

JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/Conference Title: An investigation of song duet function in the Canebrake Wren (*Thryothorus zeledoni*).

Travel Dates: 15th June 2002 – 15th August 2002

Location: La Suerte Biological Field Station, Costa Rica and El Zota Biological Field Station Cosata Rica

Group Member: Claire Brenner, Lorraine Marshall-Ball, Carol Christie

Aims: To assist Lorriane Marshall-Ball gather data for her PhD research and by doing this learn about rainforest ecology and gain experience working in the field.

OUTCOME (not less than 300 words):-

.The Canebrake wren is a small, very cryptic, forages in dense undergrowth, and sings and nests in concealed sites. It lives in long grass and scrub surrounding floating reed beds. These are traditionally found in forest clearings.

Playback experiments were used to record the wren's duetting. The wrens live in clearly defined territories. The birds in approximately 30 territories were studied.

The territories were first mapped and some time was taken to carry out habitat and insect surveys to ascertain the productivity of each territory. The following measurements were made: Vegetation height, canopy height, canopy density, leaf litter depth, tree diameter and water cover. Insect surveys were also carried out using destructive sampling. The insects were collected by sweep netting and identified in the station lab. I have learnt how to perform accurate habitat surveys and am now good at insect identification (to Order).

The wrens in each territory were ringed by using mist-nets. This was a fascinating exercise and enabled me to learn how to catch the birds and also the opportunity to see several different species at close range (as several birds flew into the nets accidentally).

The playback experiments involved playing artificial wren song from a speaker placed at the territory edge and recording the response of the wrens.

The reasons the Wrens duet are unknown but several different theories exist:

- Territorial defence
- Mate attraction/guarding
- Sexual Selection
- Visual and Acoustic Display

The wrens duetted by the male first singing a short high pitched introductory phrase. He would repeat this until the female responded by initiating the duet with a short call the male would reply with a similar call and the female would reply back again. The birds would call at each other in this fashion for a varying length of cycles – sometime as many as 15 times. The duet was so well timed that the gap between the two birds singing was not audible. The birds had to sit next to each other when they duetted or the time taken to hear the partners song would cause the duet to be slower. The duets often changed phrase whereby the male and female would begin singing a new phrase without stopping the duet.

During the playback experiments the calls the birds made were written down using the following notation:

I -introductory call (always the male)

F -Female singing her part of duet

M -Males singing his part of duet

FM₆ -Birds Duetting (in this case for 6 cycles)

The duetting was not always perfect. Sometimes one bird would sing their part of the duet alone before the other would join in (normally the Female). It took a lot of practise to be able to hear what the birds were singing and write it down (they duetted very fast, and when agitated the duet became more complex).

There were several theories being tested. The wrens duetting may be a sign of pair bond strength – the more complex and well co-ordinated the wrens duets the fitter and more closely bonded they would be.

There were several different playback experiments carried out, each to test a different hypothesis.

In each case 2 sets of artificially assembled wren song was played – one ‘good’ and one ‘bad’. The theory is that pairs able to sing better duets would be fitter and a greater threat to the resident pair.

The experiments were as follows:

Song Switching - Both duets the same length but one had many phrase changes and the other sang a single phrase only

Duet Co-ordination – Both duets the same length but one was very fast with very little gap between the birds calls and the other had a long gap between the calls.

Duet Length – Duets of similar quality were played but one lasted for 8 cycles and the other lasted for only 3 cycles.

The two sets of song were played through loud speakers at the wrens for 5 minutes each, with a 5 minute gap between the song types. Before the experiment a 30-minute observation period was carried out where the pair calls were recorded. During the experiment the wren’s calls were recorded using a gun microphone and Marantz tape recorder. The distance the wrens were from the speaker, from the ground and from each other was also noted.

Back at the field centre the tape recordings were analysed using ‘Avisoft’ to produce sonograms of the calls. The calls were analysed and the individual duets saved.

The wrens showed a marked difference in their reaction to different calls. When pairs were played the 'fitter' call they would sing more, approach the speaker much closer (the male would often sit on it and attack it), they would also make the duet much more complex but changing the phrases very rapidly.

It was interesting that in territories held by a single male they would react often to the 'poor' duet but would fly away when the 'good' duet was played – presumably because he was unable to compete with them.

The results have not yet been fully analysed. Lorraine is in Costa Rica again now collecting another set of data.

Being a field assistant was hard work but very greatly enjoyable. There was an amazing array of bird and animal life and the field station was on the edge of primary rainforest. I recorded 97 species of bird during my stay (although I saw and did not identify many more). At the station there were several different researchers and also students taking courses on rainforest ecology, primatology and herpetology. I had the opportunity to accompany the students on some of their field trips and sit in on their lectures. I also got to learn a lot about the other research being undertaken (including radio-tracking juvenile iguanas, salamander behaviour, the use of prehensile tails in howler monkeys and poison dart frog breeding habits.) I had an amazing experience and made some fantastic friends (I am travelling out to the States next year to visit them).

I would like to thank the James Rennie Bequest for helping to fund my time in Costa Rica. It is an amazing country with fantastic research possibilities and it has given me the desire to continue my studies to PhD level.