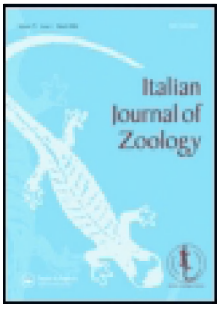

Bolletino di zoologia

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tizo19

Oral communications

Stefano Cannicci [a] , Dyane Anyona [b] & Farid Dahdouh-Guebas [c]

[a] Dipartimento di Biologia Animate e Genetica «Leo Pardi», Università di Firenze, via Romana 17, Firenze, I-50125, Italy

[b] Kenya Marine and Fishery Research Institute, P. O. Box 81651, Mombasa, Kenya

[c] Kenyan Belgian Project, Vrije Universiteit Brussel, Labo voor Ecologie Pleinlaan 2, Brussel, 1050, Belgium

Version of record first published: 28 Jan 2009

To cite this article: Stefano Cannicci, Dyane Anyona & Farid Dahdouh-Guebas (1994): Oral communications, Bolletino di zoologia, 61:S1, 92-92

To link to this article: http://dx.doi.org/10.1080/11250009409355930

Boll. Zool. Suppl.: 92 (1994)

Homing in the mangrove swimming crab *Thalamita crenata* (Decapoda: Portunidae)

STEFANO CANNICCI
Dipartimento di Biologia Animale e Genetica «Leo Pardi»
Università di Firenze
via Romana 17, I-50125 Firenze (Italy)

DYANE ANYONA
Kenya Marine and Fishery Research Institute
P. O. Box 81651, Mombasa (Kenya)

FARID DAHDOUH-GUEBAS
Kenyan Belgian Project
c/o Vrije Universiteit Brussel, Labo voor Ecologie
Pleinlaan 2, 1050 Brussel (Belgium)

Thalamita crenata is a swimming crab which commonly lives in the shallow waters of sheltered shores of the whole Indo-Pacific region. On the Kenyan coast, this species colonises the intertidal plateau in front of the mangrove. This crab proved to be faithful to a familiar area in which it visited a small number of known holes where it hides during low tide (Vezzosi et al., in prep.). The aim of this study was to test the homing ability of *T. crenata* after being passively displaced both within the supposed familiar range (internal homing) and outside it (external homing).

Internal homing: crabs showed good initial orientation and high homing success when displaced with full vision of the sky and landscape, both during the day and night. There were no orientational and homing differences between crabs which could not see the landscape during displacement and those in experiments in which the landward landscape was altered during the backward journey. Only blinded crabs were not able to return home.

External homing: the initial paths of crabs displaced 20 m from home with full vision of the sky and landscape were also oriented non-random, but homing success fell to about 50%. None of the crabs displaced 50 meters from home was able to find its way back.

With regard to homing mechanisms used by *T. crenata*, analysis of Straightness Index and Home Component (Batschelet, 1981) of the crabs' paths allows us to exclude the use of random walk search, while pilotage (*sensu* Papi, 1992), probably based on visual cues, can be hypothesised.

Financial support was from a Life Sciences & Technologies for Developing Countries (EEC) project and from MURST (60% funds).

REFERENCES

Batschelet E., 1981 - Circular Statistics in Biology. Academic Press, New York.

Papi F., 1992 - General aspects. *In*: Papi F. (ed), Animal Homing. Chapman & Hall, London.

Boll. Zool. Suppl.: 92 (1994)

Homing behaviour in the slave-making ant, *Polyergus rufescens* Latr. (Hymenoptera, Formicidae)

DONATO A. GRASSO
Dipartimento di Biologia e Fisiologia generali
Università degli Studi, viale delle Scienze, I-43100 Parma (Italy)

ALBERTO UGOLINI
Dipartimento di Biologia Animale e Genetica
Università degli Studi, via Romana 17,
I-50125 Firenze (Italy)

FRANCESCO LE MOLI
Dipartimento di Biologia e Fisiologia generali
Università degli Studi, viale delle Scienze, I-43100 Parma (Italy)

Polyergus rufescens, an obligatory slave-making ant, conducts raids mainly against colonies of the *Formica fusca* group. During the raiding expeditions, hundreds of workers form a close-packed column which moves with a straight route towards the target colony. We verified the existence of workers (scouts) whose role is to search for host colonies (Le Moli *et al.*, 1994). The scouts' exploratory paths consist in a twisted outbound route followed by a straighter return trip.

How do *Polyergus* scouts and raiders orientate during their trips? To answer this question we carried out field experiments. Scouts were captured (just when they started the return trip) and displaced in an unknown area. The scouts, after having been released, chose the same direction they were selecting just before the displacement: they moved with a straight route until they reached the point where they expected their colony to be; there, they began to search for the nest entrance. These results suggest that scouts of *P. rufescens* use a *path integration* system to home after the outbound trips, very similar to that typically adopted by *Cataglyphis* (see Wehner & Wehner, 1986). In some occasions displaced scouts proceeded along a straight path for a shorter distance than the total homing distance (= distance between the capture point and the nest). This fact could be interpreted both as a consequence of the errors intrinsecally involved in the path integration mechanism and the possible use of piloting by homing scouts.

As far as raiders are concerned, on the basis of our experiments we suggest that: a) the head of the raiding phalanx uses mainly visual cues to orientate during the outbound trip; b) on the way home, raiders rely mostly on a chemical trail they probably lay during the outbound journey.

REFERENCES

Le Moli F., Grasso D. A., Mori A., Ugolini A., 1994 - Ethology: in press.

Wehner R., Wehner S., 1986 - Monitore zool. ital., 20: 309-331.