Alarming Decline of Bridled Quail-Dove populations on Statia

Hannah Madden (Caribbean Netherlands Science Institute), Frank F. Rivera-Milán (US Fish and Wildlife Service) and Kevin Verdel (University of Utrecht)

The Bridled Quail-dove is a regionally endemic species that, on Statia, is only found in upper elevations of the Quill (above ~150m) and inside the crater. Since 2017, annual surveys have highlighted an alarming decline in populations. At an estimated population decrease of ~77% since 2017, this species has caught the attention of conservationists and requires immediate protection.

The Plight of the Dove

Last year we reported the results of a post-hurricane assessment of the Bridled Quail-dove (*Geotrygon mystacea*) population on Statia. Once thought to have been a common resident of the West Indies, declining populations are now isolated within coastal dry forest patches of the eastern Caribbean. Introduced, non-native predators such as feral cats, mongooses and rats are thought to negatively impact Bridled Quail-dove populations by preying on adults, eggs and/or chicks. Other external factors that contribute to population declines include hunting, volcanic activity, hurricanes, and habitat loss and alteration. Furthermore, this species is sensitive to openings in the forest canopy, which also affects nesting. Despite its current classification as a species of Least Concern by the IUCN (in 1992 it was classified as Near Threatened), the Bridled Quail-dove is likely of conservation concern due to data deficiency and population declines across its entire habitat. The only surveys we are aware of took place in Montserrat (2007) following a volcanic eruption, St. Croix (1992) following hurricane Hugo, and Guana Island, British Virgin Islands (2018). Populations on other islands such as Puerto Rico are thought to be so limited that the species was excluded from a Columbid study (1995). Calling and breeding activity are dependent on rainfall, therefore the dove is sensitive to hurricanes and extended periods of drought. Similar to other Columbids, the Bridled Quail-dove lays clutches of two eggs in a flimsy nest made of twigs up to six meters above the forest floor. Furthermore, Bridled Quail-doves do not fare well in areas of human activity.

Current Study Highlights Rapid Decline in Population

Our pre-hurricane assessment in May 2017 was initially encouraging, with an estimated 1,039 (minimum 561 - maximum 1,621) quail-doves across its local habitat of 440 hectares, possibly the highest known density in the region. Post-hurricanes season, in November 2017, we repeated the surveys and recorded a decrease of 22% to 803 (minimum 451 - maximum 1,229). Furthermore, in May 2018, we recorded a decline to 253 individuals (minimum 83 - maximum 486).

We repeated surveys across the entire Quill (440 hectares) during May 2019, coinciding with the quail-dove's peak breeding season. Estimations for detection probability, density and population size were calculated by measuring the perpendicular distance of the quail-dove from the transect centerline during repeated surveys. The results are very concerning since the population has continued to decline to 238 individuals (minimum 118 – maximum 390). The surveys of May 2018 and 2019 showed that little if any successful post-hurricane reproduction has occurred. Additionally, the majority of detections were recorded inside the crater and near the crater rim, with very few detections at lower elevations. This means that the population is highly clumped at low numbers, which increases the chance of local extinction.

Bridled Quail-Dove. *Photo by: © Hannah Madden*

Would you like to share a news item?
Please e-mail us: research@DCNAnature.org

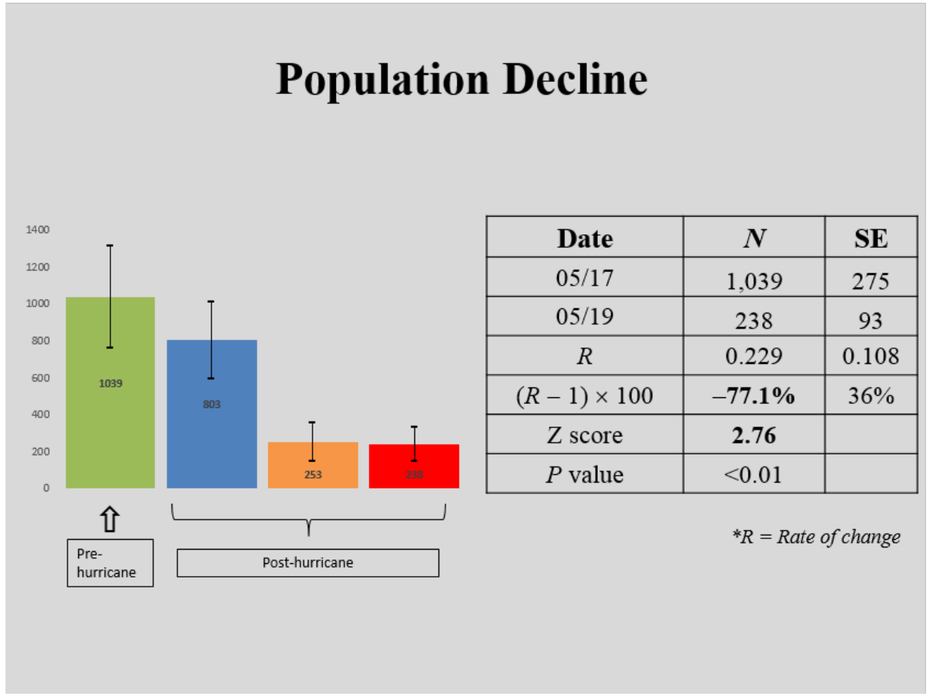
Possible Causes for Population Decline

Indirect effects of hurricanes, human-induced habitat degradation and increased predation continued to affect quail-dove survival and reproduction in 2019. Rat and other invasive predator species may increase in density following hurricane-induced changes in foraging resources, affecting quail-dove survival and reproduction even further. A feral cat was detected during surveys inside the crater, probably as a result of forest openness after the hurricane. Due to the fact that members of the Columbidae family have early maturity and short lifespans, conservation efforts should focus on successful reproduction through invasive species management. The integrity of the Quill should be improved to help forest-dependent birds and other wildlife recover in order to enhance their prospects for long-term survival on Statia.

Uncertain Future for Quail-Doves on Statia

Unfortunately, the frequency and intensity of hurricanes are predicted to increase as a result of climatic change. Furthermore, Caribbean islands are expected to see more frequent and severe droughts. Between 2013 and 2016, the region experienced a widespread drought due in part to El Niño. Large scale trends are difficult to estimate since precipitation has been very inconsistent over the past century. However, there does appears to be a regional trend towards an increase in variability of precipitation. This increase in variability will continue to threaten the local quail-dove populations.

We are grateful to BirdsCaribbean for funding Frank's travel expenses in 2017, to St. Eustatius National Parks for allowing us to conduct surveys in the Quill National Park, and to Caribbean Netherlands Science Institute (CNSI) for facilitating this ongoing project. This July, Hannah Madden presented the results of this research at BirdsCaribbean's regional meeting in Guadeloupe.



Date	*N*	SE
05/17	1,039	275
05/19	238	93
R	0.229	0.108
$(R - 1) \times 100$	**–77.1%**	36%
Z score	**2.76**	
P value	<0.01	

**R = Rate of change*

Alarming Decline of Bridled Quail-Dove populations on Statia

Would you like to share a news item?
Please e-mail us: research@DCNAnature.org