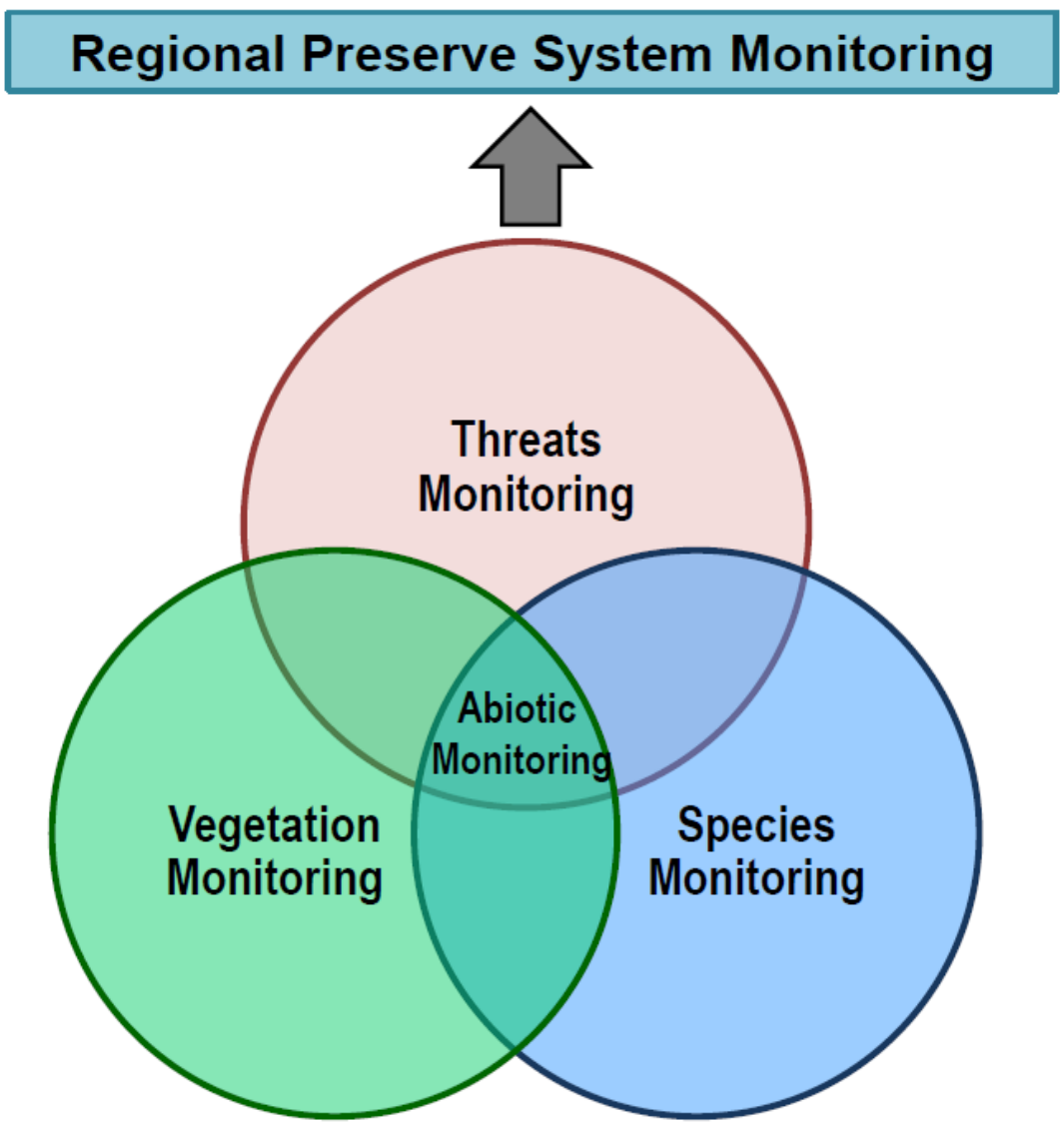
# Preserve Metrics Workshop

EMPWG
November 12, 2019

# ITOC Audit Recommendation

*"Measure progress in meeting specific and detailed EMP goals, objectives, and action items for regional monitoring and management under the Management Strategic Plan. Specifically, develop metrics using the abundance of data to holistically understand the status and trend of the overall health of the preserve against the baselines established in regional conservation plans and formalize a system to communicate complex performance results to the public."*



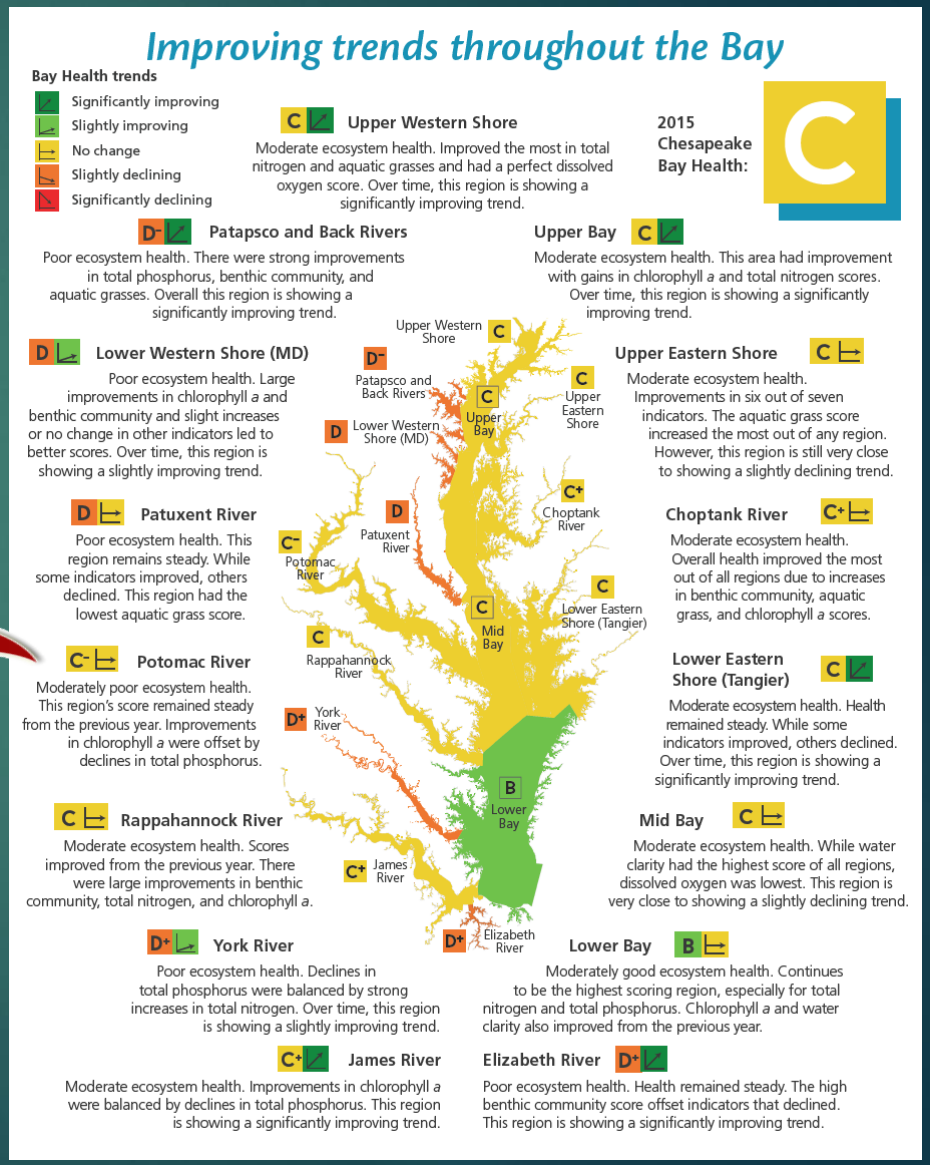

Source: MSP Roadmap 2017

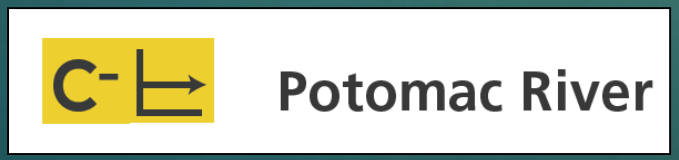
# Ecosystem Health Report Examples

- Chesapeake Bay
- Northeast Temperate Network (NETN)
- State of the South Atlantic

# Chesapeake Bay

- Academic grading system with trending figures
- 15 sub-regions
- 10 indicators used in evaluations
  - Abiotic & biotic
- Multi-trophic



# Northeast Temperate Network

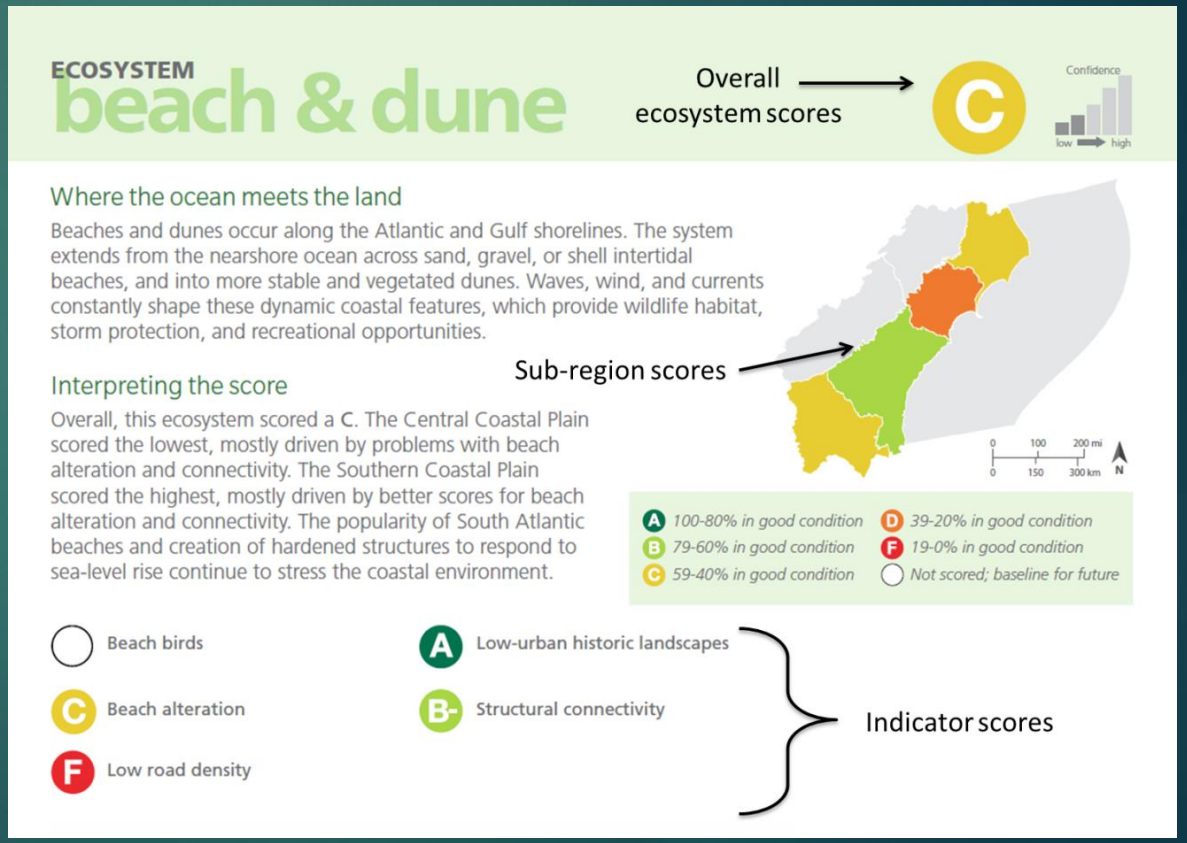
| Park | Structural Stage Distribution | CWD Ratio | Snag Abundance | Invasive Exotic Plants | Tree Condition/ Forest Pests | Tree Regeneration | Deer Browse Indicator Species | Tree Growth and Mortality | Soil Ca:Al | Soi C:N |
|---|---|---|---|---|---|---|---|---|---|---|
| Acadia National Park | Caution | Caution | Caution | Good |  | Good / Caution | Good | Good | Caution | Good |
| Marsh-Billings-Rockefeller NHP | Caution | Caution | Sign. Conc. | Caution |  |  | Good | Caution | Good | Sign. Conc. |
| Minute Man NHP | Good | Sign. Conc. | Caution | Sign. Conc. |  |  | Good | Good | Caution | Sign. Conc. |
| Morristown NHP | Good | Caution | Sign. Conc. | Sign. Conc. |  |  | Caution | Caution | Good | Sign. Conc. |
| Eleanor Roosevelt NHS & Home of FDR NHS | Good | Good | Caution | Caution |  |  | Caution | Caution | Good | Sign. Conc. |
| Vanderbilt Mansion NHS | Good | Good | Caution | Sign. Conc. |  |  | Caution | Caution | Good | Caution |
| Saint Gaudens NHS | Caution | Caution | Caution | Caution |  |  | Good | Caution | Sign. Conc. | Sign. Conc. |
| Saratoga NHP | Caution | Caution | Caution | Caution |  |  | Caution | Caution | Good | Sign. Conc. |
| Weir Farm NHS | Good | Caution | Caution | Sign. Conc. |  |  | Caution | Caution | Caution | Sign. Conc. |

Natural Resource: Forest Health

# State of the South Atlantic

- Considers 7 sub-regions, 9 ecosystems and 2 landscape level metrics of connectivity

- Two levels of evaluation
  - System based
  - Geographically based
- Indicators use existing information
- Lacks quantitative data



# Measuring Status and Trends for Conserved Lands in Western San Diego County:

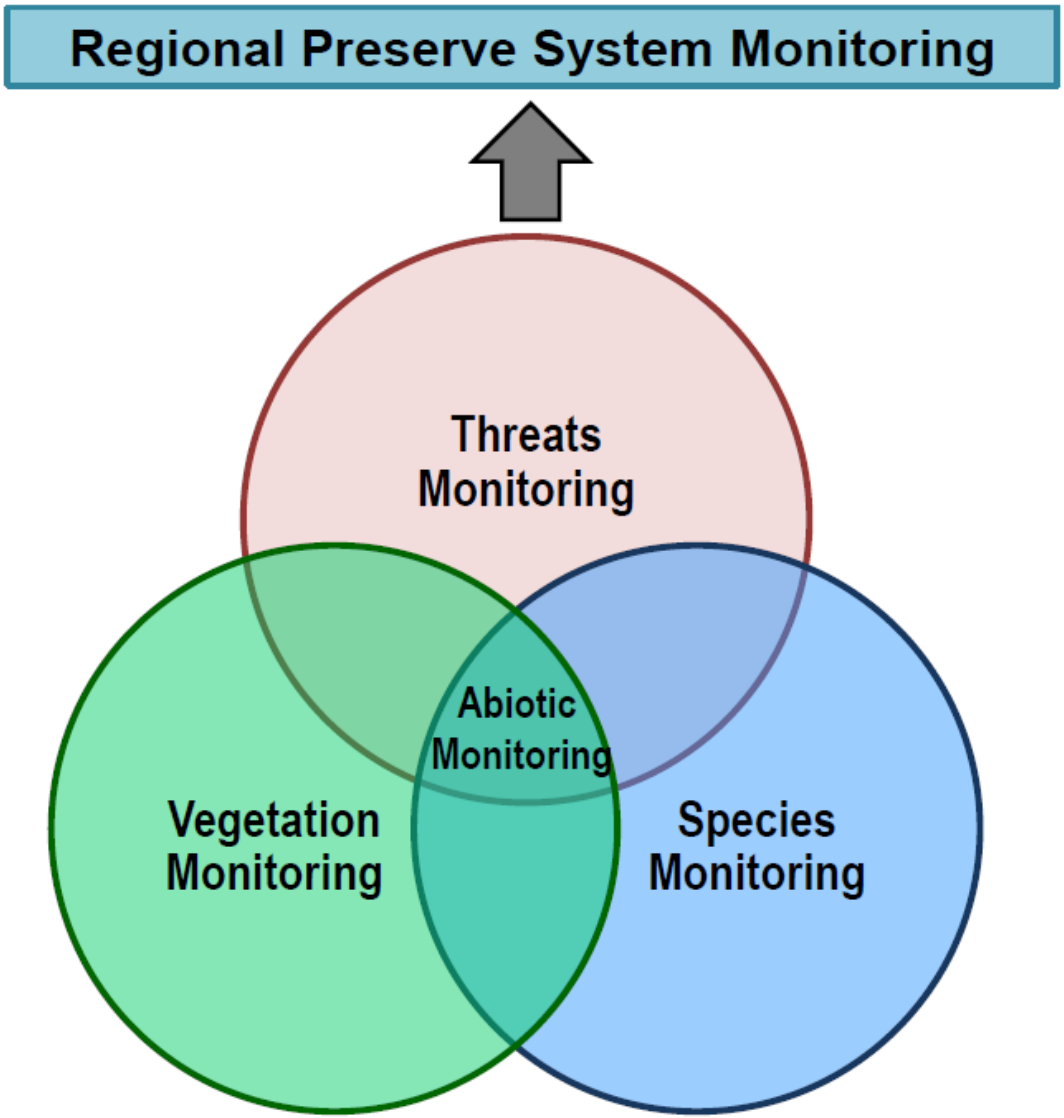
# Preserve Metric Approach

ITOC Audit:

*"Measure progress in meeting specific and detailed EMP goals, objectives, and action items for regional monitoring and management under the Management Strategic Plan.*

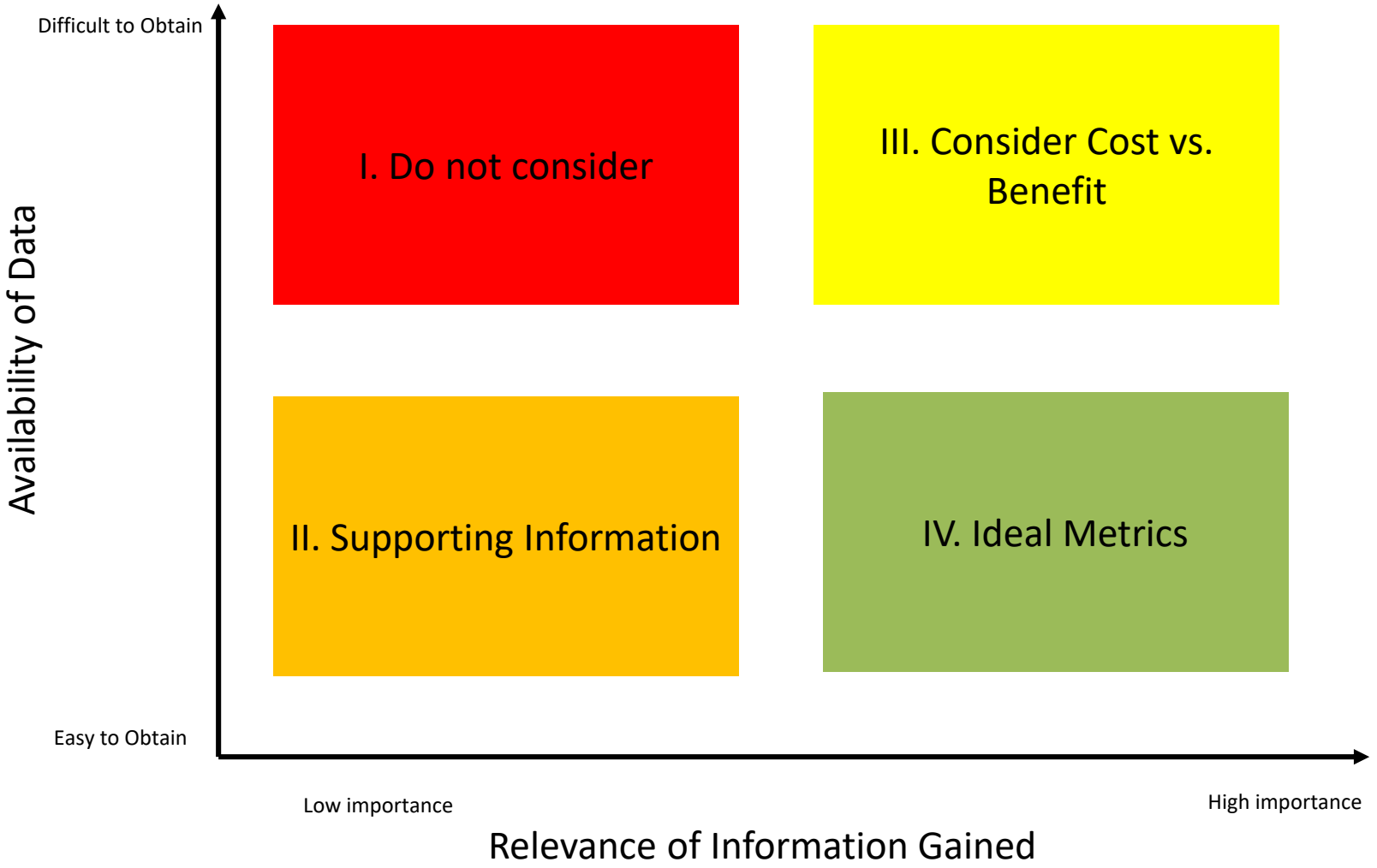
*Specifically, develop metrics using the abundance of data to holistically understand the status and trend of the overall health of the preserve against the baselines established in regional conservation plans…*

*…and formalize a system to communicate complex performance results to the public."*




Source: MSP Roadmap 2017

# Model for Selecting Metrics



# Proposed Categories for Preserve Metrics

- **Habitats and Biodiversity**
- **Species**
- **Threats**

Only need 4-5 metrics per Category
What are most important?

# Habitats and Biodiversity

MSCP & MHCP objectives:

- Maintain biological diversity of native species & their habitats
- Maintain full range of vegetation communities & functional ecosystems

MSP Roadmap objectives:

- Maintain ecological integrity & biodiversity of vegetation communities

# Habitat & Biodiversity
# Data Available for Metrics

*Habitats:*

- # Acres habitat (total & by veg type) conserved, restored, enhanced
- Ecological integrity (spatial & temporal landscape models & field data & covariates)
  - CSS, chaparral, grassland (% shrub cover, % NNG)
  - riparian (% tree mortality, composition, structure, Index Biological Integrity)
  - oak woodland (% tree mortality)
  - Torrey pine forest (% tree mortality)
  - Tecate cypress forest (% tree mortality)

*Biodiversity:*

  - species diversity (temporal, spatial & post-fire) – plants, inverts, birds, herps, bats, mammals

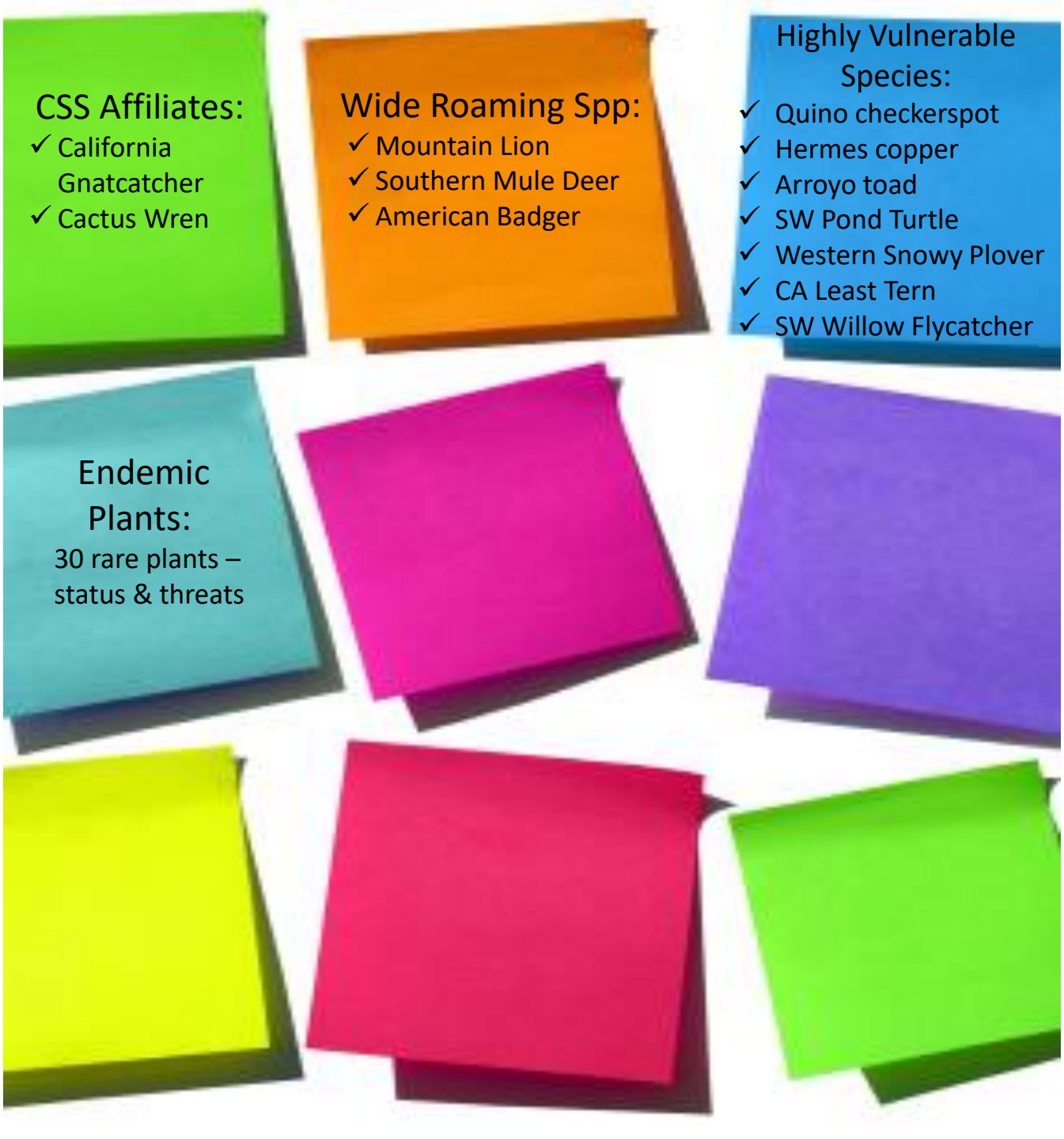
# Species

MSCP & MHCP objectives:

- Maintain viable populations of priority and other native species to prevent local extirpation or species extinction

MSP Roadmap objectives:

- Manage threats to priority MSP species populations to ensure long term persistence (>100 years)



# Species
# Data Available for Metrics

*Species Monitoring:*

- genetics
- current popn status
- popn trends over time & space
- popn responses to environmental & threat covariates & mgmt actions
- # species monitoring plans prepared
- # species monitoring obj implemented

*Species Management:*

- # acres species' habitat restored/enhanced
- # individuals translocated
- population response to management actions
- # species mgmt plans prepared
- # species mgmt obj implemented

# Threats

MSCP & MHCP objectives:

- Maintain & enhance/restore functional wildlife corridors & linkages
- Manage 11 types of threats to maintain long-term ecological integrity and viability of ecosystems, MSP species and vegetation communities

# Threats
# Data Available for Metrics

*Altered Fire Regime:*

- fire metrics - time & space
- species & veg post-fire recovery over time & space
- # sensitive habitats & species recently affected by fire
- # acres/species recovered with post-fire mgmt
- # fire obj implemented

# Threats
# Data Available for Metrics

*Altered Hydrology:*

- STICs – stream flow changes spatially & temporally
- aquatic invasive species (monitoring & mgmt)
- % watershed urbanized
- hydro-period changes
- altered hydrology & physical modifications by watershed
- # altered hydrology obj implemented

# Threats
# Data Available for Metrics

*Climate Change:*

- predicted changes in species distributions
- spatial analyses of low vs highly variability climate areas
- drought & species population responses
- # climate change obj implemented
- # projects ↑ resilience spp/veg

# Threats
# Data Available for Metrics

*Human Use of Preserves:*

- measured human use
- Modeled human use
- # illegal trails mapped & rehabilitated
- enforcement  projects - # contacts & behavioral responses
- citizen science & volunteer effort
- meters of fencing & # signs installed
- # human use objectives implemented

# Threats
# Data Available for Metrics

*Invasive plants:*

- # high priority invasive plant species controlled/extirpated
- # invasive plant projects at target species occurrences
- target species responses to invasive plant mgmt
- # acres of habitat treated for invasive plants
- habitat response to invasive plant control

# Threats
# Data Available for Metrics

*Invasive animals* – monitoring & mgmt actions

- # aquatic spp detected & removed
- feral pig control – effort & results
- SHB, GSOB pest monitoring & mgmt
- Argentine ants (landscape risk model & sampling)
- Invasive Animal Strategic Plan completed
- # invasive animal obj completed

# Threats
# Data Available for Metrics

*Loss of Connectivity:*

- # constrained linkages
- # spp affected by loss of connectivity
- # spp with mgmt actions to enhance connectivity
- # improved linkages (land conservation, infrastructure)
- # acres/parcels acquired to create corridors
- biodiversity losses with fragmentation
- # connectivity monitoring & mgmt obj implemented