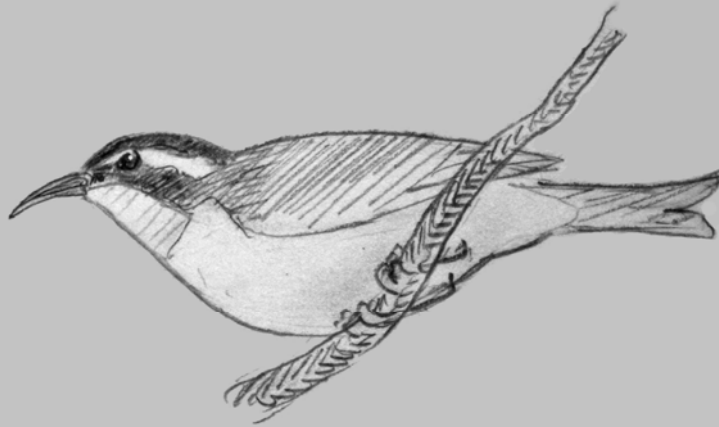


Árni Einarsson:

**Scrubland birds
at the Indian Town Trail
archaeological site, Barbuda**



Bananaquit *Coeroba flaveola*

Myvatn Research Station, Iceland

2007

ABSTRACT

The scrubland bird fauna was studied at 18 sites within a 0.5 km² area in northern Barbuda in January 2007, using fixed radius point counts with bird sound playbacks. Fourteen species were recorded, all permanent residents, including the endemic Barbuda Warbler *Dendroica subita*. The most common species were the Caribbean Elaenia *Elaenia martinica*, Bananaquit *Coeroba flaveola*, Lesser Antillean Bullfinch *Loxigilla noctis* and Antillean Crested Hummingbird *Orthorhynchus cristatus*. Other common birds included the Barbuda Warbler, Common Ground Dove *Columbina passerina*, Yellow Warbler *Dendroica petechia*, Black-faced Grassquit *Tiaris bicolor*, Green-throated Carib *Eulampis holosericeus* and Mangrove Cuckoo *Coccyzus minor*. The number of species and records (individuals) per site are similar to those recorded on Eleuthera (The Bahamas) but the total number of species is much lower on Barbuda.

INTRODUCTON

Barbuda is one of the Leeward islands of the Lesser Antilles on the eastern border of the Caribbean Sea. The island is a small (15 x 8 km) uplifted coral reef and the landscape is flat. Most of Barbuda is covered with xeric scrubland but mangroves fringe coastal and inland wetlands. The avifauna of Barbuda has not been described in any detail, and apparently no estimates of the species composition or density of land birds have been published. The CUNY archaeological expedition to Barbuda in January 2007 created an opportunity to study the birds of the scrubland habitat because one of the excavation sites (The Indian Town Trail site) was situated there. The present study is an attempt to describe the bird community of the scrublands of the northern part of Barbuda.

METHODS

The study area was at the Indian Town Trail archaeological site. The study plots were distributed within an approximate area of 0.5 km² (Figs. 1-2). The scrub was 1-4 m high and the visibility was mostly in the range of 2-20 m.

The methods were based on those recommended by Joseph Wunderle (1994) for Caribbean land birds and was originally presented as the fixed radius point count method by Hutto et al. (1986). This method gives an index of abundance that is

comparable between islands or habitats but does not translate directly into bird density. The observer chose a spot in the scrub and stayed there for 15 minutes. During the first 7 minutes a pre-recorded collection of bird calls and songs was played through loudspeakers. This attracted some birds that would not be seen otherwise. The bird sounds that were played included the following species:

Coccyzus americanus Yellow-billed Cuckoo
Coccyzus minor Mangrove Cuckoo
Vireo olivaceus Red-eyed vireo
Vireo altiloquus Black-whiskered Vireo
Vireo griseus White-eyed vireo
Dendroica caerulescens Black-throated Blue Warbler
Dendroica magnolia Magnolia Warbler
Dendroica petechia Yellow Warbler
Wilsonia citrina Hooded Warbler
Mniotilta varia Black-and-white Warbler
Parula americana Northern Parula
Seiurus aurocapilla Ovenbird
Seiurus noveboracensis Northern Waterthrush
Setophaga ruticilla American Redstart

Although the sounds did neither include Bullfinch nor Barbuda Warbler both species were clearly attracted to the songs played. The same did not apply to hummingbirds or the *Elaenia* which were also missing from the soundtracks. *Bananaquit* sounds were also missing and it was not clear if they responded or not to other species' sounds. Both the *Mangrove Cuckoo* and the *Yellow Warbler* responded readily to the sounds of their own species. The observer recorded all birds seen or heard within a 25 m radius and then moved to a new spot about 100 m away. Altogether 18 spot counts were made (see Table 1 for exact location). With two (mutual) exceptions each point was at least 100 m from all others and not closer than 25 m from a habitat edge. The counts were made between 0700 (sunrise) and 1015 in the period 11-15 January 2007. The density of scrub was recorded as *visibility*: the mean distance of un- or little obstructed vision estimated in 8

directions around the observer. Visibility over 25 m in any one direction was recorded as 25, as this was the maximum radius of bird observation at each location.

As the scrubland is mostly very dense most observation sites were along trails or tracks, hence not randomly distributed. I calculated the mean number of detections (seen and heard) per 25m-radius point count for each species, and the frequency of a species was calculated as the proportion of sample sites that contained the species.

A note on taxonomy: The Barbuda Warbler *Dendroica subita* is a recent split from Adelaide's Warbler *Dendroica adelaidae*, based on genetic (mtDNA) evidence presented by Lovette et al. (1998). The new taxonomic position of this species was acknowledged by the American Ornithologists' Union in the year 2000. The *Barbuda Warbler* is virtually indistinguishable from *D. adelaidae* in the field. In the present report all birds with the field characteristics of the *Adelaide's Warbler* are recorded as Barbuda Warbler, *D. subita*. The Barbuda Warbler *D. subita* is endemic to Barbuda and is listed as threatened by IUCN by virtue of its limited range and lack of information.

RESULTS

Fourteen bird species in total were recorded in the scrub habitat at Indian Town Trail (Tables 2-3, Figure 3). Three of them were only seen outside the sampling sites (*Peregrine Falcon*, *American Kestrel* and *Zenaida Dove*). The mean number of species per sampling site was 5.61 (mode=7; range 3-9). The mean number of individuals recorded per site was 9.9 (range: 1-17). The most abundant and frequent were *the Caribbean Elaenia* and *Bananaquit*, seen in 78% of the sample sites and a mean of 1.5 records per site. The *Lesser Antillean Bullfinch* had similar abundance (78% and 1.2 records per site). The *Antillean Crested Hummingbird* was also very common with 72% frequency and 1.2 records per site. This figure is an underestimate as three more sites had unidentified hummingbirds that most likely belonged to this species. Four other fairly common species were the *Barbuda Warbler* (44% frequency and 1.2 records per site), *Common Ground Dove* (33% of sites and 0.9 records per site), the *Black-faced Grassquit* (28% of sites and 0.6 records per site) and the *Yellow Warbler* (28% of sites and 0.3 records per site). More scattered birds included the *Green-throated Carib*, a hummingbird species (17% of sites and 0.3 records per site) and the *Mangrove Cuckoo* (17% of sites and

0.2 records per site). Only one site had *Lesser Antillean Flycatcher*, but this site was not far from the edge of the scrubland.

There was indication of some variation in species composition within the study area. The northern part (north of the road, Fig. 2) had more *Common Ground Doves*, as there tended to be more open spaces in the scrub there. Also, *Yellow Warbler* and *Green-throated Carib* showed some evidence of patchiness. (Table 2) but the data is not conclusive.

DISCUSSION

This study should be seen as preliminary. It describes the bird community in a small part of the xeric scrubland of the northern part of Barbuda at one time of the year. Unsystematic observations in the southern part of Barbuda indicate some difference in bird density between the two ends of the island and this needs to be studied further. Also, as no other habitats were studied, nothing can be said about the habitat preferences of the species recorded in the scrub habitat. With the exception of the flycatcher (seen on one occasion only) all the species seemed at home in the scrub habitat. Some of the species were frequently observed outside the scrub (*Common Ground Dove*, *Black-faced Grassquit*, *Lesser Antillean Bullfinch*, the two hummingbird species) and some common Barbudan birds were *not* seen in the scrubland (*Grey Kingbird*, *Barn Swallow*, *Caribbean Grackle*).

The absence of wintering passerines from North America was somewhat unexpected, but none were found (although, possibly some of the Yellow Warblers may have been wintering birds).

Both the mean number of species and mean number of records per site, 5.61 and 9.9 respectively, can be compared with those reported from the scrublands (“short coppice”) of the Bahamian islands of Andros and Eleuthera (Currie 2005 a,b). Andros and Eleuthera had 1.77 and 6.0 species per site, respectively and the mean numbers of records per site were 1.93 and 8.6. Species abundance per site and density in the Barbuda scrubland therefore seems similar to that of Eleuthera. Eleuthera, however, has a lot more species (25 as opposed to 14 on Barbuda). Andros had 26 species in the scrubland. This high number of species is probably a result of the larger size of these islands and the fact that they are closer to the mainland of America.

The ten common species of the Barbudan scrubland can be grouped according to size and feeding habits (Fig. 4). The granivorous (seed-eating) birds were the *Black-faced Grassquit* (small), the *Lesser Antillean Bullfinch* (medium) and *Common Ground Dove* (large). The nectarivorous birds were the *Antillean Crested Hummingbird* (small), *Green-throated Carib* (medium) and *Bananaquit* (large) and the insectivores were the *Yellow* and *Barbuda Warblers* (small), *Caribbean Elaenia* (medium) and *Mangrove Cuckoo* (large). The only anomaly in this scheme is that the two warbler species seem to be sharing a niche. All study plots with *Yellow Warblers* also had *Barbuda Warblers*, so there does not seem to be spatial segregation of the two species. Maybe there is a segregation, but only detectable on either a larger geographic scale or a finer scale within the scrubland. This coexistence of two warblers, one of them endangered, might be worth further study in order to throw light on their competitive relationship and niche partitioning.

ACKNOWLEDGEMENTS

This study would not have been done were it not for the presence and encouragement of Sophia Perdicaris. The help of Unnur Jökulsdóttir, Matthew Brown, Corey Look and Calvin Gore is greatly appreciated.

REFERENCES

- Currie, D., J.M. Wunderle Jr., D.N. Ewert, M.R. Anderson, A. Davis & J. Turner 2005a. Habitat distribution of birds wintering in Central Andros, The Bahamas: implications for management. *Caribbean Journal of Science* 41: 75-87.
- Currie, D., J.M. Wunderle Jr., D.N. Ewert, A. Davis & Z. Mckenzie 2005b. Winter avian distribution and relative abundance in six terrestrial habitats on southern Eleuthere, The Bahamas. *Caribbean Journal of Science* 41: 88-100.
- Hutto, R. L., S. M. Pletschet & P. Hendricks. 1986. A fixed-radius point count method for nonbreeding and breeding season use. *Auk* 103: 593-602.
- Lovette, I.J., E. Bermingham, G. Seutin, & R. E. Ricklefs. 1998. Evolutionary differentiation in three endemic West Indian warblers. *Auk* 115: 890-903.

Forty-second supplement to the American Ornithologists' Union check-list of North American birds. *The Auk* 117: 847–858, 2000.

Wunderle, J.M. Jr. 1994. *Census Methods for Caribbean Land Birds*. US Department of Agriculture. Southern Forest Experiment Station, New Orleans, General Technical Report SO-98.

OTHER USEFUL BIBLIOGRAPHY

Baltz, M.E. 1993. Abundance of neotropical migrant songbirds on North Andros Islands, Bahamas. *Florida Field Naturalist* 21: 115-117.

Cox, G.W. & R.E. Ricklefs 1977. Species diversity and ecological release in Caribbean bird faunas. *Oikos* 28: 113-122.

Emlen, J.T. 1977. Land bird communities of Grand Bahama Island: the structure and dynamics of an avifauna. *Ornithological Monographs* 24: 1-129.

Latta, S.C., C.C. Rimmer & K.P. McFarland 2003. Winter bird communities in four habitats along an elevation gradient on Hispaniola. *Condor* 105: 179-197.

Lee, D.S. 1996a. Winter avifauna of the Abaco national park (part 1). *Bahamas Journal of Science* 6: 8-15.

Lee, D.S. 1996b. Winter avifauna of the Abaco national park (part 2). *Bahamas Journal of Science* 6: 29-34.

Sliwa, A, & T.W. Sherry 1992. Surveying wintering warbler populations in Jamaica: point counts with and without broadcast vocalizations. *Condor* 94: 924-936.

Wunderle, J.M. Jr. & R.B. Waide 1993. The distribution of over-wintering nearctic migrants in The Bahamas and Greater Antilles. *Condor* 95: 904-933.

Table 1. Locations of bird observation sites. UTM (WGS84) coordinates in m.

Site	East	North	Mean visibility (m)
1	629479	1954259	
2	629399	1954286	
3	629266	1954331	
4	629792	1954400	
5	629865	1954416	
6	630006	1954581	
7	629363	1954101	
8	629109	1954056	9.1
9	629013	1954113	8.3
10	628835	1953997	12.5
11	628721	1953909	5.6
12	629455	1954519	8.5
13	629572	1954479	4.4
14	629493	1954568	4.6
15	629577	1954692	5.6
16	629517	1954788	6.6
17	629513	1954961	17.9
18	629739	1954618	9.5

Table 2. Numbers of registered birds in study plots 1-18. S=seen, h=heard, +=registered outside the 25 m limit.

Species	Plot no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Elaenia martinica</i> Caribbean Elaenia		-	-	1s	2h	2s	1s	1h	1h	2h	2s3h	2h	2h	3h	2h	1s	2s	-	+
<i>Tiaris bicolor</i> Black-faced Grassquit		-	2s	2s	-	-	1s	-	-	2s	3s	-	-	-	-	-	-	-	-
<i>Coeroba flaveola</i> Bananaquit		2s	2s	1s	2s	3s	3s	-	-	3s	2s	-	1h	1h	1s	1s1h	1h	2s1h	+
<i>Orthorhynchus cristatus</i> Antillean Crested Hummingbird		-	1s	1s	1s	2s	-	1s	1s	4s	2s	-	2s	1s	-	4s	-	1s	1s
<i>Eulampis holosericeus</i> Green-throated Carib		1s	2s	-	3s	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trochilidae Unid. hummingbird		-	2s	2s	1s	1s	2s	-	3s	1s	-	-	1s	1s	2s	-	2s	-	-
<i>Columbina passerina</i> Common Ground Dove		+	2s	2s	6s	2s	-	-	-	-	-	-	3s	2s	-	-	-	-	-
<i>Coccyzus minor</i> Mangrove Cuckoo		-	-	+	-	-	1s	+	-	-	-	-	-	-	1s	1s1h	-	-	-
<i>Myiarchus oberi</i> Lesser Antillean Flycatcher		-	-	-	-	-	-	-	-	-	1s	-	-	-	-	-	-	-	-
<i>Dendroica petechia</i> Yellow Warbler		2s	-	1s	-	-	1s	1s	-	-	1s	-	-	-	-	-	-	-	-
<i>Dendroica subita</i> Barbuda Warbler		1s	1h	1s	-	1s	1s	3s1h	2s	1s	1s	4s	-	-	2s	1s	1s	-	-
<i>Loxigilla noctis</i> Lesser Antillean Bullfinch		1s	-	1s	2s	1s		1s	1s	3s	2s	2s	2s	2s	1s	-	-	1s	-

Table 2 continued.

<i>Falco peregrinus</i> Peregrine Falcon	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
<i>Falco sparverius</i> American Kestrel	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Zenaida aurita</i> Zenaida Dove	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+

Table 3. Summary statistics of registered birds in the Barbuda scrubland.

	Total	Mean	Frequency
<i>Elaenia martinica</i>	9s18h	1.5	0.78
Caribbean Elaenia			
<i>Tiaris bicolor</i>	10s	0.6	0.28
Black-faced Grassquit			
<i>Coeroba flaveola</i>	22s5h	1.5	0.78
Bananaquit			
<i>Orthorhynchus cristatus</i>	22s	1.2	0.72
Antillean Crested Hummingbird			
<i>Eulampis holosericeus</i>	6s	0.3	0.17
Green-throated Carib			
Trochilinae	18s	1.0	0.61
unidentified hummingbird			
<i>Columbina passerina</i>	17s	0.9	0.33
Common Ground Dove			
<i>Coccyzus minor</i>	3s1h	0.2	0.17
Mangrove Cuckoo			
<i>Myiarchus oberi</i>	1s	0.1	0.06
Lesser Antillean Flycatcher			
<i>Dendroica petechia</i>	6s	0.3	0.28
Yellow Warbler			
<i>Dendroica subita</i>	20s2h	1.2	0.44
Barbuda Warbler			
<i>Loxigilla noctis</i>	21s	1.2	0.78
Lesser Antillean Bullfinch			

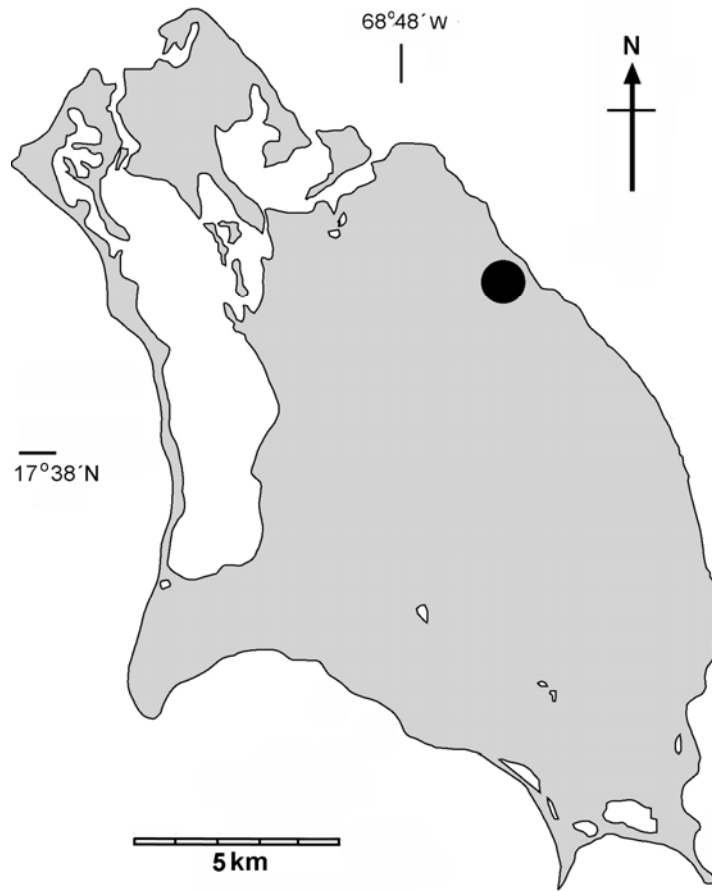


Figure 1. Map of Barbuda with location of the bird study area.

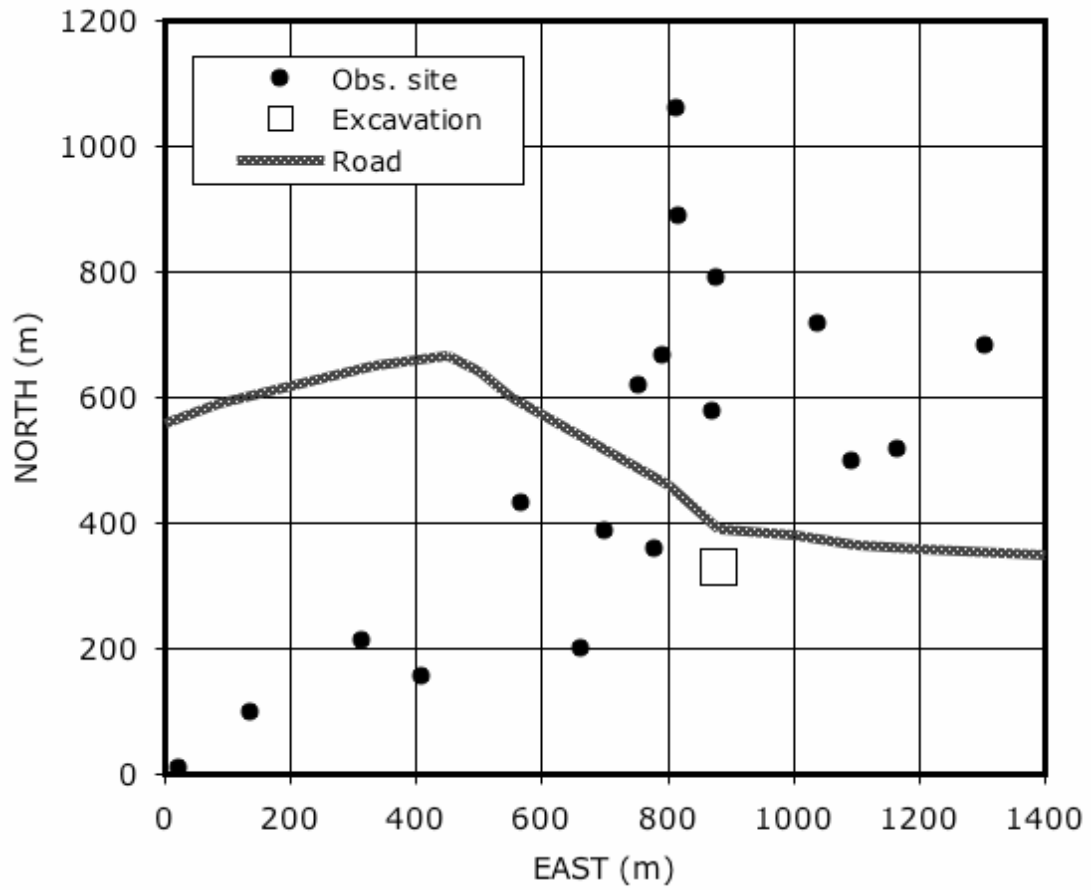


Figure 2. Locations of bird observation sites at Indian Town Trail. See Table 1 for exact positions.

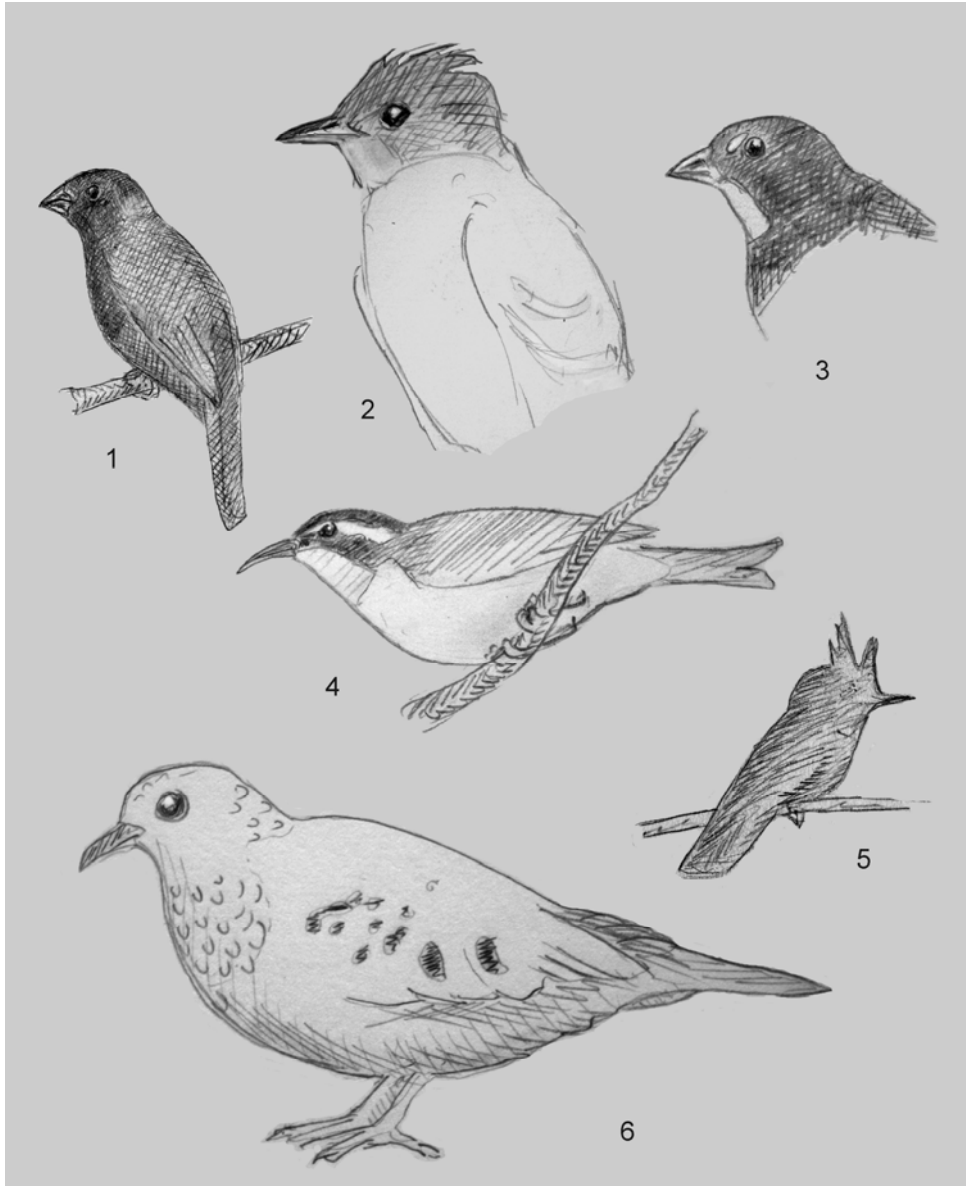


Figure 3. Scrubland birds of Barbuda. 1. Black-faced Grassquit, 2. Caribbean Elaenia, 3. Lesser Antillean Bullfinch, 4. Bananaquit, 5. Antillean Crested Hummingbird, 6. Common Ground Dove.

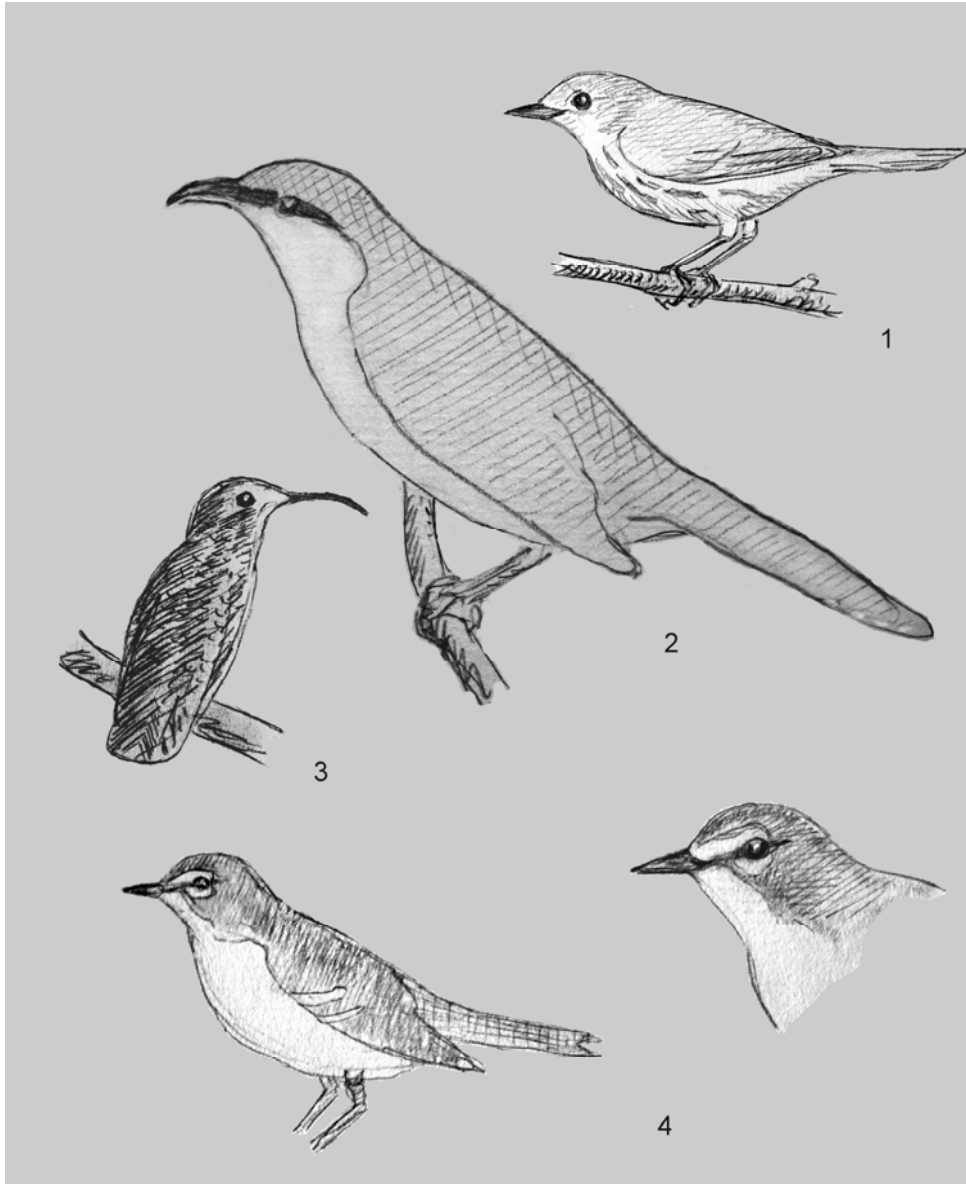


Figure 3, *continued*. Scrubland birds of Barbuda. 1. Yellow Warbler, 2. Mangrove Cuckoo, 3. Green-throated Carib, 4. Barbuda Warbler. Relative body sizes approximate.

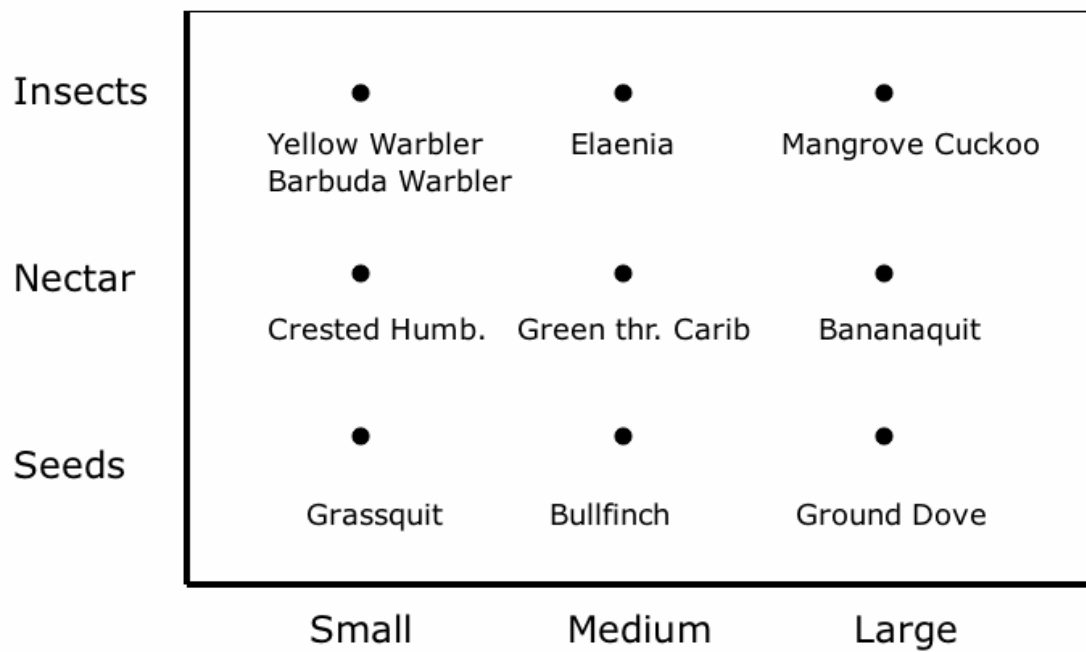


Figure 4. Hypothetical niche partitioning of the scrubland birds of Barbuda, based on diet and body size.