



*2017 Cal-IPC SYMPOSIUM
Working Across Boundaries*

CA State Wildlife Action Plan 2015 Update *as a Collaborative Invasive Management Tool*

October 26, 2017

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**CA Department of Fish and
Wildlife**



Outline

- **Introduction – What is SWAP 2015?**
- **Implementation Status**
- **Implementation Priorities**
- **Baseline**
- **Embracing the Blueprint...**
- **Discussion**

SWAP 2015

SWAPs

State Wildlife Action Plans

To receive “State Wildlife Grant (SWG)”

“California” SWAP

- **Creates a vision & framework**
- **Ecosystem approach**
- **Provides conservation priorities**
- **For sustainable future**



SWAP 2015 Strategic & Standardized Approach



1. Conceptualize

- Define planning purpose and project team
- Define scope, vision, targets
- Identify critical threats
- Analyze the conservation situation

2. Plan Actions and Monitoring

- Develop goals, strategies, assumptions, and objectives
- Develop monitoring plan
- Develop operational plan

3. Implement Actions and Monitoring

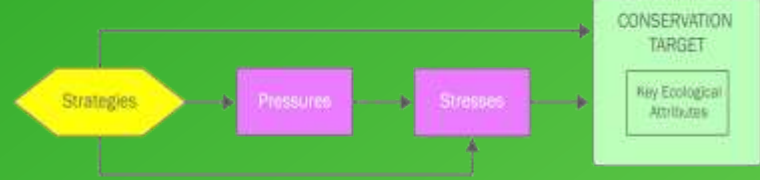
- Develop work plan and timeline
- Develop and refine budget
- Implement plans

4. Analyze, Use, Adapt

- Prepare data for analysis
- Analyze results
- Adapt strategic plan

5. Capture and Share Learning

- Document learning
- Share learning
- Create learning environment

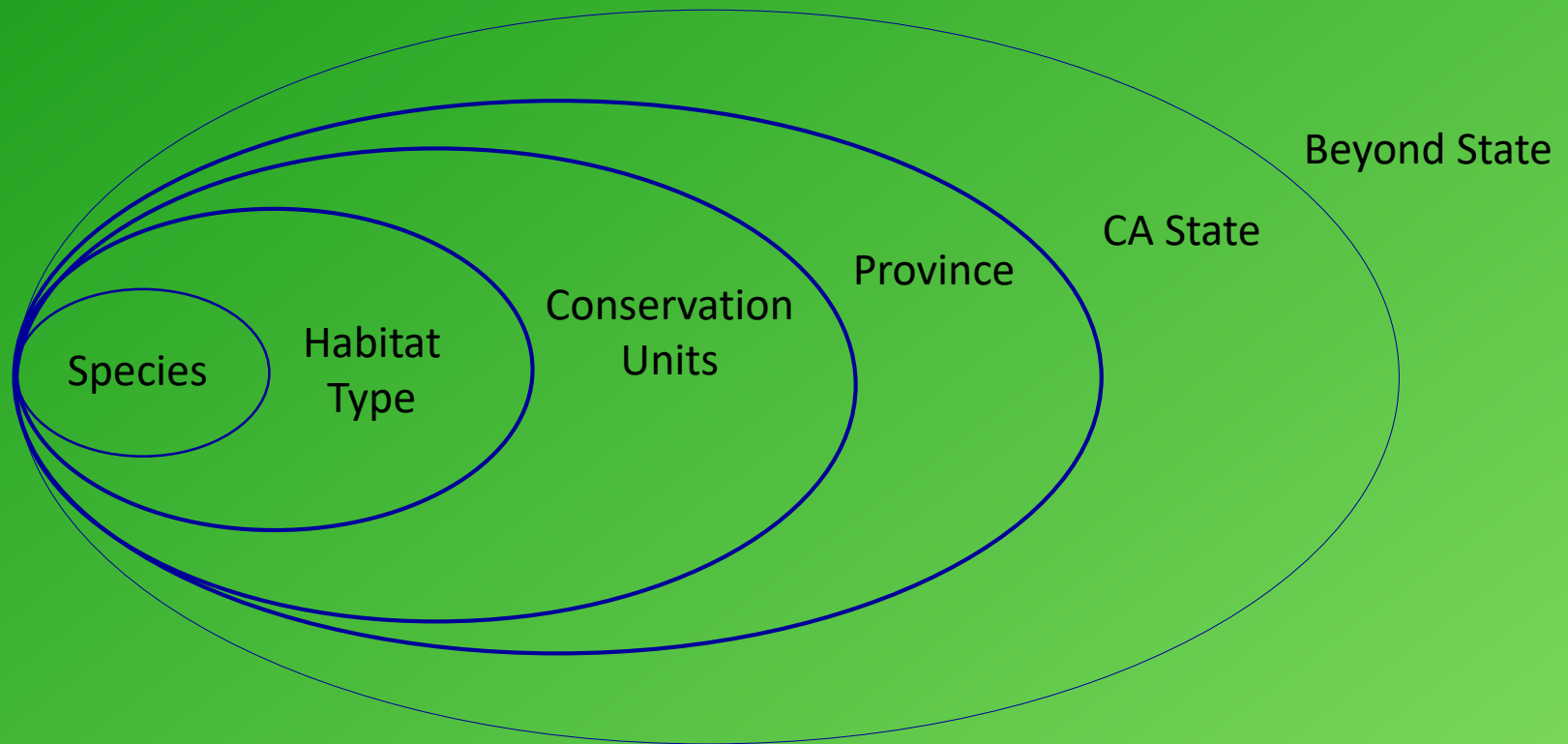


Code	KEA	Status Indicator	Metric
Community-Age	Community structure and composition	Age class heterogeneity	Miles of stream with desired age class
Community-Age	Community structure and composition	Age class heterogeneity	Acres with desired age class heterogeneity
Community-Div	Community structure and composition	Diversity	Acres with desired plant/animal diversity
Community-End	Community structure and composition	Endemic diversity	Acres with desired endemic diversity
Community-Comp	Community structure and composition	(Native) Fish composition	Acres with desired native species composition
Community-Key	Community structure and composition	Key species population level	Key species population
Community-Native	Community structure and composition	Native vs non-native	Acres with native species dominant
Community-Pond	Community structure and composition	Native vs n	
Community-Denegas	Community structure and composition	Native vs n	
Community-Rivers	Community structure and composition	Native vs n	
Community-Rivers	Community structure and composition	Native vs n	
Community-Structure	Community structure and composition	Structural	
Connectivity-Habitat	Connectivity among communities and	Level of co	
Connectivity-Rivers	Connectivity among communities and	Level of co	
Connectivity-Gen	Connectivity among communities and	Level of ge	
Fire	Fire regime	Fire frequ	
Hydrology-Groundwater	Hydrological regime	Depth of g	



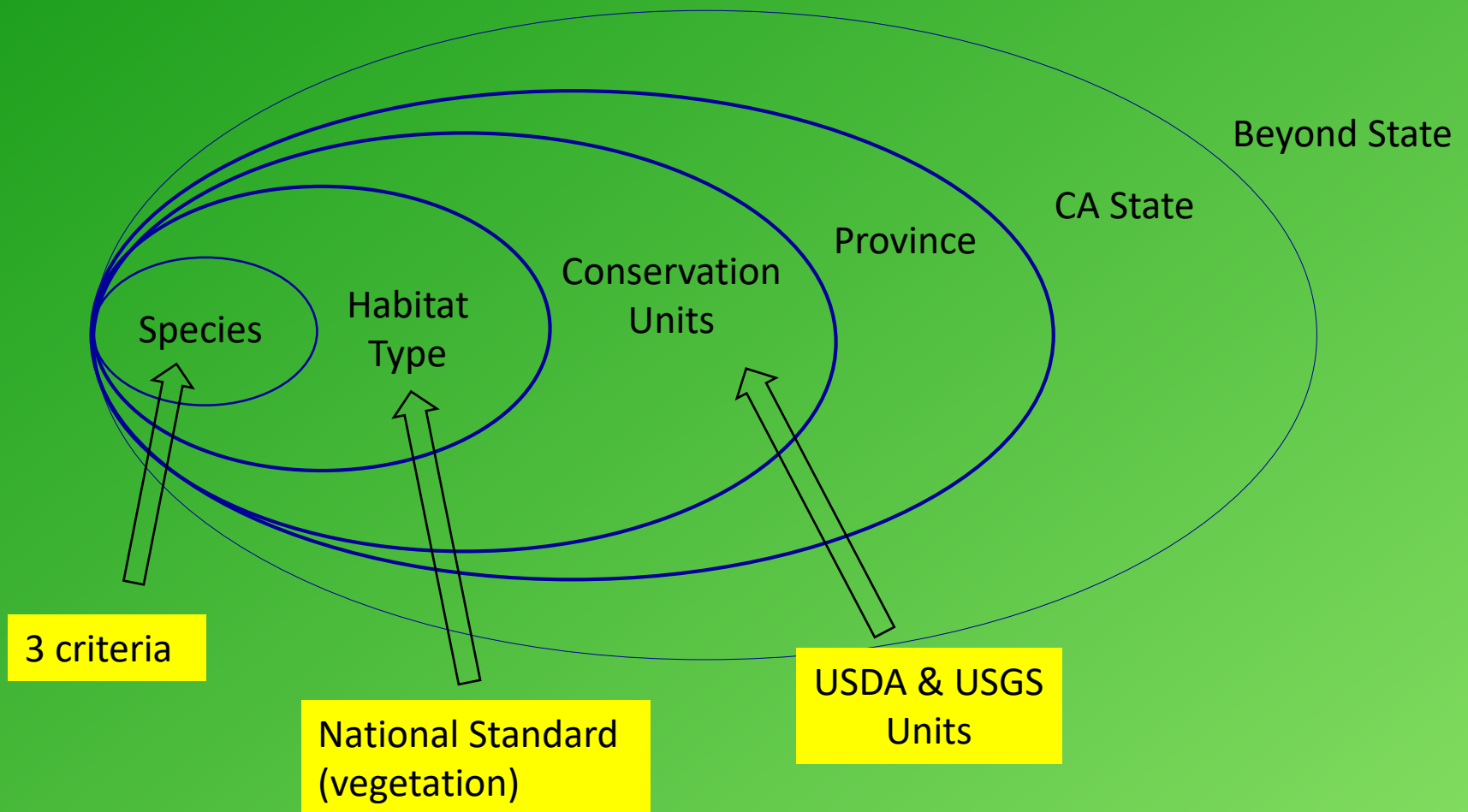
SWAP 2015

Ecosystem & Regional Approach



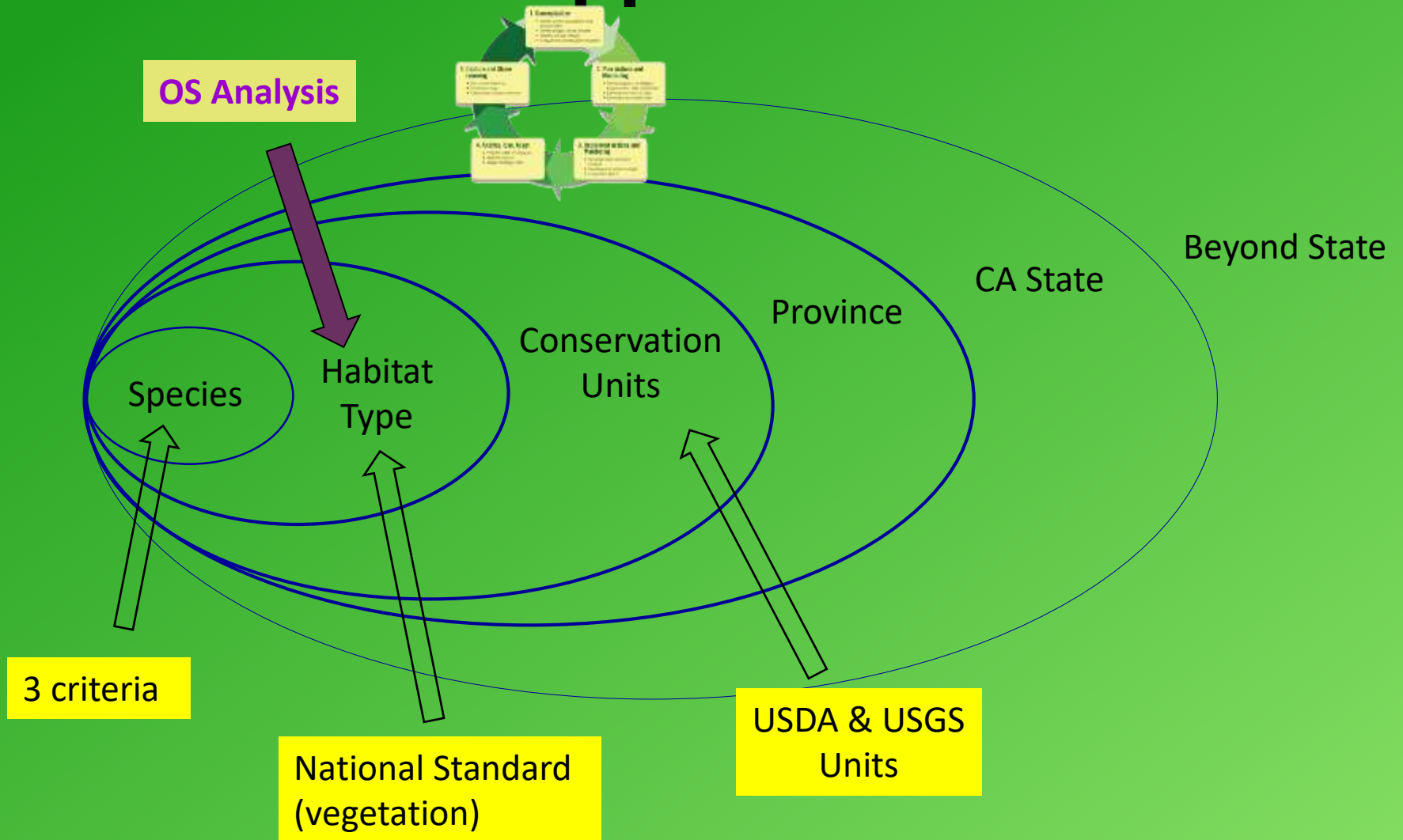
SWAP 2015

Strategic & Standardized Approach



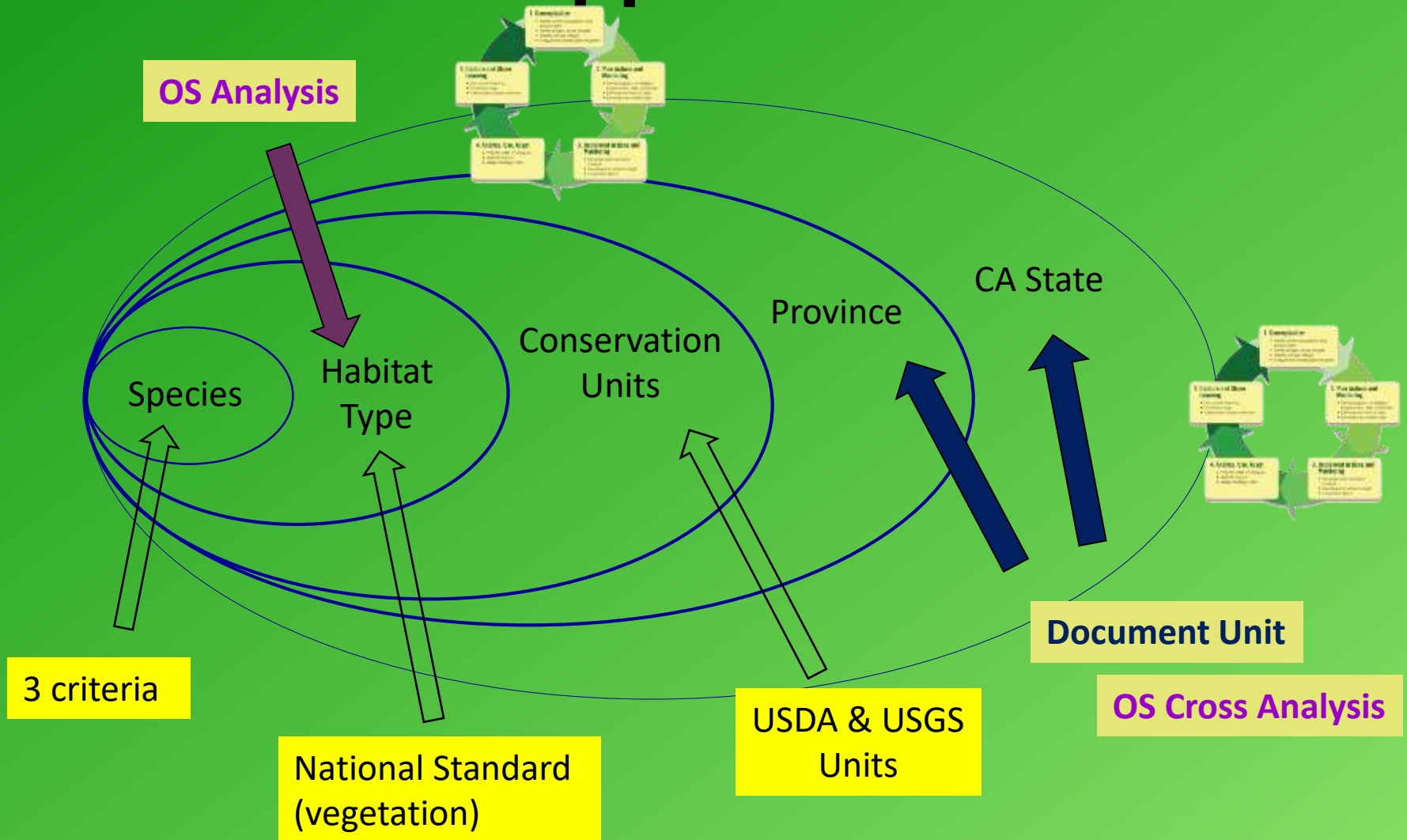
SWAP 2015

Strategic & Standardized Approach



SWAP 2015

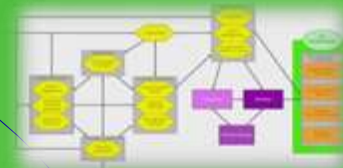
Strategic & Standardized Approach



SWAP 2015 Strategic & Standardized Approach



OS Analysis



CA State

Province

Conservation
Units

Habitat
Type

Species



3 criteria

National Standard
(vegetation)

USDA & USGS
Units

Document Unit

OS Cross Analysis



(Some of the) SWAP 2015 Key Findings

There are common themes across the state

- What to conserve (Target, KEA)
- What is degraded (Stress)
- What is affecting (Pressure)
- What to do (Strategy)

(some of the) Key Themes under SWAP 2015

○ Riparian Ecosystems

- 9 different ecoregions (approx. 50% of terrestrial units)
- Most of the watershed units (in various degrees)
- 6 provinces (all but marine)
- All CDFW units

○ Invasive Plants & Animals

- 97% of total con. units
- 7 provinces (all)
- Both under terr. & aquatic units
- All CDFW units



SWAP 2015 Key Findings

Common Key Ecological Attributes

Table 9 Most Commonly Identified Key Ecological Attributes

Key Ecological Attributes	Conservation Unit Type	
	Terrestrial	Aquatic
Area and extent of community	X	X
Community structure and composition	X	X
Connectivity among communities and ecosystems	X	X
Fire regime	X	
Successional dynamics	X	
Surface water flow regime		X

SWAP 2015 Key Findings (Common Pressure)

Table 11 Most Commonly Identified Pressures

Pressures	Conservation Unit Type	
	Terrestrial	Aquatic
Agriculture and forestry effluents		X
Annual and perennial non-timber crops	X	X
Dams and water management		X
Fire and fire suppression	X	X
Housing and urban development	X	
Introduced genetic materials		X
Invasive plants and animals	X	X
Livestock, farming, and ranching	X	X
Recreational activities	X	X
Roads and railroads	X	X
Utility and service lines	X	

SWAP 2015 Key Findings

Common Strategy

Table 12 Most Commonly Identified Strategies

Strategies	Conservation Unit Type	
	Terrestrial	Aquatic
Data Collection and Analysis	X	X
Partner Engagement	X	X
Management Planning	X	X
Direct Management - Manage Invasive Species	X	X
Direct Management - Habitat Restoration	X	
Direct Management - Manage Dams and Other Barriers		X
Direct Management - Species Reintroductions		X
Land Acquisition, Easements, and Lease	X	X
Law and Policy	X	
Outreach and Education	X	X

SWAP 2015 Key Findings (What to do for What)

Table 13 Number of Conservation Strategy Categories Addressing Each Pressure

Pressure	Strategy Category										
	Data collection and analysis	Partner engagement	Management planning	Direct management	Economic incentives	Environmental restore	Land acquisition, easement, and lease	Land use planning	Law and policy	Outreach and education	Training and technical assistance
Agricultural and forestry effluents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Airborne pollutants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Annual and perennial non-timber crops	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Catastrophic geological events	<input type="radio"/>										
Climate change	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial and industrial areas ¹	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Dams and water management/use ²	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Fire and fire suppression	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="checkbox"/>				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Garbage and solid waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Household sewage and urban wastewater ³	<input type="radio"/>		<input type="radio"/>					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Housing and urban areas ¹	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Industrial and military effluents ⁴		<input type="radio"/>	<input type="radio"/>					<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Fishing and harvesting aquatic resources		<input type="radio"/>	<input type="radio"/>			<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Introduced genetic material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>						<input type="radio"/>	<input type="radio"/>
Invasive plants/animals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="checkbox"/>	<input type="radio"/>
Livestock, farming, and ranching	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input type="radio"/>		<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Logging and wood harvesting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	
Marine and freshwater aquaculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Military activities		<input type="radio"/>									
Mining and quarrying			<input type="radio"/>	<input type="radio"/>							
Other ecosystem modifications ⁵			<input type="radio"/>	<input type="radio"/>							





SWAP 2015

***Implementation & Integration
Status***

SWAP 2015 has been used as

- **Conservation Framework**
- **Conservation Priorities & Standards**
- **Framework and/or motivation for Study**
- **Data**
- **Reference**



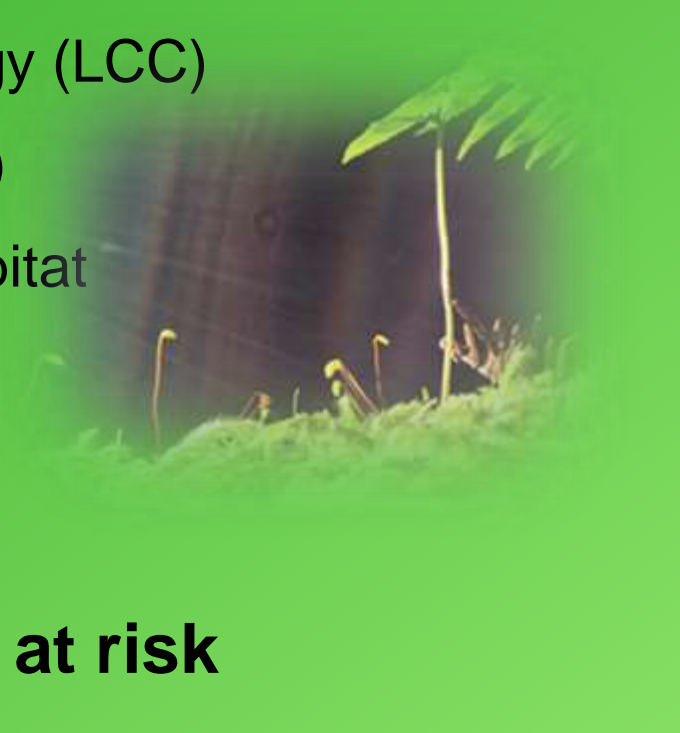
To address diverse conservation activities:

- Funding
- Land Protection
- Regulation & Policy making
- Conservation Planning
- Operational Planning
- Partner Engagement
- Data Gathering & Analysis
- Studies



SWAP 2015 - Integration Example

- **Legislation – AB 2087 and the Guideline**
- **Regional Strategic Plans**
 - Integrated Conservation & Development Plan (SGC)
 - Regional Climate Adaptation Strategy (LCC)
 - Forest Carbon Plan (NRA & CalFire)
 - Strategic Plan (WCB, Transition Habitat Conservancy)
 - CA Water Plan (DWR)
- **National Databases**
- **Climate adaptation strategy for at risk species (AFLA)**



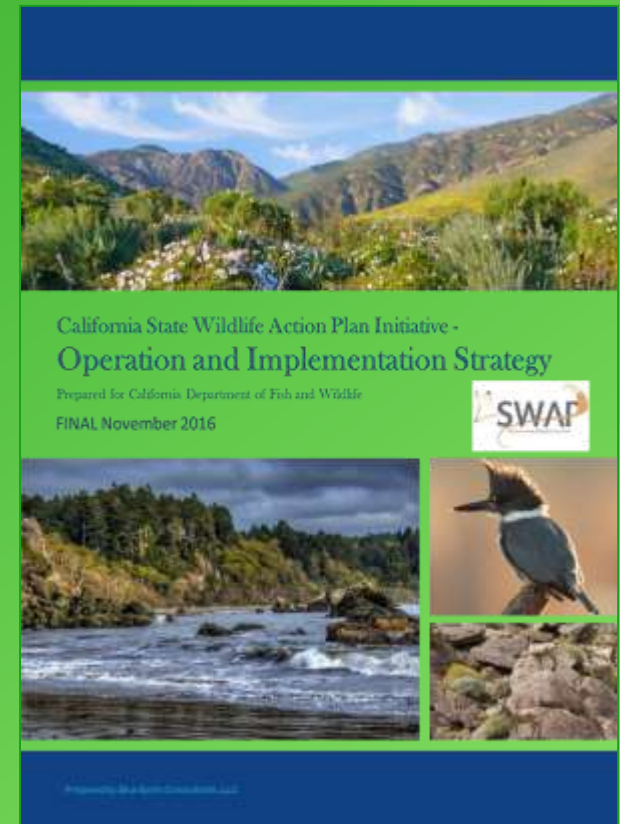
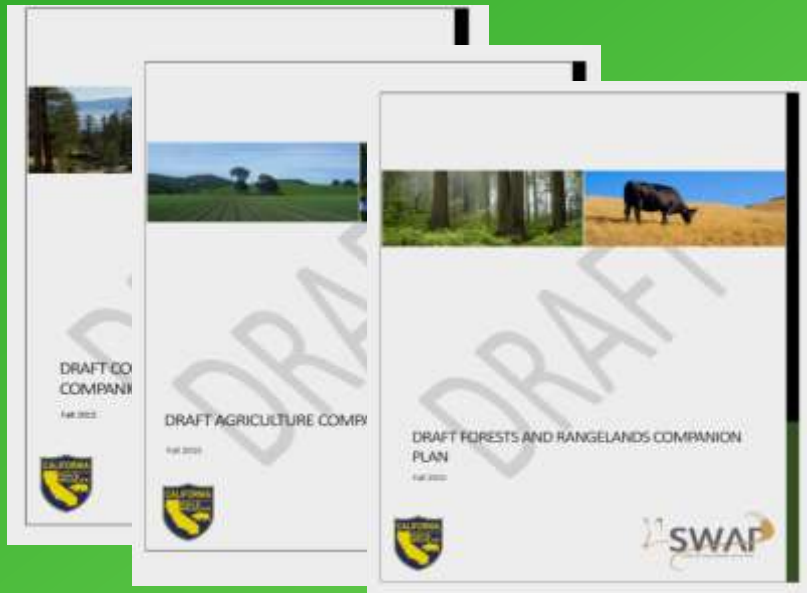
SWAP 2015 - Integration Example (cont.)

- **Environmental Enhancement and Mitigation Program** (\$7M per yr)
- **Proposition 1** - Water Quality, Supply, and Infrastructure Improvement Act of 2014
 - Restoration Grant Program
 - \$372.5M (10yr)
 - \$31M (FY2015~16)
 - Water Storage Investment Program
 - \$2.7B (1time, coming)
- **State Wildlife Grant**

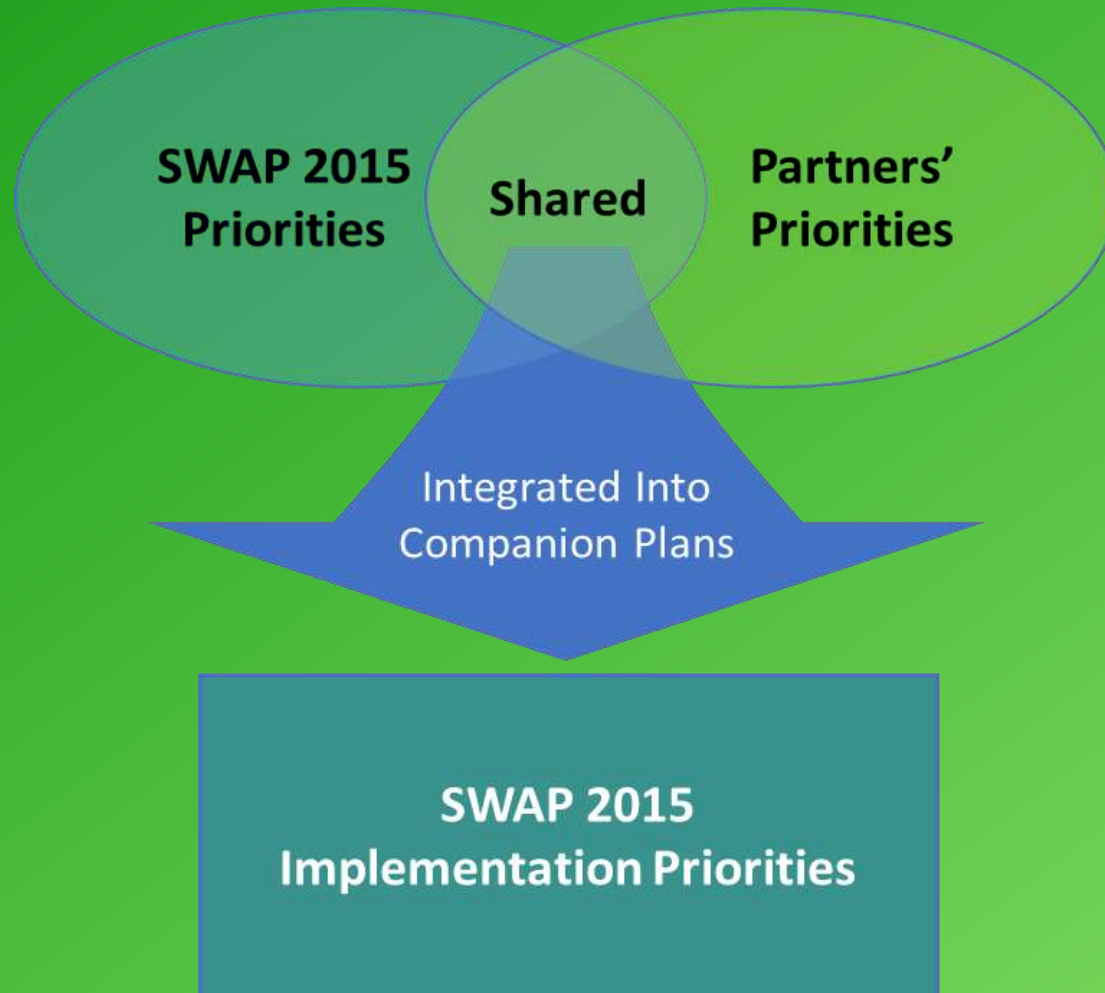


SWAP 2015 Direct Implementation

- **SWAP Companion Plans (2016)**
- for Collaborative Implementation
- **SWAP 2015 Operational Plan (2016)**

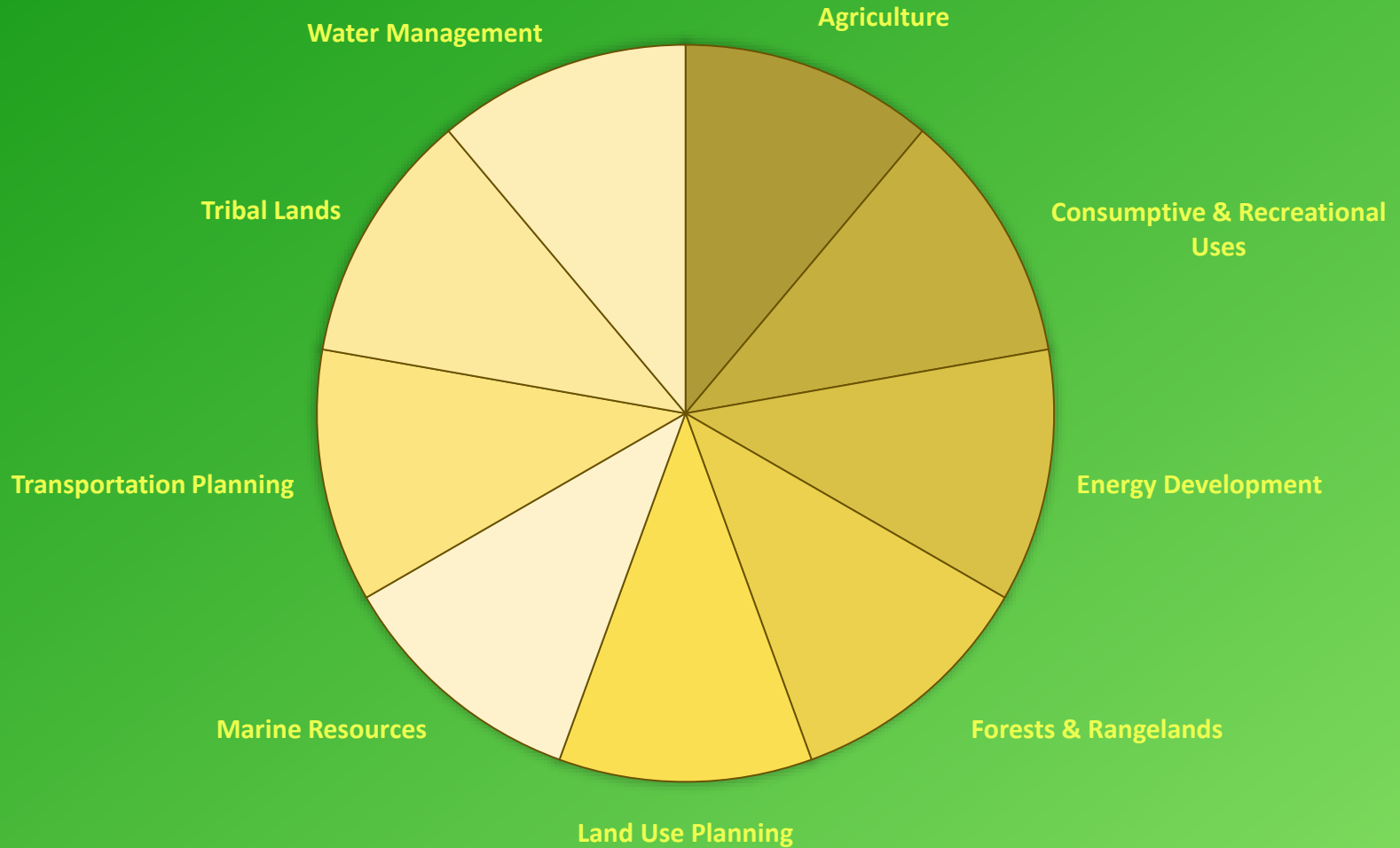


SWAP 2015 Companion Plans



SWAP 2015 Companion Plans

9 Sectors



SWAP 2015 Operational Plan

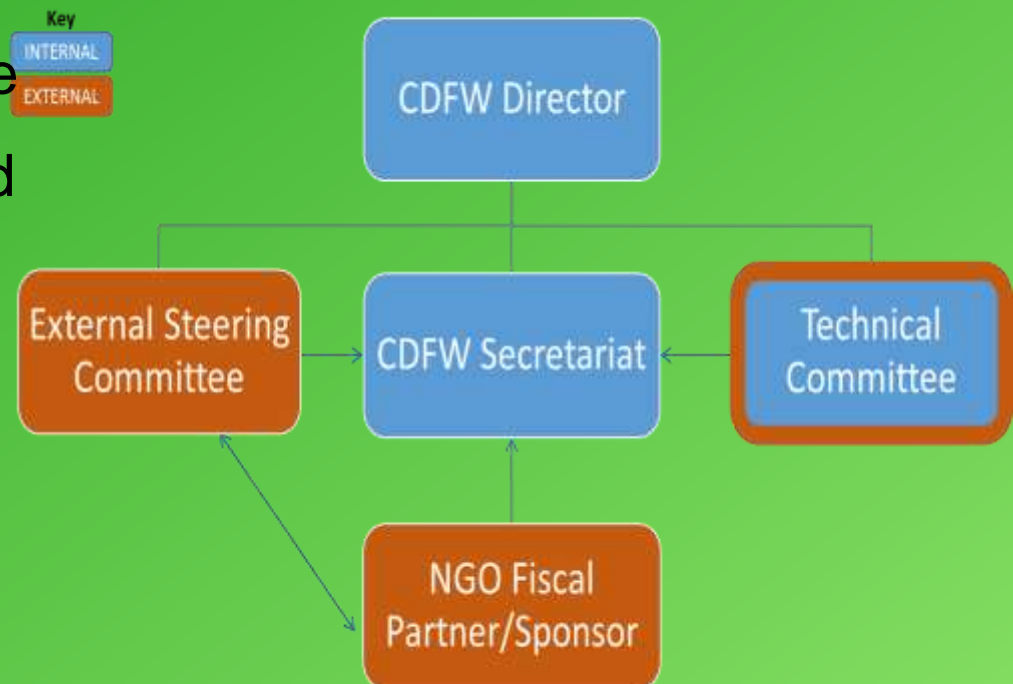
○ Purpose

- To create enabling conditions and to implement SWAP priorities



○ Topics

- Governance Structure
- Resource Making and Allocation
- Branding
- Pilot Project
- Project Tracking
- Next Steps



SWAP 2015 Direct Implementation

- **Riparian (pre) Task Force** - for Collaborative Implementation
- **eDNA Task Force** ...





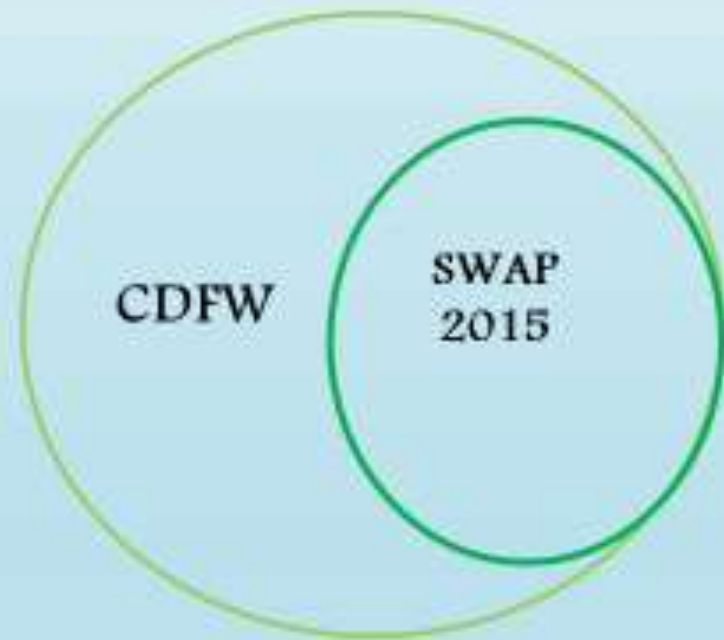
SWAP Program

Implementation Priorities

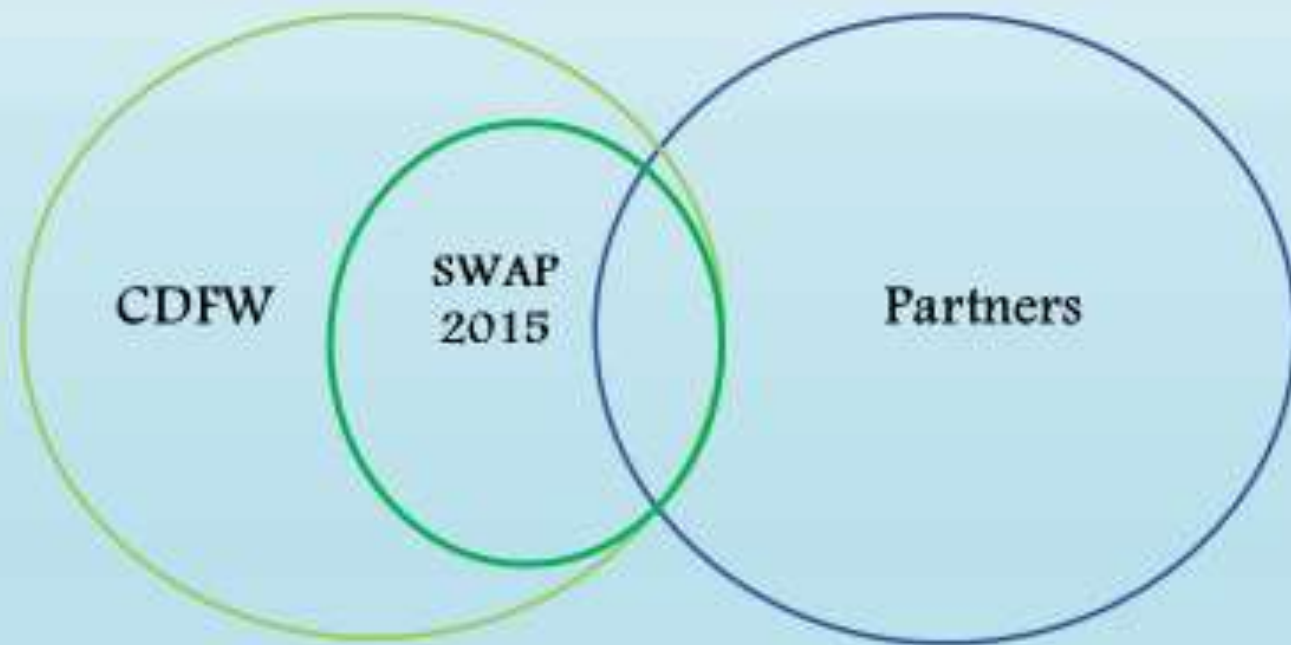
SWAP Program Priorities



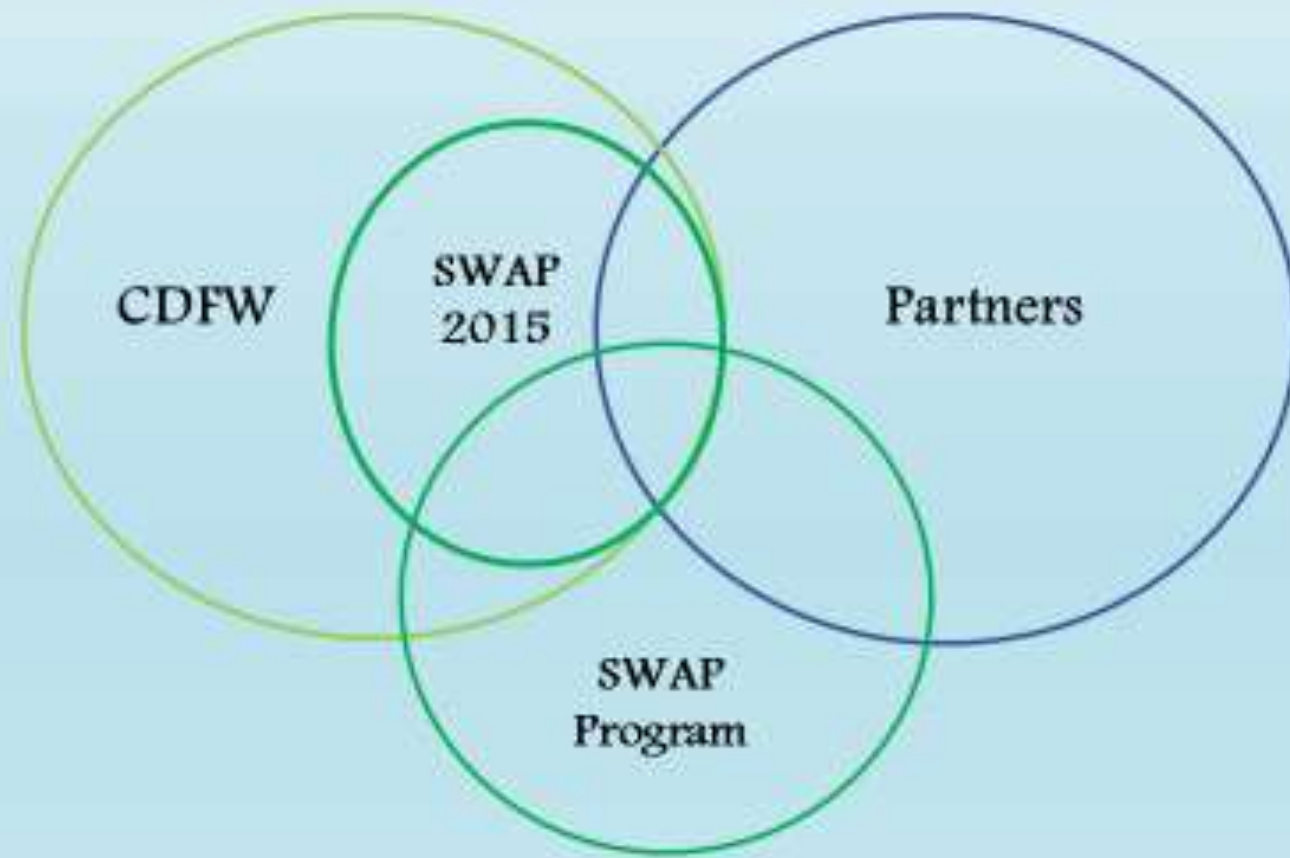
SWAP Program Priorities



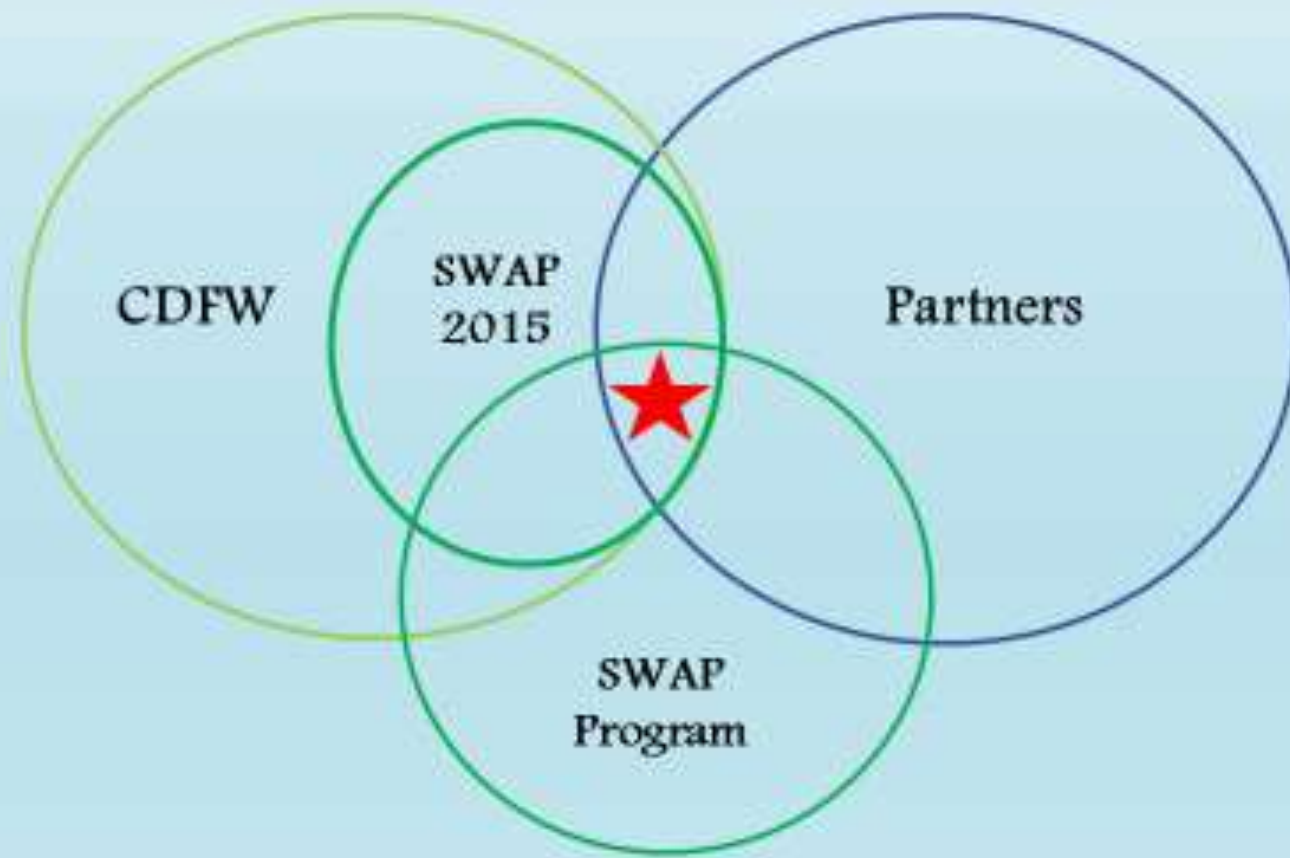
SWAP Program Priorities



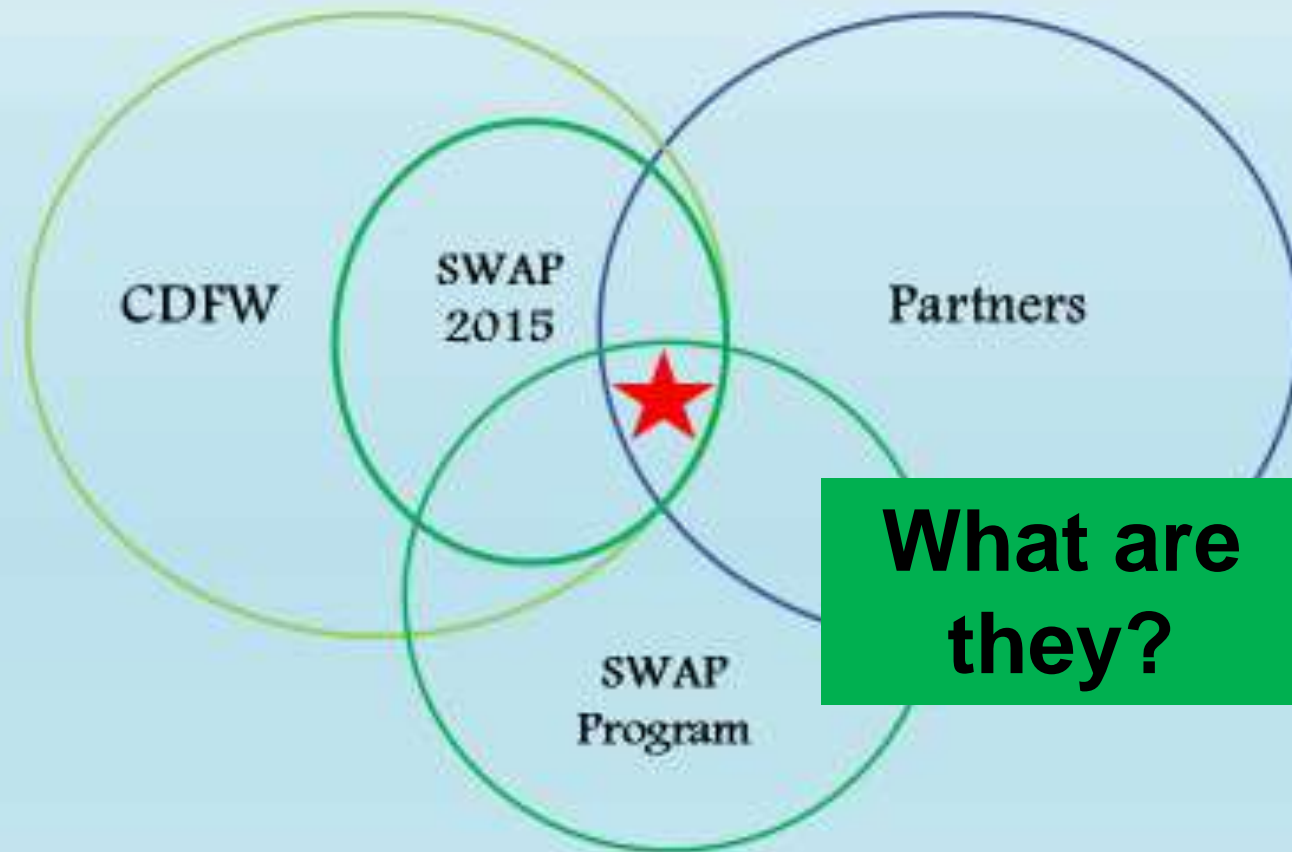
SWAP Program Priorities



SWAP Program Priorities



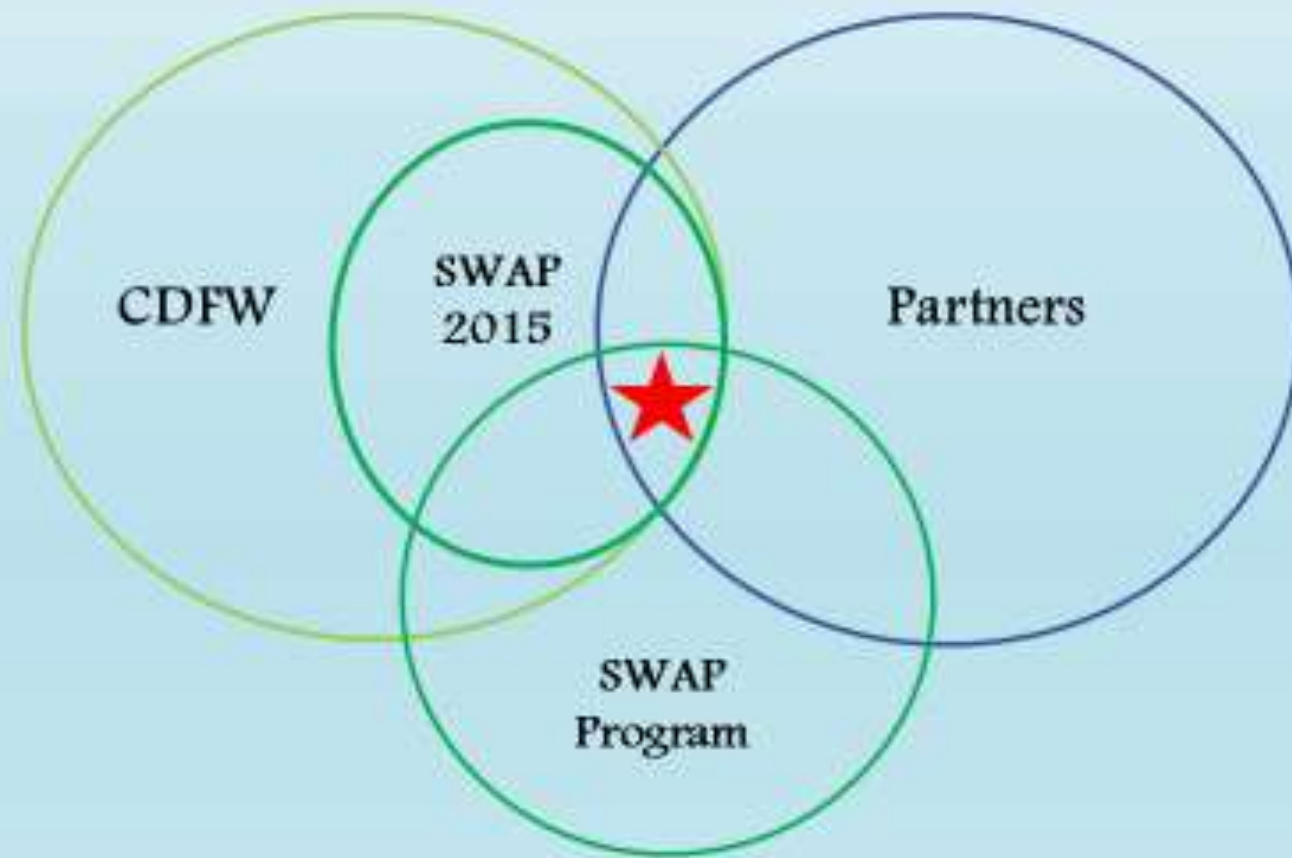
SWAP Program Priorities



**What are
they?**

BASELINE

Baseline to start with...



BASELINE

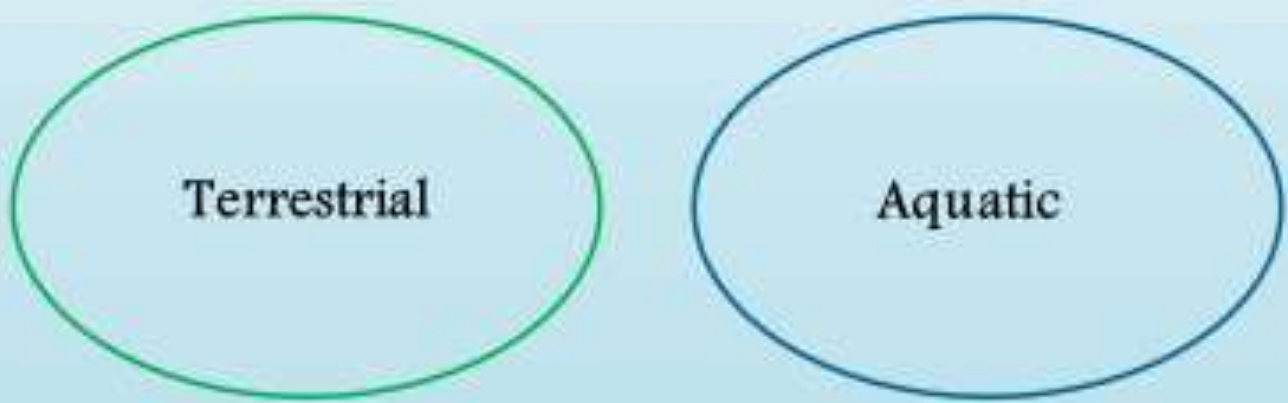
- Ecological Conditions
- Scientifically defensible
- Statewide (and beyond)
- Integrable in regional scales
- Pretty quickly
- Rough/rapid assessment is ok



BASELINE



BASELINE



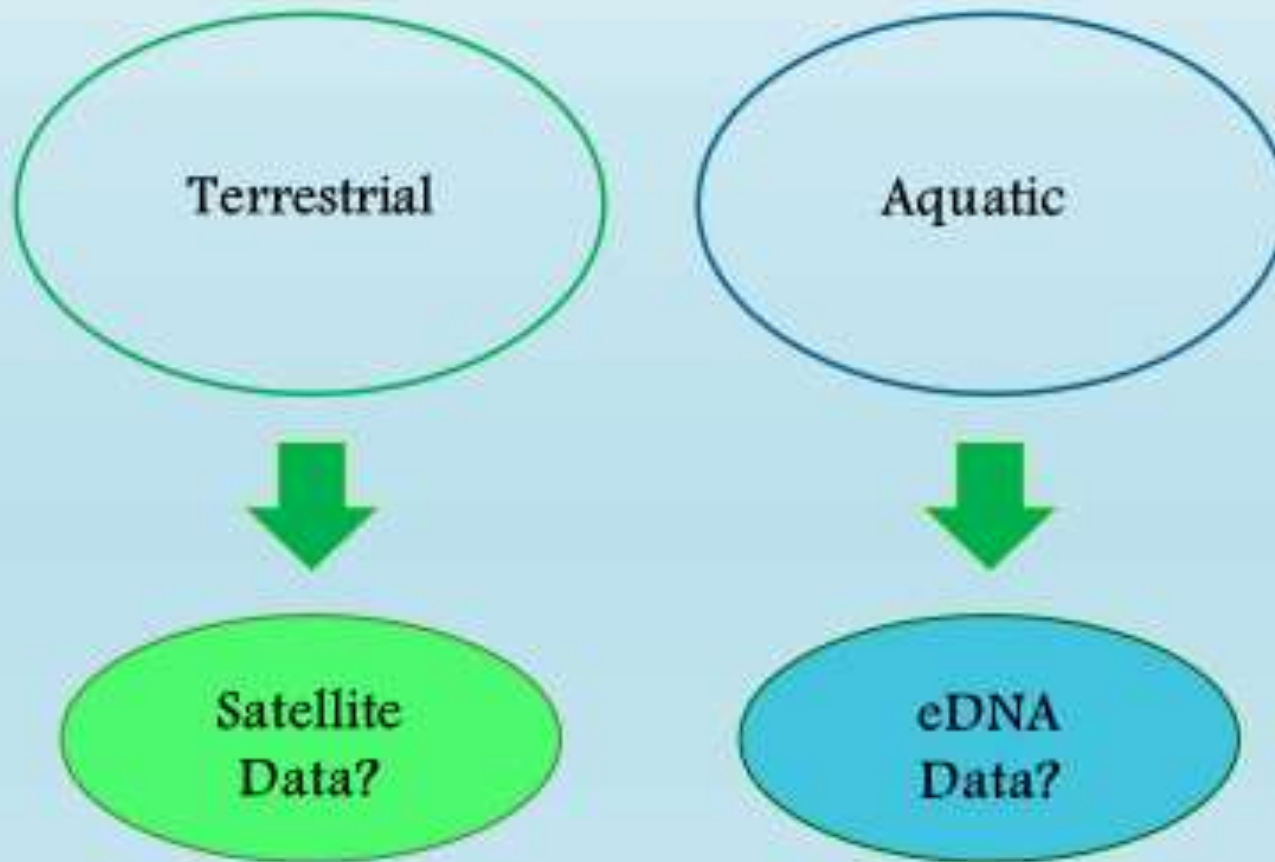
Terrestrial

Aquatic

BASELINE



BASELINE



BASELINE

Terrestrial

Aquatic

Technically
feasible, NASA
looking for
partners.

Satellite
Data?

eDNA
Data?



BASELINE

Terrestrial

Aquatic

Technically
feasible, NASA
looking for
partners.



Satellite
Data?

Technically
Feasible for
some species.



eDNA
Data?

BASELINE

Terrestrial

Aquatic

Technically
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looking for
partners.



Fund
Opportunities!



Technically
Feasible for
some species.

Satellite
Data?

eDNA
Data?

BASELINE

Terrestrial

Aquatic

Technically
feasible, NASA
looking for
partners.



Fund
Opportunities!



Technically
Feasible for
some species.

Satellite
Data?

eDNA
Data?

Are you
serious?

BASELINE

Terrestrial

Aquatic

Technically
feasible, NASA
looking for
partners.



Fund
Opportunities!



Technically
Feasible for
some species.

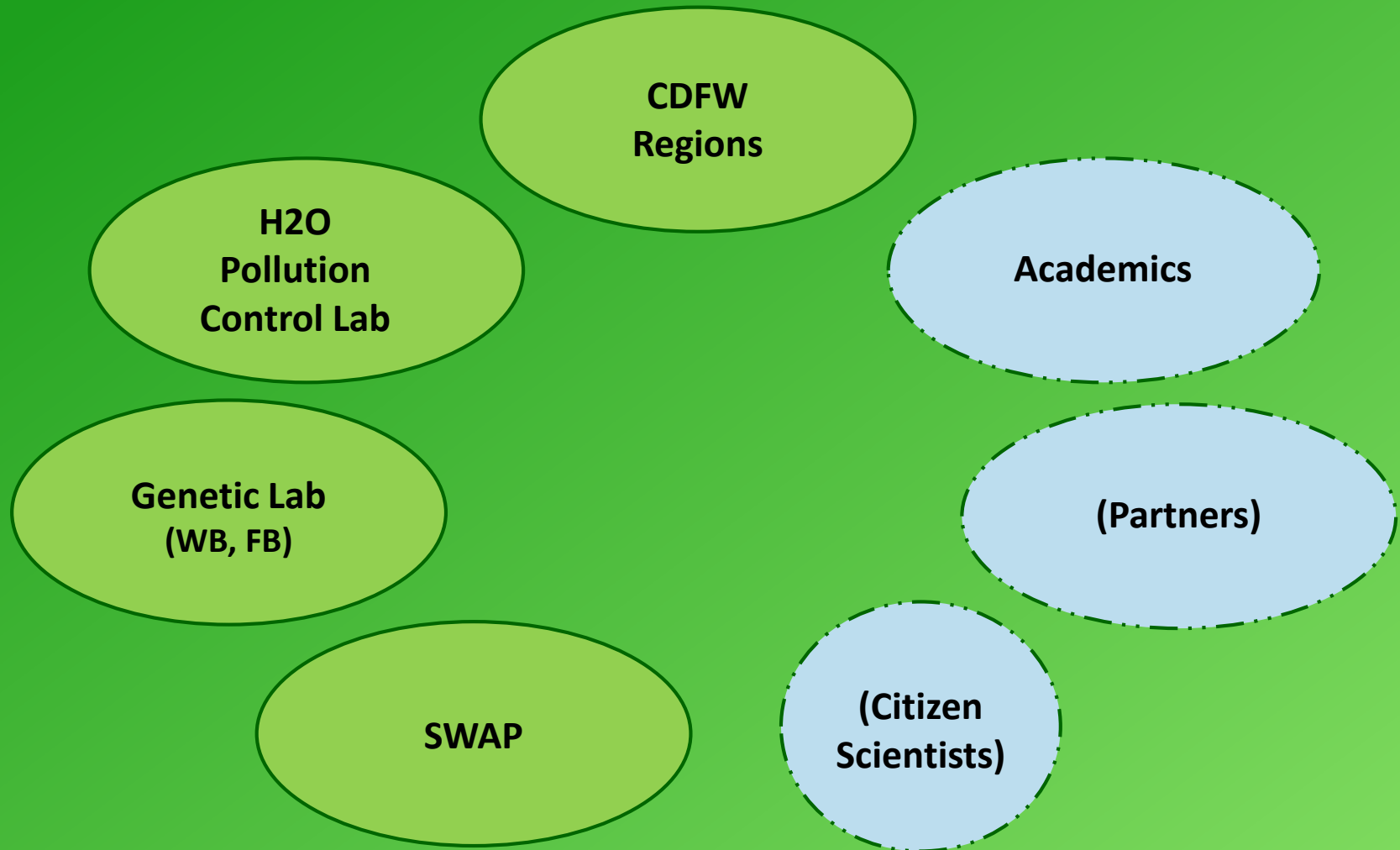
Satellite
Data?

eDNA
Data?

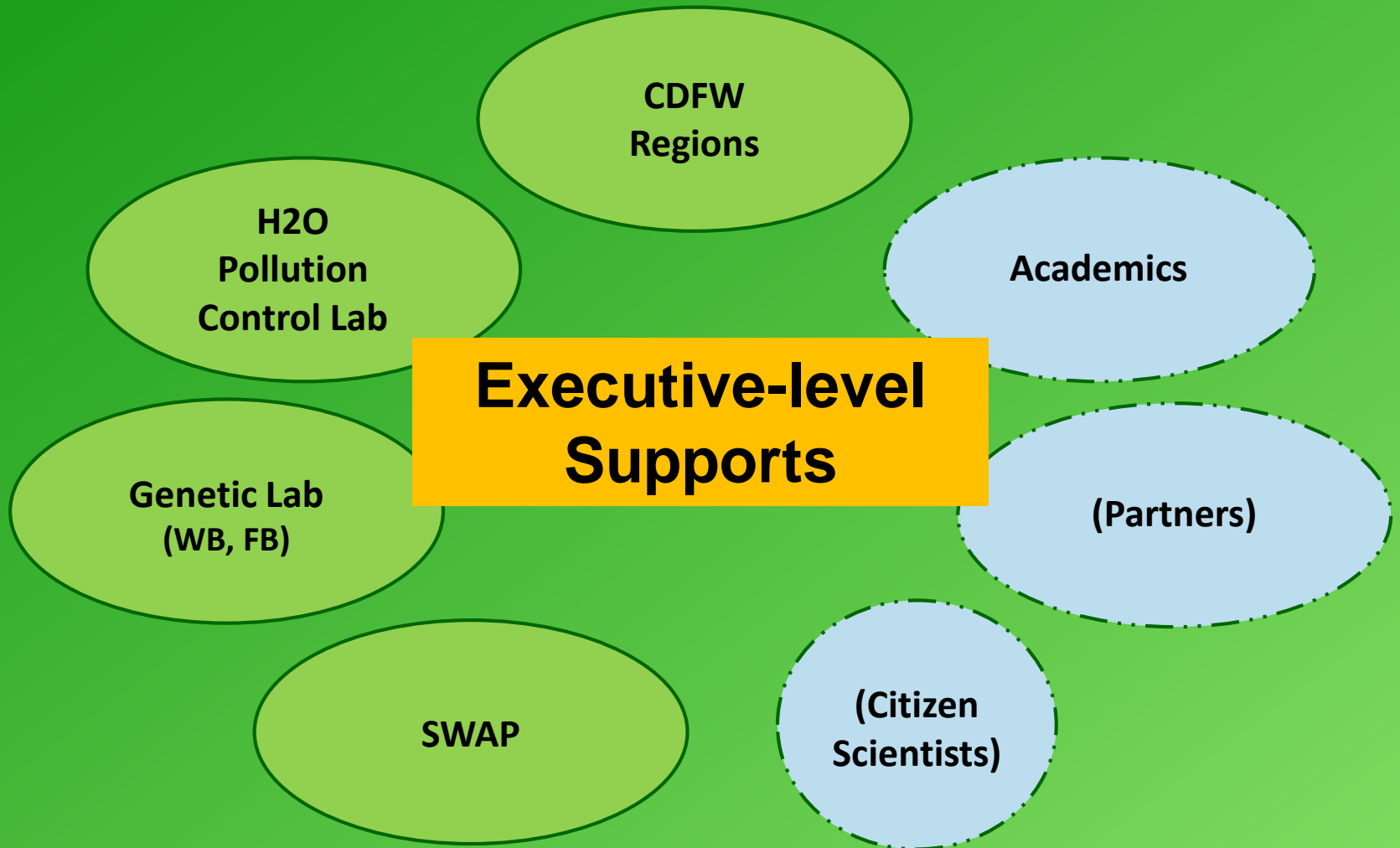
Are you
serious?

YES!!

Who are Interested in eDNA work?



Interests in eDNA in-house capability building

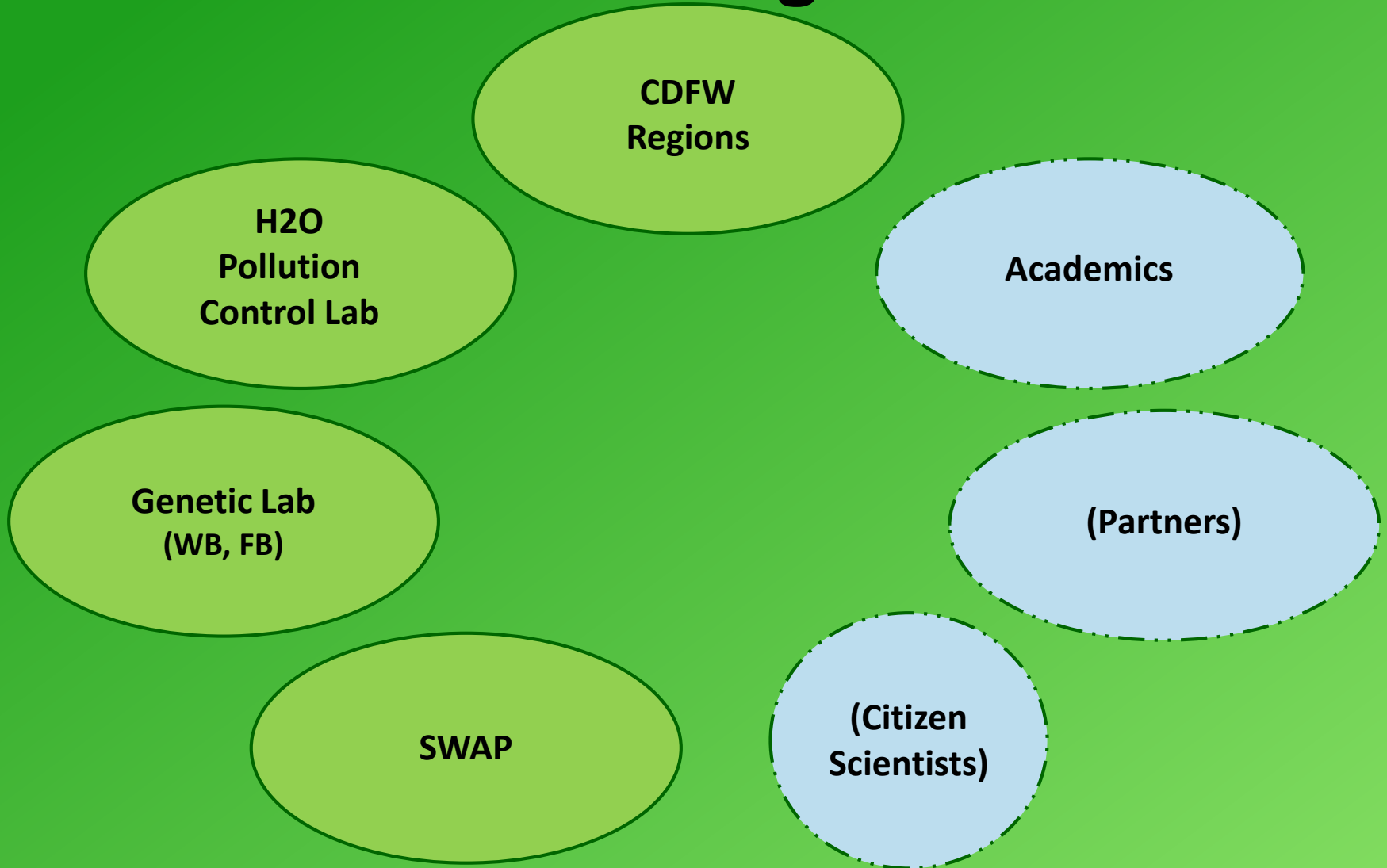


Key Activities to Utilize eDNA for Regional Conservation

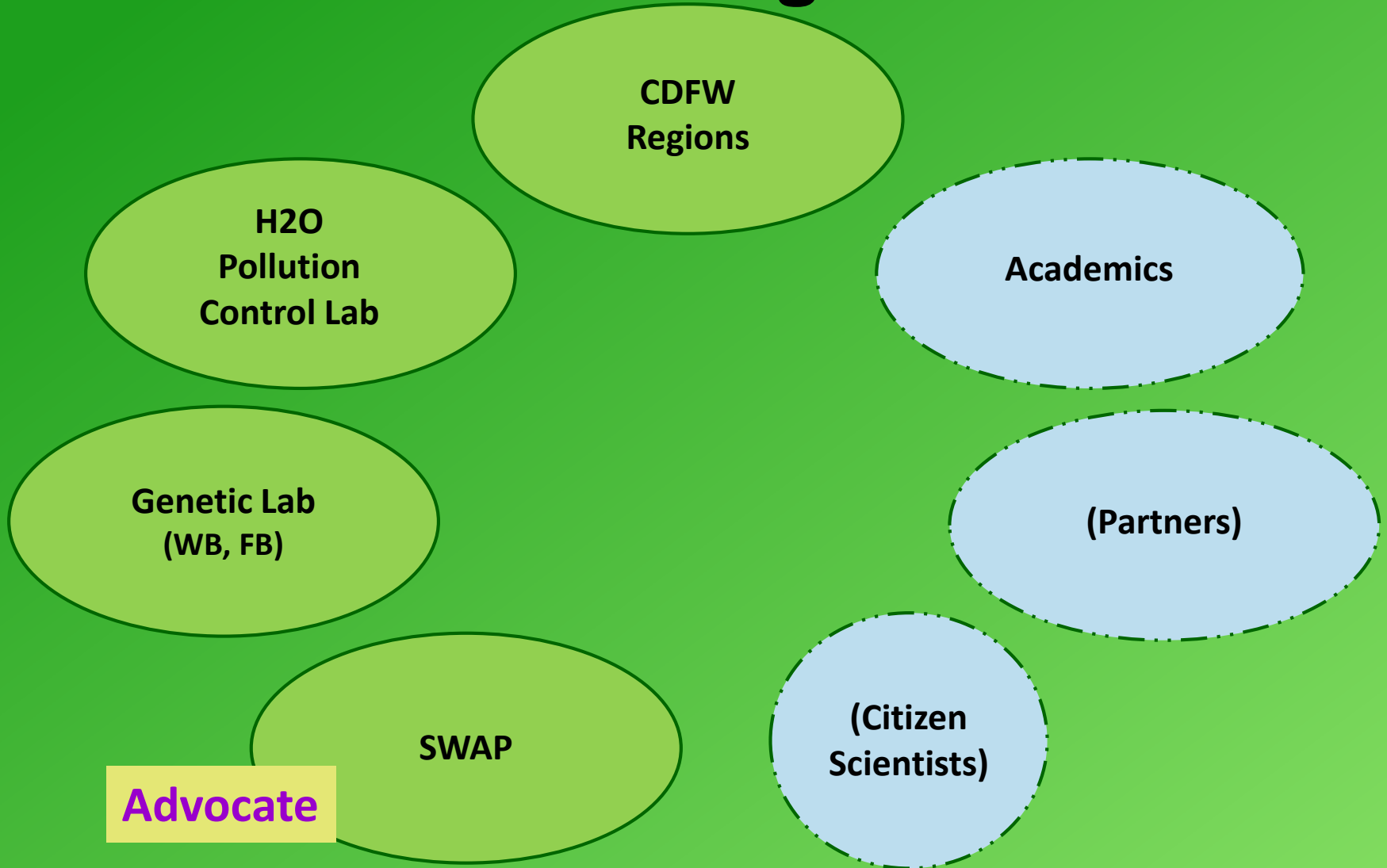
- ID key markers for spp. of interests
 - Sampling Design
 - Sampling
 - eDNA Analysis
 - Mapping the results & Analysis
- and so on...



Interests in eDNA in-house capability building



Interests in eDNA in-house capability building

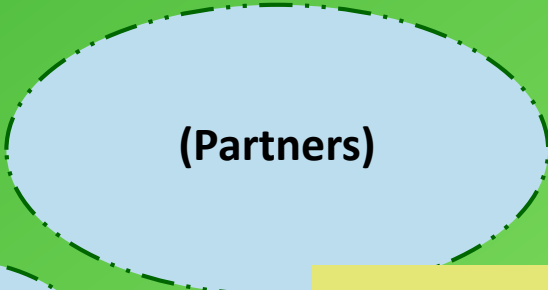
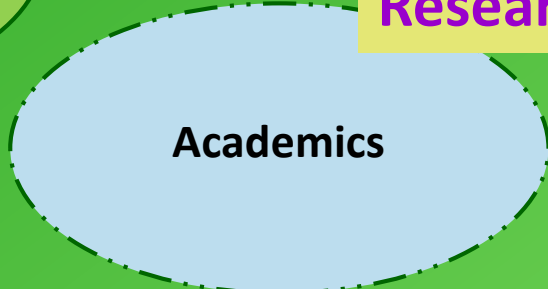


Interests in eDNA in-house capability building

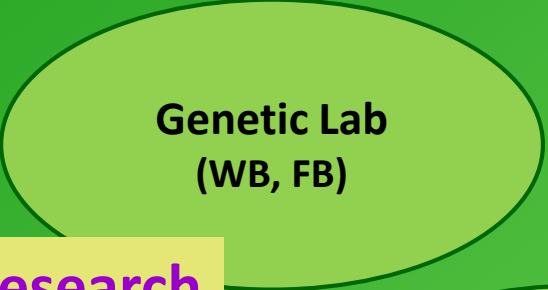
Research



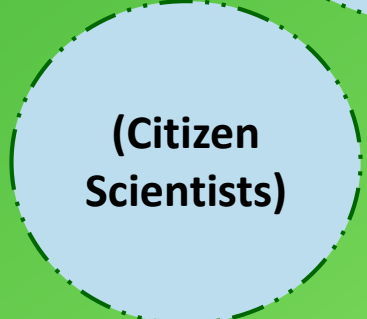
Research



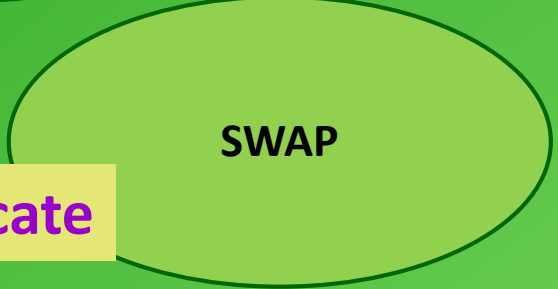
Research



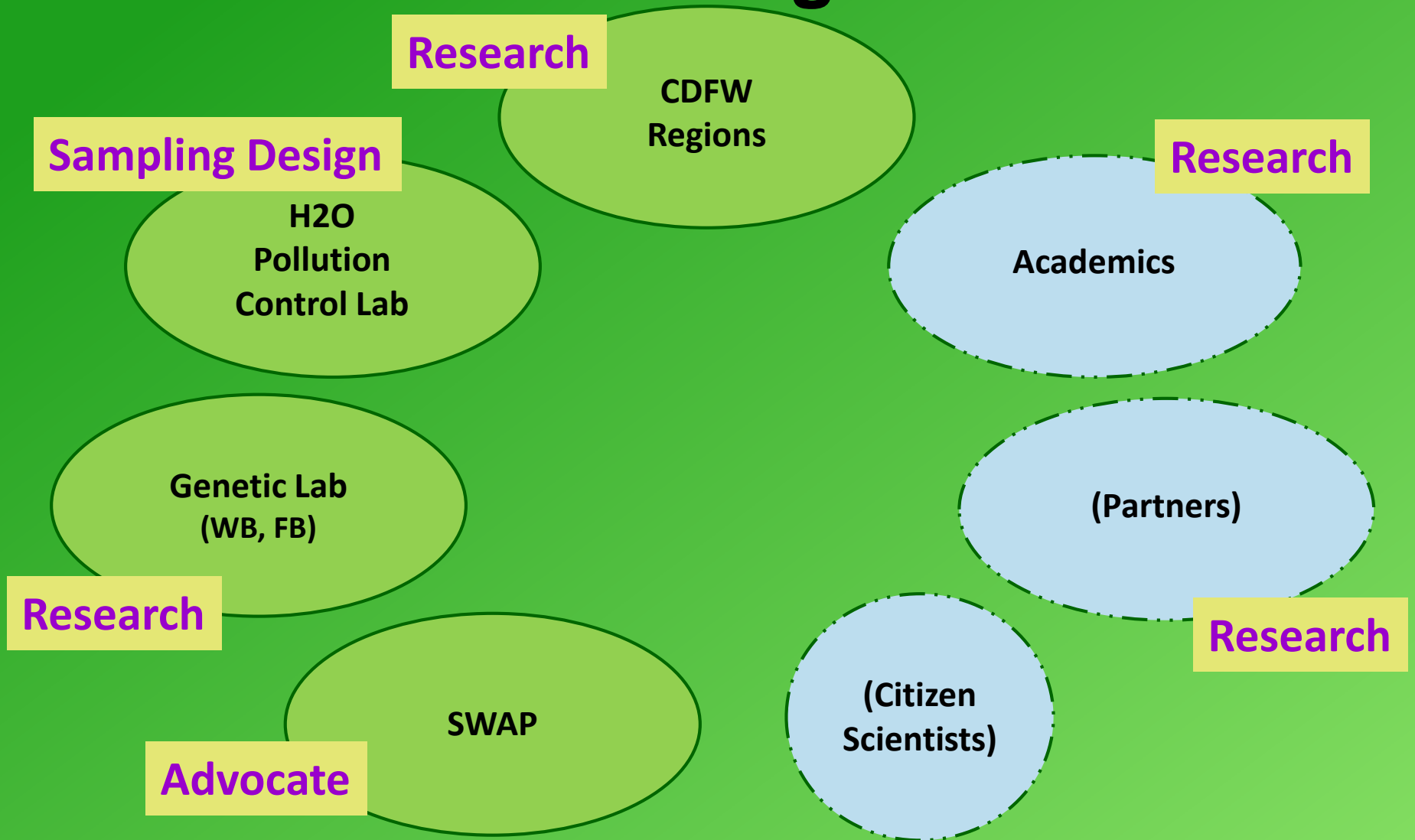
Research



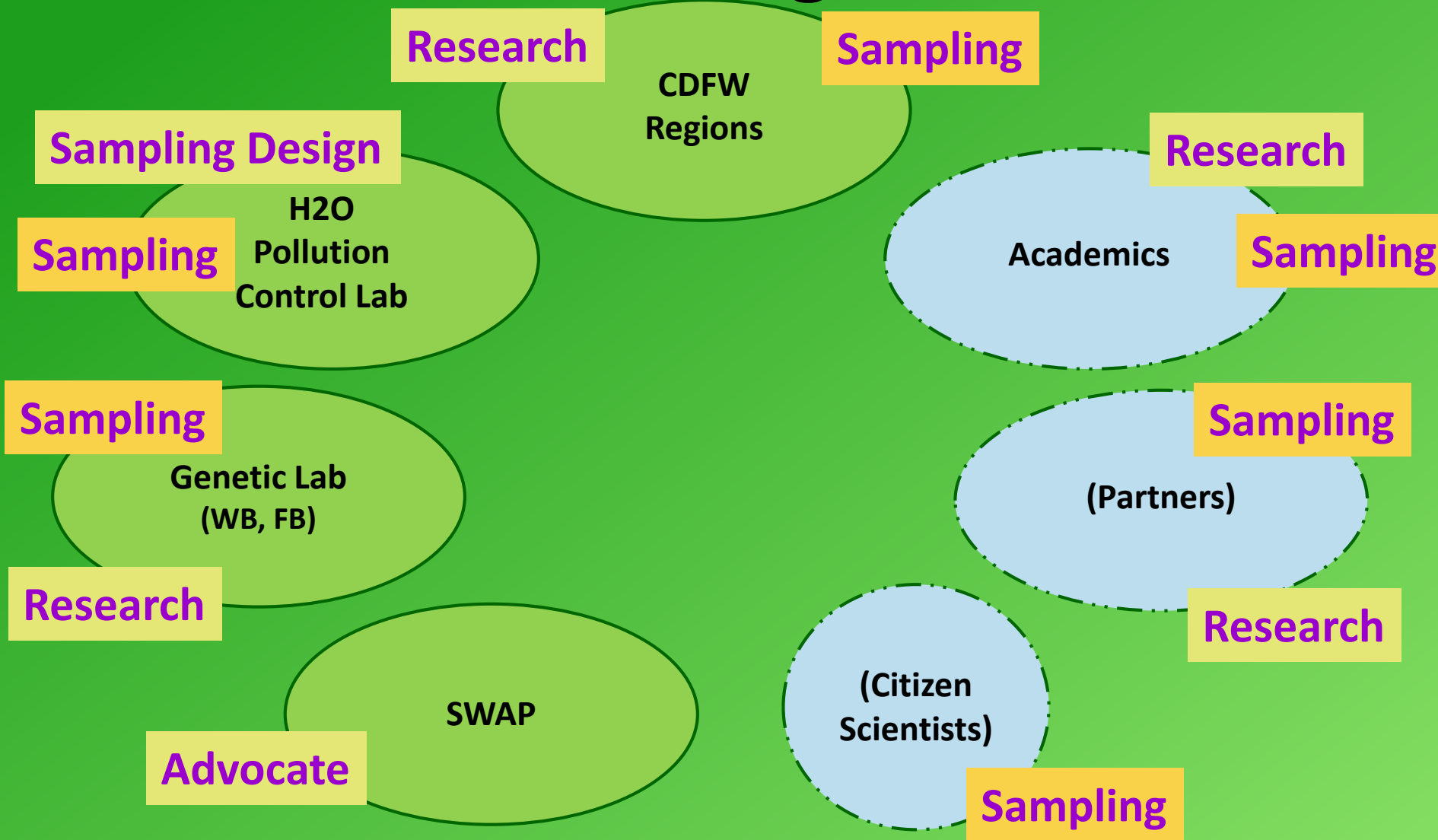
Advocate



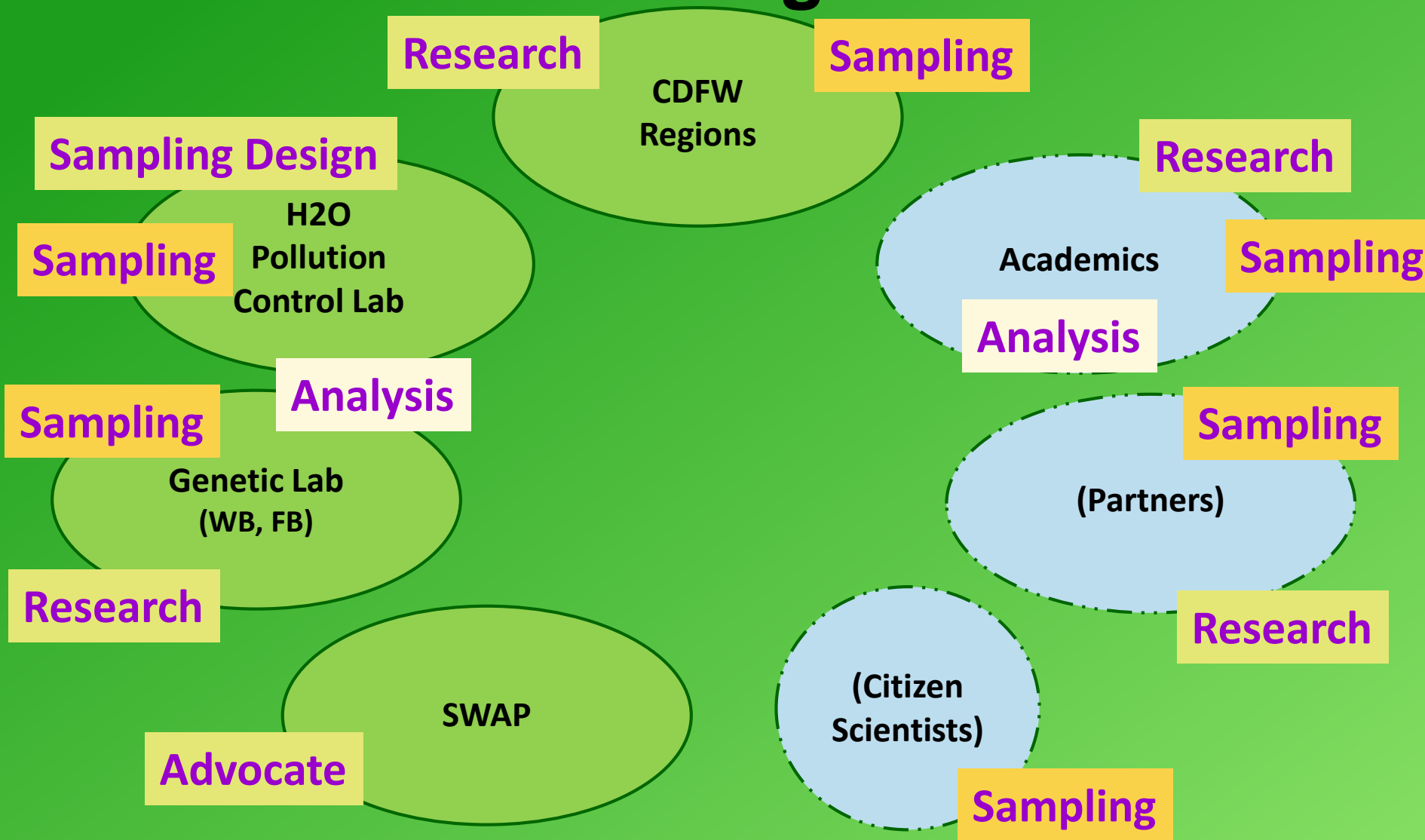
Interests in eDNA in-house capability building



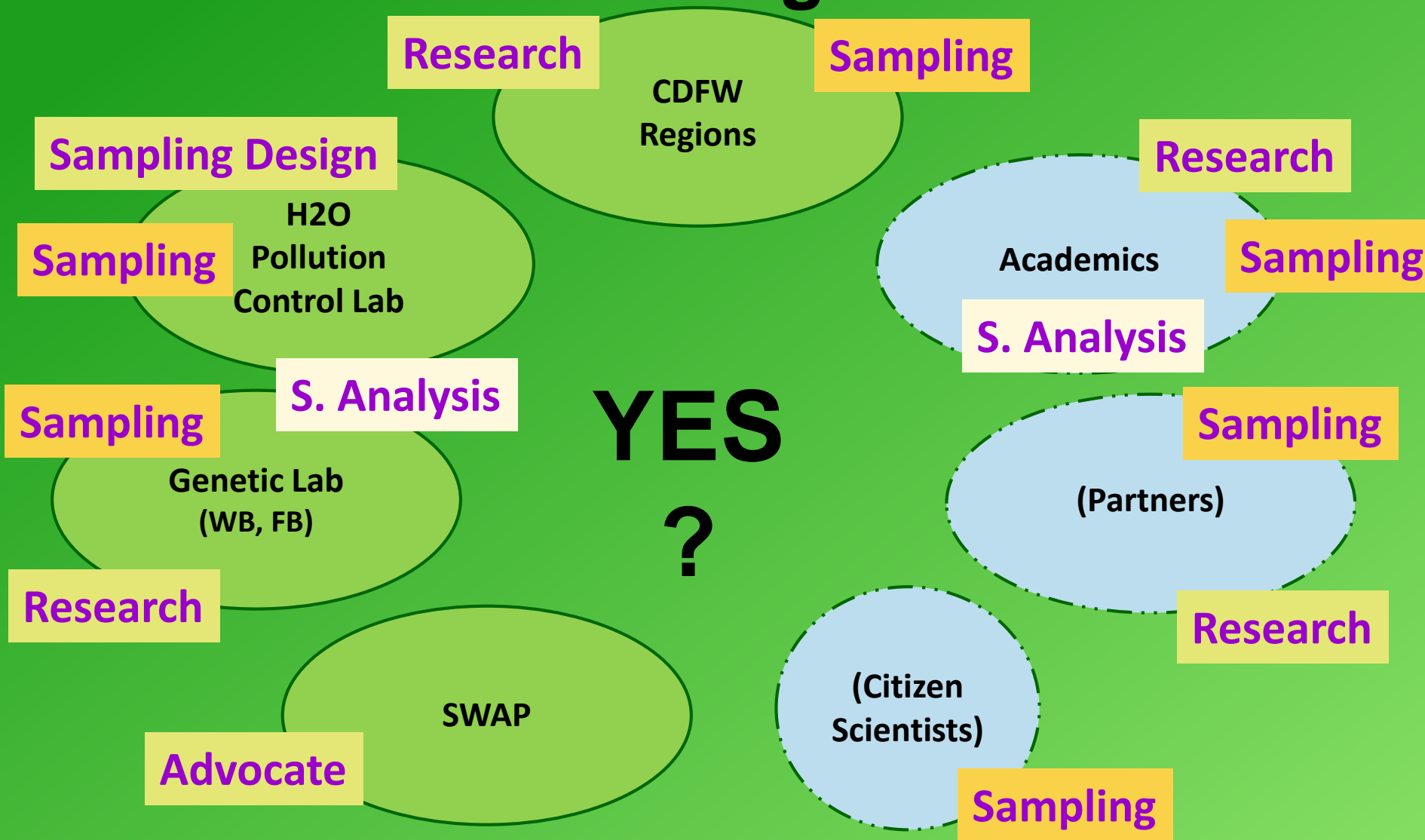
Interests in eDNA in-house capability building



Interests in eDNA in-house capability building



Interests in eDNA in-house capability building



Advocate Roles for SWAP

- **ID key issues and potential opportunities**
- **Connect dots**
- **Find missing links**
- **Advocate to fill the gaps**



Advocate Roles for SWAP (cont.)

- The scope includes invasive aquatic animals.
- Invasive plants in research level only, but high interests.
- Once markers for invasive plants are established, we should have ways to incorporate the sampling/s. assessment for those plants.
- Potential to add dimensions for early



To find more about SWAP...

SWAP 2015 & Companion Plans:

<https://www.wildlife.ca.gov/SWAP>

or contact

Junko Hoshi (me):

Climate Science and Renewable Energy Branch

junko.hoshi@wildlife.ca.gov

**Thank You!
&
Questions?**

