

Wingin' It: Restoration of Endemic Puerto Rican Birds

Observation and Restoration of Bird's and their habitats raises questions on the expectations of natural coastal forest composition after deforestation and agricultural land use spanning half a millenium

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Puerto Rican Landmangement since Spanish colonization has been almost soley agricultural. With great areas needed for farming and plantations an ancient coastal forest was wiped from the Earth. This forest encircled the entire island and was home to several endemic species of birds from wet forrest Puerto Rican parrots to mangrove dwelling Yellow Shouldered Blackbirds. Habitat loss being a driving factor of species endangerment quickly put these species at risk and eventually critical endangerment. 2017's hurricanes Maria and Irma not only altered Puerto Rican Infrastructure they also upset already fragile ecosystems which raised question of what surviving landscapes should be restored to without historic composition data to guide management. Manicuring overrun forests, erecting and protecting swampland over landfill remains, and restoring species through rapid breeding are all methods employed by land managers Which I either Participated in or Observed.

Pictured: A Puerto Rican parrot from the El Yunque National Forest display is being transported elsewhere

¿Hay Nombres? (Does they have names?) I jokingly asked to a handler of the pictured Puerto Rican Parrot, replying "No solo un numero (no, only a number)", he secured the parrots transport and was off. Our team toured El Yunque National Forest where we were introduced to the story of the Puerto Rican Parrot, a critically endangered endemic species that once "blackened the skies" round the island now only numbering 250 in the wild. The parrots' descent into endangerment is multifaceted. Pet trade and habitat loss have greatly contributed to endangerment. Restoration efforts have persisted since the 1970s, but much progress was lost as newly released birds died during 2017's hurricanes Irma and Maria. This has put pressure on breeding Programs to fast-track reintroduction. Introduced species such as the Red-Tailed Hawk and Red-Tailed Boa also pose threats to the reintroduced birds as they may quickly become prey items. This forces restoration efforts to be mindful of invasive population dynamics and how to control numbers in release areas. With it's many challenges the Puerto Rican parrot has become a staple of resilience and triumph endemic Caribbean species restoration.



Pictured: Puerto Rican Parrot main cage, used for parrots preparing to be released into the larger complex Maricao, PR

Preparing a habitat for the return of these birds is far more complicated and existential than I'd ever imagined. Pictured left I am posing with a stand of trees in the Northeastern Corridor of Luquillo, Puerto Rico where we worked to alleviate vine overgrowth that stunts tree productivity. We trimmed vines off trees standing on land that has seen half a millennium of agricultural usage, our aim was to open up the canopy of the forest that had been overrun by the vines as a first step toward a hypothesized natural landscape. Following our work land managers will monitor canopy coloration via drones as a metric of vine die off, vines constrict trees at their base and smother them at their canopy and are a direct biproduct of the 2017 Hurricanes. As we took baby steps toward the preparation of a robust coastal forest in the Northeast, parrot restoration stirred in the west. I worked in a cage complex high in the mountains near Maricao, Puerto Rico. The main cage pictured above housed birds awaiting release, surrounding the main cage were several smaller cages housing birds unfit for release. They served as companions for main cage birds and homing beacons for the few birds that flew free around the complex at later stages of the reintroduction method known as "soft release." Birds begin life in a hatching facility and are then transferred to larger more social cages. They are next released into the wild but are called back to the complexes by food, water, and their peers awaiting release. Ultimately birds are tagged and released into the wild at different locations. I was involved in traditional husbandry such as behavior monitoring, feeding, and food collection from the surrounding landscape. I also took part in monitoring nesting behaviors of newly hatched chicks and their parents.



Pictured: Signage saying "protect the mangrove" on the roadside leaving our bird survey site in the mangroves near Rincón, Puerto Rico

On my final day in Puerto Rico I walked 14Km through mangrove swamp surveying nests of the endangered and endemic Yellow Shouldered Blackbird. The ground I walked on was converted from a historic landfill to protected coastal mangroves that nurture this vulnerable population. With weed control in the Northeast, species restoration in the West and now protection along the coast, the complexities of the next steps of land management for this island were revealed to me. Work done by different entities under three different methodologies all worked to see a better Puerto Rico for it's endemic species. Along my trip I learned of the many exotic species that have made their way ashore and have upset any "naturalness" desired by land managers. Upon reflecting on the "natural" I will change my diction when referring to land management practices meant to restore landscape homeostasis and protect endemic species from the natural to the productive. I realized much of our operations on the environment were already unnatural in practice. Defoliating natural vines in the Northeast, Caging and breeding in the West, and building on human sludge along the coast all were far from picturesque landscape restoration. Through this experience and work I had set a learning objective to observe the cross section of restoration work and extinction or other cataclysm. With my career focus being in genetic engineering it is often we believe there is only a single approach and solution to a problem. By seeing three grand efforts at habitat and species restoration occurring under three names in three locations all toward same end I am forced to look beyond the blinders of my own scientific training to date.

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Pictured: Service Learning Team and DRNA representatives in Luquillo, Puerto Rico after vine trimming

