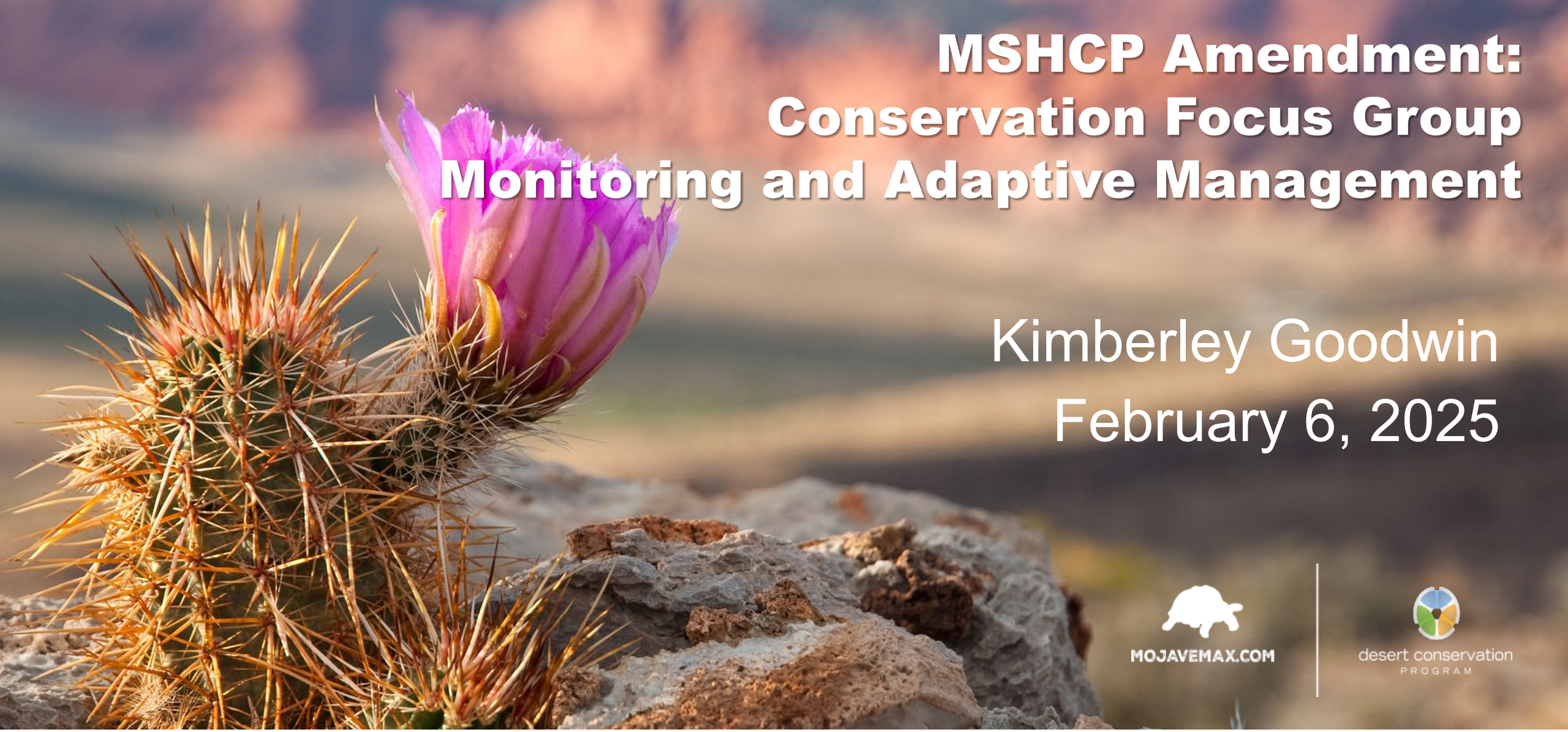

MSHCP Amendment: Conservation Focus Group
Monitoring and Adaptive Management

Kimberley Goodwin

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desert conservation PROGRAM

BOULDER CITY, NEVADA Home of Hoover Dam

THE CITY OF HENDERSON A Place To Call Home

CITY OF LAS VEGAS NEVADA

Mesquite Nevada

CITY OF NORTH LAS VEGAS

NEVADA DOT

CLARK COUNTY NEVADA

MONITORING

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Describes 3 types of monitoring:

1. Baseline monitoring: establishes current conditions, necessary to in order to assess changes to species/habitats over time
2. Compliance (or implementation) monitoring: ensures that the Permittees are complying with permit terms and conditions
3. Effectiveness monitoring:
    - Assesses Covered Species in the Plan Area
    - Tracks progress towards meeting biological goals and objectives
    - Evaluates effectiveness of management actions
    - Provides early warning of threats (or adaptive management triggers)

HABITAT MONITORING

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Invasive species monitoring

- Develop an Early Detection Rapid Response Program for weed species within 3 years
- Develop a weed management plan for each SMA within 2 years

Habitat quality monitoring

- Review and update habitat suitability models every 10 years
- Use habitat quantification assessment at the landscape scale to track changes over time
- Site-specific assessments will use a habitat uplift tracking system (under development)

HABITAT MONITORING

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Covered plant species sediment source monitoring

- Threecorner milkvetch and sticky buckwheat – identify sediment sources within 1 year
- Avoid impacts to sediment sources if feasible; if not, implement minimization and mitigation measures

Connectivity Monitoring

- Identify high priority connectivity corridors (desert tortoise, pocket mouse, Gila monster) within 3 years
- Identify key seed dispersal corridors for Covered Plants
- Develop a Connectivity Management Plan within 3 years; implement connectivity improvement projects

SPECIES MONITORING

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Ensure Covered Species populations are stable or increasing within the Reserve System

- Baseline surveys for first 2-3 years (most species)
- Surveys conducted every 5-10 years thereafter
    - May be more frequent for federally listed species
- Monitoring protocols are species specific
- Remote sensing, use of drones, and passive acoustic methods are proposed where feasible to minimize monitoring costs

ADAPTIVE MANAGEMENT

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What is it?

- A tool for addressing uncertainty in the conservation and management of Covered Species and their habitat
- Identify problems, design and implement strategies, monitor and evaluate results, then adjust approach to achieve desired outcomes

Uncertainties: ecosystem functions, effectiveness of management actions, survey approaches or models, or changed climatic conditions

ADAPTIVE MANAGEMENT

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Adaptive Management Evaluation

- Occurs every 10 years
- Evaluate species monitoring results against pre-defined triggers
- If a trigger is met, begin Adaptive Management Process
- Continues until actions are successful in resolving or improving upon an issue

TRIGGERS

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Example Triggers

Monitoring Type	Species/Habitat Monitored	Trigger
Invasive Species Monitoring	Invasive Species	• Newly established invasive plant species • Increasing cover of invasive plant species relative to baseline.
Habitat Quality	All Covered Species Habitat	• Decreasing habitat quality across reserve lands during the assessment period
Species Monitoring	Desert Tortoise	• Decreasing metric across desert upland reserve lands during the assessment period
Species Monitoring	Southwestern Willow Flycatcher	• Decreasing detections during the breeding season across riparian reserve lands during the assessment period
Species Monitoring	Gila Monster	• Decreasing suitable habitat across reserve lands during the assessment period
Species Monitoring	Las Vegas Bearpoppy	• Non-federal development in areas of occupied and potentially suitable habitat has exceeded 9% of baseline within Plan Area