CONSERVATION RESEARCH REPORTS

Reproductive Investment of a Lacertid Lizard in Fragmented Habitat

DÍAZ ET AL. (2005. *Conservation Biology* 19:1571–1577) studied the effect of habitat fragmentation on female reproductive investment in a widely distributed lacertid lizard (*Psammodromus algirus*) in a mixed-forest archipelago of deciduous and evergreen oak woods in northern Spain. They captured gravid females in fragments (≤ 10 ha) and forests (≥ 200 ha) and brought them to the laboratory, where they laid eggs. Eggs were incubated and the first cohort of juveniles released into the wild in order to monitor survival. Females from fragments produced a smaller clutch mass and laid fewer eggs (relative to mean egg mass) than females of similar body size from forests. Lizards did not trade larger clutches for larger offspring, however, because females from fragments did not lay larger eggs (relative to their number) than females from forests. Among the first cohort of juveniles, larger egg mass and body size increased the probability of recapture the next year. Thus, fragmentation decreased the relative fecundity of lizards without increasing the quality of their offspring. Reduced energy availability, increased predation risk, and demographic stochasticity could decrease the fitness of lizards in fragmented habitats, which could contribute to the regional scarcity of this species in agricultural areas sprinkled with small patches of otherwise suitable forest. Results demonstrated that predictable reduction of reproductive output with decreasing size of habitat patches can be added to the already known processes that cause inverse density dependence at low population numbers.

PASCAL DUBOIS

The reproductive output of lizards (*Psammodromus algirus*) from fragmented habitat patches was reduced when compared to lizards from forests.

The Conservation of Brazilian Reptiles: Challenges for a Megadiverse Country

About 650 species — 330 snakes, 230 lizards, 50 amphisbaenids, 6 caimans, and 35 turtles — comprise the known reptilian fauna of Brazil. Only 20 species are considered threatened. Except for the marine and freshwater turtles, which suffer from overexploitation and habitat destruction, species are threatened because of rarity and extremely restricted ranges. Despite its richness and diversity, research on Brazil's reptilian fauna remains largely restricted to alpha taxonomy. TREFAUT RODRIGUES (2005. *Conservation Biology* 19:659–664) suggested that surveys, an electronic database of all herpetological collections, and phylogeographic studies based on molecular genetic techniques are needed to improve our understanding of the biogeography of Brazilian reptiles and to delineate effective conservation strategies to preserve the evolutionary potential of existing lineages. Autecological, population, and community studies that monitor effects of habitat degradation, fragmentation and loss, pollution, and exploitation are needed for a better understanding of the effects of the widespread and ever-worsening degradation of Brazil's natural ecosystems.

ROBERT POWELL

The Black Caiman (*Melanosuchus niger*) is a threatened species, but the conservation status of many of Brazil's other reptilian species is uncertain, a condition largely attributable to a paucity of information.

Effect of Vegetation Matrix on Animal Dispersal: Genetic Evidence from a Study of Endangered Skinks

Maintaining connectivity in fragmented landscapes is a key principle of biological conservation. Although corridors are a widely accepted approach to connecting populations, their merits are still debated, and they may be impractical in many situations. A focus on management of the vegetation matrix between populations has been advocated as an alternative way to deal with habitat fragmentation and has theoretical support. BERRY ET AL. (2005. *Conservation Biology* 19:855–864) combined microsatellite DNA and demographic data to provide an empirical account of how two forms of agricultural land use affect the connectivity of insular populations of an endangered skink in southern New Zealand. The Grand Skink (*Oligosoma grande*) lives in small populations (approximately 20 individuals) on rock outcrops separated from one another by 50–150 m of inhospitable matrix vegetation (either native tussock grassland or exotic pasture). Skinks typically dispersed short distances, and the nature of the matrix both quantitatively and qualitatively affected dispersal dynamics. Skink populations in pasture were significantly more genetically structured and had less genetic variation than similar populations in tussock,

TRENT BELL

The Grand Skink (*Oligosoma grande*) of New Zealand lives in small populations of approximately 20 individuals on rock outcrops separated from one another by 50–150 m of inhospitable vegetation.

WIKIPEDIA: ORCHI

The lack of seed dispersal by a lizard (*Podarcis lilfordi*) extinct on Menorca (a Balearic island in the western Mediterranean) may be responsible for the decline in populations of a perennial shrub considered at risk of extinction.

implying less dispersal between populations in pasture than tussock. Furthermore, although female-biased dispersal was a feature of populations in tussock, no sex bias was evident in pasture. In addition, Bayesian individual-based genetic assignment tests that incorporated prior mark-recapture information revealed that some populations produced many emigrants but received few immigrants, whereas other populations were relatively insular. Patterns of dispersal and response to matrix vegetation were complex, and the causes of these patterns deserve attention in future studies of habitat fragmentation. Managing the vegetation matrix may be a practical way to connect animal populations in some situations.

Disruption of a Plant-Lizard Seed Dispersal System and Its Effects on a Threatened Endemic Plant

The introduction of exotic species to an island can have significant effects on the population density and distribution of native species and on the ecological and evolutionary interactions among them (e.g., plant-animal mutualisms). The disruption of these interactions can be dramatic, significantly reducing the reproductive success of the species and even leading to their extinction. On Menorca Island (Balearic Islands, western Mediterranean), TRAVESET AND RIERA (2005. *Conservation Biology* 19:421–431) examined the consequences of the disruption of the mutualism between two endemic species: a perennial shrub (*Daphne rodriguezii*) and a frugivorous lizard (*Podarcis lilfordi*). The lizard became extinct from this island (as well as from Mallorca) as a result of the introduction of carnivorous mammals, which has continued since Roman times. The relict mutualism between *D. rodriguezii* and the lizard currently persists only in an islet (60 ha) where *P. lilfordi* remains abundant. The authors hypothesized that the absence of this lizard from most Menorcan populations is the factor causing the regression of this plant, currently considered at risk of extinction. Through observation and experimentation in the field and laboratory, they found strong evidence that a lack of seed dispersal in Menorca is the main cause of the low seedling recruitment. First, the population with greatest seedling recruitment was that in the islet where lizards were abundant. Second, lizards appeared to be the only dispersers of *D. rodriguezii*. Lizards consumed large amounts of fruits, without affecting either germination or seedling growth, and moved seeds to sites suitable for plant establishment. Seedlings in Menorca, in contrast, recruited almost exclusively under the parent plants. Third, the effect of other factors that may influence plant population growth (a low fruit set and a high postdispersal seed predation) was similar between the islet and the Menorcan populations. These appear to be the first results to quantitatively show that a biological invasion can cause a disruption of a specialized plant-vertebrate mutualism that sets the plant partner on the road to extinction.

Predicting the Impact of Sea-Level Rise on Caribbean Sea Turtle Nesting Habitat

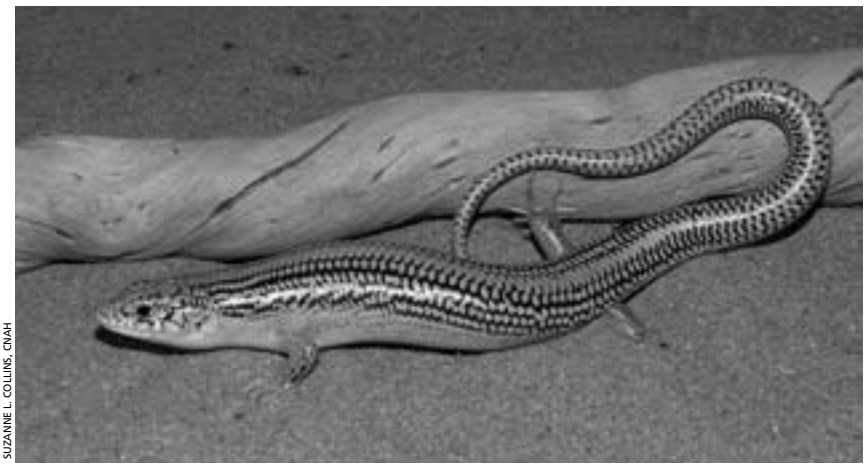
The projected rise in sea level is likely to increase the vulnerability of coastal zones in the Caribbean, which are already under pressure from a combination of anthropogenic activities and natural processes. One of the major effects will be a loss of beach habitat, which provides nesting sites for endangered sea turtles. To assess the potential impacts of sea-level rise on sea turtle nesting habitat, FISH ET AL. (2005. *Conservation Biology* 19:482–491) used beach profile measurements of turtle nesting beaches on Bonaire, Netherlands Antilles, to develop elevation models of individual beaches in a geographic information system. These mod-

Hawksbill Turtles (*Eretmochelys imbricata*) often nest in dense beach vegetation. Their nesting beaches as well as those of other Caribbean sea turtles could be threatened by rising sea levels. Photograph courtesy of the Nature Foundation of St. Maarten (NAF-SXM).

els were then used to quantify areas of beach vulnerable to three different scenarios of a rise in sea level. Physical characteristics of the beaches were also recorded and related to beach vulnerability, flooding, and nesting frequency. Beaches varied in physical characteristics and therefore in their vulnerability to flooding. Up to 32% of the total current beach area could be lost with a 0.5-m rise in sea level, with lower, narrower beaches being the most vulnerable. Vulnerability varied with land use adjacent to the beach. These predictions about loss of nesting habitat have important implications for turtle populations in the region.

Burn Regimes and Tallgrass Prairie Reptiles

The Flint Hills region of Kansas is the largest contiguous area of tallgrass prairie remaining today. Historically, the tallgrass prairie burned every 2–3 yr on average, but current land managers have altered burn regimes, resulting in a range of habitats from annually burned to long-term unburned. WILGERS AND HORNE (2006. *Journal of Herpetology* 40:73–84) used drift fence/funnel trap arrays and coverboards to estimate species richness, evenness, and diversity of herpetofauna within three different burn regimes: annual, 4-yr, and long-term unburned at Konza Prairie Biological Station, Riley County, Kansas. During the spring and fall of 2003–2004, 315 individuals from 20 species were captured across all burn regimes. Herpetofaunal species richness, evenness, and diversity estimates were not different between the three burn treatments. However, because of species-specific responses to individual burn regimes, community composition was significantly different between the habitats. Four species exhibited preferences among burn regimes, which differed significantly from independent assortment, with Great Plains Skinks (*Eumeces obsoletus*) and Texas Horned Lizards (*Phrynosoma cornutum*) preferring annual burn treatments, Ground Skinks (*Scincella lateralis*) preferring 4-yr burn treatments, and Ringneck Snakes (*Diadophis punctatus*) preferring longterm unburned treatments. Species-specific responses were likely because of changes in vegetation structure and microhabitat (temperature and moisture content) created through different frequencies of fire disturbances. Maximizing large-scale herpetofaunal diversity across the Flint Hills' rangelands could be accomplished by creating a large number of small-scale habitat types through a mosaic style burning plan.



SUZANNE L. COLLINS, CNAH

Great Plains Skinks (*Eumeces obsoletus*) were among four species of tallgrass prairie-dwelling reptiles that demonstrated a clear preference for a particular burn regime, favoring annual burn treatments.

Alligator Snapping Turtles in Southeastern Louisiana,

BOUNDY AND KENNEDY (2006. *Chelonian Conservation and Biology* 5:3–9) trapped 200 Alligator Snapping Turtles (*Macrochelys temminckii*) at an average rate of 0.057 turtles per trap-night in all but 1 of 33 sites in southeastern Louisiana. Trap rate varied between sites, by harvest pressure levels at sites, and by season, but not by hydrology. Perceived trap rate differences under different harvest regimes appeared to be a function of seasonal differences in trap rate. No differences in sex ratio or percentage of immature turtles were detected between sites, harvest regimes, seasons, or waterbody types. Turtle weight varied between harvest regimes and hydrology. Weight–length relations for turtles was highly correlated and similar between sexes, except that males continued to grow to larger sizes than females (males averaged 150% female weight and 118% female carapace length). Sex ratio was 1:1, and immature turtles made up 48% of the total. Average sizes of turtles were very similar between Louisiana and turtles from surveys in several other states. Population structure differed between surveys, with Louisiana having a higher percentage of immature turtles and lower trap rate than elsewhere. Population differences could not entirely be explained by differences in harvest regimes between states. Large-scale turtle butchering operations in southern Louisiana have closed, as has commercial harvest. Anecdotal reports that Alligator Snappers were nearly extirpated from a heavily harvested site proved erroneous. The authors recommended resurvey of sites to determine current population trends.

SUZANNE L. COLLINS, CNAH

Louisiana populations of Alligator Snapping Turtles (*Macrochelys temminckii*) included more immature turtles and exhibited a lower trap rate than populations surveyed in other southern states.