

CHIRICAHUA LEOPARD FROG: CONSIDERATIONS FOR MAKING EFFECTS DETERMINATIONS AND RECOMMENDATIONS FOR REDUCING AND AVOIDING ADVERSE EFFECTS (CMED)

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CMED funded by the U.S. Department of Defense Legacy Resource Management Program



Chiricahua Leopard Frog Habitat



Chiricahua Leopard Frog, Sycamore Canyon, Coronado National Forest, AZ



Chiricahua Leopard Frog Habitat

CONSIDERATIONS FOR MAKING EFFECTS DETERMINATIONS

Concepts of Chiricahua leopard frog habitats

- **Occupied habitat** includes sites where the frog is known to occur or where it was present within the last 10 years, but no follow-up surveys have been conducted confirming its absence and suitable habitat is present.
- **Likely to be occupied habitat** includes currently suitable habitat where the frog has been documented within the last 10 years, but is apparently now absent, or suitable habitat that is:
 - 1) within 1 mile overland of occupied habitat, 2) within 3 miles along an ephemeral or intermittent drainage from occupied habitat, or 3) within 5 miles along a perennial stream from occupied habitat.
- **Suitable habitat** includes habitats suitable for one life stage or activity of the frog may not be suitable for others. Suitable habitat may include marginal habitats and also those sites that are occupied, likely to be occupied and unoccupied habitats. Site occupancy can also change due to immigration and colonization.
- **Potential habitat** includes aquatic systems within the historical range of the frog that are damaged or degraded from natural perturbations or chronic stressors but have the appropriate hydrological and ecological components, capable of being restored to suitable habitat.

How alterations to habitat may affect Chiricahua leopard frogs

During the planning of a project and the associated analysis of effects, consideration should be given to how the project may alter elements of frog habitat. Some of these habitat features include (but are not limited to): (1) Water permanence and flow regimes; (2) Water quality (temperature, sediment, contaminants, pesticides); (3) Aquatic, semi-aquatic, and peripheral vegetation; (4) Presence of non-native predators and competitors; (5) Exposure to Bd, and (6) Dispersal habitats. Altering these habitat components may affect such basic frog resources as food, cover, breeding success. The alterations may result in brief impacts to frog behavior or may ultimately affect the survivorship of eggs, tadpoles, or adults.

Disruptions to the individual

Individual frogs (eggs/embryos, tadpoles, juveniles, and adults) are themselves susceptible to the direct effects from some types of activities that may result in mortality or other disruption of behavior that may influence growth and survivorship. For example:

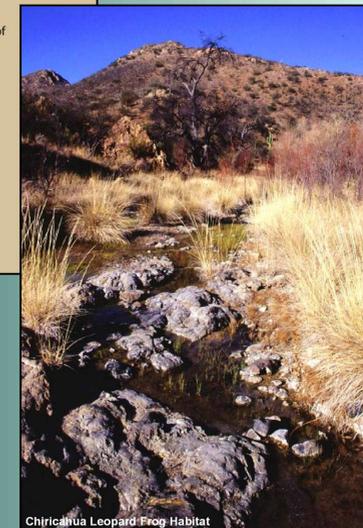
- Physical contact with eggs, tadpoles, juveniles, or adults may constitute "take".
- Egg masses may be crushed or dislodged from aquatic vegetation and displaced to sites less suitable for successful hatching.
- During winter, disturbance of the benthos may crush hibernating frogs.
- Activities may disrupt feeding, or cause movements that may expose them to predation.
- Anthropogenic noise may disrupt male vocalizations affecting mating and reproduction.

Representative examples to assist in the analysis process

This section of the CMED provides brief analyses of effects that may result from some general types of activities, including fire management, construction, native fish restoration, and livestock management. This section is intended to suggest what types of effects might be considered during a project-specific assessment and provide a "jump-start" in the thought process during effects analyses.



Chiricahua Leopard Frog Habitat



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INTRODUCTION

Goals of the "Considerations for Making Effects Determinations" (CMED) for the Chiricahua leopard frog (*Lithobates [Rana] chiricahuensis*) are to:

- Focus the effects analysis of proposed Federal activities on critical elements.
- Reduce uncertainty in determining effects.
- Improve and facilitate section 7 consultations that may be required under the Endangered Species Act.

The CMED should be used as a guide in assessing potential effects of a proposed action to the species, but consideration must be given to site-specific information in making the final determination of effects. The CMED provides considerations in determining if the species may be in the action area of the proposed activity and, if so, possible ways in which Federal activities may affect various aspects of the species and its habitat by providing:

- Examples of representative activities and ways in which those activities may affect Chiricahua leopard frogs.
 - The purpose of this is to "jump-start" the thought process during the effects analysis of similar activities.
- Examples of conservation measures that may be incorporated into proposed actions to reduce adverse effects and take, and in doing so facilitate section 7 consultations.
 - These examples should be used as a guide and not as a "cook-book" when designing projects and evaluating their effects.
 - The document should be used in conjunction with informal consultation between the Federal action agency and the U.S. Fish and Wildlife Service (USFWS).

It is important that the practitioner using this CMED document also become very familiar with the Chiricahua Leopard Frog Final Recovery Plan (USFWS 2007) and is able to incorporate conservation measures from the plan into proposed activities where the frog is likely to be present or where future recovery actions for the species are likely to occur.

This CMED document is an important component of a comprehensive, long-term strategy for streamlining consultations. To be most effective, a comprehensive strategy must also emphasize the species' recovery under section 7(a)(1) of the Endangered Species Act through affirmative conservation programs by Federal agencies (50 CFR 402.1(a)) so that protection under the Act and its requirements for section 7 consultations are no longer needed.

*Formerly "Guidance Criteria" as described in the Long-term Strategy for Streamlining Consultations under the Endangered Species Act in Arizona and New Mexico (Southwest Strategic, November 1999).



Chiricahua Leopard Frog Egg Mass

BACKGROUND

CLF was listed federally threatened in 2002 and a recovery plan was finalized in 2007. Between 2005 and 2008, surveys documented CLF at 111 sites (20% of historical localities) in the U.S. The recovery plan and biological opinions are excellent sources of information, management recommendations, and project design considerations.

The species' life history is not well studied. Habitat requirements include:

- Clean permanent or semi-permanent water free of non-native predators
- Diversity of habitat including:
 - Shallow water with emergent vegetation (egg deposition, thermoregulation, and foraging)
 - Deeper water, root masses, undercut banks and shoreline vegetation (hibernation and refuge from predation)
 - Soft, unconsolidated substrate (hibernation and algal growth to feed tadpoles)

Breeding males attract mates through vocalizations. Breeding season is variable depending on temperature and can run from February to November. Eggs are deposited, attach to emergent vegetation, and hatch in 8 to 14 days.

Larval frogs are fully aquatic, metamorphose in 3 to 9 months, and may overwinter. They are primarily herbivorous, feeding on algae, aquatic plants, periphyton, and diatoms.

Post-metamorphic frogs are primarily aquatic and require permanent or semi-permanent water. They will inhabit intermittent water bodies, if microhabitats are available to provide refuge from desiccation. Adults feed on a variety of items including invertebrates, fish, and frogs and likely overwinter underwater in areas with high dissolved oxygen levels.

Predators of CLF:

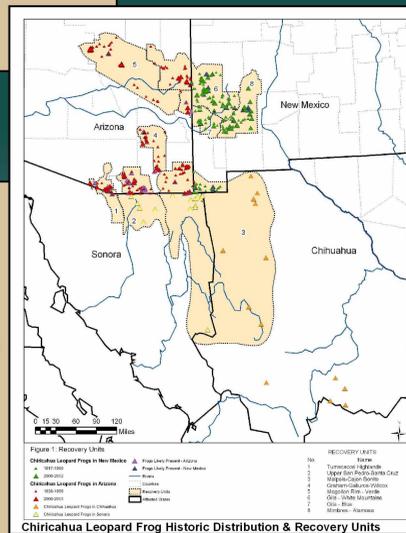
- Crayfish, leeches, fish (eggs and larvae)
- Aquatic insects (larvae)
- Snakes, bullfrogs, wading birds, fish, Corvids, mammals (larvae and adults)

Threats to the species include:

- Habitat destruction, loss (water pumping and diversion) and degradation (environmental contamination)
- Environmental perturbations (drought, floods, wildfires)
- Disruption of metapopulation dynamics (relationships among populations or frogs)
- Increased chance of extirpation or extinction resulting from small numbers of populations and individuals
- Non-native species, i.e. bullfrogs, fish
- Diseases and parasites
 - Chytridiomycosis (chytrid) is one of the most serious diseases. Caused by *Batrachochytrium dendrobatidis* (Bd) fungus, it causes mortality in adults. Bd can inhabit alternate hosts (i.e. bullfrogs, salamanders, shrimp) but can survive without a host for up to 7 weeks under certain circumstances.



Chiricahua Leopard Frog Tadpole



Chiricahua Leopard Frog Historic Distribution & Recovery Units



Chiricahua Leopard Frog Surveyors

RECOMMENDATIONS TO REDUCE OR AVOID ADVERSE EFFECTS

Section III of the CMED includes a variety of possible ways to reduce or avoid potential adverse effects for some of the more common types of projects that have been found to impact frogs. Importantly, project proponents and action agencies should work closely with USFWS to determine which combinations of measures are most applicable and effective to their specific project. The recovery plan for the frog provides substantial guidance management recommendations to minimize effects of Federal activities and should be referred to often.

General Recommendations: An important prerequisite to avoiding adverse effects to extant populations is to know if and where extant populations occur in the action area of a proposed project. The importance of USFWS-permitted survey data for evaluating project effects, but also to the recovery of the species, cannot be overemphasized. If adverse effects cannot be avoided, then in order of preference, such effects should be minimized, rectified, reduced, and/or compensated to the extent possible. A few specific recommendations are provided below:

Fire management activities

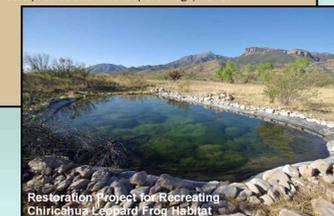
- During emergency events, protecting human life must come first every time.
- All personnel on the fire should be briefed about protecting the frog and its habitat.
- Resource Advisors should be designated to coordinate listed species and other resource concerns and serve as an advisor to the Incident Commander.
- Crew camps, equipment staging areas, and aircraft landing and refueling areas should be located away from frog populations and sites selected for habitat restoration or creation.
- No fire retardants or suppressants toxic to fish or amphibians should be used over habitats occupied by frogs, tributary drainages, or on the watershed where these chemicals are likely to enter occupied frog habitats.
- Water should not be drafted from stock tanks or other aquatic habitats if frogs are present or likely to be present, or if the site is known to be positive for the fungus Bd which causes chytrid.

Construction activities

- When possible, surface-disturbing construction projects should be located outside of occupied frog habitat. If not, the area of disturbance (veg., soil, water) should be kept to a minimum.
- Incorporate into the proposed action a water quality management plan prepared by or authorized by qualified agency personnel.
- Develop and implement a worker education/training program for all construction personnel.

Livestock management activities

- To avoid direct and indirect adverse effects associated with livestock activities, no grazing or livestock management activities should occur in occupied habitat or where the frog is reasonably likely to occur, including aquatic sites and potential dispersal corridors.
- All earthen stock tanks within reasonable dispersal distance of occupied habitat should be surveyed for frogs prior to maintenance activities.
- To minimize trampling and/or ingestion of frogs, metamorphosing frogs, larvae, and eggs in occupied habitat, protect stock tanks sufficiently to permit regeneration of emergent and submergent vegetation.
- Note: Through the maintenance and operation of the stock tanks for cattle, habitat is provided for the leopard frogs, hence there is a conservation benefit to the species.



Restoration Project for Restoring Chiricahua Leopard Frog Habitat