



Great Salt Lake Wetland Conservation Action Planning Meeting #1 Summary

Conservation Action Planning

Conservation Action Planning (CAP) is a process developed by The Nature Conservancy that has been used to tackle a variety of conservation issues across the globe. CAP has also been used around Great Salt Lake several times and the March 2018 meetings sought to build on that previous work. The CAP framework focuses on five steps:

1. Identifying conservation targets (ecosystems or species)
2. Assess conservation target health based on key ecological attributes
3. Assess stress and sources that threaten target health
4. Develop conservation strategies
5. Measure success

Some CAP terminology:

- **Targets** are the ecosystems or species we are trying to conserve through CAP
- **Key Ecological Attributes** are the processes or traits that are important to the long-term health of targets
- **Indicators** are the measurable characteristics of ecological attributes
- **Health** is the integrity or viability of a target or nested target
- **Stresses** are those things that negatively impact key ecological attributes, thereby impairing the health of targets
- **Sources** are the causes of stress (e.g., if altered hydroperiod is a stress, upstream water use might be a source)
- **Strategies** are courses of action with specific objectives that decrease threats or increase target viability

Great Salt Lake & CAP

Around Great Salt Lake (GSL), the first use of the CAP framework was an assessment of the entire lake and adjacent wetlands conducted in 2011 ([link](#)). Those meetings found

that GSL was generally in good health, that it was supporting migratory birds, brine shrimp, and stromatolites. A one-day GSL wetland-specific CAP was conducted in 2015 that elaborated on the key ecological attributes and indicators of three wetland targets: impounded wetlands, fringe wetlands, and playa/mudflats ([link](#)). A CAP addressing the Willard Spur of GSL was conducted in 2018. Those meetings found that while the indicators of health differed between the Spur when it was in the flooded state vs. drawdown summer state, overall the Willard Spur is in good health.

GSL Wetland 2018 CAP

The ultimate goal of this most recent version of CAP is to provide the Utah Division of Water Quality (UDWQ) with hands-on advice needed to update the water quality standards for GSL wetlands. We held a meeting in March 2018 with the following objectives:

1. Review the proposed wetland conservation targets (impounded, fringe, and playa/mudflat wetlands)
2. Review and revise key ecological attributes, indicators, and indicator ratings
3. Assess current health
4. Assess future threats (sources of stress)
5. Very brief results of each objective are listed below.

1. Wetland Targets and Nested Targets

We focused on three wetland targets used in previous CAP's and commonly recognized around GSL: impounded wetlands, fringe wetlands, and playa mudflats. Nested Targets are the major wetland-dependent bird guilds that utilize targets: waterfowl, shorebirds, and waterbirds. See Figure 1.

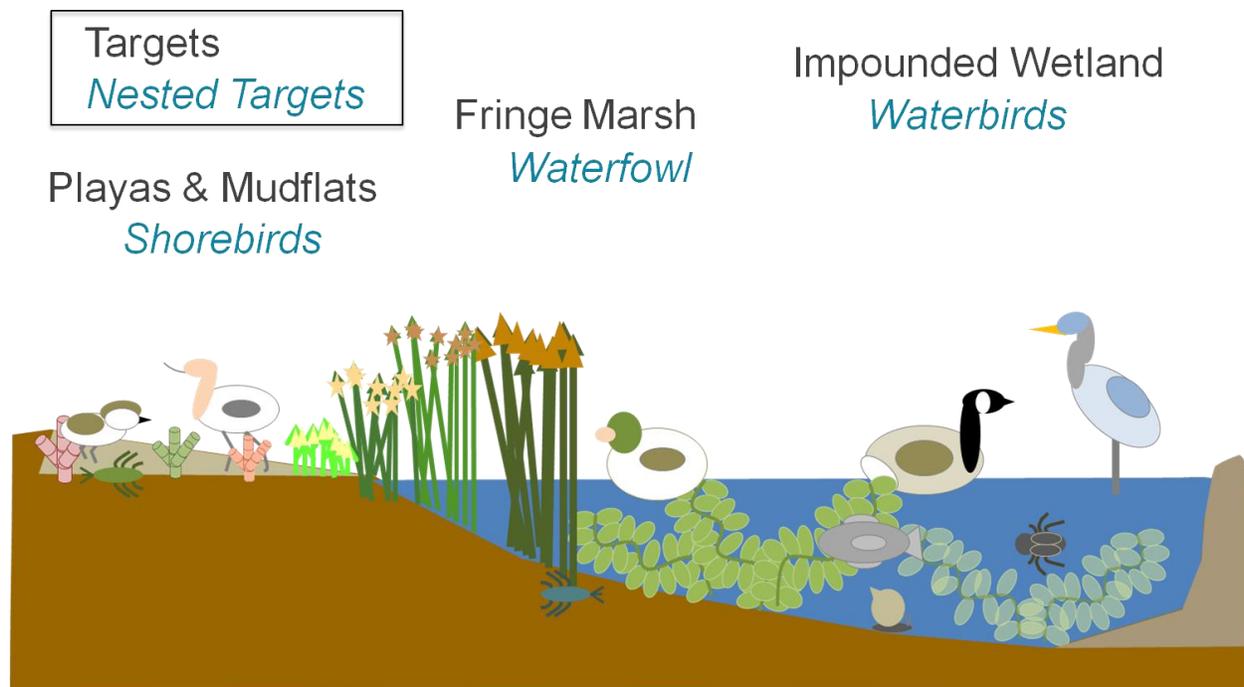


Figure 1. Great Salt Lake Target wetland types and Nested Target bird guilds.

- **Impounded wetlands** are relatively deeply flooded wetlands impounded by dikes, where water levels are manipulated via canals and headgates. These wetlands were impounded in order to extend the depth and duration of flooding. Multiple wetland types are found within the target, from wet meadows and short emergent marsh in the shallowly flooded parts to deep submergent marsh in the deepest part. All nested targets (waterfowl, shorebirds, and waterbirds) nest, rest and forage in impounded wetlands. This target is especially critical to large waterfowl and piscivorous waterbirds.
- **Fringe wetlands** (previously called unimpounded marsh complex) are unmanaged wetlands upstream or downstream of impoundments. A shifting mix of submergent and emergent wetland types exists within this wetland target. Fringe wetlands provide nesting, resting, and foraging habitat for all nested targets and provide critical Cinnamon teal nesting habitat and White-faced ibis foraging habitat.
- **Playa/mudflat** wetlands are flat, sparsely vegetated wetlands found extensively along the shoreline of GSL. Halophytic plants are the dominant species in this salty wetland target. The playa/mudflat target provides feeding, resting, and foraging habitat for all nested targets. The isolation and ephemeral macroinvertebrate species make playa/mudflats especially critical for shorebirds.

2. Revised Attributes & Indicators –

The attributes and indicators selected are the physical, chemical, and biological aspects of wetlands that are critical to wetland-dependent birds. See Table 1.

Table 1. Key Ecological Attributes and Indicators for Target wetland types.

Key Ecological Attributes	Impounded Wetland Indicator	Fringe Wetland Indicator	Playa/Mudflat Indicator
Hydrologic Regime	Water available to meet management objectives, including: residence time, pond flushing, habitat size, & habitat diversity		Habitat area near fresh or brackish water
Hydrologic Regime	Flood timing & depth adequate to maintain multiple habitat types	Flood timing & depth adequate to maintain multiple habitat types	Patterns of flooding & drying supportive of nested target needs
Chemical Regime	Toxic substances remain below concentrations toxic to aquatic life	Toxic substances remain below concentrations toxic to aquatic life	Toxic substances remain below concentrations toxic to aquatic life
Chemical Regime	Tissue concentrations of important bioaccumulation toxics remain below deleterious concentrations		Salinity within a range support of nested target food webs
Nutrient Regime	Algal mats or Harmful Algal Blooms do not adversely affect aquatic life	Soil & water nutrient bioavailability favor native plant community	Nutrient cycling between soil, water, plants, macroinvertebrates & birds
Aquatic Biota	Invasive animal abundance does not adversely affect the populations of native organisms		
Recreational Uses	Algal mats or harmful algal blooms do not impede recreational uses		

Key Ecological Attributes	Impounded Wetland Indicator	Fringe Wetland Indicator	Playa/Mudflat Indicator
Macro-invertebrates	Healthy macroinvertebrate population supportive of nested targets; follows seasonal dynamics & salinity gradients	Healthy macroinvertebrate population supportive of nested targets; follows seasonal dynamics & salinity gradients	
Marco-invertebrates	Adequate macroinvertebrate biomass to support nested targets & management goals		Adequate macroinvertebrate biomass to support nested targets
Plants	Dominance of native species	Dominance of native plant species	Vegetated area dominated by native halophytes
Plants	Submerged Aquatic Vegetation (SAV) seeds & tubers supportive of fish, waterfowl, & other birds		Bare ground & vegetated areas present
Plants	Healthy plant community (submerged & emergent) that provides adequate habitat structure to support waterfowl & other birds		Phragmites australis cover is a minor component of entire area
Size		Wetland area below 4,218 feet adequate to support nested targets	

3. Assessment of current health

Workgroups were divided by wetland target to assess the rating of each indicator as Very Good, Good, Fair, or Poor within three GSL regions: Bear River, Ogden, and Farmington Bays. Given the wide geographic range covered, participants found it difficult to estimate the health of wetlands in regions they were unfamiliar with.

4. Assessment of future stress

Participants ranked the severity and scope of the stresses (the flip side of key ecological attributes) and then voted for the top sources of stress for each wetland target. As with assessing health, estimating stresses and sources in regions that are difficult to visit was

challenging. The top threats were invasive plant species, upstream water withdrawal, and land use conversion.

Stresses

- Altered hydrologic regime
- Altered chemical regime
- Altered nutrient regime
- Reduced macroinvertebrate diversity or biomass
- Altered vegetation

Sources

- Point source discharges
- Upstream water withdrawal
- Invasive species
- Management of dams and diversions
- Land use conversion

Upcoming Meeting

We will be hosting a second CAP workshop on **May 23 and 24th** (Wed-Thurs) beginning at 9:00 at the Department of Environmental Quality offices: 195 N 1950 W, Salt Lake City, UT.

The goals of our upcoming workshop will be

1. Review the current health and threats to GSL wetlands with a larger group of participants
2. Develop strategies to address threats

Utah DWQ's Wetland Program webpage [[link](#)] has hand out materials, previous CAP reports, and DWQ's wetland research if you are interested in reading more background material.