GOLDEN COQUI RECOVERY PLAN

RECOVERY PLAN FOR

THE GOLDEN COQUI

(ELEUTHERODACTYLUS JASPERI)

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for the

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TABLE OF CONTENTS

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

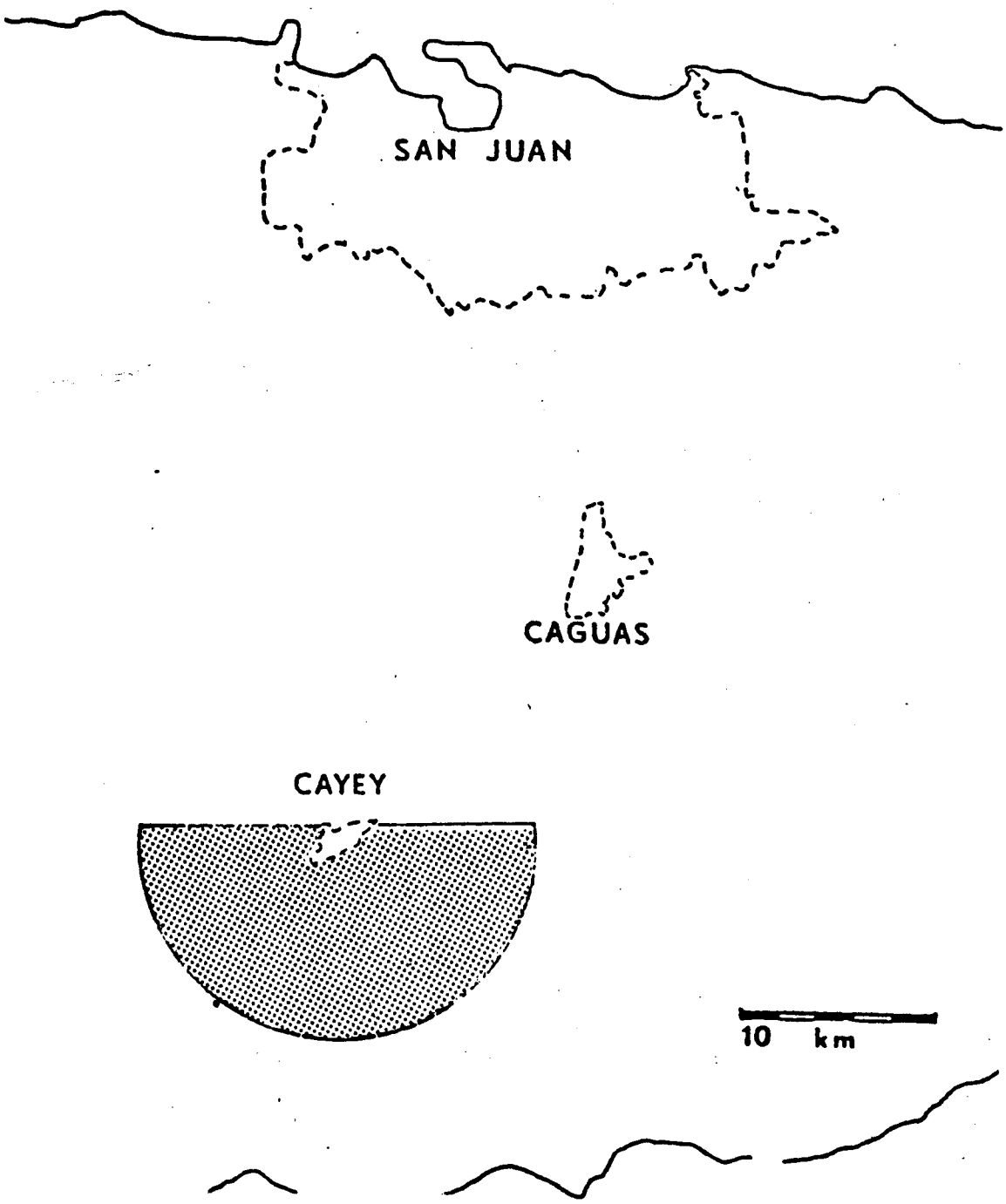

Figure 1. Current range of golden coqui.

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. cochranae. 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. cochranae 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

Drewry, G. E. and K. L. Jones. 1976. A new ovoviviparous frog (Eleutherodactylus jasperi) from Puerto Rico. J. Herpetol. 10:161-105.

Rivero, J. A. 1978. The Amphibians and Reptiles of Puerto Rico. Editorial Universitaria, Univ. Puerto Rico. 148 pp.

Wake, M. H. 1978. The reproductive biology of Eleutherodactylus jasperi (Amphibia, Anura, Leptodactylidae) with comments on the evolution of live-bearing systems. J. Herpetol. 12:121-133.

Golden Coqui

Part III Implementation Schedule

General Category	Plan Task	Task Number	Priority	Task Duration	Responsible Agency			Estimated Fiscal Year Costs			Comments/Notes
					FWS Region	FWS Program	Other	FY 1	FY 2	FY 3	
A 1-7	Protect essential habitat on privately-owned lands.	1.1	1	Cont.	4	FA/SE*	DNR	--	--	--	*Asterisks indicate anticipated primary source for funding.
M 7	Develop management plans.	1.2	2	2 yrs.	4	FA/SE*	DNR	10,000	10,000	--	
O 2	Protect habitat on Commonwealth lands.	1.3	1	Cont.	4	FA/SE	DNR*	--	--	--	Protection needs to be determined by future surveys
R 1-3;9	Determine the current status of the species.	2.	2	4 yrs.	4	Research*	DNR	80,000	80,000	80,000	Costs include task 3.
R 1-3	Study life history.	3.	2	4 yrs.	4	Research	DNR				
I 1	Monitor recovery.	4.	3	Cont.	4	FA/SE	DNR*	15,000	15,000	15,000	

KEY TO IMPLEMENTATION SCHEDULE COLUMNS 1 & 4

General Category (Column 1):

Information Gathering - I or R (research)

1. Population status
2. Habitat status
3. Habitat requirements
4. Management techniques
5. Taxonomic studies
6. Demographic studies
7. Propagation
8. Migration
9. Predation
10. Competition
11. Disease
12. Environmental contaminant
13. Reintroduction
14. Other information

Acquisition - A

1. Lease
2. Easement
3. Management agreement
4. Exchange
5. Withdrawal
6. Fee title
7. Other

Other - O

1. Information and education
2. Law enforcement
3. Regulations
4. Administration

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

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