



*Speaker invited by: Manfred Gahr*

Thursday, November 15, 16:00 h, House 7/8, Dept. Gahr

## Who's who ? Vocal signatures under social and environmental constraints in birds

Nicolas Mathevon

*Jean Monnet University and Institut universitaire de France*

How information transmission processes between individuals are shaped by natural selection is a key question for the understanding of the evolution of acoustic communication systems. Environmental acoustics predict that signal structure will differ depending on general features of the habitat. Social features, like individual spacing and mating behavior, may also be important for the design of communication. By mainly focusing on two bird species -the zebra finch *Taeniopygia guttata*, a gregarious species, and the white-browed warbler *Basileuterus leucoblepharus*, a territorial bird-, we will present some experimental results that show how vocal recognition processes can be related to social and environmental conditions experienced by the animals.

Within the zebra finch communication network, parent-offspring interaction and mate recognition depend on vocal signatures. The voices of juvenile birds are sexually and individually characterized well before fledging, allowing breeding adults to manage parental care allocation. Call-based mate recognition relies on multi-parametric processing and behavioural response to mate voice is modulated by the social context.

In the White-browed warbler song, species-specific information is encoded in a resistant acoustic feature, helping males to reach a wide audience. Conversely, individual identity is supported by song features susceptible to propagation, this private signal thus being reserved for neighbors.

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### Who is Nicolas Mathevon

1996 PhD University of Lyon, France  
1999 Associate Professor, Jean Monnet University, France  
2005- Member, Institut universitaire de France  
2005- Professor, Jean Monnet University, France

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### Selected publications:

[Charrier I, Mathevon N, Jouventin P, 2001. Mother's voice recognition by seal pups. \*Nature\*, 412: 873.](#)

[Charrier I, Mathevon N, Jouventin P, 2003. Vocal signature recognition of mothers by fur seal pups. \*Animal Behaviour\*, 65: 543-550.](#)

[Vignal C, Mathevon N, Mottin S, 2004. Audience drives male songbird response to partner's voice. \*Nature\*, 430:448-451.](#)

Mathevon N, Dabelsteen T, Blumenrath S, 2005. Are high perches in the Blackcap *Sylvia atricapilla* song or listening posts ? A sound transmission study. *Journal of the Acoustical Society of America*, 117:442-449.

Vignal C, Andru J, Mathevon N, 2005. Social context modulates behavioural and brain immediate early gene responses to sound in male songbird. *European Journal of Neuroscience*, 22:949-955.

Vignal C, Mathevon N, Mottin S, *in press*. Mate recognition by female zebra finch: Analysis of individuality in male call and first investigations on female decoding process. *Behavioural Processes*.