GOALS AND OBJECTIVES

IEMM in cooperation with SDMMP

Agenda

- **Introduction**
  - **Today Our Goals and Objectives are . . .**
    - **IEMM project**
    - **Why are we here today?**
    - **What will we do today?/What won't we do today?**
  - What are Goals and Objectives (G/O) ?
    - Why are they hard to write
  - Examples of thinking iteratively about G/O
    - Vernal Pools and Fairy (recovery plan)
    - Hermes (12-month finding)
    - Rare Plant (Otay Tarplant - draft conceptual model)
  - Our work today
    - Stay tuned for part deux – Conceptual Models
- Regional context (SDMMP)
- The Fun Begins
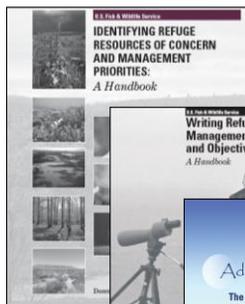
Why are we here?
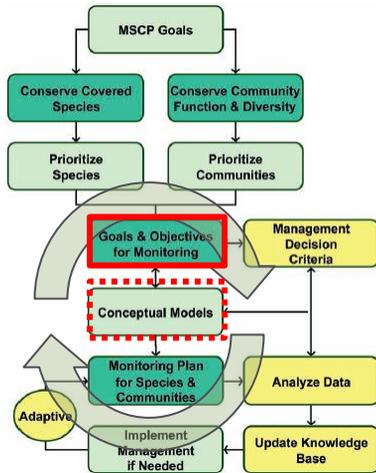
IEMM was tasked to work with preserves to refine monitoring and management goals and objectives, improve conceptual models that link natural drivers, human stressors, and management actions.

This process is iterative

# Templates galore

□ DFG
□ FWS
□ TNC
□ DOI
□ COUNTY
□ ATKINSON

Why are we here

- Plenty of flowcharts and templates: So why are we not done yet with this easy task?? DIFFICULT
- Writing goals and objectives that balance species, communities, and function is DIFFICULT
- Developing models that link natural process, threats, and management is DIFFICULT
- Designing robust monitoring program is DIFFICULT
- Analyzing data is DIFFICULT
- Translating analyses into appropriate management action is DIFFICULT

What will we do today

- **Operationalize the templates:**
  - Work with the available guidelines
  - Explore why it's still so hard to write goals and objectives
- **SMART**
  - Specific
  - Measurable
  - Achievable
  - Results-oriented
  - Time-fixed
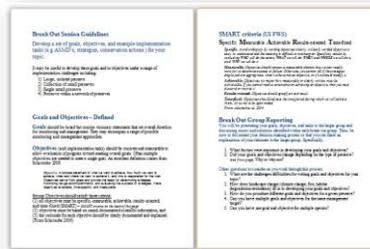
Handout

What we can't do today

- Write definitive goals and objectives that will fit every preserve
- Write goals and objectives that meet every preserve's regulatory framework and obligations
- Write goals and objectives that capture regional priorities
- Be able to prioritize goals and objectives or determine how many you should have in your preserve

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Some definitions

Goals should be **broad but concise** visionary statements that set **overall direction for monitoring and management.** They may encompass a range of possible monitoring and management approaches.

Objectives A concise statement of **what we want to achieve, how much we want to achieve, when and where we want to achieve it,** and **who is responsible for the work.**
Often **multiple objectives** are **needed** to meet a single goal.

(Tear et al 2005)

Why is writing G&O so hard?

1) How well does the objective meet the **SMART criteria**
2) How clear is the **rationale/narrative that explains the assumptions, logic, reasoning**
3) Was **available science used** in objective development?
4) Does is meet regulatory mandates?

1= Poor, 2= Fair, 3= Good, 4= Excellent
Average score = 1.73

Scores improved annually since 1997-2004
Scores inched up again 2005-2007: 1.89

(Schroeder 2006, 2009)

Why is writing G&O so hard?

- **Primary impediments**
  - Diving into scientific literature is time-consuming (too complex or too much information to sort through)
  - Hard to write a specific objective that is concise (focus on key elements while still providing a quantitative means to monitor progress)
  - Desire to maintain flexibility
  - Conflict between species focus and broader condition measures

Should we give up ?

$$1997 - 2004 = 1.73$$
$$2005 - 2007 = 1.89$$

1) This is a very challenging process for managers

2) Using SMART, makes us smarter

(Schroeder 2006, 2009)

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Common Themes

- Multiple objectives for each goal

- SMART criteria are not easy to achieve (nor evaluate our objectives)

- Developing objectives is possible in information poor situations (Hermes copper)

- Refining objectives is needed even in data/document rich examples (Vernal Pools, Tarplant)

http://www.californiachaparral.com/images/555_Vernal_Pool_II_crop.jpg

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Vernal Pools and Fairy Shrimp

- Pool basins support a unique group of rare and/or endemic **plants** and a highly diverse assemblage of **invertebrates**.

- The San Diego fairy shrimp (*Branchinecta sandiegonensis*) is endangered. *Branchinecta lindahli* (versatile fairy shrimp), is very common and often occurs in the same areas.

- The species is threatened by:
  - Habitat destruction
  - Alteration of wetland hydrology by draining
  - Disturbance (ORV, cattle grazing)

From: Vernal Pools Of Southern California Recovery Plan, 1998

https://www.californiachaparral.com/images/555_Vernal_Pool_II_crop.jp

http://calphotos.berkeley.edu/cgi/

http://waynesword.palomar.edu/images/fshrimp7.jpg

Vernal Pools and Fairy Shrimp — GOALS

Recovery Plan for Vernal Pools of Southern California

OBJECTIVE

The goal of this plan is conserve and enhance southern California vernal pool ecosystems, with specific emphasis on stabilizing and protecting existing populations of *Eryngium aristulatum* var. *parishii*, *Pogogyne abramsii*, *Pogogyne nudiuscula*, *Orcuttia californica*, and San Diego and Riverside fairy shrimp so that these species may be reclassified from endangered to threatened status. The goal of this plan for *Navarretia fossalis*, currently proposed for listing as threatened, is to ensure the long-term conservation of this species.

Although labeled as an objective (and a goal),
this is the broad (yet concise) vision statement

From: Vernal Pools Of Southern California Recovery Plan, 1998

Vernal Pools and Fairy Shrimp — SUGGESTED (?) GOALS AND OBJECTIVES

Goal: Maintain intact vernal pools and their associated species in a configuration that maintains species diversity, species viability, and habitat function *(largely unchanged from recovery plan)*

Objective 1:
Eliminate all pool disturbance from unauthorized access by vehicles, bicycles, human foot traffic, domestic animals, and livestock.

Tasks under Objective 1:
1. Install, repair or improve signage and fencing
2. Increased community outreach and education
3. Increased enforcement activities

Monitoring Objective 1:
1. Survey pools for tracks (tires, human, livestock)
2. Install IR remote cameras

☑	S	Specific
☑	M	Measurable
☑	A	Achievable
☑	R	Results-Oriented
☐	T	Time-fixed

SUGGESTED (?) GOALS AND OBJECTIVES
Vernal Pools and Fairy Shrimp

Goal: Maintain intact vernal pools and their associated species in a configuration that maintains species diversity, species viability, and habitat function *(largely unchanged from recovery plan)*

Objective 2:
Reduce or eradicate nonnative species to levels that do not adversely affect the native species.

Tasks under Objective 2:
1. Maintain natural fluctuations in hydrology
2. Controlled burns in degraded areas
3. Removal of key exotics like bullfrogs (predator)

Monitoring Objective 2:
1. Vegetation surveys in vernal pools
2. Frog surveys in vernal pools

☐	S	Specific
☑	M	Measurable
☐	A	Achievable
☑	R	Results-Oriented
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SUGGESTED (?) GOALS AND OBJECTIVES
Vernal Pools and Fairy Shrimp

Goal: Maintain intact vernal pools and their associated species in a configuration that maintains species diversity, species viability, and habitat function *(largely unchanged from recovery plan)*

Objective 3:
Limit further genetic hybridization with the common generalist (*Branchinecta lindahli*) in the next 3 years

Tasks under Objective 3:
1. ID pools with generalist and/or hybrids
2. Limit dispersal of cysts between contaminated pools through reduced travel and disinfection of equipment, boots, tires etc

Monitoring Objective 3:
1. Sampling of pools and screening (morphological and/or genetic)
2. Repeated sampling through time to detect changes

☑	S	Specific
☑	M	Measurable (sort of)
☑	A	Achievable
☑	R	Results-Oriented
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Possible "Game Changer" based on new information

Hermes copper

- Hermes copper (*Hermelycaena [Lycaena] hermes)* is a rare butterfly endemic to San Diego County.
- Hermes copper butterfly is threatened with extirpation due to habitat loss, wildfires restricted range, and population isolation.

http://www.sandiegohistory.org/timeline/images/missionvalley.jpg

From: Federal Register. 2011
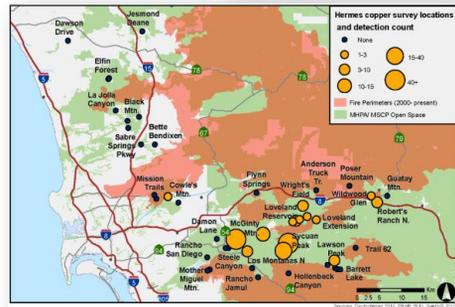
SUGGESTED (?) GOALS AND OBJECTIVES
Hermes copper

Goal: Maintain adequate size and distribution of populations in order to ensure high probability of survival for the next 100 years

Objective 1:
Determine size and extent of populations on public and protected lands during a single flight season (May to July).

☑ S   Specific
☑ M   Measurable
☑ A   Achievable
☑ R   Results-Oriented
☑ T   Time-fixed

Monitoring Objective 1:
1. Develop list of historical Hermes locations and possible suitable (redberry) habitat
2. Develop a prioritized list of sites and survey routes before the flight season
3. Conduct weekly surveys across the entire range to determine number and approximate size of extant populations

SUGGESTED (?) GOALS AND OBJECTIVES

Hermes copper

Goal: Maintain adequate size and distribution of populations in order to ensure high probability of survival for the next 100 years

Objective 2:
Reduce risk of catastrophic loss of populations in a megafire (sensu Federal Register) within 2 years of the 12-month finding

Tasks under Objective 2:
1. Create fire management plans that limit fire risk through creation of fire breaks and/or emergency response plans for key populations

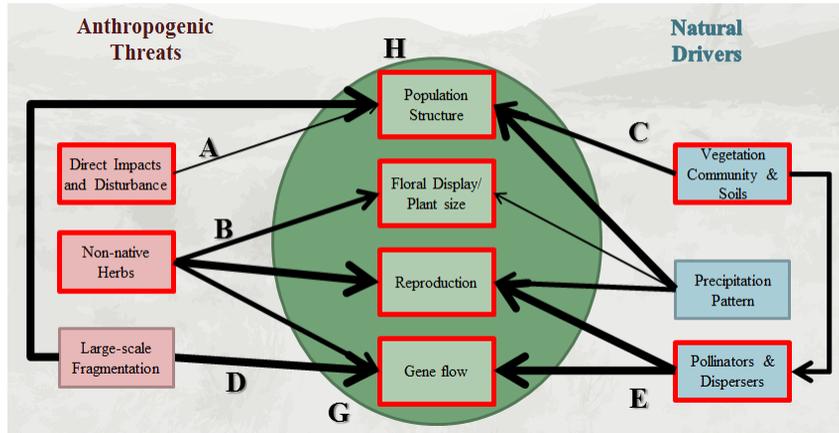|		
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Otay Tarplant

- *Deinandra conjugens* is an annual plant with a self-incompatible breeding system (requires pollination from an individual with a different genetic structure).

- Major threats
  - Loss of habitat due to development
  - Agricultural activities
  - Invasion of nonnative species
  - Inadequate pollination due to self-incompatible breeding system
  - Decline in genetic variation.

- The goal of this recovery plan is to recover *Deinandra conjugens* sufficiently to warrant delisting.

From: Recovery Plan 2004

Otay Tarplant

Draft Conceptual Model

Otay Tarplant

Goal: Stabilize and protect habitat that supports known populations of *Deinandra conjugens* and identify and protect other populations

Objective 1:
Evaluate the status of all known populations of *Deinandra conjugens* and conduct surveys to search for new populations

☑ S	Specific
☐ M	Measurable
☑ A	Achievable
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Tasks under Objective 1:
1. Monitor population size (area and number of individuals), reproduction, distribution, and threats to stability or viability for all sites
2. A single methodology (comparable among sites) should be developed to conduct population assessments and implemented across all reserves.
3. Surveys for D. conjugens should continue within areas of suitable habitat using a standardized and comparable monitoring methodology within conserved areas

SUGGESTED (?) GOALS AND OBJECTIVES
Otay Tarplant

Goal: Stabilize and protect habitat that supports known populations of *Deinandra conjugens* and identify and protect other populations

Objective 2:
Adaptively manage and monitor areas conserved for *Deinandra conjugens*.

|		
☑	S	Specific
☐	M	Measurable
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Tasks under Objective 2:
1. Appropriate techniques should be developed and implemented to control invasive weeds within suitable D. conjugens habitat, while avoiding adverse impacts to the species or its habitat.

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  - ▫ **Our work today**
    - ▪ **Stay tuned for part deux – Conceptual Models**
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Why are we here?
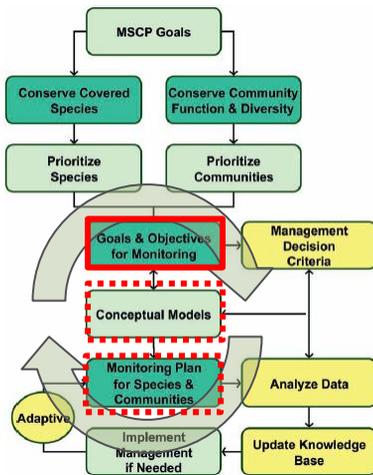
This process is iterative

Breakout groups

1) Rare and endemic species (e.g., Otay tarplant, Vernal Pools)

2) Corridors and connectivity for highly mobile wide ranging species (e.g. mule deer, mountain lion)

3) Invasive species (e.g. stinkwort, arundo, invasives that are detected early)

4) Stewardship management, education, and outreach (e.g. trails and public access issues, addressing mountain biking and equestrian communities, educational programming, public participation)

5) Ecosystem and natural communities

EMP recommendations for priority funding	
California least tern	Otay Mesa mint
Western snowy plover	California Orcutts grass
California least tern	Spreading navarretia
Coastal cactus wren	Thread-leaved brodiaea
Golden Eagle	San Diego thornmint
Northern harrier	Dehesa beargrass
Tricolored blackbird	Nuttalls lotus
American badger	Short-leave dudleya
Quino checkerspot	Orcutts spineflower
	Willowy monardella

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- **Regional context (SDMMP)**
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