DUNE RESTORATION MONITORING REPORT 1

FOR

AMERICAN AIRLINES 331 ACCIDENT SITE

Submitted to:

AMERICAN AIRLINES

Prepared by:

CL ENVIRONMENTAL

Taking Care of You and Your Environment.

SEPTEMBER 2010

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1.0 INTRODUCTION

This report outlines the first report on the dune restoration for American Airlines 331 accident site. Monitoring began on September 9th, 2010, one month after the planting exercise which occurred on August 9-10, 2010.

The University of the West Indies Port Royal Marine Laboratory was contracted to supply suitable sand dune plants and conduct the planting exercise on the recently rehabilitated AA 331 accident site. Plants that were requested from the Port Royal Marine Lab were mainly of the runner growth forms, which is the typical vegetation growth form of sand dunes. As such, three (3) species of plants were supplied to be planted at the location. These species were: *Ipomea, Sesuvium and Sporobulus*. In total **Seven Hundred and Sixty Six (766)** plants were planted; *Ipomea* ***(343 individuals)***, *Sesuvium* ***(283 individuals)*** *and Sporobolus* ***(140 individuals)***

Plate 1 shows the Dune Restoration site during the first month.

Plate 1 Dune restoration site (facing east), September (month 1)

2.0 METHODOLOGY

The plants were transported to restoration site from Port Royal Marine Laboratory Coastal Plant Nursery on August 9 and 10, 2010. The plants were placed in rows spaced 1m apart. The plants were then planted in holes dug approximately six (6) to eight (8) inches deep and placed with potting soil and roots intact. Rows of plants were planted in an East to West direction, each row being a minimum of 1m away from the next. The rows were mostly species specific (one species type) with the exception of a few mixed rows. Areas with electrical / service conduits were not planted over with plants as requested.

During post planting monitoring, two belt transects which were two meters wide by thirty-two meters long, previously established at the restoration site, were used to determine both growth and survivorship. The transect began at the southern end (seaward) of the area at the edges of the replanted site and ran diagonally across the area ending at the western edges of man-holes close to the roadway (Figure 1).

Data was then collected along the transect using 2m x 2m quadrats. Plant growth was measured in terms of three parameters: percentage cover (grasses), shoot length and shoot numbers (runners) (Plates 2-3). Species position, type and general health were also noted.

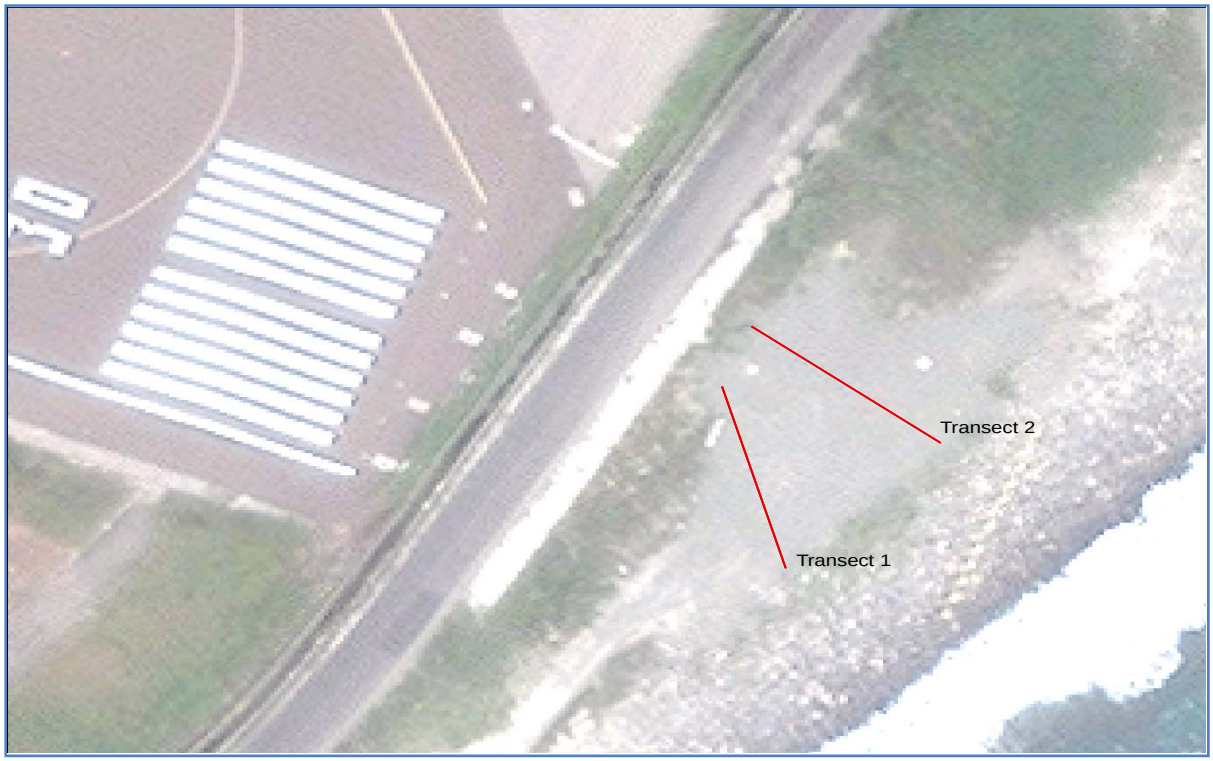

Figure 1 Map showing locations of belt transects at dune restoration site

Plate 2 Photo showing measurement of shoot lengths

Plate 3 Photo showing method for shoot measurements of runners

3.0 RESULTS AND DISCUSSION

3.1 Survival

There was 100% survival of the grass (*Sporobolus*) in both transects. Survival for the runners (*Ipomea* and *Sessuvium*) were lower in both transects, with an average survival of 71.9% (Table 1, Figure 2).

Table 1 Plant Survival of runners and grasses in each transect

Plant Survival		
	Transect 1	Transect 2
% Survival of runners- month 1	74.29	69.69
% Survival of grasses-month 1	100	100

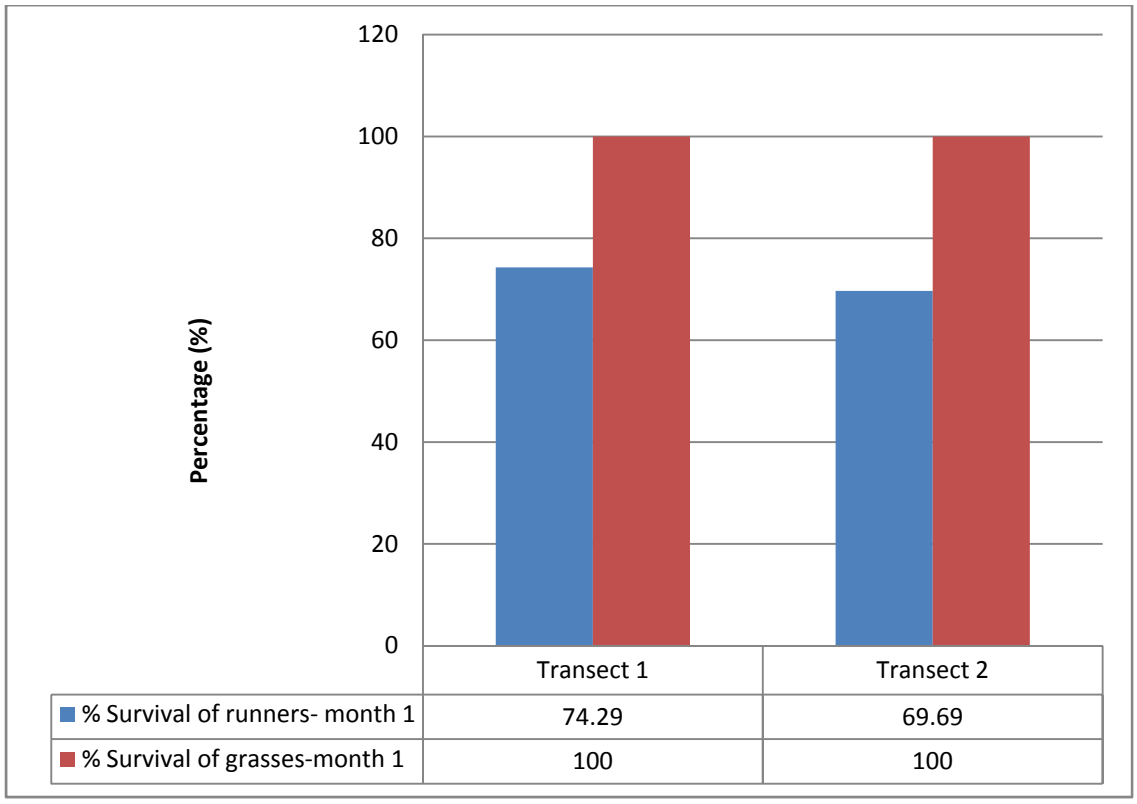

Figure 2 Percentage survival of runners and grasses in each transect

It must be noted that there was a noticeable mortality at the northern end of Transect 1 which is situated closer to the main road. This area is theorized to be affected directly by the heat from jet blast exhaust from departing airplanes from the NMIA runway.

3.2 Growth

Sporobolus individuals did not exhibit significant growth in the first month of planting (Figure 3). All *Sporobolus* individuals exhibited their original 1% percentage cover as during the planting period. Despite this lack of growth, these grasses are expected to show positive growth in forthcoming months.

3.3 Shoot Number

An increase in shoot numbers was achieved in the runners in both transects. An average of 0.42 shoots per plant was achieved for the representative sample (Table 2, Figure 3).

Table 2 Mean shoot numbers for runners for both transects

Mean Shoot Numbers		August	September
TRANSECT 1	**Mean Shoot number**	1.6	1.62
TRANSECT 2	**Mean Shoot number**	2	2.04

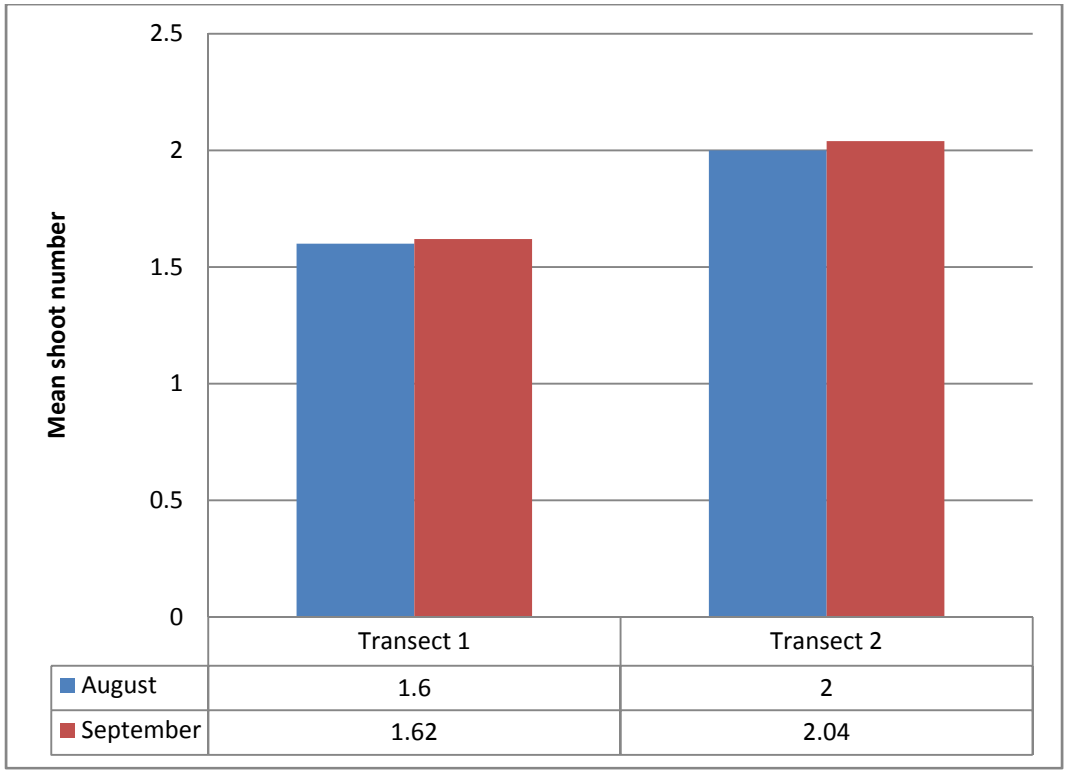

Figure 3 Mean shoot number for both transects

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3.4 Shoot Length

Despite an increase in shoot numbers, a net negative growth was achieved in terms of shoot length for *Ipomea* and *Sesuvium*. Most plants had their shoots decrease in size due to the initial shock of transplantation. From the results, the runners lost an average of 9.5 cm from the length of their longest shoot (Table 3, Figure 4).

Table 3 Mean shoot length for runners for both transects

Mean Shoot Length		**August**	**September**
TRANSECT 1	**Mean Shoot length (cm)**	35	26
TRANSECT 2	**Mean Shoot length (cm)**	33	23

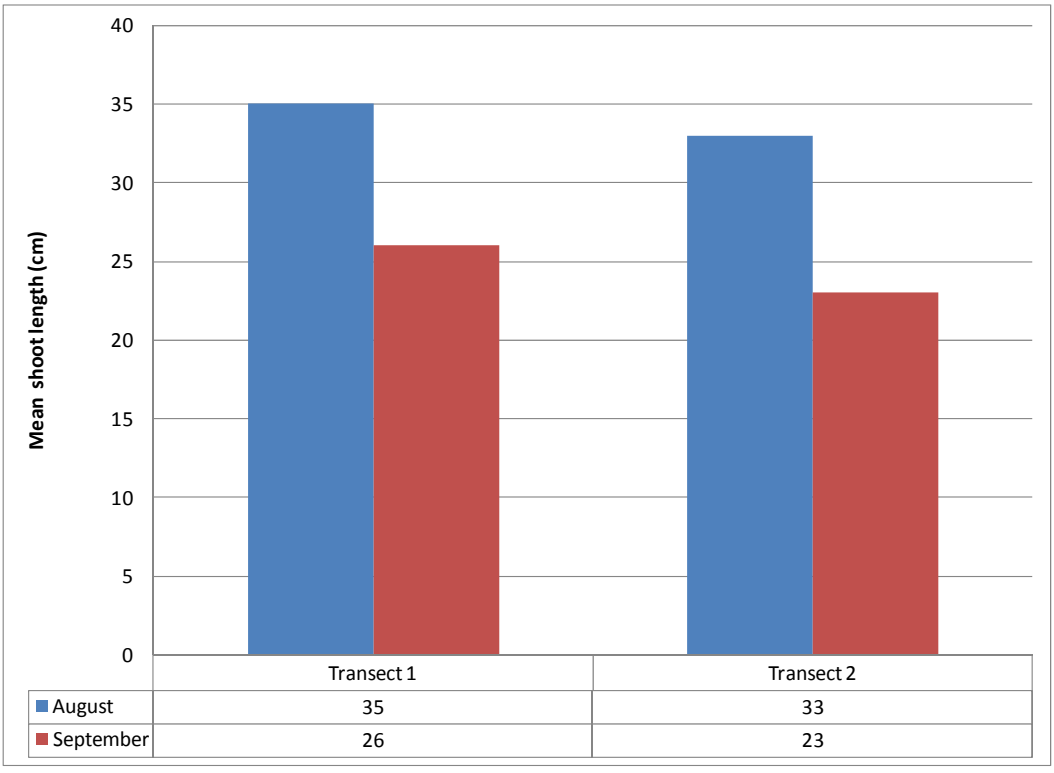

Figure 4 Mean shoot length for both transects

3.5 Ecological Data

No animals or evidence of animals were observed to inhabit the soil or general plant area.

4.0 PROFESSIONAL STATEMENT

Plant growth in this period show a net negative growth in the general plant population. This is indicative of the initial shock experienced by the plants following transplantation from a controlled nursery environment. After one month, there was a decrease in shoot extension as the harsh conditions were not optimal for sustaining high leaf numbers. The plants are expected to show a positive increase in shoot length in the forthcoming months.