Home Range, Habitat Use, Feeding Ecology and Reproductive Biology of the Cuban Boa (*Chilabothrus angulifer*) at Naval Station Guantánamo Bay, Cuba

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Naval Station Guantánamo Bay encompasses 45 mi² of bay and subtropical dry forest (open-canopy) at the mouth of the Guantánamo Bay, Cuba.
The naval lands provide a refuge for an astonishing number of rare birds, mammals, and reptiles.

- Cuban Rock Iguana
- Desmarest’s Hutia
- Cuban Tody
Desmarest’s Hutia
The Cuban boa is the largest land predator in Cuba-reaching lengths of more than 18 feet.
Methods

• From April, 2000 through the present the Navy and Toledo Zoo have been researching Cuban boa habitat use, home range, feeding ecology, and reproductive biology.

• The primary method used in this study is radio telemetry.

• More than 65 Cuban boas of both sexes and all age classes have been or are being tracked on the Naval Station.

• Snakes are generally tracked three times a year for a 4-6 week period.

• Snake locations are recorded using a Global Positioning System (GPS) and imported into a Geographical Information System (GIS).
# Results - Home Range

<table>
<thead>
<tr>
<th>Class</th>
<th>Mean MCP</th>
<th>Mean 95% Kernel Isopleth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Male</td>
<td>270.4 ac</td>
<td>125.2 ac</td>
</tr>
<tr>
<td>Adult Female</td>
<td>111.0 ac</td>
<td>93.2 ac</td>
</tr>
<tr>
<td>Sub-adult</td>
<td>49.3 ac</td>
<td>60.0 ac</td>
</tr>
<tr>
<td>Juvenile</td>
<td>15.1 ac</td>
<td>47.3 ac</td>
</tr>
</tbody>
</table>

- Adult males have mean MCP activity ranges approximately two times that of females. This is likely the result of mate searching behavior.

- Large movements by females may be a function of prey availability.

- Juveniles and sub-adults generally restrict their movements to a home range of < 25 acres.
Home Range Example - Male

Subject: E09D (Male) 2005-2015

Legend
- Subject: E09D
- MCP YEAR
  - MCP 2005 = 8.20 ha
  - MCP 2006 = 45.20 ha
  - MCP 2007 = 36.92 ha
  - MCP 2008 = 138.68 ha
  - MCP 2009 = 21.02 ha
  - MCP 2010 = 0.002 ha
  - MCP 2012 = 2.98 ha
  - MCP 2013 = 5.83 ha
  - MCP 2014 = 12.93 ha
  - MCP 2015 = 2.86 ha
  - MCP 2005-2015 = 364.63 ha

Legend
- Subject: E09D
- PROBABILITY
  - 25% = 1.65 ha
  - 50% = 4.21 ha
  - 75% = 30.61 ha
  - 95% = 120.34 ha
Results - Habitat Use

- Common in woodlands, primarily *Phyllostylon* and legume forests although it can be found in virtually all habitat types with the possible exception of salt flats.

- Particularly abundant in degraded grasslands comprised of sandspur, (*Cenchrus myosuroides*) and Guinea grass (*Urochloa maxima*).

- Several Cuban boas at NS Guantánamo Bay have been found in anthropogenic situations, including residential areas, military and commercial areas and even sewers.
Results - Threats

- Vehicle strikes are the greatest threat to Cuban boas at the Naval Station.
- Feral cats and free-roaming dogs (several boas discovered with bite marks)
- Raptors (owls and hawks)
- Human Persecution – although prohibited on the Naval Station, it occurs rarely
Foraging activity typically begins shortly after sunset.

The primary prey species on the Naval Station are Desmarest’s hutia and the Cuban rock iguana.

They are also known to feed on mice, rats, domestic fowl, native birds and bats.
Results - Reproduction

- At NS Guantánamo Bay, Cuban boas court and mate from mid-April to late May.

- Males mate search for females (males will move > 2.5 km to court a female; 0.8 km in a single night!)

- Courtship may include one or more males. It is ritualized and may include male-male combat when multiple males are involved.

- Females snakes reproduce every other year at best and may skip reproduction for multiple years if their nutritional state is poor.
Results - Parturition Sites

Parturition sites include grasslands, burrows of Cuban rock iguanas and anthropogenic structures.
Results - Neonates

Litter sizes ranged from only three to more than 23 neonates.
Larger adult females give birth to larger litters of longer (SVL) and heavier offspring.
Benefits to the Military Mission

Data collected for this study are used to update the installation Integrated Natural Resource Management Plan (INRMP)

• Results are used to inform the natural resource manager how to manage/enhance the habitat used by the boa, educate the installation residents about this unique species and inform future study efforts
Benefits to the Military Mission

These data act to decrease military/boa conflicts and conserve and manage the Cuban boa

- Inform military personnel where they are most likely to encounter the species, what to do if the species is encountered, how often this species is found within residential and military training ranges
Benefits to the Military Mission

The conservation of this top predator is critical to ecosystem health and integrity.

- This investigation provides data on the population status of the boa, life history traits and threats to survival that can be used to maintain healthy populations for ecosystem health.
Questions?