



# DFG Wildlife Action Plan Climate Work Group Meeting March 3, 2012

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# Agenda

- ◆ Introductions
  - ◆ Work group purpose/objectives
  - ◆ Overview of SWAP (Armand)
  - ◆ Survey results
  - ◆ Potential work group tasks
  - ◆ Next steps
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# Work group purpose/objectives

- ◆ Provide stakeholder input and support to thoroughly integrate climate change into California's State Wildlife Action Plan (SWAP) revision process.

## Objectives:

- ◆ Provide information for DFG teams to adequately consider climate change issues
- ◆ Identify a network of partners with climate expertise that can work with DFG teams
- ◆ Ensure climate change is effectively and appropriately integrated into the SWAP

# State Wildlife Action Plan Update 2013

## CALIFORNIA WILDLIFE *Conservation Challenges*



Armand Gonzales  
April 3, 2012

CALIFORNIA'S WILDLIFE ACTION PLAN

Prepared by UC Davis Wildlife Health Center for the California Department of Fish and Game

# SWAP

- ◆ Completed in 2005
- ◆ FWS requires updates every 10 years
- ◆ Position CA/DFG to integrate new information and leverage more funding
- ◆ Overarching vision for natural resources
- ◆ Articulate strategy for:
  - Priority species and habitats
  - Identify data gaps, research and monitoring needs
  - Recommendations and accountability

# Elements 1-4

1. Information on the **distribution and abundance** of wildlife, including low and declining populations, that describes the diversity and health of the state's wildlife.
  2. Descriptions of **locations and relative conditions** of habitats essential to species in need of conservation.
  3. Descriptions of **problems that may adversely affect species** or their habitats, and priority research and survey efforts.
  4. Descriptions of **conservation actions** proposed to conserve the identified species and habitats.
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# Elements 5-8

5. **Plans for monitoring species and habitats**, and plans for monitoring the effectiveness of the conservation actions and for adapting these conservation actions to respond to new information.
  6. Descriptions of procedures to **review the plan** at intervals not to exceed 10 years.
  7. **Coordination** with federal, state, and local agencies and Indian tribes in developing and implementing the wildlife action plan.
  8. **Broad public participation** in developing and implementing the wildlife action plan.
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# California SWG Funding History

(millions)



- ◆ SWG funding range \$2.4 million to \$3.7 million
- ◆ Based on formula (land base x population)
- ◆ Other funding opportunities

# Update objectives

- ◆ Create the vision for fish and wildlife conservation in California
- ◆ Provide an accounting of accomplishments
- ◆ Strategy analysis of impacts and stressors by ecoregions
- ◆ Incorporate climate change impacts and adaptation strategies
- ◆ Update species at risk, vulnerable species and species of greatest conservation need
- ◆ Recommend conservation actions consistent with planning documents developed by other agencies

# Update Components

## Internal Coordination

- Executive Committee
- Steering Committee
- Technical Team

## Public Outreach

- Social Media
- Advisory Committees
  - Tribal
  - Public
    - Agriculture
    - Forests
    - Water
    - Consumptive Users
  - State Agencies
  - Federal Partners
- Scoping
- Draft Review

## Administrative

- Grants and Contracts
- Training

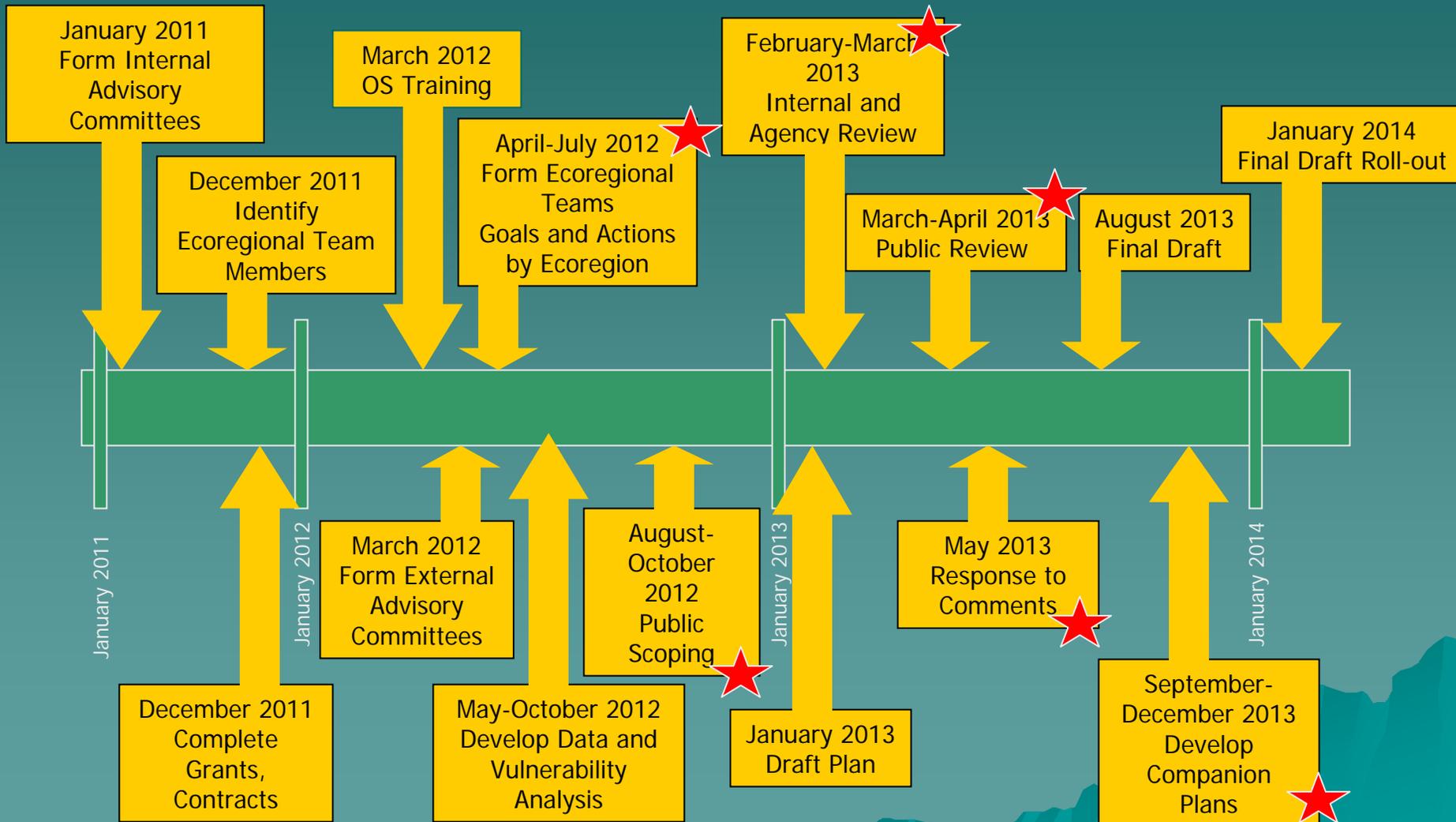
## Data Development

- Range maps
- Species Data-Base
- Species at Risk-Target Species
- Vulnerability Study
- List of Stressors/Threats

## Strategy Development

- Open Standards
  - Goals and Actions
  - Effectiveness Measures
  - Monitoring Plan
  - Adaptive Management Strategy
- Heinz Center/BLM

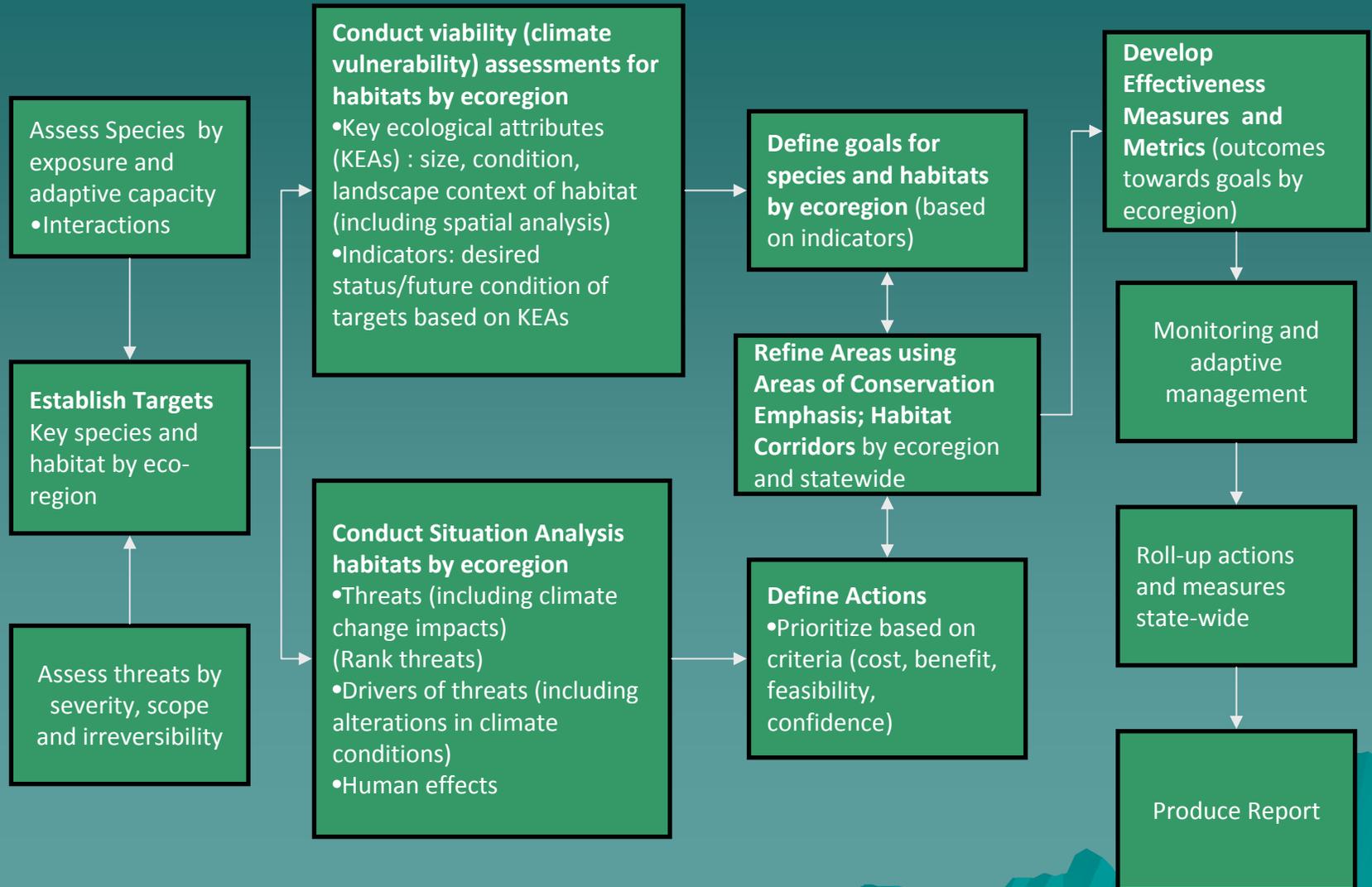
# Schedule of Major Tasks



# Phase I

- ◆ Public Outreach
  - ◆ Internal Scoping
  - ◆ Public Scoping
  - ◆ Facilitation
  - ◆ Data Development
  - ◆ Vulnerability Analysis
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- A stylized, layered mountain range graphic in shades of teal, located in the bottom right corner of the slide.

# CA SWAP UPDATE PROCESS



# Phase II

- ◆ Compile Ecoregional Assessments
  - ◆ Update Maps
  - ◆ Conduct External Coordination
  - ◆ Publish Drafts and Final Report
  - ◆ Conduct Public Review and Response to Comments
  - ◆ Final Roll-out
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- A stylized, teal-colored mountain range graphic is located in the bottom right corner of the slide, extending from the right edge towards the center.

# Stakeholder Committee Roles

- ◆ Provide input on ecoregion targets
- ◆ Provide expertise to ecoregional teams
- ◆ Review ecoregional strategies
- ◆ Participate in public scoping meetings
- ◆ Review climate chapter
- ◆ Provide scientific advice throughout process i.e. Response to comments, companion plans.

# Survey Results

- ◆ Number of participants: **8**
- ◆ California climate change literature: **16**
- ◆ Regional climate contacts
  - Klamath-Cascade-Sierra: **5**
  - Coast-Marine: **9**
  - Central Valley and Coast Range: **6**
  - California Deserts: **5**
  - All: **2**
- ◆ Regional climate change literature
  - Klamath-Cascade-Sierra: **17**
  - Coast-Marine: **27**
  - Central Valley and Coast Range: **0**
  - California Deserts: **1**

# Climate Factor Worksheet

Microsoft Excel - CA\_ClimateFactors\_NorthernCaliforniaCoast\_1 [Read-Only]

File Edit View Insert Format Tools Data Window Help Adobe PDF Type a question

11 B I U % , +.00 +.00

B	C	D	E	F	
Ecoregion: Northern California Coast (coastal portion of PRBO Northwestern California Ecoregion and some info taken from the Central Western California Ecoregion)					
General stress, abiotic, ecosystem-level (Geyer et al. 2010)	Climate Factor/Projected abiotic change	Direction (+/-)	Magnitude (or range)	Source(s)	Notes
3.1.1 climatic changes (average, variability, seasonality)	Δ annual average temperatures	+	increase 1.7 to 1.9°C by 2050	PRBO wildlife report	Cayan et al. 2008
3.1.1 climatic changes (average, variability, seasonality)	Δ spring average temperature				
3.1.1 climatic changes (average, variability, seasonality)	Δ summer average temperature	+	1.1 to 3.4°C from 2035-2066	Cayan et al. 2008	Based on 2 models
3.1.1 climatic changes (average, variability, seasonality)	Δ winter average temperature	+	.9 to 2.4°C from 2035-2066	Cayan et al. 2008	Based on 2 models
3.1.1 climatic changes (average, variability, seasonality)	Δ temperature extremes	+	Mean max. and min. temperatures	Bell et al. 2004 in PRBO report	Many of these changes are not in the models
3.1.1* climatic changes (average, variability, seasonality)	Δ average length of frost free growing season	+	begin 25 days earlier and end 25 days later	Bell et al. 2004 in PRBO report	This is not a stressor
3.1.1 climatic changes (average, variability, seasonality)	Δ annual average precipitation	-	101 to 387 mm by 2070; or 100 to 300 mm by 2050	PRBO report; Snyder et al. 2000	Models are not consistent
3.1.1 climatic changes (average, variability, seasonality)	Δ spring average precipitation				
3.1.1 climatic changes (average, variability, seasonality)	Δ summer average precipitation				
3.1.1 climatic changes (average, variability, seasonality)	Δ fall average precipitation				
3.1.1 climatic changes (average, variability, seasonality)	Δ average winter precipitation	-	+13 to -92 statewide by 2050	Hayhoe et al. 2008	3 of 4 models show decrease
3.1.1 climatic changes (average, variability, seasonality)	Δ form of precipitation (from snow to rain)	n/a	shift from snow to rain	Cayan et al. 2008	minimum temperatures will be above freezing
3.1.2 change in marine water characteristics	Δ in currents and upwelling	+	intensifying upwelling months	Snyder et al. 2000	important for marine life
3.1.3 change in freshwater hydrologic regimes	Δ water temperature	+/-	no info	PRBO report	suggests change
3.1.3 change in freshwater hydrologic regimes	Δ runoff and river flow (annual)	-	loss of snowpack in this region	PRBO; Stewart et al. (2008)	No specific projections
3.1.3 change in freshwater hydrologic regimes	Δ timing of runoff	n/a	shift in timing of heavies	Stewart et al. (2008)	No specific projections
3.1.3 change in freshwater hydrologic regimes	Δ groundwater table				
3.1.3 change in freshwater hydrologic regimes	Δ water chemistry (freshwater)		salinity intrusion into freshwater	PRBO	
3.1.3 change in freshwater hydrologic regimes	Δ flood occurrence				
3.1.4 change in snow or ice regimes	Δ snow pack	-	73% reduction in snow accumulation	Snyder et al. 2000	73% reduction in snowpack
3.1.4 change in snow or ice regimes	Δ snow cover period	-	shorter period due to earlier melt	Kiparsky and Gleason 2008	Statewide reduction
3.2.1 change in abiotic structure	SLR (average)	+	6-32 cm above 1990 level	Cayan et al. 2008a	
3.2.1 change in abiotic structure	SLR (extremes)	+	frequency of sea level extremes may increase		Increases in the number of extreme events

# Work Group Tasks

## April Tasks:

- ◆ Identify state-wide and regional California climate change literature references
- ◆ Identify regional climate change contacts
- ◆ Climate factors worksheet

## May-August Tasks:

- ◆ Review and finalize climate change overarching chapter for the SWAP
- ◆ Review and provide input on ecoregional teams climate strategies.
- ◆ Serve as a resource to DFG ecoregional teams on climate change

# Next Steps

- ◆ Next meeting 2-3 weeks?
- ◆ Finalize survey response
  - Review compiled survey document
  - Add additional regional contacts
  - Populate deserts, central valley-coast ranges resources
- ◆ Discuss climate factors worksheets