Biogeography of West Indian Spiders focusing on the St. Lucian spider fauna

Presented by:
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What is biogeography?

The study of the geographic distribution of organisms.
Biogeographic regions

- Nine primary terrestrial biogeographic regions of the World:
  - Antarctic
  - Western Palearctic
  - Eastern Palearctic
  - Afrotropical
  - Indo-Malayan
  - Australasian
  - Micronesian
  - Nearctic
  - Neotropical (that’s us)
Who is included in the Neotropics

• This region extends southward from the Straight of Tehuantepec, in southern Mexico and includes the Central and South America as well as several groups of oceanic islands:
  • Antilles in the Caribbean Sea
  • Galapagos in the Eastern Pacific Ocean
  • Falklands in the Southern Atlantic Ocean
Oceanic vs. Continental Islands - definitions

Oceanic islands - are already separated by sea barriers when they first emerge above the surface.

A fall in the sea level can create a new island, or it can arise through vulcanism or uplift.

Continental islands - land masses that were originally part of a continent, but became islands through such processes as faulting, drifting and sea-level rise.
Oceanic vs. Continental Islands - fauna

Oceanic islands:
• High degree of endemism
• Lower species diversity
• Takes a long time for species diversity to build up

Continental islands:
• High species diversity
• Established ecosystems
Introduction to the spiders

- Spiders have a worldwide distribution, occupying all land environments except at the polar extremes (Foelix 1996).
- Currently there are approximately 40,700 known species worldwide (Platnick 2009).
- This is believed to be approximately one-fifth the total.
- Thus the world’s fauna is far from being known, especially in the neotropics.
What are spiders?

Spiders belong to the order Arachnida, as do scorpions and mites. The defining characteristics of arachnids are:

- Two body segments consisting of a cephalothorax (fused head and thorax segments) and an abdomen
- Eight legs
- No antennae
- No wings
What are spiders? (cont’d)

There are two main groups of spiders;

Mygalomorphae to which the tarantulas belong

Araneomorphae which house the other types, like hunting, jumping and web-building spiders.
How do spiders reach these islands?

- Float on debris
- Blown by the wind
- Brought in by humans – visitors or through imports.
Problems

- Exotic species are introduced
- They may be able to compete better for habitats and food
- They may eliminate the native species
- They may become a problem to humans, for example, the Black Widow (*Latrodectus mactans*)
Methodology

- **Field:**
  - Sweep-netting
  - Visual search
    - Ground search
- **Aerial search**
- **Lab:**
  - Identification
- **Data analysis**
Habitat types sampled

Natural Habitats:
- Semi-evergreen seasonal forest
- Deciduous seasonal forest
- Lower montane rainforest
- Mangrove Woodland
- Littoral Woodland
- Riparian vegetation

Disturbed habitats:
- Farmland
- Secondary vegetation
- Roadside vegetation
<table>
<thead>
<tr>
<th>Family</th>
<th>Number of species</th>
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<tr>
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<td>Uloborididae</td>
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<tr>
<td>Unidentified species</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>29</strong></td>
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</tbody>
</table>
Some common spiders in St. Lucia

- *Argyrodes elevatus*
- *Cyclosa sp.*
- *Leucauge argyra*
- *Argiope argentata with prey*
So what good are spiders?

- They eat insects, including mosquitoes which are vectors of disease.
- They regulate pest numbers in crop fields.
- They can be used as bio-indicators
Acknowledgements

This project was partially funded by a grant from the British Arachnological Society and a Percy Sladen Memorial Fund Grant from The Linnaean Society of London.

Thank you also to Greg Pereira, Alwin Dornelly and the staff and foresters of the Dept. of Forestry St. Lucia for facilitation and assistance.
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