**MONARCH OVERWINTERING GROVE MANAGEMENT PLAN TEMPLATE**

**Cover page with Title, Location, Authors, Date**

**Acknowledgements**

**Table of Contents**

1. **Background and Purpose** *(monarch declines, threats, partners, purpose of plan)*
2. **Site Description** *(location, map of site, history, land ownership, use & management, soils, dominant tree/plant species, management plans, City or County plans, site-specific threats; Is this site part of a complex? Are there plans being implemented within complex?)*
3. **Survey Information for overwintering monarchs** *(history of monarch counts at site and estimates by year, Thanksgiving counts cluster locations, predominant winds, areas for monarch sunning, nectaring, water sources, other behaviors including movement throughout the season.) Contact* [*wmtc@xerces.org*](mailto:wmtc@xerces.org) *for copies of overwintering site counts or online at* [*www.westernmonarchcount.org*](http://www.westernmonarchcount.org)*.*
4. **Management Plan Actions** *(goals, actions to reduce or remove threats, duration of plan, timeline for plan revisions as conditions change and if compliance is needed)*
   1. **Tree Planting and Forest Management** *(overall approach, maps, threats addressed)*
      1. **Tree Planting***(include species, location, and purpose)*
      2. **Tree Removal** *(include locations and species to be removed, including downed trees, and purpose for removal, as applicable)*
      3. **General Forestry Guidance** *(work with arborist and include recommendations)*
      4. **Tree Sourcing** *(local propagation, translocation, disease-free nursery stock, best management practices, as applicable)*
      5. **Hazard Tree Guidance** *(public safety first, assess annually)*
      6. **Tree Management Timeline** *(list each action: Year 1, 3-5 Years, Annually)*
   2. **Reducing Monarch Mortality** *(describe primary reasons for excessive mortality, if known; monitor/adaptively manage predation or other threats; describe actions to reduce mortality, as applicable)*
   3. **Nectar Sources and Milkweed**
      1. **Increasing Appropriate Nectar Sources** *(include species, locations & bloom period, habitat restoration monitoring)*
      2. **Milkweed Guidance** *(remove milkweed from in and around overwintering sites if it was planted/does not naturally occur there; most important to remove all non-native milkweeds, such as tropical milkweed {Asclepias curassavica})*
   4. **Public Engagement** *(increase positive engagement and reduce negative effects of public access; e.g., fencing, interpretive signage, docents, outreach)*
5. **Success Criteria & Monitoring Plan** (*define success criteria and describe monitoring plan. Can insert Monitoring Guidelines Template information - Attachment 1. See Attachment 2 - Example Success Criteria.)*
6. **Timeline for Plan Actions: Adaptive Management & Monitoring** *(list each plan action, when and how often it will be implemented, evaluated and/or monitored: Year 1, 3-5 Years, Annually, etc.)*
7. **Appendices** *(monarch surveys. protocols, previous management plans, plant lists, etc.)*
8. **References**

**ATTACHMENT 1: MONITORING GUIDELINES TEMPLATE**

**BASELINE ASSESSMENT:** *Use the long* [Habitat Assessment Form](https://www.westernmonarchcount.org/wp-content/uploads/2014/10/WMTC-Habitat-Assessment-Long-Form_updated2016.pdf) *as a basis to describe baseline site conditions.*

**PROBLEM STATEMENT/RESTORATION OR MANAGEMENT HYPOTHESIS:** *What are the problem(s) to solve at site and how will implementing this plan assist in solving them?*

**PROJECT GOALS AND OBJECTIVES:** *Goals and objectives should be measurable and directly relate to the problem statement and hypothesis.*

**SUCCESS CRITERIA:** *Clearly define what will be measured to track success of each project goal and objective. See Attachment 2 – Example Success Criteria.*

**MONITORING QUESTIONS:** *Questions should directly relate to goals, objectives, and success criteria and then link to monitoring type and methods.*

**MONITORING TYPES TO BE USED:** *Monitoring types (check all that apply) should be appropriate to answer questions posed, assist in tracking progress of goals and objectives via success criteria, and relate back to the problem statement and hypothesis.*

**\_\_Pre-project** *(Baseline Assessment)*

**\_\_Implementation** *(Was project installed or conducted as planned?)*

**\_\_Effectiveness** *(Did habitat conditions change at site over anticipated timeframe?)*

**\_\_Qualitative** *(e.g., veg photos)* **\_\_Quantitative** *(e.g., veg cover plots)*

**\_\_Validation** (*Did monarchs respond to changed habitat conditions as a result of the project? Note: There are many factors involved, but this is one piece of the puzzle) See Attachment 2.*

**MONITORING METHODS:** *Describe methodology, timeframe for monitoring, equipment, costs (if any). Is there are control site or reference site?*

**POST-MONITORING EVALUATION:**

*1. Was type of monitoring employed sufficient to address success of project goals and objectives? If yes, see #2. If no, what is needed for the next time you conduct a similar project?*

*2. Based upon success criteria, were project goals and objectives met? If yes, describe how this was determined. If no, how can the project be adapted to achieve goals/objectives?*

**RESULTS TO BE SHARED WITH THE FOLLOWING ENTITIES:** *Share results with CA Overwintering Group, landowners/managers, as applicable.*

**ADAPTIVE STEPS TO BE TAKEN BASED UPON RESULTS:**

**NOTES AND RECOMMENDATIONS FOR FUTURE PROJECTS:**

**ATTACHMENT 2: EXAMPLE SUCCESS CRITERIA**

**Forestry success criteria could include one or all of the following:**

- Create strategic (xx #) openings in canopy

- Increase native tree abundance by xx %

- Increase tree species and age diversity by xx %

- Reduce sources of disease and insect herbivore by removing freshly downed, infested wood

- Improve tree health through strategic trimming of all trees deemed hazardous by an arborist

- Establish a stable age structure allowing for senescence and replacement

**Nectar success criteria could include:**

- Increase abundance and diversity of native nectar plants by xx %

- Extend the bloom time of nectar plantings into February thru additional plantings

- Replace non-native nectar plants with the same (or greater) abundance of native nectar plants

- Remove all non-native milkweeds on site

​- Provide nectar plants within 100’ of the core cluster area

- Provide a water source if none available

**Mortality success criteria could include:**

- Reduce populations of a specific non-native monarch predator (e.g., yellow jacket traps; trap & release off-site eastern squirrel)

- Reduce monarch predator attractants at site (e.g., remove excess garbage; contain garbage)

- Improve percent of ground covered by native vegetation by xx %

​- Establish and implement a mortality monitoring protocol

**Public engagement:**

- Install education signage or programming (e.g., x # signs, x # programs per year)

- Reduce trespass and unauthorized vigilante "site management" (e.g., change from baseline)

- Increase fundraising for site maintenance (e.g., xx dollars raised per year)

**Monarchs (Validation Monitoring/Biological Response):**

- Maintain or increase overwintering monarch #'s at the site (caveat: this as not the only success criteria; some of this is beyond site-level control; it is one piece of the puzzle)

- Monarchs use the site for longer into the ow season (Jan, Feb) (e.g., change from baseline)

- Monarchs utilize areas where onsite restoration occurred

- Monarch utilize onsite native plantings for nectar

​- Transitional site becomes climax site (long-term cluster monitoring required through autumn and winter)