



# Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali / Thesis & Dissertation / Master of Science / MS-19

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/5756>

Title:	Mate choice on spatially explicit models of a single lek.
Authors:	<a href="#">Singh, Akanksha.</a>
Keywords:	Mate choice on spatially explicit models. spatially explicit models of a single lek. explicit models of a single lek. models of a single lek.
Issue Date:	2-May-2024
Publisher:	IISER Mohali
Abstract:	<p>Lekking is a bizarre mating system where many males gather on resource-less territories to combat each other and to make mating displays to females. These areas of male gatherings are called leks. Females visit and mate with males on the lek, and proceed to bring up the resulting offspring on their own. Given the disproportionately high female reproductive investment, and easy male sampling opportunities, these sites are likely hubs of female mate choice. On the other hand, for a male this is a doubly costly strategy because of the combined high rates of male-male competition, and lack of resources. It has been seen that on leks, most female visitations and mating events are directed towards the center of the lek [Trail 89, Isvaran 21, Isvaran 00]. This central bias can incentivise the males to gather even closer together, maintaining lekking behaviour [Isvaran 21]. Lekking, therefore, is a very spatial phenomena that emerges as a result of local animal interactions, in the context of mating. In this study, models of leks were created using agent based modelling to explore the impact of various local interactions on the spatial reproductive patterns. Different types of male arrangements were created based on different lek evolution hypotheses. In this, I included a lek with uniformly spaced males with randomly assigned qualities to simulate a scenario where males gather simply at intersections of female home ranges (hotspot hypothesis), a lek where lower quality males gather around higher quality males (hotshot hypothesis), and a lek with males clustered in order to increase chances of encounter by a randomly walking female (black hole hypothesis). On these leks, I looked at the visitation and mating patterns that emerged when females followed different mate choice strategies, while performing random walks from one male to another. I looked for scenarios which led to the emergence of a bias towards the center in mating and visitation. I found that when females are exercising a costly mate choice strategy, such as best of n, a central bias in mating patterns can arise in a lek where central males are of higher qualities (hotshot hypothesis). However, this may still not lead to a central bias in visitation patterns. Surprisingly, another case where central bias emerges, is when males are just clustered together (i.e., not equidistant from each other) (black hole hypothesis). This bias emerges even without any correlation between the location and quality of a male, as a result of the spatial arrangement of males. So, it is not just central bias that can drive clustering in males, as shown by previous work [Isvaran 21], but clustering can also lead to a central bias in visitations and mating patterns. Thus, leks could be potentially stabilised by this positive feedback loop between male clustering and female bias, where both reinforce each other.</p>
URI:	<a href="http://hdl.handle.net/123456789/5756">http://hdl.handle.net/123456789/5756</a>
Appears in Collections:	<a href="#">MS-19</a>

## Files in This Item:

File	Description	Size	Format	
<a href="#">Under Embargo period.odt</a>		9.72 kB	OpenDocument Text	<a href="#">View/Open</a>

Show full item record



Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.