Organizational Alignment and Optimization of Resource Allocation to Conservation Goals

Ellen Pero, Riley Andrade, Randy Wilson, **Laura A. Brandt**, Todd Jones-Farrand, Conor McGowan

USGS
science for a changing world

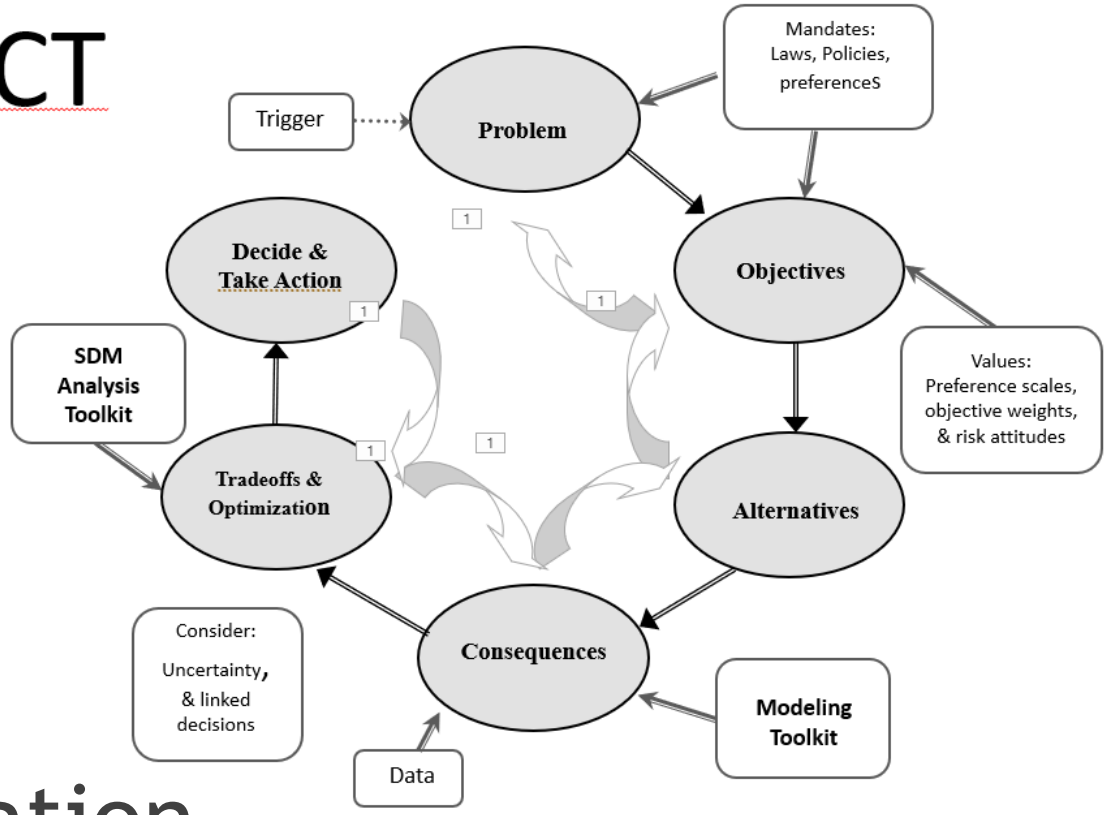
FLORIDA COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

UF UNIVERSITY of FLORIDA

PrOACT

- Background
- **P**roblem
- **O**bjectives
- **A**lternatives
- **C**onsequences
- **T**radeoffs and Optimization



Source: Jean Fitts Cochrane

Background

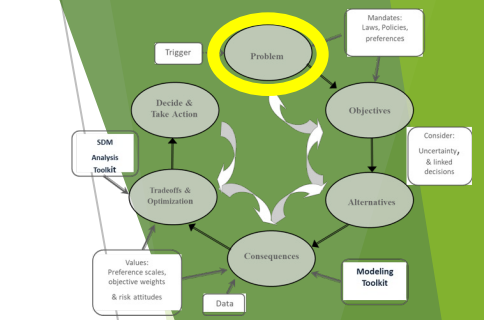
Work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people

Background

Sci
Appl

SAMB

Problem

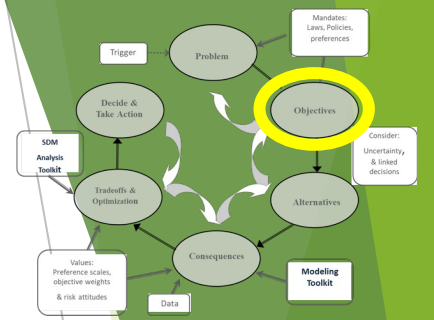


- *How does the Southeast Region's Science Applications-Migratory Bird Program of the U.S. Fish and Wildlife Service align limited resources to maximize contributions to the conservation of trust resources?*

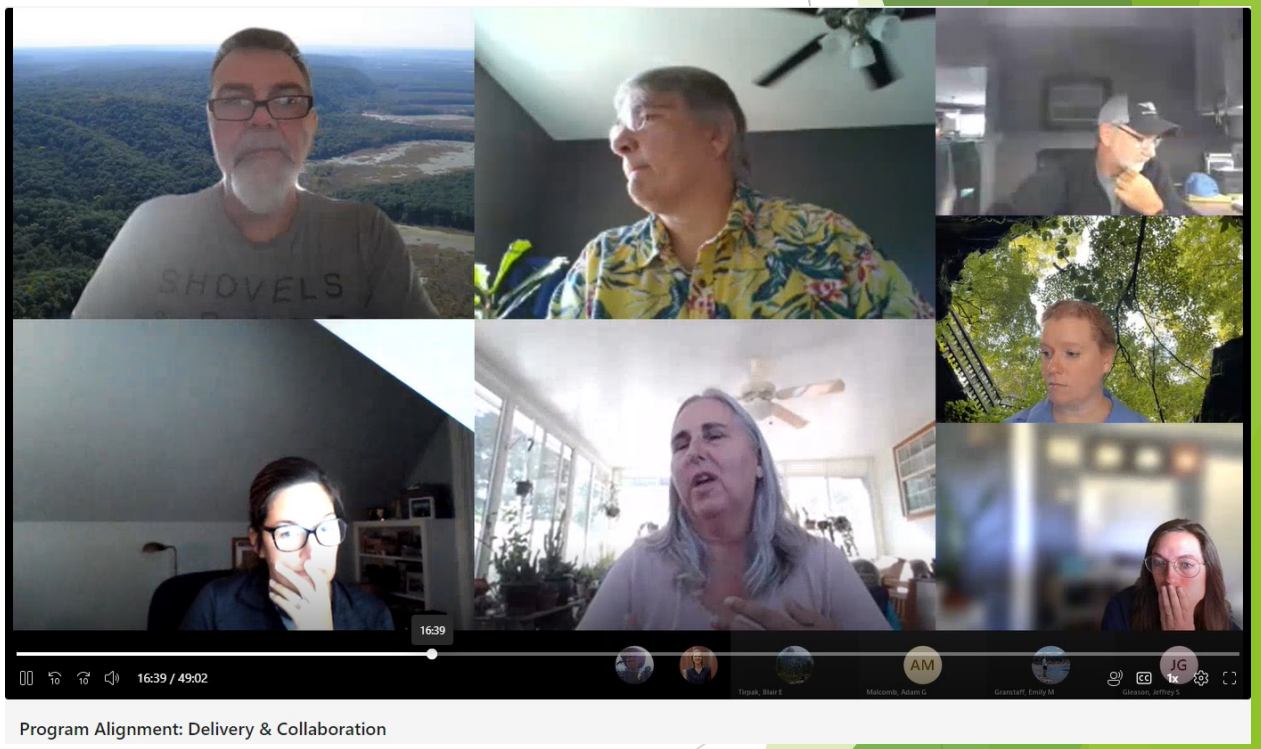




Objectives



- Mined mission and vision statements and other documents
- Identified functions and roles
- Input from core team
- Input from broader staff



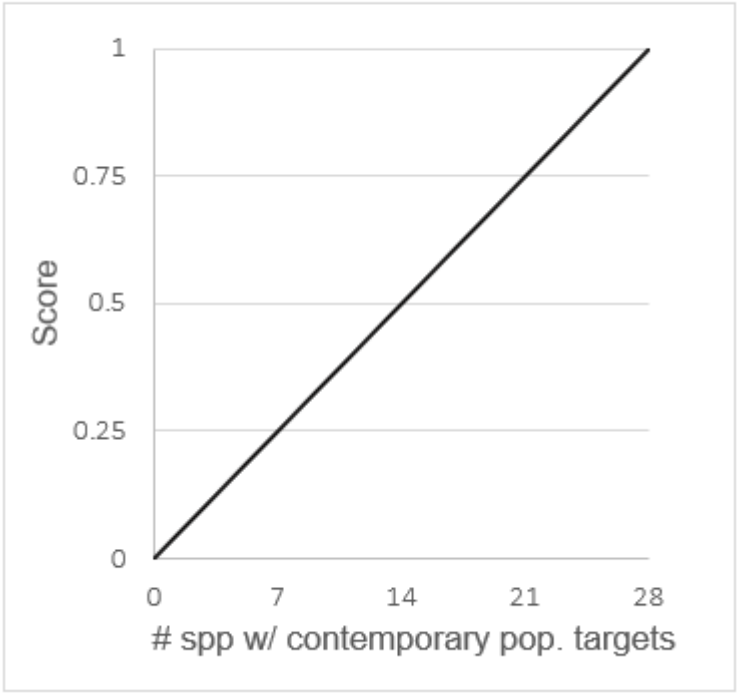
Objectives

Maximize the Southeast region SAMB's joint contribution to trust resource conservation

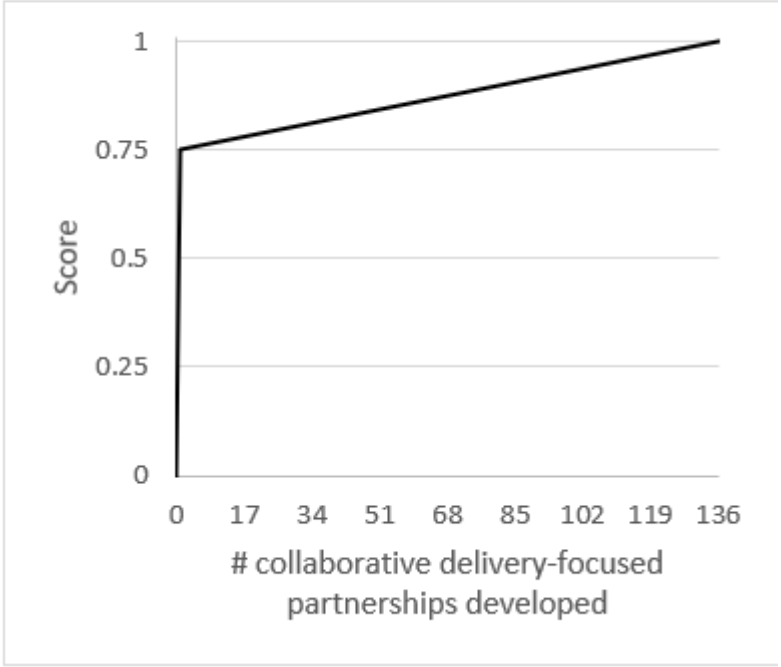
- **SHC**
  - Biological Planning
  - Conservation Design
  - Delivery of Conservation Actions
  - Research & Monitoring
    - Pops
    - Habitat
    - Mgmt Actions
    - Env Change
    - Life History
- **Regulations**
  - Mig Bird Permits
  - Mig Game Bird Harvest Mgmt
  - Tech Asst re: Mig Bird Regs
- **Engagements**
  - Social Science Application & Research
  - Inclusive Dialogues
  - Collaborative Conservation
- **Data**
  - Availability
  - Usability

Objectives

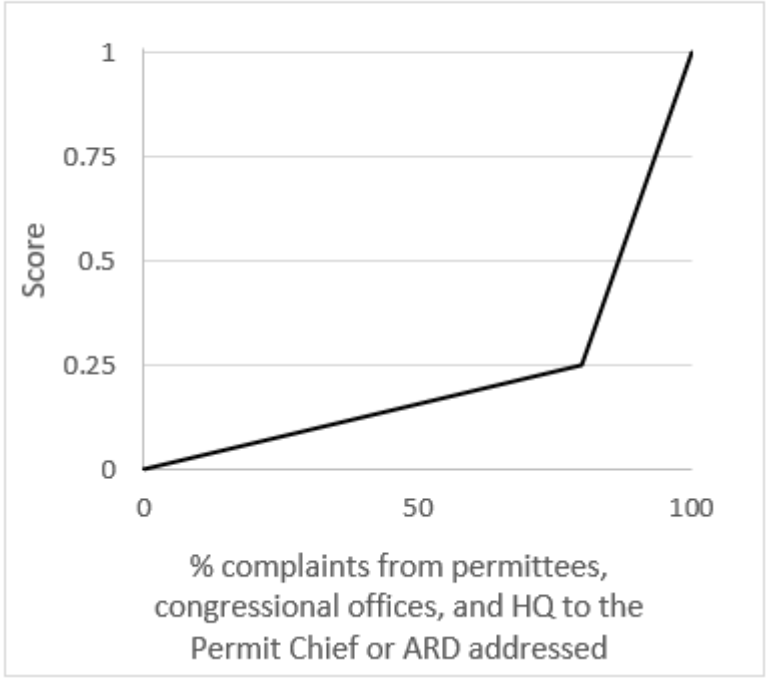
Metric 1: Population Targets



Metric 5: Partnerships Developed



Metric 15: Permitting Complaints

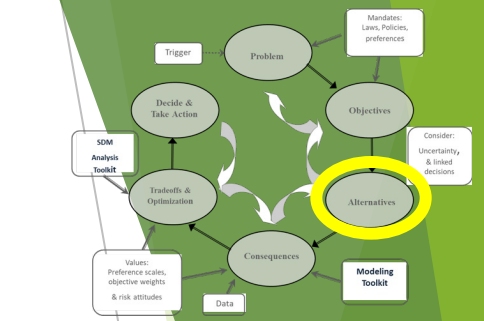


Objectives

- How does addition of an FTE contribute to programmatic objectives?

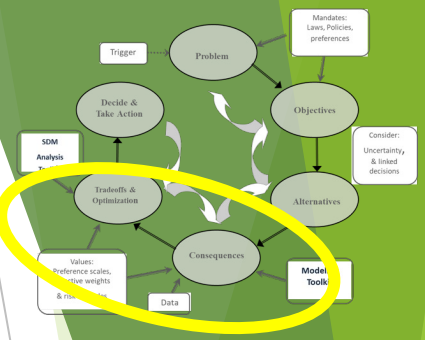
Objective Branches	Sub-Objective	etri	Measureable Attribute	Organization Wide per annual basis		Organizati Wide - annu	1 FTE (to Sub-Objective) results in... (answer in scale of metric on annual basis)			Confidence my range holds the true value
				Min	Max	Max	Low	High	Most Likely	
Promote Population Sustainability of Trust Resources	Bio Planning	1	# of species [red or yellow bird species in FTC] with contemporary population targets	0	141	2 2	1	10	4	70%
	Cons Design	2	# of taxa guilds with a habitat-based decision support tool (DST) [- See Taxa Guild Matrix sheet]	0	58	11.6	0	2	1	70%
		3	# of guilds with contemporary habitat objectives [- See Taxa Guild Matrix sheet]	0	58	11.6	0	2	1	70%
		4	# guild habitat objectives integrated with those for other taxa (bird guilds & beyond) [- See Taxa Guild Matrix sheet]	0	58	11.6	0	2	1	70%
	Deliv. Cons. Actions	5	# of collaborative delivery-focused partnerships developed (e.g., CDN, RCPP, etc) [- see Geo-Habitat Matrix sheet]	0	136	27.2	1	4	1	60%
		6	# of collaborative delivery-focused partnerships supported (e.g., longleaf implementation team, GCPEP, etc) [- see Geo-Habitat Matrix sheet]	0	136	27.2	1	10	4	60%
		7	# of engagements with histocially underserved communities to advance the delivery of conservation actions. [- see Geo-Habitat Matrix sheet]	0	136	27.2	1	12	6	60%
	Pops.	8	# of taxa guilds with population status and trend assessments [- See Taxa Guild Matrix sheet]	0	58	11.6	0	10	3	60%

Alternatives

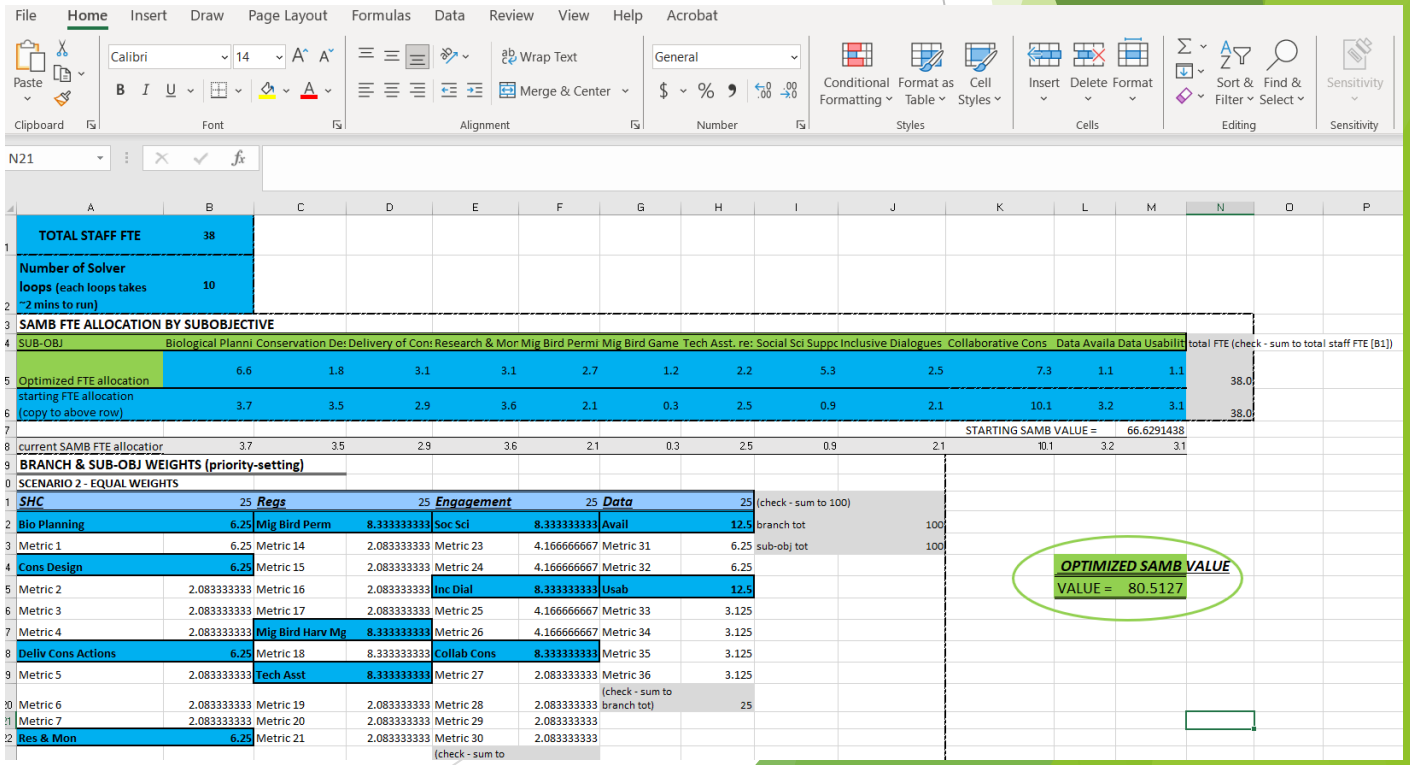


1. **Current allocation of FTEs (38 FTEs)**
2. Equal allocation of FTEs
3. Focused allocation of FTEs on renewable energy and seabirds
4. Each objective favored 85% of weight:
   a) **SHC**
   b) Regulations
   c) **Engagements**
   d) Data

Consequences/Tradeoffs/Optimization



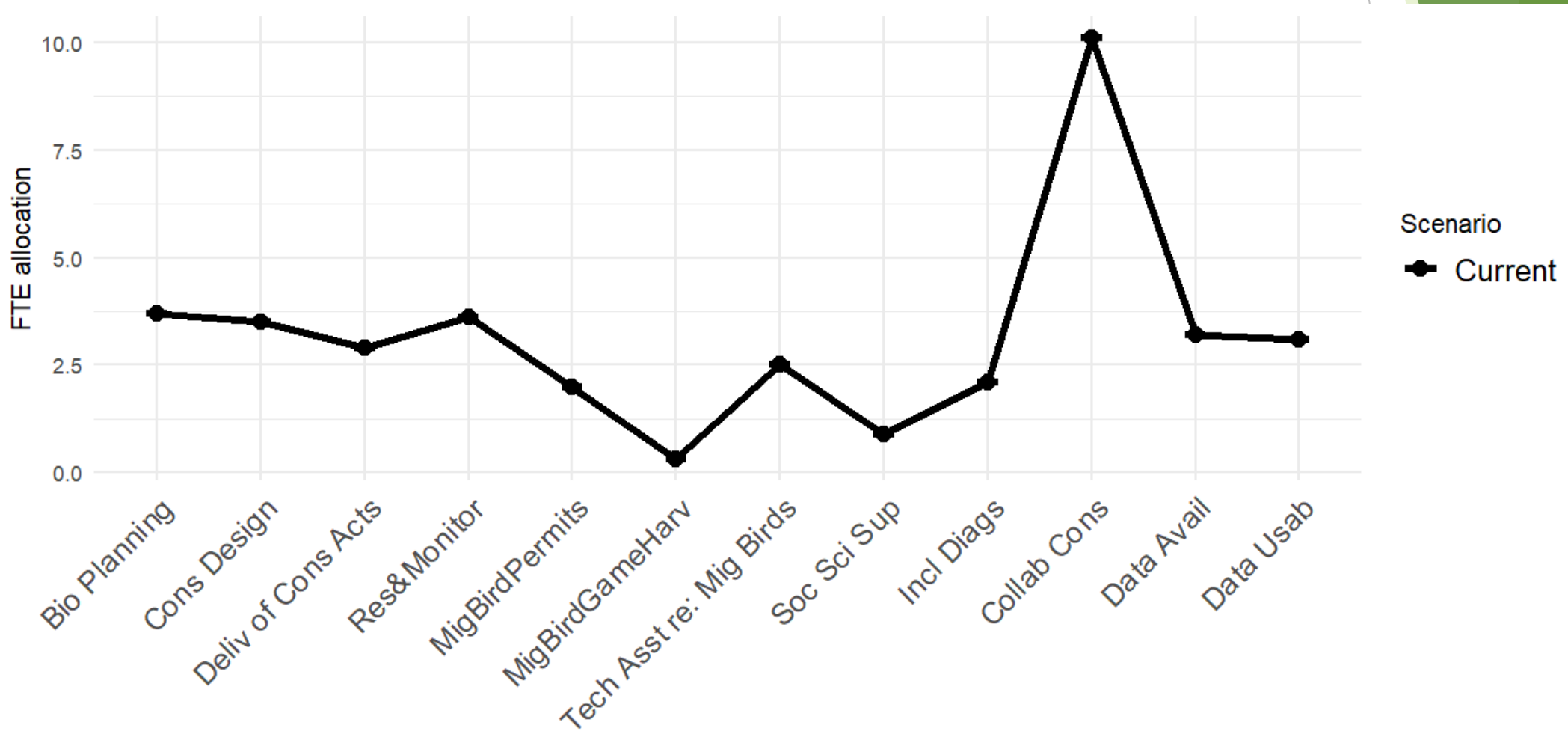
- Stochastic linear optimization model
  - Parameter stochasticity
- Objective weighting
- Parameter sensitivity



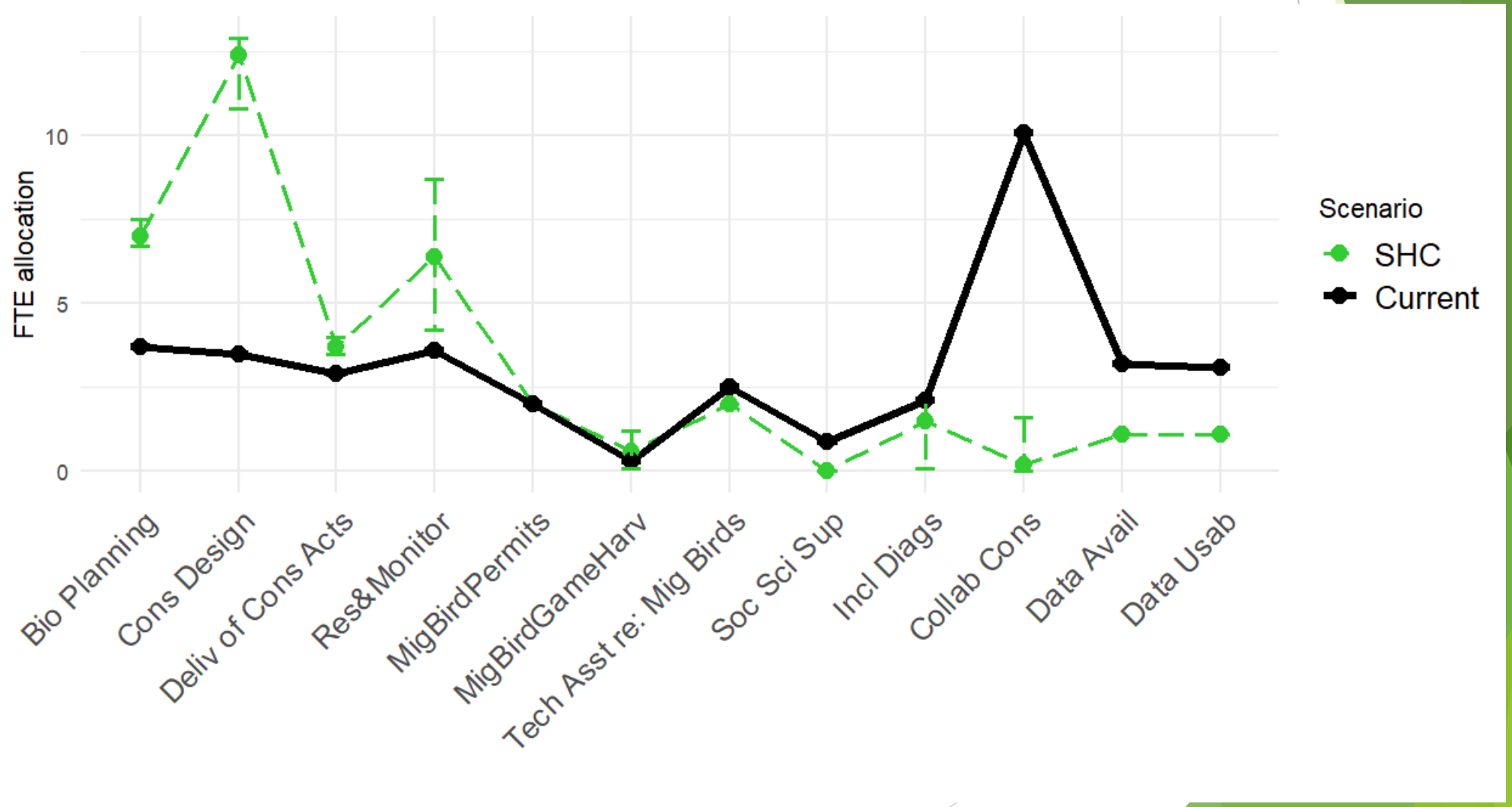
TOTAL STAFF FTE	38													
Number of Solver loops (each loops takes ~2 mins to run)	10													
SAMB FTE ALLOCATION BY SUBOBJECTIVE														
SUB-OBJ	Biological Planni	Conservation De:	Delivery of Cons	Research & Mor	Mig Bird Permi	Mig Bird Game	Tech Asst. re:	Social Sci Suppc	Inclusive Dialogues	Collaborative Cons	Data Availa	Data Usabilit	total FTE (check - sum to total staff FTE [B1])	
Optimized FTE allocation	6.6	1.8	3.1	3.1	2.7	1.2	2.2	5.3	2.5	7.3	1.1	1.1	38.0	
starting FTE allocation (copy to above row)	3.7	3.5	2.9	3.6	2.1	0.3	2.5	0.9	2.1	10.1	3.2	3.1	38.0	
											STARTING SAMB VALUE =	66.6291438		
current SAMB FTE allocation	3.7	3.5	2.9	3.6	2.1	0.3	2.5	0.9	2.1	10.1	3.2	3.1		
BRANCH & SUB-OBJ WEIGHTS (priority-setting)														
SCENARIO 2 - EQUAL WEIGHTS														
SHC	25	***Regs***	25	***Engagement***	25	***Data***	25	(check - sum to 100)						
Bio Planning	6.25	Mig Bird Perm	8.333333333	Soc Sci	8.333333333	Avail	12.5	branch tot	100					
Metric 1	6.25	Metric 14	2.083333333	Metric 23	4.166666667	Metric 31	6.25	sub-obj tot	100					
Cons Design	6.25	Metric 15	2.083333333	Metric 24	4.166666667	Metric 32	6.25							
Metric 2	2.083333333	Metric 16	2.083333333	Inc Dial	8.333333333	Usab	12.5							
Metric 3	2.083333333	Metric 17	2.083333333	Metric 25	4.166666667	Metric 33	3.125							
Metric 4	2.083333333	Mig Bird Harv Mg	8.333333333	Metric 26	4.166666667	Metric 34	3.125							
Deliv Cons Actions	6.25	Metric 18	8.333333333	Collab Cons	8.333333333	Metric 35	3.125							
Metric 5	2.083333333	Tech Asst	8.333333333	Metric 27	2.083333333	Metric 36	3.125							
						(check - sum to branch tot)	25							
Metric 6	2.083333333	Metric 19	2.083333333	Metric 28	2.083333333									
Metric 7	2.083333333	Metric 20	2.083333333	Metric 29	2.083333333									
Res & Mon	6.25	Metric 21	2.083333333	Metric 30	2.083333333									
				(check - sum to										

OPTIMIZED SAMB VALUE
VALUE = 80.5127

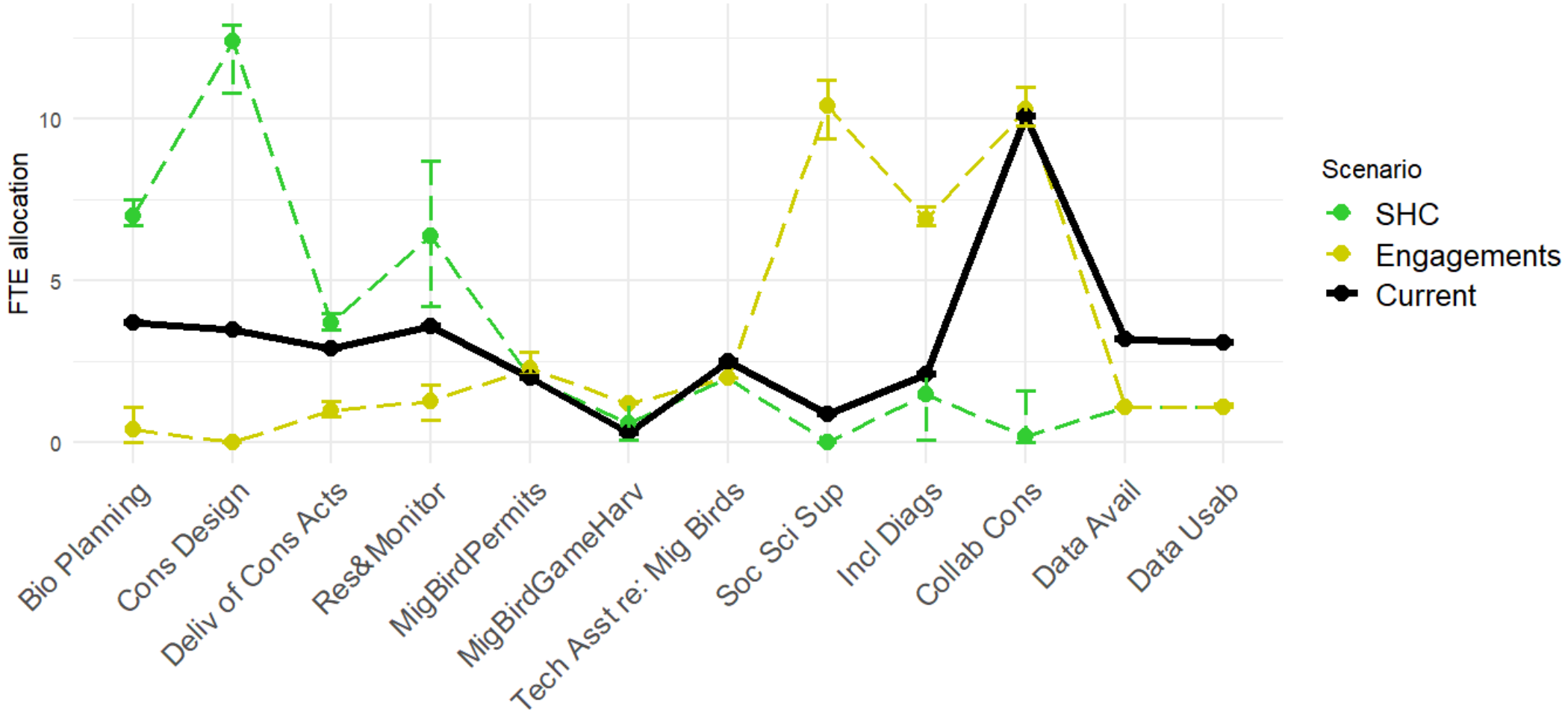
Optimization results



Optimization results + objective weighting



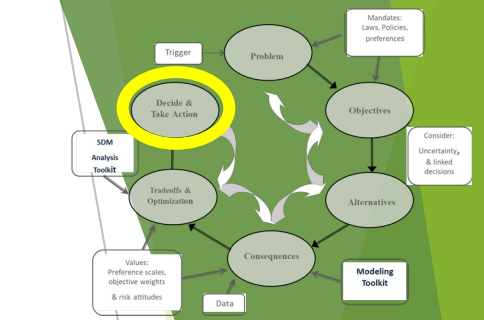
Optimization results + objective weighting



Parameter sensitivity

- Three metrics had the biggest significant effect
  - Number of species with population targets
  - Number of actions supporting effective game bird harvest regulations and frameworks
  - Number of groups engaged at relational levels (cooperation & collaboration)

Summary



- Having clear program-wide priorities matters!
- Once priorities are identified we CAN optimize our efforts.
- We identified places where uncertainty had the most effect. These would be areas to focus on first.
- This effort is challenging because our metrics are non-monetary.

Thank You