



Invertebrate Interactions as Primary Decomposers of Terrestrial Remains



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Background

Field experiments relating to small island taphonomy as well as ecological forensics and the differences in their processes given environment were performed during this program. Throughout the duration of the SURF program, research was conducted both in a tropical and temperate environment. The tropical environment being the CARMABI (Caribbean Research and Management of Biodiversity) research station in Curaçao, and the temperate environment being Richard's Marsh, which is owned by Yale and is located in Branford, Connecticut.

Once the final plans were in place, the **aims of this research** were to:

1. Capture and mark a small sample of terrestrial hermit crabs on Curaçao to allow for a population estimation.
2. Digitally record the feeding patterns and general movements of the invertebrates in Curaçao and in Richard's Marsh.
3. Analyze the social behaviors of the various invertebrate species that are encountered and how they interact with one another in the presence of terrestrial remains.

References

All satellite images were taken from Google Maps. Coordinates:
 - 41°15'50.1"N 72°44'18.6"W (Richard's Marsh)
 - 12°07'50.0"N 68°58'15.2"W (Curaçao)

Materials and Methods

Curaçao

Two pig (*S. scrofa*) necks were placed in separate locations, each with two trail cameras aimed at them to capture any scavenging.



Figure 1: Overview of Curaçao with experimental location marked.



Figure 2: Diagram of experimental set up in Curaçao.

Richard's Marsh

Two pig legs were also placed in separate locations that mirrored those in Curaçao. Trail cameras were again utilized to record any scavenging.



Figure 3: Overview of Richard's Marsh with experimental location marked.

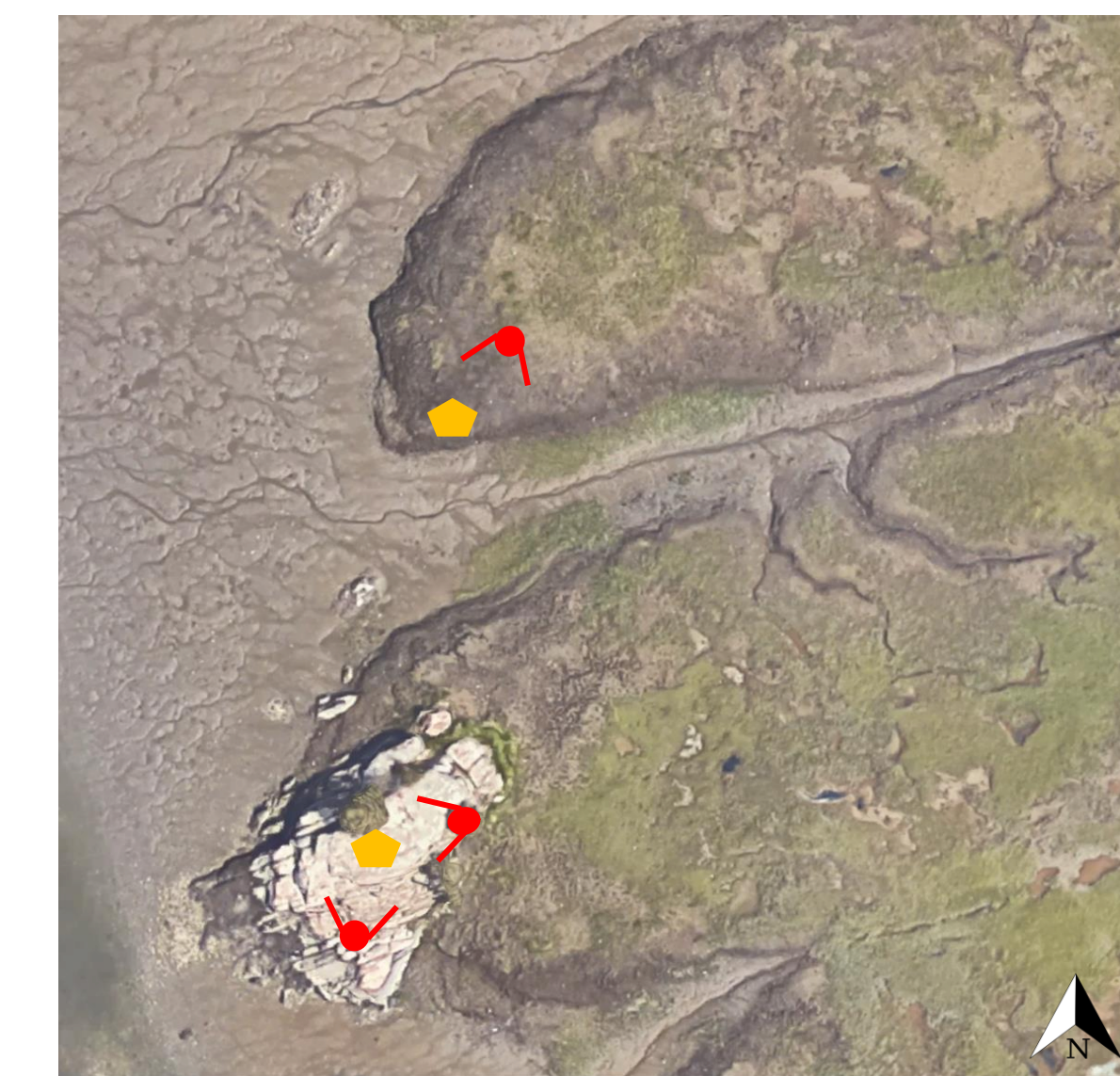


Figure 4: Diagram of experimental set up at Richard's Marsh.

Legend

- Research Location
- ▼ Trail camera
- Pig leg

Discussion

- The climactic data collected at both of the locations does confirm that the tropical and temperate regions are disparate.
- Scavengers varied based on experimental locations and terrain. With no overlap between experimental locations.
- Scavenging was viewed primarily between dawn and dusk. However instrumental malfunctions may have been the error in not seeing more dusk to dawn scavenging.
- Invertebrates tended to scavenge in groups.

Conclusion

It was observed that the primary decomposers in Curaçao were Whiptails Lizards. Whereas the primary decomposers in Connecticut were a small species of fish.

Even after the completion of this study, the knowledge gap in relation to these invertebrates and their scavenging behaviors is still large and therefore warrants further investigation

Acknowledgements

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Results

Difference in Means of Humidity by Location and Experimental Day

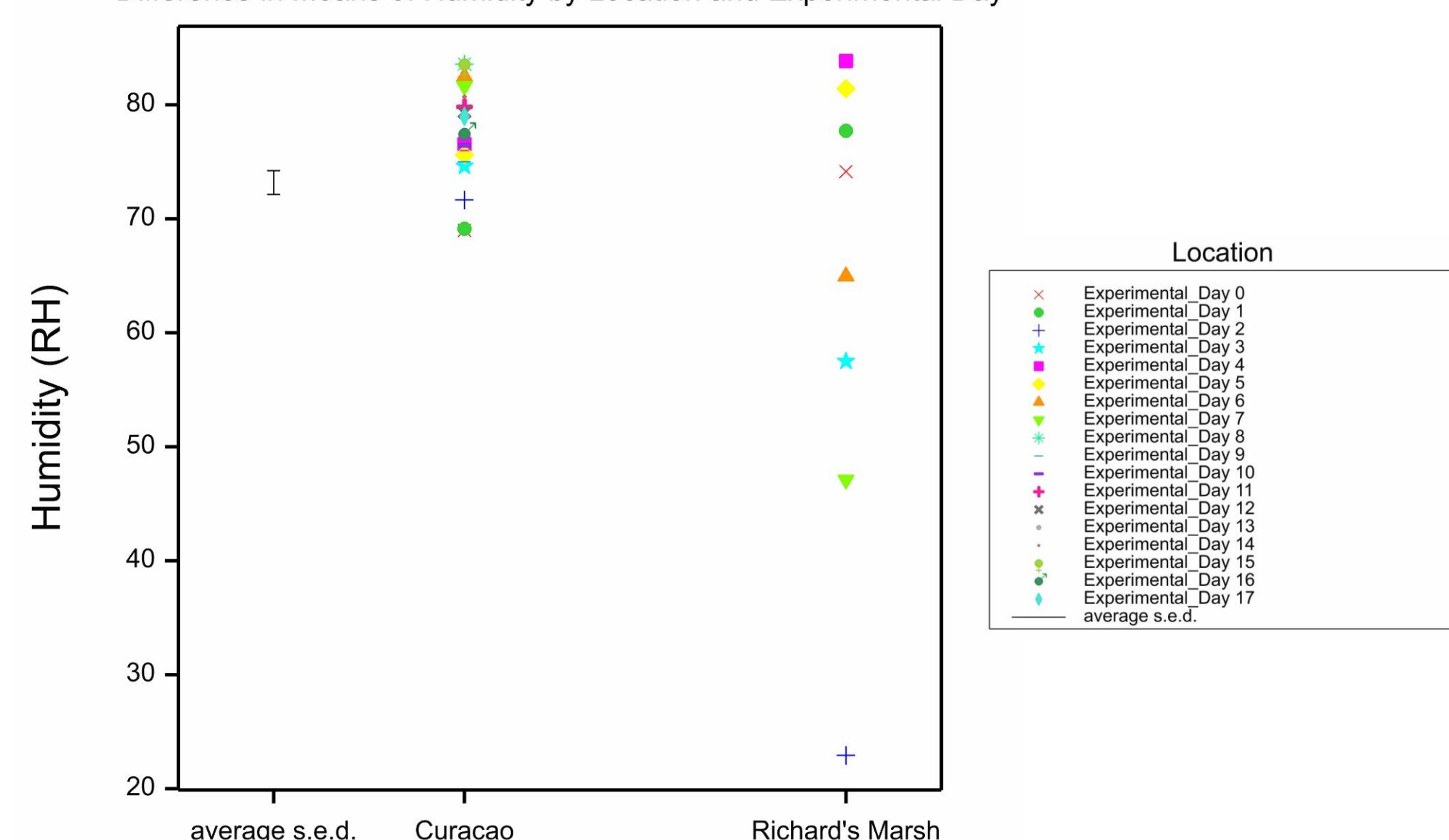


Figure 3: Differences in Means of Humidity by Location and Experimental Day (Unbalanced ANOVA $F_{2,6878}=186.67$, $p<0.001$, s.e.d. = standard error of differences)

Distribution of Curaçao Scavengers by Duration of Scavenging Event and Time of Day

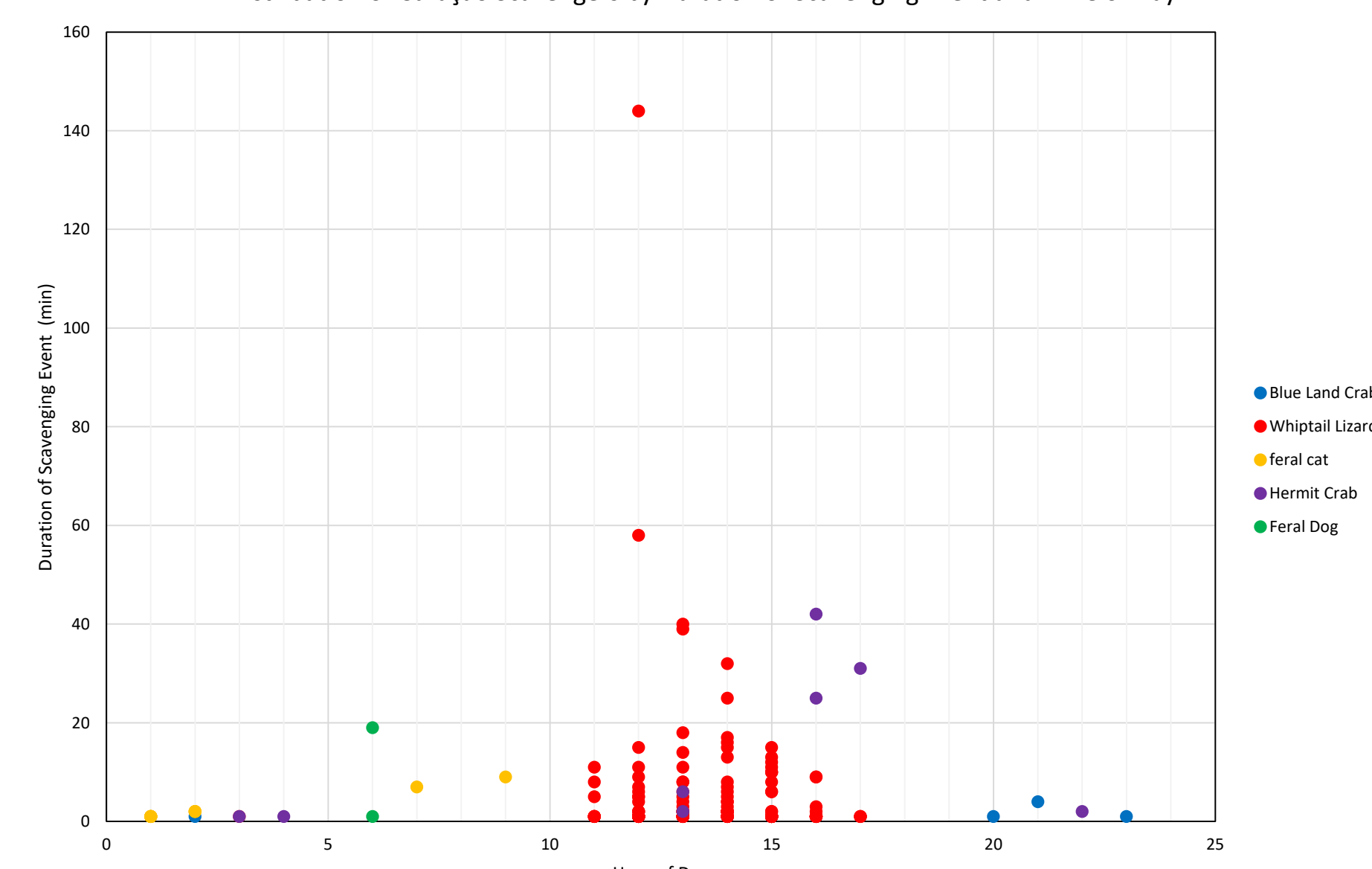


Figure 3: Distribution of Curaçao Scavengers by Duration of Scavenging Event and Time of Day

Distribution of Richard's Marsh Scavengers by Duration of Scavenging Event and Time of Day

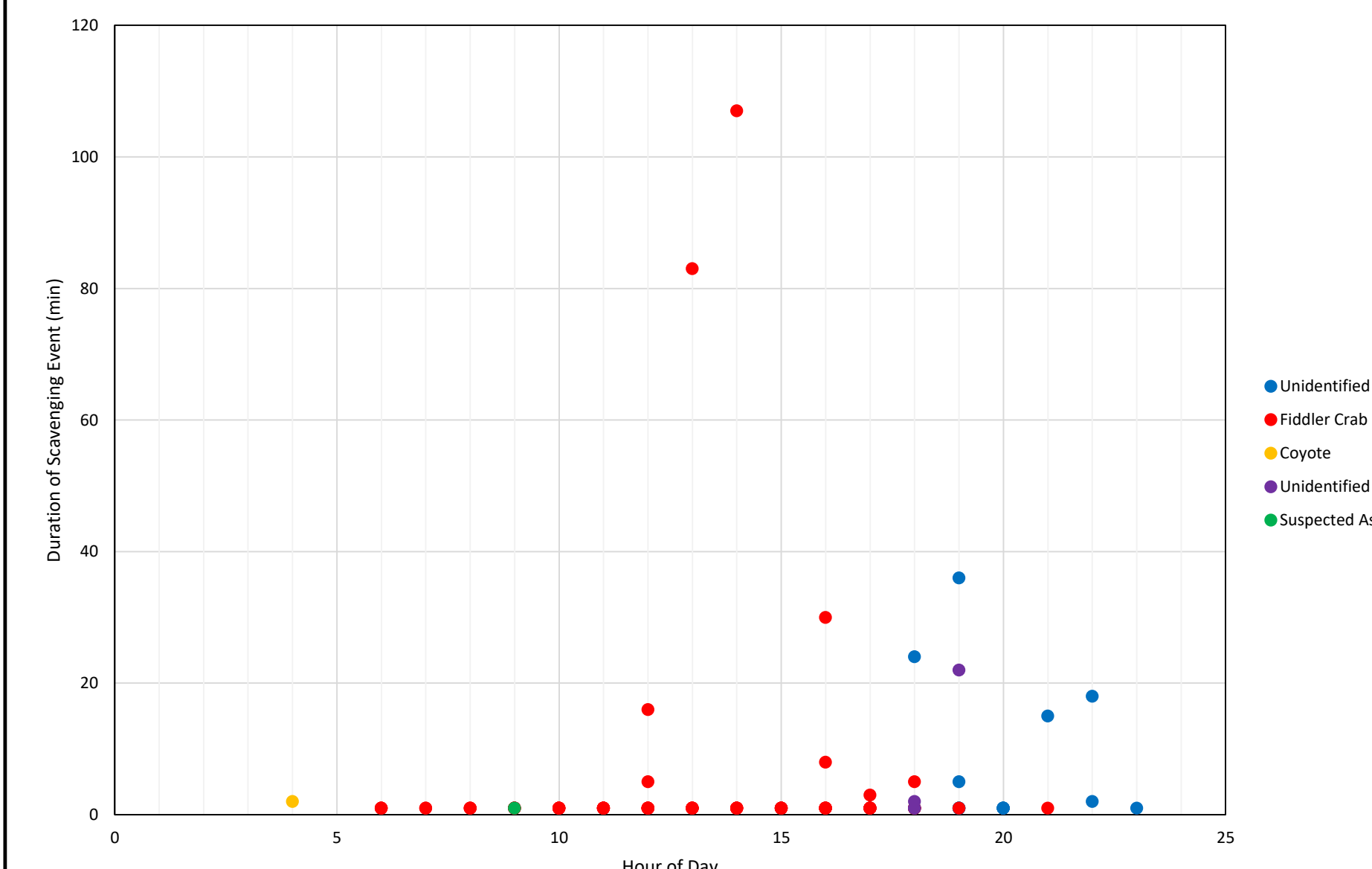


Figure 4: Distribution of Richard's Marsh Scavengers by Duration of Scavenging Event and Time of Day

Table 1: List of Scavenging Species Observed Organized by Location

Location	Common Name	Scientific Name
Curaçao	Blue Land Crab	<i>Cardisoma guanhumi</i>
	Feral Cat	<i>Felis catus</i>
	Feral Dog	<i>Canis lupus</i>
	Hermit Crab	<i>Coenobita sp.</i>
	Whiptail Lizard	<i>Cnemidophorus murinus</i>
Richard's Marsh	Coyote	<i>Canis latrans</i>
	Fiddler Crab	<i>Ocypodidae uca</i>
	Suspected Asian Shore Crab	<i>Hemigrapsus sp.</i>
	Unidentified Crab	n/a
	Unidentified Fish	n/a