Max-Planck-Institut für Ornithologie

Max Planck Institute for Ornithology

Seewiesen Colloquia

Speaker invited by Henrik Brumm:

Monday, October 27, 2014, 13:00 h, in House 4, Lecture Room

Stability and change in killer whale (Orcinus orca) dialects

Volker Deecke

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While vocal learning is widespread among birds, only a few species of mammals have evolved complex abilities to model their vocal output based on experience. Resident killer whales live in stable matrilineal groups with repertoires of seven to 17 stereotyped call types. Some types are shared among matrilines, but their structure typically shows matriline-specific differences. An analysis of 2 call types made by 2 matrilineal social groups over a period of 14 years showed significant changes in one call type in both groups, but not in the other. For the modified call type, the rate of differentiation between the two groups was significantly lower than the rate of modification within either group showing that both groups modified the call type in a similar fashion. This suggests structural modifications to the call types were transmitted through vocal learning and that vocal learning is not limited to vertical transmission from mother to offspring. A comparison of the calls of nine killer whale matrilines tested whether the similarity of shared call types primarily reflects social or genetic relationships. Call similarity was positively correlated with association frequency for two of the three call types analysed. Similarity of one call type was also correlated with matriarch relatedness, but no relationship between relatedness and association frequency was detected. These results show that call structure reflects relatedness and social affiliation, but not because related groups spend more time together. In combination these studies suggest that learned vocal repertoires play a role in kin recognition and shape the association behaviour of killer whale groups. A precise mechanism to identify even distant kin may provide fitness benefits given the small population size of resident killer whales.

Who is Volker Deecke?

2012-to date	Senior Lecturer, Centre for Wildlife Conservation, University of Cumbria.
2011-2012	NERC Research Fellow, Sea Mammal Research Unit, University of St. Andrews.
2010-2011	Contract Researcher, Sea Mammal Research Unit, University of St. Andrews.
2008-2011	Marie-Curie Research Fellow, Sea Mammal Research Unit, University of St. Andrews.
2003-2007	Post-Doctoral Fellow, Marine Mammal Research Unit, University of British Columbia.
2003	Ph.D., Evolutionary Biology, University, St. Andrews, Scotland
1998	Masters of Science, Zoology University of British Columbia, Canada
1994	Bachelor of Science (Honours), Animal Biology University of British Columbia, Canada

Selected publications:

- Stansbury, A. L., Götz, T., *Deecke, V .B.* and Janik, V. M. (in press). Grey seals use anthropogenic signals from acoustic tags to locate fish: evidence from a simulated foraging task. Proceedings of the Royal Society of London, Series B: Biological Sciences.
- *Deecke, V. B.*, Barrett-Lennard, L. G., Spong, P. & Ford, J. K. B. (2010). The structure of stereotyped calls reflects kinship and social affiliation in resident killer whales (Orcinus orca). Naturwissenschaften, 97, 513–518.
- *Deecke, V. B.* & Janik, V. M. (2006). Automated categorization of bioacoustic signals: Avoiding perceptual pitfalls. Journal of the Acoustical Society of America, 119, 645-653.
- *Deecke, V. B.*, Ford, J. K. B. & Slater, P. J. B. (2005). The vocal behaviour of mammal-eating killer whales (Orcinus orca): Communicating with costly calls. Animal Behaviour, 69, 395-405.
- *Deecke, V. B.*, Slater, P. J. B. & Ford, J. K. B. (2002). Selective habituation shapes acoustic predator recognition in harbour seals. Nature, 420, 171-173.
- *Deecke, V. B.*, Ford, J. K. B. & Spong, P. (2000). Dialect change in resident killer whales (Orcinus orca): Implications for vocal learning and cultural transmission. Animal Behaviour, 60, 629-638.

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