

**ECOLOGY, BEHAVIOR, AND MANAGEMENT OF
THE MONA ISLAND GROUND IGUANA,
*CYCLURA STEJNEGERI***

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Cornell University, 1977**

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The giant West Indian ground iguana unique to Mona I., P.R., was studied in the field for three years. Mona is a flat, cavernous, 5,500-ha island of limestone and dolomite with a subtropical-dry climate. The iguana population is sparse and distributed island-wide, with talus slopes and sinkhole depressions being preferred habitats. Year-round these diurnal lizards pass most of the day resting motionless, conserving energy and water. Activity is sporadic, possibly optimizing foraging efficiency while minimizing intraspecific strife. Iguanas eat chiefly fruits, flowers, large slow-moving insects and non-resinous, non-aromatic leaves. Factors promoting herbivory in juvenile Cyclura and other "small" lizards are discussed.

The iguana's communication system is primarily visual, consisting of stereotyped postural attitudes and head movements. Unlike most iguanid lizards, this species shows no identifiable species-typical bobbing display pattern; use of display elements is clearly graded in form. Disputes between males are resolved through ritualistic face-to-face pushing matches; females rely mainly on escalated displays in dispute settlement. The display repertoire, and published accounts for other species, suggest that bobbing displays in lizards evolved from intention movements, representing ambivalence between upright, alert, flight-preparatory or assertion postures and low postural attitudes associated with remaining inconspicuous or being submissive.

The mating season is extremely brief, and males compete aggressively for control over sites containing retreats attractive to females. A male's mating success depends chiefly upon the frequency with which he encounters females and upon his ability to catch a female quickly when she is receptive, mate without interference from competing males, and keep her from contacting other males between insemination and fertilization. Females appear to seek multiple insemination and mate with one or more males. From the standpoint of time/energy optimization, the only male reproductive strategy effective for monopolizing structurally complex areas that attract many females is short-term defense of a small territory. In contrast, where both retreats and females are relatively few, territorial behavior is less costly and fitness is improved through extended courtship and defense of a comparatively large area year-round. The older, more dominant males make the long-term investment and obtain most copulations.

Because Mona's surface area is predominantly rock, females must migrate to the scarce soil deposits offering conditions favorable for nesting. The onset of the two-week, mid-summer nesting season is apparently cued by photoperiod. Females typically nest in aggregations and individuals patrol completed nests for 3-4 days against gravid females searching for loosened soil. Evidence is given that nest-guarding

neighbors recognize each other as individuals. Origins and evolutionary consequences of communal nesting in iguanine lizards are discussed and a model developed to illustrate how intense competition selects for late, synchronous nesting, nest-guarding, delayed maturity, and reduced sexual dimorphism.

Clutches are relatively small, with 5-19 uniformly large eggs, among the largest known for the family. Large egg and hatchling size offers several adaptive advantages: reduced susceptibility to desiccation and entrapment during emergence, increased food availability for hatchlings, and a shortened period of vulnerability to predators. In-nest mortality is low, and hatchling survivorship appears dependent upon Mona's uncertain rainfall pattern. Birds are the only significant native iguana predators, and they affect only the small, slow-growing juveniles.

The outlook for the future of cycluran iguanas throughout the West Indies is bleak; the animals' life history requirements are incompatible with man's present and expanding land-use practices. Introduced free-ranging mammals, especially pigs, goats, cats, dogs, and mongooses, have had a devastating impact. Pigs, for example, eat an average of 25% of the Mona Iguana's eggs annually. Detailed conservation guidelines applicable to Mona and many other Caribbean islands are presented.

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