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GUANA ISLAND

MARINE SCIENCE MONTH REPORT

SEPTEMBER, 1996

H. Lavity Stoutt Community Colle

Paraquita Bay Campus

P.O. Box 3097
Road Town, Tortola
British Virgin Islands

Tel: (809) 494-4994
Tel: (809) 494-4902
Fax: (809) 494-4996

Henry and Gloria Jarecki
10 Timber Trail
Rye, NY 10580

20 September, 1996

Dear Henry and Gloria,

With this report, I am preparing for another marine science month on Guana. We will be joining the terrestrial scientists in October this year rather than coming in the summer time, mainly because I was in Germany for most of the summer. Furthermore, this year marks, from my side, a winding down of my research activities on Guana. I have much work ahead to write up the results of my studies on Guana, and I plan to collect new data only from the permanent coral reef transects around Guana. The marine month "regulars" are all interested in continuing their research on Guana--Graham Forrester, Dave Carlon, Liz Kintzing, and Christina Leahy. Dave Carlon, unfortunately, cannot make it in October and would like to come later in the year (he has not given me any specific date). I have purposely not sought new participants for Marine Science Month because of the space constraints that integration with Terrestrial Science Month poses. Thus, our group is not only small but will also only be on Guana for a short time. This abbreviation of our normal program is reflected in our reduced budget.

The following report describes the activities and accomplishments of the marine science group on Guana, and it shows that we remain productive in research, education, and community involvement. This year, both Christina Leahy and Skip will give lectures at the College's Public Lecture Series. And I am, as usual, working with Skip, yourselves, Guana, and the College to put together the fourth Guana Island Science Department, on Sunday, October 20th. Last year's was quite successful, and I trust that Skip can organise five or six good speakers again.

I have included a budget and list of support needs to run marine month this year. However, I have not included the hourly compensation for organisational work that I normally receive from you for these activities. This is because budget funds normally go through TCA as a grant, and TCA, being a non-profit organisation, cannot justify salaries. Therefore, I ask that you compensate me directly. I will bill you separately for my hours at the rate we agreed upon in '93 -- $12.50 per hour.

Thank you, on behalf of all marine science month participants, for your continued support. I look forward to another exciting and productive science season on Guana, and I will do all I can to help October's science month on Guana run smoothly. I do hope that both of you will join us for as much time as you can.

Love,
Lianna

Marine Science Month 1995
Budget Request

Visual Inspection of existing Guana tanks (11 tanks, $16 each)	$176
Regulator annual servicing	$60
Oxygen tank fill	$20
First-aid kit replenishing	$100
Communications (including phone, fax, mail, and photocopying)	$150
Contingency funds (incidentals, local transportation, air fills, emergencies)	$300

Logistics:

Boat use: whaler needed full time.
Sovereign as necessary, estimate 5 days, 4 hours/day
The air compressor needs to be tuned-up and checked out.
We need the use of a pick-up to transport tanks to and from the dock after 5 pm and before 7:30
Breakfast at 7:00 a.m., if possible
Other logistics will be worked out on site

Schedule of Participants

	Date of Arrival	Date of Departure
Graham Forrester	2 October; 11:17a.m. (AA)	9 October
Liz Kintzing	2 October; 13:07 (AA)	7 October
Christina Leahy	10 October	21 October
Kelly Radding	17 October	21 October

Lianna Jarecki, Coordinator
Marine Science Month Report, 1996

HYPERSALINE POND STUDY

During 1995, I completed the data collection for an intensive study of hypersaline pond ecology in the BVI. Ten ponds, on five different islands, were sampled monthly to monitor salinity, nutrient concentrations, planktonic fauna, bird populations, and fiddler crab densities. Data collection included field measurements and laboratory tests of water chemistry. The vegetation around each pond was mapped, and the area of each pond was measured. Darryl Sookram assisted in most site visits. Occasional field assistants included Charmian Lutchman, Dawn Laurencin, Tessa Smith, and Christina Leahy. An intensive side-study was undertaken at Banana Wharf pond on Beef Island to document the effects of hurricanes on a pond ecosystem. This pond was sampled twice weekly through two consecutive hurricanes and for nearly two months following the second hurricane. The data collected is now being entered into JMP, a versatile statistics program for the Macintosh, and will be analysed during October this year.

Preliminary results of this study were presented at the 27th meeting of the Association of Marine Laboratories of the Caribbean at the MacLean Marine Science Center, University of the Virgin Islands, 3-6 June, 1996. I was invited to participate in this meeting by Dr. Jim Battey, director of the UVI Marine Science Center, and my participation was sponsored by HLS Community College.

An additional study was undertaken in cooperation with Dr. David Garbary, at St. Francis Xavier University, in Canada. Dr. Garbary analysed cyanobacterial composition of benthic mats collected at ponds between May and November. These mats were collected during my normal site visits and shipped Federal Express to Dr. Garbary in Canada. There, species composition and chlorophyll content of the mats were assessed. and samples from different ponds were compared. Mat samples from single ponds , collected during different months, were also compared. Differences were correlated with physical data such as salinity, temperature, nutrient content, and location. This study is near completion and Dr. Garbary has promised to send me a draft manuscript very soon.

These studies were supported primarily through grants from The Conservation Agency and The Falconwood Corporation. Additional support came from Sue Robinson and Lowel Wheatley at Anegada Reef Hotel, John and Catherine Morley at Guana Island Hotel, and the HLS Community College. Equipment used during the study will be kept at the College and used by students during field studies. The refractometer, however, will be given to Guana Island to monitor salinity of their flamingo pond.

MARINE SPONGE POPULATION MONITORING

For the fourth consecutive year sponges at eight permanent monitoring stations around Guana were counted and identified. Each site is located on a coral reef at a depth of 30 feet, and monitoring is done using SCUBA. As in prior years, three 30m transects were laid at each site, and sponges were identified at 10cm intervals along each transect. Corals were also counted along these transects.

During October, this monitoring will be repeated. The data collected over five years will be analysed and described within the next year.

MUSEUM

Last year, the museum was nearly completely re-done. Photographs were re-printed, laminated, and mounted. Display cases were cleaned and broken specimens replaced. A new display of underwater photographs was added. I had asked Carolina Blok to finish hanging the photographs and to edit, print, and mount the interpretive signs that hang with the photographs, but she apparently did not have time. The insect collection was never completely re-done because the October entomologists have been relatively unenthusiastic about assisting in collection and identification of specimens. Roy Snelling was the original force behind the beautiful and interesting collection we first had, but, without a return visit from him, I fear that the insect case will remain a collection of unidentified butterflies and moths.

EDUCATION/OUTREACH

In 1995, we ran a short-course called "Birds of the BVI" for BVI residents. It was well-attended by enthusiastic amateur birders and by employees of the Conservation and Fisheries Department and the National Parks Trust. A report of this successful course was prepared and distributed in the latter part of 1995. The course was coordinated by myself and Christina Leahy and was taught by David Bird and Rodger Titman, from McGill University, with special sessions by Christina Leahy and Rowan Roy.

BIRD NESTING BOX PROJECT

Though we do not intend to run a field course this year, I am organising a project with the HLSCC Nature Club, a student-run organisation, and the Conservation and Fisheries Department. This is a project to build and install bird nesting boxes on Tortola, Virgin Gorda, Jost van Dyke, Guana, and Anegada. The project is being directed by Halstead Lima, of the Conservation and Fisheries Department. On September 29th and 30th, Nature Club members will build 20 bird nesting boxes at the High School Woodworking Shop. Allen Hodge, the High School woodworking instructor, and Kenneth Challenger, the head of HLSCC Technical & Vocational Department, will supervise the box construction according to plans sent by Christina Leahy. Conservation and Fisheries has bought the wood and supplies. All parties (including Christina Leahy) will be involved in installing the boxes during October. Volunteers living in the vicinity of installed boxes will monitor use of the boxes by birds and communicate any such activity to the Conservation Department.

Last marine science month, we had several interns assisting with research, including Ian Greenspan, Franz Gerster, Darryl Sookram, and Charmian Lutchman. This year, I have not made such arrangements because most young people (as well as myself) are busy with school during October.

I plan to invite Bruce Potter, director of Island Resources Foundation's Washington Office, to visit and meet the scientists on Guana. He will be in St. Thomas during the first half of October.

Dr. David B. Carlon
Department of Soil and Environmental Science
University of California
Riverside, CA 92521

Field Work

This year I completed data collection on a coral recruitment experiment initiated during MSM 1994 and set up fixed quadrats to monitor changes in reef corals and invertebrates over time. I was assisted by Mr. Darin MacGillivray of San Bernardino, CA. We completed over 25 dives on Guana Island during our two week stay.

With regards to the coral recruitment experiment, I photographed a total of 106 settlement plates that had been *in-situ* at the Iguana Head and Muskmelon Bay Reefs since the Summer of 1994. These plates were set out at three different depths spanning the range of reef development at the two sites. The objective of this experiment was to document variation in coral recruitment among the three depths and between the two sites. I am currently analyzing the data from the plates by electronically digitizing the photographs and determining the abundance of corals and other encrusting invertebrates with image analysis software. While my observations are at this point preliminary, it appears that coral recruitment patterns among depths are very similar to what I found during the first year of the study: recruitment is highest at 6 meters depth and decreases with depth. Interestingly, the abundance of other encrusting invertebrates (sponges, clams, tube-secreting worms, etc.) appears to increase with depth. It has been shown previously on other Caribbean reefs that encrusting invertebrates are intense competitors for space on cryptic reef surfaces. Thus the negative correlation between coral recruitment and encrusting invertebrate abundance found here may be related to the competitive dominance of the latter. Further statistical analysis will confirm this relationship between young corals and other invertebrates.

I also initiated a photo-quadrat study during MSM 1996. I successfully marked and photographed a total of 48 fixed 0.5 meter quadrat to monitor changes in coral and invertebrate abundance over time. Quadrats were located at three depths (6, 12, and 18 meters) on the Iguana Head and Muskmelon Bay Reefs. I plan to follow growth and mortality of corals and invertebrates within these quadrats for as many years as possible. Results from Guana can then be compared with other on-going studies in the Caribbean. Significant monitoring studies are being carried out by Dr. Terry Hughes at Discovery Bay, Jamaica who has been studying coral demography for over ten years. Dr. Caroline Roger

of the United States Biological Service, and Dr. Peter Edmunds of California State Northridge are currenily monitoring corals and other invertebrates on St. John. These on-going surveys and the Guana Island data will allow reef scientists to determine if changes in coral populations are local phenomena, or alternatively whether there exist larger scale patterns in population fluctuation. Clearly this information will be important in identifying the natural and human-related causes of fluctuating reef populations,

This year (MSM 1997) I will focus my energy on re-photographing the permanent quadrats and expanding the aerial coverage of this study by increasing quadrat sizes. Each quadrat will be expanded to 8 square meters. Increasing the size of quadrats will provide a landscape perspective on changes in coral abundance.

Dissemination of Scientific Results

I have submitted a manuscript entitled "Vertical structure in Caribbean reef corals I. : recruit, juvenile, and adult abundance" to the journal *Marine Biology*. This paper presents and discusses patterns in coral recruitment during the first year or the recruitment study (1994-1995). This Winter I will present data from the second year of the recruitment study (discussed above) at the annual meeting of the Western Society of Naturalists, to be held in La Paz, Baja California, Mexico. I plan on submitting a second paper to *Marine Biology* (Part II) which will deal with the second year data of the coral recruitment study.

Dr. Graham Forrester, UCLA, Dept. Biology

GUANA ISLAND MARINE SCIENCE MONTH PROPOSAL FOR 1996 AND REPORT FOR 1995

Population regulation in coral reef fishes: a long term study

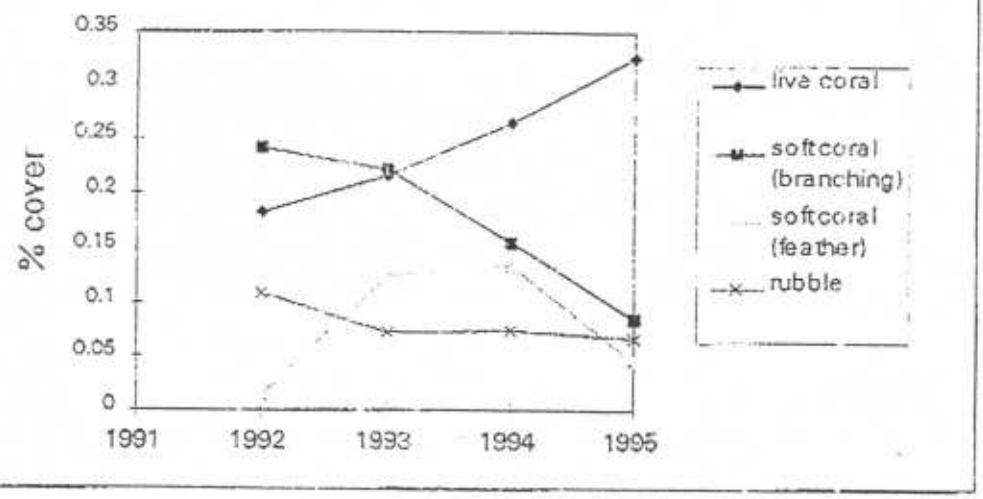
Introduction and methods

This part of the project is a continuation of the monitoring study initiated in 1992. Its aim is to provide a long term analysis of patterns in the abundance of reef fishes and how they relate to characteristics of the reef habitat. The proposal for October 1996 is to continue censuses initiated during 1992. The censuses would be done at the sites established in 1992 using the same methodology as in previous years (see previous proposals). Continuation of these surveys is of particular interest because of the potential effects of hurricanes Luis and Marilyn on the reefs around Guana during July/August 1995.

Some results of monitoring from 1992-5

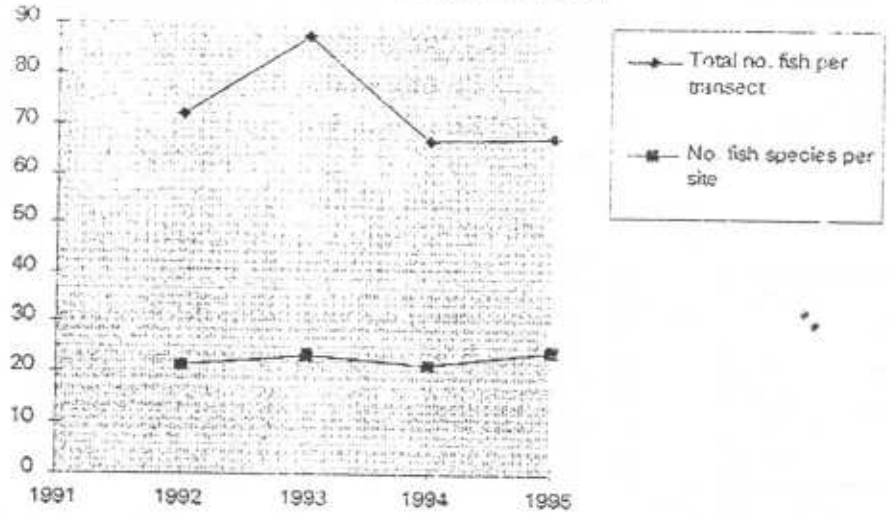
1. Changes in the reef and fish community over time.

Fig. 1. Changes in reef habitat at Guana Island (1992-95)



The major components of the reef community have shown some steady changes over time since I began surveying their composition in 1992. Most obviously, the proportion of the reef covered by live coral has steadily increased each year (Fig. 1). Correspondingly, the % cover of branching soft coral, the second most common space occupier on the reef, has shown steady decline since 1992. The data displayed in Fig. 1 are pooled from all 8 survey sites around Guana, because these trends have been apparent at all 8 of the sites. The two other dominant components of the reef habitat, feather soft corals and coral rubble, have not shown any consistent changes in abundance during this study. Although I cannot confirm it, the most parsimonious explanation for the trends in live coral, and branching soft coral abundance are that they represent the latter stages of recovery from damage to the reefs around Guana that occurred as a result of hurricane Hugo. Slower growing live corals are perhaps gradually replacing the soft corals that recovered more quickly from the damage imposed by the hurricane. The censuses planned for 1996 provide the first opportunity to document the effects of the hurricanes Luis and Marilyn, which passed close to Guana in July/August 1995. Should there be significant reef damage due to these storms, then continuation of the surveys will allow me to track the recovery process over time. If my hypothesis is correct, branching soft corals (and perhaps also algae) will recover more quickly from the hurricane, but be gradually replaced by hard coral.

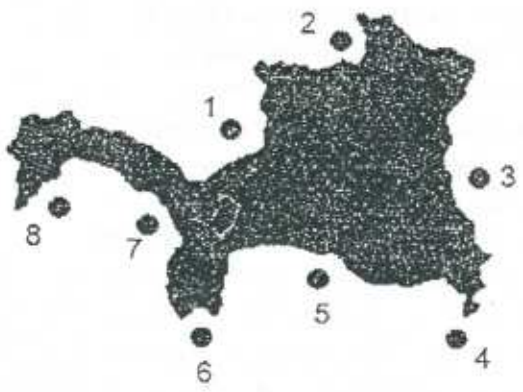
Fig. 2. Changes in fish abundance and diversity at Guana Island (1992-95)



Despite the changes in the composition of the reef habitat over time. The overall abundance of fish around the island (averaged across all sites) has remained fairly stable from 1992-95 (**Fig. 2**). Likewise, the number of fish species recorded at the sites has remained remarkably constant. Continuation of the surveys will allow me to determine the responses of the fish community as a whole to storms, and associated changes to the reef habitat.

2. Differences among sites in fish and reef communities

Fig. 3. Guana Island survey sites



1. Grand Ghut
2. Pelican Ghut
3. Bigelow Beach
4. Monkey Pt.
5. White Bay
6. Iguana Head
7. Crab Cove
8. Muskmellon

The 8 survey sites (**Fig. 3**) were chosen to have some basic similarities in the type of habitat they provide (they are all sloping reef sites, at 30 ft depth). They do, nevertheless, show some differences in composition of the reef community. Most obviously, the sites differ in the amount of live coral they support. These differences between sites have remained consistent over the 4 years of the study (even though the coral cover at all sites has shown a general increase from 1992-95, Fig. 1).

The composition of the fish community at the 8 sites shows strong relationships to the differences among sites in reef habitat. This is illustrated by **Figs. 4** and **5**. which show the strong relationships between the % cover of live coral at a site and both the overall abundance of fish, and the number of fish species present. It is not clear whether these correlations represent causal relationships, or whether good places for coral also just happen to be good places for fish. I hope to test some hypotheses about the causes of these patterns using one common species at Guana, the threespot damsel.

Fig. 4. Relationship between fish diversity and coral cover - Guana Island (1992-95)

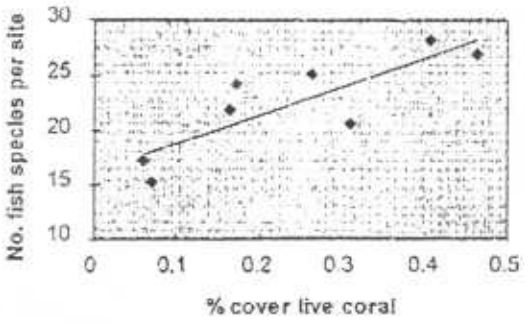
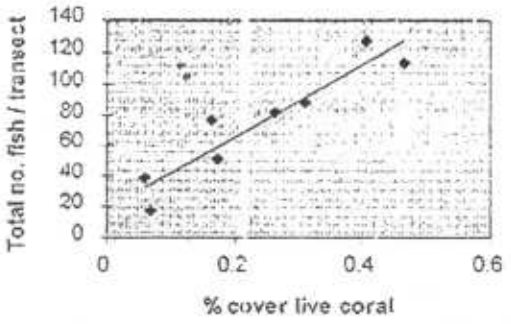


Fig. 5. Relationship between fish abundance and coral cover - Guana Island (1992-95)



3. Patterns in the abundance of one common species (the threespot damselfish)

The three spot damsel is a small (up to 10 cm) species that defends a small territory on the reef. Territories are defended for the algal and invertebrate food they contain, and (for males) as sites to build nests within which females will lay eggs. The abundance of this species at the 8 survey sites exhibits the same relationship with coral cover, as that for all species combined (**Fig. 6**). This suggests that it is some feature of the reef habitat (represented by coral cover) which determines the abundance of adult threespot damsels. An alternative hypothesis, currently favored by most reef fish biologists is that the abundance of adult fishes is determined simply by the number of larvae that arrive at a site. Virtually all reef fishes have planktonic larvae, which are dispersed by ocean currents for several weeks before they grow large enough to take up residence on a reef. The number of larvae supplied to different sites (equivalent to the birth rate of the population) can thus cause differences in the number of adult fish among sites (if a fishes chance of surviving once on the reef is similar at all sites). Put simply, this hypothesis predicts that sites receiving more larvae will end up supporting more adult fish. The pattern of threespot damsel abundance is also consistent with this hypothesis, because the number of adults at a site is correlated with the average number of newly arrived larvae at the site (Fig. 7).

At this point, it is not possible to distinguish between these alternative explanations because the supply of larval fish to sites is correlated with the % cover of coral at the site. Continuation of the surveys will help me to distinguish between these, and other, hypotheses to explain patterns in the abundance of reef fishes. This task will be made much simpler if the storms during 1995 have significantly altered the reefs around Guana, because this is likely to reduce the correlation between the variables. Even if this is not the case, more focused studies on the population biology of threespot damsels, which I hope to begin in 1997, will allow me to answer these questions.

Fig. 6

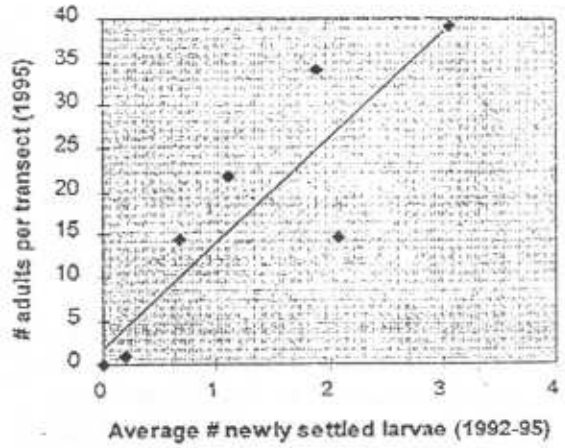
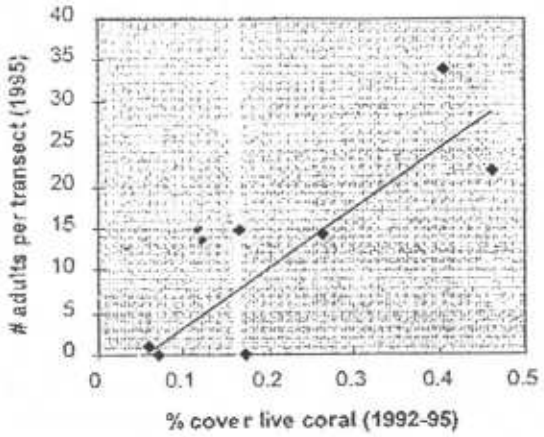

adults per transect (1995)
40
35
30
25
20
15
10
5
0
0
1
2
3
4
Average # newly settled larvae (1992-95)

Fig. 7


adults per transect (1995)
40
35
30
25
20
15
10
5
0
0
0.1
0.2
0.3
0.4
0.5
% cover live coral (1992-95)

Christina Leahy

1996 Guana Island, British Virgin Islands Project Proposal

For the 1996 avian project I will set in motion an avian nest box program in conjunction with Halstead Lima from the Conservation and Fisheries Department, and with the H.L. Stout Community College students from the Environmental Group at the BVI College. I will be in touch with Haley to discuss the details of planning and coordinating the project.

Enclosed also is the plans for building the kestrel nest boxes. It will be preferable if Haley could coordinate the building of the boxes with the aid of the students prior to my arrival. This would then optimize my time available in the BVI to focus on other portions of the nest box project, i.e., in placing the boxes in appropriate habitat on (hopefully) a few of the surrounding islands and in organizing data collection and monitoring techniques for those involved with the project.

Lianna, you and I had discussed possibilities for funding for materials, let me know what you come up with and how I can help or what I can do. As outlined in the directions of the nest box, one six foot board 1"x10" and a 13" piece of 1"x12" is needed for each box. Special attention to important details is necessary for instance that the wood is not painted and left untreated. Dimensions have been found critical in many nest box studies especially when targeting a particular raptor species. As noted, it is also commonly utilized by screech owls, our other potential target species in addition to the Caribbean kestrel. The hole size and height from the bottom of the box are critical, in other words these directions have been well researched for successful utilization. Of course part of the fun in monitoring will be to discover what and how other species utilize the boxes.

We will also discuss the important information that can be learned from nest box studies and how easily it is to capture birds for banding in the nest boxes. Research has also shown that disturbing a bird in a nest box does not necessarily mean that the bird will abandon the box. The nest box then becomes a reliable place of study, and research has found that many species of birds of prey will actually form a strong attachment to these boxes. For example, the barred owl that I study has utilized the same nest box that I built and placed for him, for the last six years with a highly successful fledging observed.

I therefore hope to discuss banding birds next year including the training of individuals to trap and band successfully. If we can obtain written approval from the government to band birds for next year, I can then get the wheels in action for obtaining the appropriate permits for trapping methods and banding of birds of prey, arranging for bands and trapping equipment and organizing a training session with an appropriate colleague joining me in this part of the project.

I would like to get a couple boxes up at Sage Mt. a most likely habitat for the screech owl if it is in residence in the BVI, a few boxes at various sites on Tortola making use of different habitat sampling, i.e., at the college, near a salt pond or ocean, in a more forested area, in an open field, near settlement and farther from settlement. Other potential island sites would be Peter Island, Anegada (of particular interest is the status of the partial albino individuals noted on this island), and of course Guana Island. I will be in touch with Sue Robinson and Rondel Smith on Anegada to coordinate the effort there and also the current manager at Peter Island.

I would also like to nurture a working relationship with Judy Pierce on St. Thomas with the Fish and Wildlife Dept.(I think), who said that they have nest boxes up and offered these to be a part of the study sample. Of course I will check on the current status of these boxes after the numerous storms that troubled this area last year. This would be great for comparison purposes and a logical extension of the study area.

The second part of my work on Guana will be in attempting to band pintails and stilts. We have the bands, but may need capture devices. I will talk to Rodger Titman for ideas of the best way to go about this project. Thirdly, I hope to update as many bird lists as possible, especially in regards to the time of year, North American bird migrations, and photographing avian species for identification purposes. I am researching the potential of writing a BVI bird identification book focusing on the bird watching tourist, and Kelly Leahy Radding will be assisting me in the artistic design of the book, including sketches of various avian species, noting habitat and behaviors.

AMERICAN KESTREL NESTING BOX PROGRAM

ıe American Kestrel, our most colorful falcon, was formerly quite common. However, numbers of this valuable insect and rodent predator have declined significantly in recent years. This decline is believed due to a loss of nesting sites. The kestrel is our only hawk that nests in tree cavities, such as old woodpecker holes. As many mature or dead trees are felled for timber or development, many suitable nesting sites in otherwise excellent habitat are lost, producing a severe "housing shortage."

The kestrel is a hawk of open country, preferring farmlands, meadows, and abandoned fields. It has also adjusted well to urban and suburban life, nesting in mature trees along highways and feeding along right of ways and parkland. Massachusetts has ample habitat to maintain a sizable kestrel population. What is lacking are adequate nest sites. Fortunately, the kestrel will nest in artificial "holes" -- nest boxes -- so you can help bring the kestrel back.

Kestrel boxes are surprisingly simple to build. Complete construction directions are provided in the figure on the back of this page. Use raw wood; don't paint it or treat it with a preservative. One-inch-thick, rough-cut western cedar, cypress, or redwood are the best woods. Also, don't construct an outside perch; it will only attract starlings. Check that nails and screws do not protrude inside the box. If attaching the box to a tree, use only one nail or wood lag on the top and one on the bottom. (Additional nails will split the backboard as the tree grows.) If placing the box on a pole, wrap a metal sleeve 30-inches wide around the pole to keep predatory mammals from climbing to the box. When the box is up, place one inch of wood shavings (however, not cedar shavings or any sawdust) in the bottom of the box, as kestrels don't bring nesting materials to it.

Large, isolated trees in the open or along fence rows, posts in treeless areas, or sides of barns or garages are ideal locations for boxes. Trees on the south or east side of a woodlot bordering pen areas are satisfactory, although the threat of predation or competition from racoons, squirrels, starlings, etc., is greater. Try to locate the box within 20 yards of a tree with dead limbs or a power pole. These serve as perches where the male dismembers the prey for transferral to the female, who in turn feeds the young. The perches are also used for preening, courting, and teaching the young to fly.

Boxes should be placed 12 to 30 feet off the ground, preferably facing southeast, south or east. The size of the territory a breeding pair needs varies, but one box per acre is a good guideline. In our latitude, breeding adults return during March and early April, so nesting boxes should be erected by mid-to-late March. Please clean out old boxes and monitor them early in the spring. (Starlings compete with the kestrels for the boxes, so it may be necessary to evict a few starlings before the kestrels return. Screech Owls, which nest later, may also use the boxes.) The female kestrel lays three to five eggs, which take 28 to 30 days to incubate. Most young leave the nest by July and may return to the same general area to breed the following spring.

Nesting-box construction can be an excellent service project for a scout troop, school shop course, club, or anyone handy with tools. The Brookline Bird Club (BBC) has limited funds to help pay for construction materials for kestrel boxes. If you are interested in building the boxes or know of someone who might be, contact

Paul M. Roberts
254 Arlington Street
Medford, MA 02155 or call (617) 483-4263 after 8 p.m.

Paul can provide complete information on the availability of funding for construction materials as well as additional information on American Kestrels and the nesting box program.

AK03-00

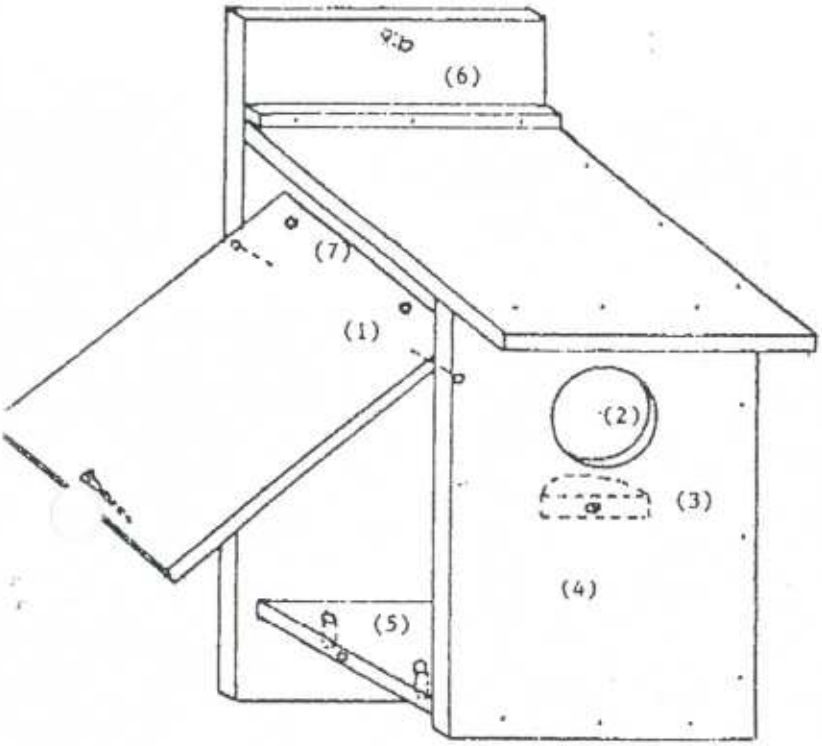
KESTREL KARETAKERS

• *Helping The American Kestrel* •

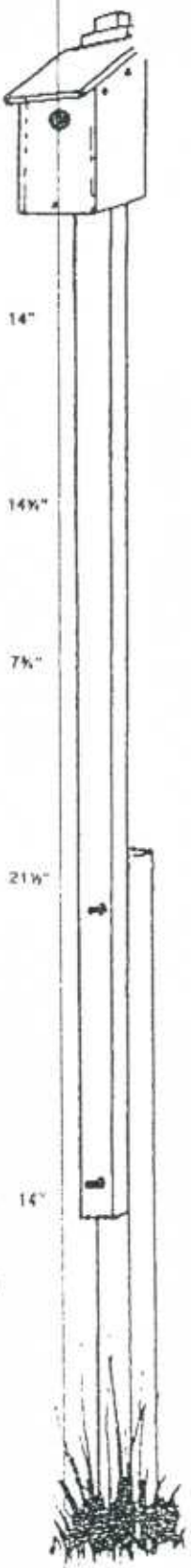
3549 DEVON DRIVE, FALLS CHURCH, VIRGINIA 22042 - (703) 533-2114

BUILDING A KESTREL HOUSE

HOMES FOR OUR SMALLEST FALCONS



GUIDE



1) Nails act as hinges to swing side open for cleaning and monitoring.

2) Entrance hole is 3" in diameter and 9-10" above floor.

3) An inside perch should be placed 3" from bottom of entrance hole. Use half of entrance cut-out and attach with screw.

4) Use a screwdriver or auger to make indentations inside the front and under the entrance hole to enable the young to climb to exit.

5) Five ¼" holes should be drilled in floor for water drainage.

6) A cleat above roof is optional but may hold the roof better in place and prevent rain seepage.

7) Two 3/8" holes should be drilled at top of both sides for ventilation.

CONSTRUCTION TIPS: For easier construction, the roof should be put on last. First step is the side being nailed to back; then front to side; then floor; hinged side is next to last before the roof. NOTE: Hinged side is ½" shorter than other side to allow side to swing open. The roof and top of front could be beveled 5 degrees for a tighter fit.

CHRISTINA L. LEAHY
2049 Main Street
Glastonbury, CT 06033

BIRD BIOLOGY COURSE SURVEY

AUGUST 18 - 25, 1995

G = GUANA ISLAND
T = TORTOLA B = BEEF ISLAND

1.	PIED-BILLED GREBE		45.	STILT SANDPIPER	
2.	BROWN BOOBY	G	46.	GREATER FLAMINGO	G
3.	BROWN PELICAN	GT	47.	LAUGHING GULL	GT
4.	MAGNIFICENT FRIGATEBIRD	GT	48.	GULL-BILLED TERN	
5.	GREAT BLUE HERON		49.	ROYAL TERN	GT
6.	GREEN-BACKED HERON	TB	50.	SANDWICH TERN	G
7.	LITTLE BLUE HERON	GT	51.	COMMON TERN	
8.	CATTLE EGRET	T	52.	ROSEATE TERN	G
9.	GREAT EGRET		53.	BRIDLED TERN	
10.	SNOWY EGRET	T	54.	LEAST TERN	
11.	TRICOLORED HERON	T	55.	BROWN NOODY	GT
12.	YELLOW-CROWNED NIGHT HERON		56.	BLACK SKIMMER	
13.	LEAST BITTERN		57.	SOOTY TERN	
14.	WHITE-CHEEKED PINTAIL	G	58.	WHITE-CROWNED PIGEON	
15.	BLUE-WINGED TEAL		59.	SCALY-NAPED PIGEON	GT
16.	RUDDY DUCK		60.	ROCK DOVE	T
17	RED TAILED HAWK	G	61.	ZENAIDA DOVE	GT
1	MERLIN		62.	WHITE-WINGED DOVED	
19.	AMERICAN KESTREL	G	63.	COMMON GROUND DOVE	GT
20.	OSPREY	G	64.	RUDDY QUAIL DOVE	
21.	CLAPPER RAIL		65.	BRIDLED QUAIL-DOVE	G
22.	COMMON MOORHEN		66.	BROWN-THROATED PARAKEET	
23.	WILSON'S PLOVER	TB	67.	MANGROVE CUCKOO	G
24.	PIPING PLOVER		68.	YELLOW-BILLED CUCKOO	
25.	SNOWY PLOVER		69.	SMOOTH-BILLED ANI	GT
26.	KILLDEER	T	70.	OWL SP.	
27.	BLACK-BELLIED PLOVER	TB	71.	ANTILLEAN NIGHTHAWK	
28.	SEMIPALMATED PLOVER	B	72	CHIMNEY SWIFT	
29.	BLACK-NECKED STILT	GTB	73.	GREEN-THROATED CARIB	GT
30.	COMMON SNIPE		74.	ANTILLEAN CRESTED HUMMINGBD.	G
31.	RUDDY TURNSTONE	B	75.	GRAY KINGBIRD	GT
32.	AMERICAN OYSTERCATCHER	G	76.	PUERTO RICAN FLYCATHER	
33.	WHIMBREL		77.	CARIBBEAN ELAENIA	
34.	UPLAND SANDPIPER		78.	CARIBBEAN MARTIN	
35.	SPOTTED SANDPIPER	GT	79.	NORTHERN MOCKINGBIRD	T
36.	SOLITARY SANDPIPER		80.	PEARLY-EYED THRASHER	GT
37.	LESSER YELLOWLEGS	B	81.	BLACK-WHISKERED VIREO	
38.	GREATER YELLOWLEGS		82.	YELLOW WARBLER	T
39.	WILLET	B	83	BANANAQUIT	GTB
40.	SHORT-BILLED DOWITCHER	B	84	LESSER ANTILLEAN BULLFINCH	
41	DUNLIN		85.	BLACK-FACED GRASSQUIT	GT
42.	LEAST SANDPIPER		86.	SHINY COWBIRD	T
43.	SEMIPALMATED SANDPIPER	GB	87.	TREE SWALLOW	G
44.	SANDERLING	B	88.	SWALLOW SP.	B

CHRISTINA L. LEAHY
2049 Main Street
Glastonbury, CT 06033
(860) 657-2409

Guana Island Bird Survey

On Guana Island one can see twenty-five common and resident species of bird on a daily basis. These species are listed below according to habitat type. Thirty-three species of bird are listed as transient or occasional sightings. Eight migrants have been recorded on Guana Island, and may best be seen during the Fall migrations. Two accidentals have also been recorded on Guana Island following a storm. Field Observation Dates: October 20 to November 2, 1991; July 12 - 29, 1992; June 23 to July 19, 1993; June 30 to July 26, 1994. Field observers on August 15 - 28, 1995 included David Bird, Ph.D. and Rodger Titman, Ph.D. from McGill University in Canada, and Rowan Roy a local naturalist from Tortola, B.V.I.

Salt Pond Birds

Resident:
- Black-necked Stilt *Himantopus mexicanus*
- Wilson's (Thick-billed) Plover - *Charadrius wilsonia*
- White-cheeked Pintail - *Anas bahamensis*
- Greater Flamingo *Phoenicopterus ruber*

Transient:
- Little Blue Heron - *Egretta caerulea*
- Cattle Egret - *Bubulcus ibis*
- Snowy Egret - *Egretta thula*
- Great Blue Heron, also white phase *Ardea herodias*
- Long-billed Dowitcher - *Limnodromus scolopaceus*
- Short-billed Dowitcher - *Limnodromus griseus*
- Green-backed Heron - *Butorides striatus*
- Yellow-crowned Night Heron - *Nycticorax violaceus*
- Clapper Rail - *Rallus longirostris*
- Common Moorhen - *Gallinula chloropus*
- Black-bellied Plover - *Pluvialis squatarola*
- Lesser Golden Plover - *Pluvialis dominica*
- Semipalmated Plover *Charadruis semipalmatus*
- Killdeer - *Charadrius vociferus*
- Greater Yellowlegs -*Tringa melanoleuca*
- Lesser Yellowlegs - *Tringa flavipes*
- Willet - *Catoptrophorus semipalmatus*
- Spotted Sandpiper - *Actitis macularia*
- Whimbrel - *Numenius phaeopus*
- Ruddy Turnstone - *Arenaria interpres*
- Least Sandpiper - *Calidris minutilla*
- Semipalmated Sandpiper - *Calidris pusilla*
- Sanderling - *Calidris alba*

Shore and Sea Birds

Common:
- Brown Booby - *Sula leucogaster*
- Brown Pelican *Pelecanus occidentalis*
- Magnificent Frigatebird - *Fregata magnificens*
- Roseate Tern - *Sterna dougallii*
- Royal Tern *Sterna maxima*
- Laughing Gull (seasonal) - *Larus atricilla*

Occasional:
- White-tailed Tropicbird - *Phaethon lepturus*
- Gull-billed Tern *Sterna nilotica*
- Cayenne Tern - *Sterna s. eurygnatha*
- Common Tern - *Sterna hirundo*

Guana Island Bird Survey

hore and Sea Birds

Occasional:
- Least Tern - *Sterna antillarum*
- Sooty Tern - *Sterna fuscata*
- Sandwich Tern - *Sterna sandvicensis*
- Brown Noody - *Anous stolidus*
- American Oystercatcher - *Haematopus palliatus*
- Belted Kingfisher - *Ceryle alcyon*

Birds of Prey - Raptors

Resident:
- American Kestrel, Caribbean subspecies - *Falco sparverius caribaearum*
- Red-tailed Hawk - *Buteo jamaicensis*
- Osprey - *Pandion haliaetus*

Migrant:
- Short-eared Owl - *Asio flammeus*
- Northern Harrier - *Circus cyaneus*
- Peregrin Falcon - *Falco peregrinus*

The Birds of The Flat - Open Field

Resident:
- *Scaly-naped Pigeon - *Columba squamosa*
- *Zenaida Dove - *Zenaida aurita*
- Common Ground Dove - *Columbina passerina*
- *Antillean Bananaquit - *Coereba flaveola*
- *Green-throated Carib - *Eulampis holosericeus*
- Gray Kingbird - *Tyrannus dominicensis*
- *Pearly-eyed Thrasher - *Margarops fuscatus*

* Also seen in the Forest

Occassional:
- Northern Mockingbird - *Mimus polyglottos*
- Antillean Mango - *Anthracothorax dominicus*
- Rock Dove - *Columba livia*
- Tree Swallow - *Tachycineta bicolor*
- Nighthawk Sp. - *Chordeiles sp.*

Migrant:
- Barn Swallow - *Hirundo rustica*

Forest Birds

Resident:
- Bridled Quail Dove - *Geotrygon mystacea*
- Mangrove Cuckoo *Coccyzus minor*
- Smooth-billed Ani - *Crotophaga ani*
- Antillean Crested Hummingbird - *Orthorhyncus cristatus*
- Black-faced Grassquit - *Tiaris bicolor*
- Caribbean Elaenia *Elaenia martinica*

Occassional:
- Caribbean Martin (at Summit) - *Progne dominicensis*

Migrant:
- Yellow-bellied Sapsucker - *Sphyrapicus varius*
- Black-and-White Warbler (at Summit) - *Mniotilta varia*
- Black-throated Green Warbler *Dendroica virens*

Accidentals:
- Northern Oriole - *Icterus galbula*

CHRISTINA L. LEAHY
2049 Main Street
Glastonbury, CT 06033
(860) 657-2409

Tortola Island Bird Survey

On Tortola Island various sites visited for bird surveys included Josias Bay Salt Pond 7/14/93, Fat Hog Bay Pond 7/3/94, Belmont Pond 7/14/93 and 7/24/94, and Sage Mountain 7/24/94. Birds observed in the settlement areas of the East and West Ends and around the H.L. Stoutt Community College were also recorded. Twenty nine species of birds were listed. Field observers on August 15 - 28, 1995 included David Bird, Ph.D. and Rodger Titman, Ph.D. from McGill University in Canada, and Rowan Roy a local naturalist from Tortola, B.V.I. These species are presented below described as salt pond birds, shore and sea birds, land birds, or birds of prey.

Salt Pond Birds

Black-necked Stilt - *Himantopus mexicanus*
8/95, 7/24/94 six individuals at Belmont Pond
7/14/93 adults with young observed at both Josias Bay and Belmont Ponds
Wilson's (Thick-billed) Plover - *Charadrius wilsonia*
7/14/93 four adults with one young at Belmont Pond,
7/24/94 observed at Belmont Pond, all ponds visited 8/95
Black-bellied Plover - *Pluvialis squatarola*
Killdeer - *Charadrius vociferus*
Spotted Sandpiper - *Actitis macularia* 8/95
White-cheeked Pintail - *Anas bahamensis*
7/14/93 approximately sixty individuals at Josias Bay Pond
Little Blue Heron - *Egretta caerulea*
one adult and four immature at Josias Bay Pond 7/14/93,
7/3/94 at Fat Hog Bay, 8/95
Cattle Egret - *Bubulcus ibis*, often at the community college
Snowy Egret - *Egretta thula* id verified by R. Titman
Tricolored Heron - *Egretta tricolor*, two fishing at Fat Hog Bay/Bar Bay Pond 8/95
Yellow-crowned Night Heron - *Nyctiocrax violaceus*
7/14/93 at Belmont Pond, 7/3/94 immature at Fat Hog Bay
Green-backed Heron - *Butorides striatus*, at the Beef Island/Tortola bridge 8/95

Shore and Sea Birds

Brown Booby - *Sula leucogaster*
Brown Pelican - *Pelecanus occidentalis*
Magnificent Frigatebird - *Fregata magnificens*
four to six individuals diving low to water near dock at B.I. bridge 7/15/93,
approx twenty-five at Tortola point on 7/16/93, and twenty on 7/17/93, 8/95
Roseate Tern - *Sterna dougallii*
Royal Tern *Sterna maxima*
Laughing Gull - *Larus atricilla*
White-tailed Tropicbird - *Phaethon lepturus*, 7/12/94,
four to five individuals observed in channel between Tortola and G. I.
Brown Noody - *Anous stolidus*, observed in channel between Tortola and G.I.

Tortola Island Bird Survey

Birds of Prey - Raptors

American Kestrel, Caribbean subspecies *Falco sparverius caribaearum*
individuals sighted often in settlement areas of both the East and West End; one male observed in flight at Sage Mt.
Red-tailed Hawk - *Buteo jamaicensis*
7/12/93 two dark phase individuals; 7/24/94 light underside, dark above, dark belly band, two observations at Belmont Pond
Osprey - *Pandion haliaetus*, at the Beef Island/Tortola bridge

Land Birds

Scaly-naped Pigeon - *Columba squamosa*
Zenaida Dove - *Zenaida aurita*
Common Ground Dove - *Columbina passerina*
Rock Dove - *Columba livia*
Bananaquit - *Coereba flaveola*
Green-throated Carib - *Eulampis holosericeus*, 7/24/94 Sage Mt, 8/95
Gray Kingbird - *Tyrannus dominicensis*
Pearly-eyed Thrasher - *Margarops fuscatus*
Northern Mockingbird - *Mimus polyglottos*
Tropical Mockingbird - *Mimus gilvus*, 7/14/93
several individuals observed near beach at Josias Bay Pond
Mangrove Cuckoo - *Coccyzus minor*
Smooth-billed Ani - *Crotophaga ani*
Antillean Crested Hummingbird - *Orthorhyncus cristatus*
Black-faced Grassquit - *Tiaris bicolor*
Yellow Warbler - *Dendroica petechia*
Caribbean Martin - *Progne dominicensis*, 7/24/94 Sage Mt. three to four individuals flying and diving at summit
Shiny Cowbird - *Molothrus bonariensis*

CHRISTINA L. LEAHY
2049 Main Street
Glastonbury, CT 06033
(860) 657-2409

Beef Island Bird Survey

On Beef Island various bird recording sites were visited for this survey including the southern shoreline following the existing roadway 6/28/93, Trellis Bay 7/8/93, the middle flat salt ponds (mostly dry area) 7/8/93, and Sprat Point Salt Pond 7/8/93 and 7/24/94. Twenty-six species of birds are listed. Field observers on August 15 - 28, 1995 included David Bird, Ph.D. and Rodger Titman, Ph.D. from McGill University in Canada, and Rowan Roy a local naturalist from Tortola, B.V.I. Many of the 8/95 sightings were from the salt pond near the airport, identifications verified by R. Titman. These species are presented below described as salt pond birds, shore and sea birds, land birds or birds of prey.

Salt Pond Birds

Black-necked Stilt - *Himantopus mexicanus*
6/28/93 vocals only, 7/8/93 one pair at Sprat Point and one damaged egg also six vocalizing loudly and circling small wet area at middle flats, 7/24/94 six at Sprat Point
Wilson's (Thick-billed) Plover *Charadrius wilsonia*
White-cheeked Pintail - *Anas bahamensis*
7/8/93 one at Sprat Point, 7/24/94 nine at Sprat Point
Short-billed Dowitcher - *Limnodromus griseus*, 7/24/94 nine at Sprat Point, 8/95
Green-backed Heron - *Butorides striatus*, 8/95
Black bellied Plover - *Pluvialis squatarola*, 8/95
Semipalmated Plover *Charadruis semipalmatus*, 8/95
Ruddy Turnstone - *Arenaria interpres*, 8/95
Lesser Yellowlegs - *Tringa flavipes*, 8/95
Willet *Catoptrophorus semipalmatus*, 8/95
Semipalmated Sandpiper - *Calidris pusilla*, 8/95
Sanderling - *Calidris alba*, 8/95

Shore and Sea Birds

Brown Booby - *Sula leucogaster*
Brown Pelican - *Pelecanus occidentalis*
Magnificent Frigatebird - *Fregata magnificens*
7/12/94 in channel between Tortola and B.I.
Roseate Tern - *Sterna dougallii*
Laughing Gull - *Larus atricilla*
White-tailed Tropicbird - *Phaethon lepturus*
7/12/94 four to five in channel between Tortola and B.I.
Brown Noody - *Anous stolidus*, 7/8/93 three in channel between Tortola and B.I., 7/12/94 several in channel

Beef Island Bird Survey

Land Birds

Scaly-naped Pigeon - *Columba squamosa*
Zenaida Dove - *Zenaida aurita*
Common Ground Dove - *Columbina passerina*
Bananaquit - *Coereba flaveola*
Gray Kingbird - *Tyrannus dominicensis*
Pearly-eyed Thrasher - *Margarops fuscatus*
Northern Mockingbird - *Mimus polyglottos*, 6/28/93 on power lines near airport;
7/24/94 Sprat Point
Antillean Mango - *Anthracothorax dominicus*, 6/28/93
observed territorial displays in response to kestrel vocalization playbacks
Mangrove Cuckoo - *Coccyzus minor*, 6/28/93 vocalizations only
two different locations near airport, 7/8/93 Trellis Bay beach
Smooth-billed Ani - *Crotophaga ani*
Antillean Crested Hummingbird - *Orthorhyncus cristatus*, 6/28/93
observed territorial displays in response to kestrel vocalization playbacks
Caribbean Elaenia - *Elaenia martinica*
Yellow Warbler *Dendroica petechia*, 7/8/93 one male at Trellis Bay
Swallow sps. - *Hirundo sps.*

Birds of Prey - Raptors

American Kestrel, Caribbean subspecies - *Falco sparverius caribaecarum*
6/28/93 two sightings and vocals once (possibly same bird),
7/17/93 at bridge flying across water toward B.I. vocalizing
Red-tailed Hawk - *Buteo jamaicensis*