in the county
7. Incorporate peer review

# *Timeline/Limitations*

## Deliverables:

- Draft plan – July 2012
- Final plan – September 2012

## Limitations:

- Poor information for some species
- Cal-IPC quad level mapping
- Holland vegetation classification

➤ System allows for updating & periodic re-prioritization



# *Project Components*

- Mapping Guidance
- Regional Impact Assessments
- Regional Framework and Strategic Plan



# *Mapping Guidance*

**Purpose:** Identify priority species, update regional invasive species database, and provide input/guidance to mapping contractor

- Priority Species List
  - Cal-IPC list + San Diego database records (252/55)
  - Expert review (February 2010)
  - Stratify species for mapping based on impact/distribution



# *Mapping Guidance (con't.)*

- Existing Datasets
  - 2006 database
  - CCH records
  - San Diego Plant Atlas records
  - Datasets from land managers
  - Cal-IPC invasive plant meetings





# *Regional Impact Assessments*

**Purpose:** Assess severity of impacts and management feasibility of priority species at the regional level to establish management priorities

- Science-based Assessments
  - Plant Assessment Forms (PAFs)
    - Ecological impacts
    - Invasiveness
    - Distribution/abundance



# *Plant Assessment Form (PAF)*

## ***Matrix***

- New Format
  - Excel file (6 tabs/worksheets)
  - Additional assessment criteria
  - Numerically-based (transparent) scoring
- New Information
  - Statewide PAFs/tailored to region
  - Comprehensive literature review/expert opinion
  - New PAFs for species not yet addressed

# *Plant Assessment Form (PAF)*

## ***Scoring***

- Qualitative Assessment
    - Literature review, personal observations, some data
  - Threat Levels Defined
  - Scores Weighted and Additive
    - Final invasive species threat score based on criteria
- **Consistent, systematic method for evaluating threat of each species**

# *Plant Assessment Form (PAF)*

## ***Criteria***

- Ecological Impacts
  - Abiotic Impacts
    - Fire, water, geomorphology/soils, nutrients/chemistry, carbon sink
  - Flora & Vegetation Community Structure
    - Sensitive species, vegetation structure/composition, hybridization
  - Fauna
    - Sensitive species (impacts/benefits)
- Invasiveness
  - Invasive Potential
  - Rate of Spread
  - Reproductive Potential
  - Human-caused Dispersal
  - Long-distance (Natural) Dispersal
- Distribution & Abundance

# *State- vs Regional PAF Detail*

## **State PAF**

### 1.1 Abiotic Impacts

Identify ecosystem processes impacted



## **San Diego PAF**

### 1.1 Abiotic Impacts

Fire

- Frequency
- Intensity
- Ignition Probability

Water

- Quality
- Flow
- Quantity

Geomorphology/Soils

- Soil Erosion
- Sediment Transport

Nutrients/Chemistry

Carbon Sink

# PAF - Summary Sheet

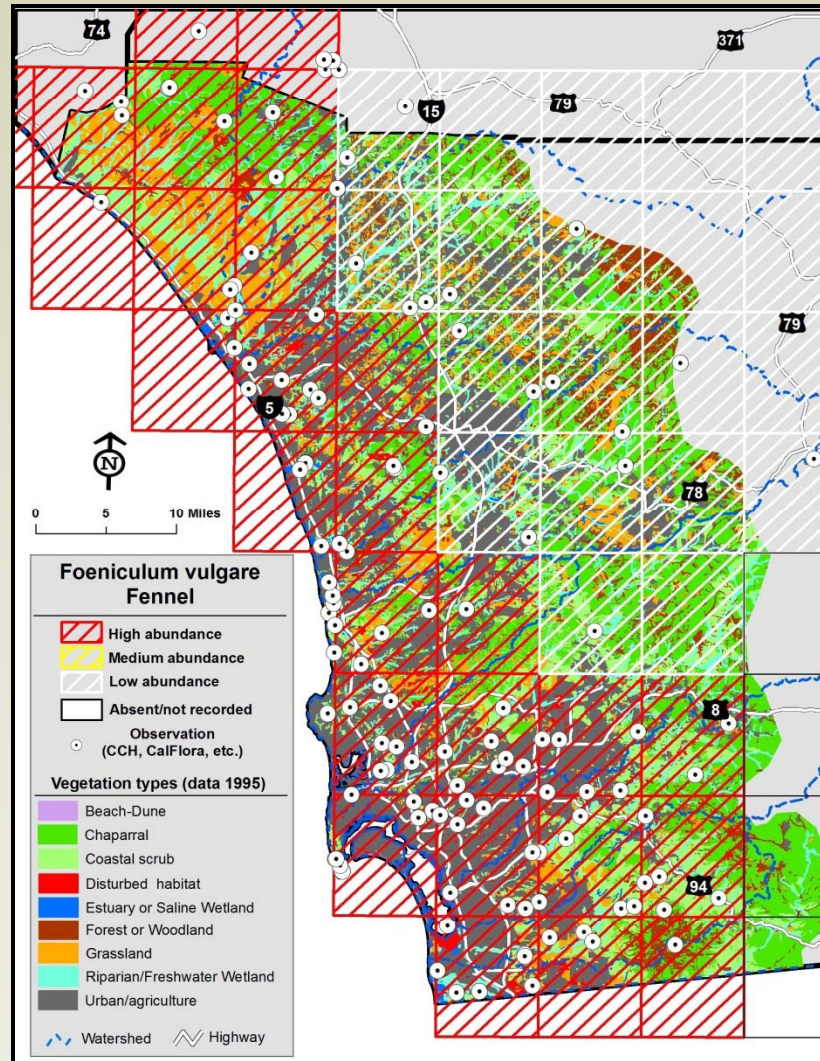
Species name	Common name			Review Date	
<i>Foeniculum vulgare</i>	Fennel			October 2011	
Final Ranking and score (0 to 10)		6.2			
Class	Subclass	Class weight	Subclass weight	Score	Weighted Score
1.0 Ecological Impacts		0.6		4.9	2.9
	1.1 Abiotic Impacts		0.3	1.2	
	1.2 Flora & Vegetation Community		0.4	3.0	
	1.3 Fauna		0.3	1.7	
2.0 Invasiveness		0.2		7.3	1.5
	2.1 Invasive Potential: Role of Natural and Anthropogenic Disturbance		0.25	2.3	
	2.2 Rate of Spread: How will it do (is it doing) in new areas?		0.25	2.0	
	2.3 Reproductive Potential		0.25	1.5	
	2.4 Human Caused Dispersal		0.10	1.2	
	2.5 Long Distance Dispersal		0.15	1.8	
3.0 Distribution and Abundance		0.2		9.2	1.8
	3.1 Distribution across vegetation classes/minor ecotypes		0.5	2.5	
	3.2 Abundance (present or potential) within invaded classes		0.5	3.0	
Reviewers: Jason Giessow, Patricia Gordon-Reedy					
Reviewer comments are designated with an (R) under citations.					



# PAF - Worksheet

Foeniculum vulgare (Fennel)										
Criteria		Intensity (Threat) Ratings					Score	Actual vs. Potential &/or Confidence	Comments	References
		Unknown (0)	Negligible (0)	Low (1)	Medium (2)	High (3)				
1.0	Ecological Impacts							4.9		
	1.1 Abiotic Impacts							1.2		
	1.1.1 Fire							2.0		
		a. To what extent does this non-native plant (NNP) change the frequency of fires? ~Fast recovery of fuel load	Unknown	No noticeable effect on fire frequency.	Minor change to fire frequency (e.g., contributes to rapid recovery of fuel load with the potential to increase fire frequency). May be part of a group of plants or single plant with minor effect.	Moderate change to fire frequency (e.g., contributes to rapid recovery of fuel load with the potential to increase fire frequency). May be part of a group of plants or single plant with moderate effect.	Greatly changes fire frequency (e.g., rapid re-growth of biomass and fuel load after fire promotes short-return interval for successive fires). Forms monotypic stands that recover quickly or is an important species in a group that has significant effects.	2		Form dense patches; increased biomass (1,2). (1) Klinger 2005; (2) Sawyer et al. 2009.
		b. To what extent does this NNP change the intensity of fires? ~Fuel load contribution ~Fuel load structure (ladder fuel)	Unknown	No noticeable effect on fire intensity.	Minor change to fire intensity (e.g., low increase in fuel load [0% to 5%]).	Moderate change to fire intensity (e.g., low to moderate increase in fuel load [5% to 25%] and/or moderate change in fuel structure in	Greatly changes fire intensity (e.g., significant increase in fuel load [25-30%] and/or important change in fuel structure, such as ladder fuel into tree canopy).	2		Burns at high intensity; vertical structure but primarily affects gaps in coastal sage scrub, so may not add a structural layer (1,2). (1) Klinger 2005; (2) Sawyer et al. 2009.
		c. To what extent does this NNP change the ignition probability? ~Harbors ignition agent ~Abundant around ignition source ~Long distance dispersal of embers ~Highly flammable with oils and resin or significant amounts of combustible material (explosive & rapid	Unknown	No noticeable effect on ignition probability.	Minor change to ignition probability (e.g., does not provide cover for transient camps; minor contribution to fuel load around roads and power poles; 'normal' flammability and ember dispersal).	Moderate change to ignition probability (e.g., may provide some cover for transient camps; contributes to fuel load around roads and power poles; disperses embers a moderate distance [100 yards], or burns with above-average intensity).	Greatly changes ignition probability (e.g., harbors ignition source; may be a significant contributor to fuels along ignition corridors [roads and power lines]; disperses embers a long-distance [100 yards]; and/or explosive combustion). Stands typically have significant amounts of dead combustible material (easily catch fire).	1		Ignition temperature relatively high due to high live fuel moisture content (1). (1) Klinger 2005.
	1.1.2 Water							1.2		
		a. To what extent does this NNP have a negative impact on water quality?	Unknown	No noticeable effect on water quality.	Minor change to water quality (e.g., small change to 1-2 components). Minor	Moderate change to water quality (e.g., minor change to 2-3 components or moderate	Greatly changes water quality (e.g., moderate change to 3 or more components or large	1		Facultative or facultative upland plant that occurs primarily in uplands or adjacent to freshwater (1) Klinger 2000; (2) Sawyer et al. 2009.

# PAF – Distribution Map



- Cal-IPC Quad Mapping
  - Existing data
  - Expert opinion/observations
- Updated with invasives mapping



## *Next ....*

- Draft PAF Scores
- Management Levels
- Management Priorities
- Strategic Plan
- Regional Framework

