



General Search Results--Full Record

Article 1 of 1

**ORIENTATION OF HOMING PIGEONS WITH THE SUN NEAR THE
ZENITH**
GASPAROTTO OC, BRITTO LRG, RANVAUD R
BRAZILIAN JOURNAL OF MEDICAL AND BIOLOGICAL RESEARCH
15: (2-3) 200-200 1982

Document
type: Meeting
Abstract

Language: English

Cited
References: 0

Times
Cited: 0

Addresses:

UNICAMP, INST BIOL, DEPT FISIOL & BIOFIS, CAMPINAS, SP, BRAZIL.
CONSELHO NACL PESQUISAS, INPE, CONSELHO NACL
DESENVOLVIMENTO CIENTIFICO, INST PESQUISAS ESPACIAIS, BRASILIA,
DF, BRAZIL.

Publisher:

ASSOC BRAS DIVULG CIENTIFICA, SAO PAULO

IDS Number:
PM290

ISSN:
0100-879X

Article 1 of 1

Copyright © 2002 Institute for Scientific Information

THE INITIAL ORIENTATION OF HOMING PIGEONS WITH THE SUN NEAR THE ZENITH
R. RANVAUD*, O.C. GASPAROTTO**, L.R.G. DE BRITTO**, K. SCHMIDT-KOENIG***
and J. KIEPENHEUER***

*Departamento de Aplicações Tecnológicas, Instituto de Pesquisas
Espaciais, Conselho Nacional de Desenvolvimento Científico e
Tecnológico, São José dos Campos, SP

**Instituto de Ciências Biomédicas, Universidade de São Paulo,
São Paulo, SP

***Institut für Biologie III, Universität Tübingen, D-7400 Tübingen

Several authors, through visual observation of the bearings taken by homing pigeons released at unfamiliar sites, have demonstrated the importance of the Sun and of the geomagnetic field in the navigation process involved in the flight back to the loft. These two environmental factors provide, also in the case of migrating birds, the elements of a compass, which can be manipulated in a predictable and reproducible manner through alterations in the biological clock, in the apparent position of the Sun, and in the direction and intensity of the magnetic field perceived by the birds. We present here the results of releases performed in two distinct regions (Vale do Paraíba, São Paulo and Camocim, Ceará), at times of the year in which the Sun culminates near the zenith (december-january and september-october respectively). In the two cases it was observed that the bearings taken by the pigeons when the Sun was less than 5° away from the zenith differ from those chosen by those same birds at other times of the day. These differences (always $p < 0.05$ and more often $p < 0.01$ on the Watson Williams test)

indicate that the solar compass is indeed of great importance in these regions, where orientation and navigation mechanisms have not been studied before. The Sun, when sufficiently near the zenith, does not possess a well defined azimuth, thus introducing a temporary breakdown of the solar compass. The maximum distance for this to happen, according to our results is in the order of 5° . It remains to be seen what is the relative importance, in this effect, of uncertainties in the biological clock, errors in the determination of the vertical, the capacity of extrapolating the vertical to localize the zenith and behavioural aspects which could lead to ignoring the Sun compass before reaching physiological limits of sensory acuity.