

# ORIENTATION

**Dr. D. K. Paul**

Associate Professor and Course  
Coordinator

Environmental Science & Management  
Department of Zoology, Patna University  
Member- SEAC constituted by MoEF &  
CC, Govt. of India

# Orientation

Every living being has to find optimal localized living conditions for its survival . It would always like to avoid adverse conditions & find a suitable environment . The sense organs play an important role in guiding the animal through the environment & achieve this goal by random or actively controlled movement in space. **The maintenance or change of position is Orientation Behaviors.** This behavior is common in all mobile animals.

# Orientation

- The term ‘orientation’ can refer to the mechanisms where by animals respond to the basic physiological qualities of their environment.
- The orientation of animals in relation to gravity and external stimuli like light depends partly upon information about the spatial relationship of various parts of the body, ( [McFarland , 1985](#))

# Orientation

- The ability to take up a particular direction with respect to some feature or property of the environment is called orientation ( D J Aidley, 1981) .
- Orientation can be defined as spatial (with reference to space) adjustment of animals towards or in response to various stimuli.

# Orientation

The orientation of the whole animal in space may be based on every simple principle but may also involve very complex mechanisms. The simple principle can be seen most easily in certain invertebrates species. **Gottfried Fraenkel and Donald Gunn (1940)** proposed a system of classification based on the work of earlier which has provided the basis of more recent discussion and reviews (**Adler, 1971; Kennedy, 1945; Hinde, 1970**)

# Orientation

- ❖ The main axes are 3 in number: Longitudinal, Transverse & Dorsoventral.
- ❖ The rotation about the longitudinal axis is Rolling, about the transversal axis is Pitching and about the dorsoventral axis is Yawing.
- ❖ In addition to these, it may be left-right on the transversal axis and up-down on the longitudinal axis.

# Orientation

Orientation behavior takes into account a large number of factors which can be grouped

- Resources
- Stress sources

All kinds of orientations can be broadly put under two categories.

- ✓ Kinesis\ Kinses - It does not involve change of direction
- ✓ Taxis\ Taxes – It involves change of direction

# Navigation - Kineses

1. Menotaxis – light compass reaction
2. Mnemotaxis – Orientation based on memory
3. Positive orientation
4. Negative orientation
5. Strato orientation
6. Zonal orientation
7. Special types of orientation –Echolocation,  
Languages of bee dance

# Suggested Readings

- Lee Alan Dugatkin.2004.*Principles of Animal Behavior*. W. W. Norton & Company Ltd. London. pp 595.
- John Alcock.2005. *Animal Behavior*. Sinauer Associates, Inc. U. S. A. pp 363.
- David Mc Farland.1985. *Animal Behaviour*. Pitman Publishing Limited , London. Pp 576.
- Satguru Prasad.2009. *Ethology*. Ahead Publications. Pp 269.
- Reena Mathur.2005.*Animal Behaviour*. Rastogi Publication. pp 688.

Thank You