GOLDEN COQUI
RECOVERY PLAN
RECOVERY PLAN FOR
THE GOLDEN COQUI

(ELEUTHERODACTYLUS JASPERI)

Prepared by
Carlos A. Diaz Diaz
Department of Natural Resources
San Juan, Puerto Rico
for the
U.S. Fish and Wildlife Service
Atlanta, Georgia
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Approved:  Robert E. Gilmore
Associate Director, U. S. Fish and Wildlife Service

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I. INTRODUCTION

Description

The golden coqui, Eleutherodactylus jasperi, is the only frog species in the New World family Leptodactylidae definitely known to give birth to live young (ovoviviparous) (Drewry and Jones 1976, Rivero 1978, Wake 1978). However, observations by Lynn and Grant in 1940 (Wake 1978) suggest the possibility of one additional ovoviviparous species, the Jamaican coqui, E. orcutti.

Eleutherodactylus jasperi measures 19-22 mm in snout-vent length and is olive-gold to yellow-gold in color (Rivero 1978). The eyes are small, protruding slightly from the sockets. The snout lacks a pointed tip, a characteristic that differentiates it from the closely related E. gryllus. Both inhabit the leaf axils of bromeliads. Rivero (1978) suggests that E. jasperi may be most related to E. hedricki, with which it shares a constriction of the back of the head.

The golden coqui was first described by Drewry and Jones in 1976. These authors also provided information on reproduction, habitat, and range of the species.

Distribution and Habitat

Eleutherodactylus jasperi is endemic to Puerto Rico and is restricted to a small area south of Cayey (Figure 1). It occurs on mountain tops, from 700 to 850 meters in elevation, at Cerro Avispa, Monte el Gato, and Sierra de
Figure 1. Current range of golden coqui.
Cayey, and occupies a total habitat area of approximately 24 hectares (G.E. Drewry pers. comm.). The area receives heavy dew from orographic uplift of air striking the mountain range.

It has been found on dense clusters of bromeliads such as *Vriesia*, *Hohenbergia*, and *Guzmania* growing on trees, rock edges, and on the ground. The golden coqui inhabits the water-filled leaf axils of the bromeliads.

Feeding Biology

Little is known about its feeding habits. Drewry and Jones (1976) observed that in daylight *E. jasperi* captures insects that enter the axils of the leaves. At night they venture out on the same leaves, but will retreat quickly when disturbed.

Breeding Biology

Drewry and Jones (1976) reported gravid females from April to August. They observed that about a month elapsed between fertilization and birth in captive golden coquis. Rivero (1978) reported a 26-day gestation period for a captive female.

Based on the observation of two classes of sub-adults on a single plant, Drewry and Jones (1976) suggested that females may produce two clutches per year. However, females and males could be receptive during long periods of time or throughout the year (Wake 1978), suggesting that reproduction could be acyclical (T. Nakamura, pers. comm.).

Wake (1978) reported that eggs are retained in a modified oviduct and that fertilization is internal. Female *E. jasperi* retain five to six developing
embryos in the oviducts. Three to five froglets metamorphosed within 33 days
(Drewry and Jones 1976, and Rivero 1978).

Data on growth rates and longevity are not available.

Population Estimates

The present status of the species needs evaluation. The only available
population estimates are those developed by Drewry while conducting field
investigations of *E. jasperi* between May 1973 and August 1974. He
estimated a population of less than 10 individuals for Cerro Avispa, 500-1000
for Monte El Gato, and 1000-2000 for all Sierra De Cayey (pers. comm.).

Reasons for Current Status

There are no data to document an actual decline of the species; however,
since the type locality burned about 3 years ago, some recent loss can
reasonably be presumed. Drewry and Jones (1976) indicated that the species is
threatened due to past and potential loss of habitat, its obligate bromeliad
dwelling mode of existence, its presumed low reproductive rate, the potential
for overcollection, and an apparent inability to disperse.

Conservation Efforts

Beyond the automatic protection provided to endangered and threatened
species under the Endangered Species Act, no conservation measures have been
taken for *E. jasperi* since it was classified as threatened and critical
habitat was designated in the Federal Register of November 11, 1977 (42 FR
58756-58758). Its current range occurs primarily on privately owned lands,
which makes conservation of the species administratively more complex and
restricts the potential for management. All native wildlife is protected under Law 70 of the Commonwealth of Puerto Rico.

II. RECOVERY

Recovery Objective

The objective of this recovery plan is to bring the population to levels at which it can be delisted. Since little information is available on present population levels and trends, an interim recovery goal will be defined in terms of the following criteria:

a. that the three known populations be stable or expanding, each having a minimum of 1,000 individuals;

b. that long-term habitat protection has been insured for essential habitat of the three known populations through appropriate means as determined by an evaluation of all available options; and

c. that habitat management plans for essential habitat in b above are completed and provide a basis for long-term management of golden coqui habitat to insure sustained availability of required habitat conditions and reduce the likelihood of catastrophic losses from fires or hurricanes.

The population objective of 1,000 individuals can be changed if warranted by new information. The present objective was arrived at by taking into account the 1973-74 population data and the need for sufficient genetic diversity and a population size that would provide a measure of protection against catastrophic events from eliminating the entire population.
Step-Down Outline

1. Protect the population.
   1.1. Protect essential habitat on privately owned lands through conservation agreements, easements, or other appropriate means.
   1.2. Develop interim management plans and revise as new data become available.
   1.3. Protect essential habitat verified to occur on Commonwealth lands.

2. Determine the current status of the species.
   2.1. Survey the known population for distribution and abundance.
   2.2. Characterize its present habitat and its requirements.
   2.3. Survey similar habitats throughout Puerto Rico in search of other populations and complete the population survey.
   2.4. Determine possible threats and limiting factors.

3. Study life history.
   3.1. Reproductive biology.
   3.2. Study feeding habits and food availability.

4. Monitor recovery of the populations.

Narrative

1. The existing population should be protected.
   1.1. Destruction, modification, or curtailment of its presently known habitat should be halted. In this way, present population levels presumably will be maintained. Conservation of nearby areas is also important because it provides buffer zones from human disturbance. All available measures for protecting the habitat, such as
conservation agreements, easements, land exchange, acquisition, or other means should be evaluated and the most appropriate alternative(s) implemented. As an immediate measure, landowners should be contacted and encouraged to voluntarily preserve as much habitat as possible.

1.2. An interim management plan should be prepared for areas secured under task 1.1. Fires, principally of man-made origin, represent a limited but potential threat to the remaining golden coqui habitat. At least two areas of habitat are known to have burned since the species was discovered. Measures should be taken as feasible to reduce the possibility of future losses from this threat. Life history, limiting factors, and habitat studies conducted under tasks 2.2, 2.4, 3.1, and 3.2 will be useful for refining long-term management strategy.

1.3. The species has the potential to occur in some areas under Commonwealth ownership. If future surveys document such occurrence, appropriate protection and management should be applied.

2. Determination of the present status of the species is needed to provide base data for assessing future population trends and management needs.

2.1. The population should be surveyed in its three known sites: Cerro Avispa, Monte el Gato, and Sierra de Cayey. The golden coqui seems maximally active and vocalizing between midnight and dawn, when other Eleutherodactylus spp. are less vocal. Surveys should take this behavior into account.

2.2. The presently known habitat should be characterized in terms of climate, structure, and vegetative components. Specific habitat
requirements for the species should be determined. These data will provide standards for use in search of other populations.

2.3. Habitats similar to those known to be used by the golden coqui should be surveyed throughout Puerto Rico to determine if other populations exist.

2.4. Possible threats should be identified. Modification, curtailment, and present use of habitat should be studied. Other threats like predators, competitors, parasites, and disease also should be determined and curtailed if appropriate. Field investigations by Dr. George Drewry between 1969 and 1975 noted an expanding range for E. cohranae. This species has been found at elevations of 675 meters, and potential encroachment on E. jasperi should be considered. While it is not known if E. cohranae could establish itself successfully in E. jasperi habitat, the potential for competition exists and should be studied.

3. Strong emphasis should be placed on research on the biology of the species.

3.1. Information is needed on the breeding season(s), behavior, brood size, growth rate, longevity, dispersal, and mortality. Knowledge of the species' population dynamics is an essential element in formulating management strategy.

3.2. Foraging behavior and food availability should be determined. This information will aid in evaluating potential habitat sites and in assessing modifications to known habitat areas.
4. Populations should be surveyed periodically until recovery of the species is achieved. This information also will be used to evaluate the effectiveness of actions taken to promote the recovery of the species.

Literature Cited


<table>
<thead>
<tr>
<th>General Category</th>
<th>Plan Task</th>
<th>Task Number</th>
<th>Priority</th>
<th>Task Duration</th>
<th>Responsible Agency</th>
<th>Estimated Fiscal Year Costs</th>
<th>Comments/Notes</th>
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<tbody>
<tr>
<td>A 1-7</td>
<td>Protect essential habitat on privately-owned lands.</td>
<td>1.1</td>
<td>1</td>
<td>Cont.</td>
<td>4</td>
<td>FA/SE*</td>
<td>DNR</td>
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<td>M 7</td>
<td>Develop management plans.</td>
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<td>2</td>
<td>2 yrs.</td>
<td>4</td>
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<td>DNR</td>
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<td>Protect habitat on Common-wealth lands.</td>
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<td>Determine the current status of the species.</td>
<td>2.</td>
<td>2</td>
<td>4 yrs.</td>
<td>4</td>
<td>Research*</td>
<td>DNR</td>
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<tr>
<td>R 1-3</td>
<td>Study life history.</td>
<td>3.</td>
<td>2</td>
<td>4 yrs.</td>
<td>4</td>
<td>Research</td>
<td>DNR</td>
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<tr>
<td>I 1</td>
<td>Monitor recovery.</td>
<td>4.</td>
<td>3</td>
<td>Cont.</td>
<td>4</td>
<td>FA/SE</td>
<td>DNR*</td>
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KEY TO IMPLEMENTATION SCHEDULE COLUMNS 1 & 4

General Category (Column 1):

Information Gathering - I or R (research)  Acquisition - A
1. Population status 1. Lease
2. Habitat status 2. Easement
3. Habitat requirements 3. Management agreement
4. Management techniques 4. Exchange
5. Taxonomic studies 5. Withdrawal
6. Demographic studies 6. Fee title
7. Propagation 7. Other
8. Migration
9. Predation
10. Competition
11. Disease
12. Environmental contaminant
13. Reintroduction
14. Other information

Management - M
1. Propagation
2. Reintroduction
3. Habitat maintenance and manipulation
4. Predator and competitor control
5. Depredation control
6. Disease control
7. Other management

Priority (Column 4):
1 - Those actions absolutely necessary to prevent extinction of the species.
2 - Those actions necessary to maintain the species' current population status.
3 - All other actions necessary to provide for full recovery of the species.
IV. APPENDIX

List of Reviewers

Dr. Richard Thomas
University of Puerto Rico
Ponce De Leon Ave.
San Juan, PR 00931

Mr. Ronald Crombie
Division of Reptiles and Amphibians
National Museum of Natural History
10th St. & Constitution Ave., N.W.
Washington, D.C. 20560

Dr. James D. Lazzell, Jr.
Center for Action on Endangered Species
175 West Main St.
Ayer, MA 01432

Dr. Ariel Lugo
Institute of Tropical Forestry
P.O. Box AQ
Rio Piedras, PR 00928

Dr. Frank Wadsworth
Institute of Tropical Forestry
P.O. Box AQ
Rio Piedras, PR 00928

Ms. Hilda Diaz Soltero
Department of Natural Resources
P.O. Box 5887
Puerta de Tierra, PR 00906

Mr. Sean Furniss
Caribbean Islands NWR's
P.O. Box 510
Boqueron, PR 00622

Mr. John Blankenship
Ecological Services
P.O. Box 3005 - Marina Sta.
Mayaguez, PR 00709

Dr. Jim Wiley
Fish & Wildlife Service
P.O. Box 21
Palmer, PR 00901

Mr. Ricardo Cotte
Fish & Wildlife Service
P.O. Box 3188 - Marina Sta.
Mayaguez, PR 00709

Dr. Alan Lewis
Biology Department
University of Puerto Rico
Mayaguez, PR 00708

Natural History Society of Puerto Rico
P.O. Box 1393
Hato Rey, PR 00917

Professor Juan A. Ricart
Society for the Conservation of the Fauna of Puerto Rico
Department of Biology
University of Catolica Santa Maria
Ponce, PR 00733