

## Classical Ethological Concepts

### Appetitive Behavior

Unstructured searching/exploratory movements associated with "drive" behavior

### Consummatory Act

Stereotyped behavior of a "drive" once a proper stimulus is encountered

### Fixed Action Pattern (FAP, or Modal Action Pattern)

Species-specific, stereotyped, largely innate behavior

### Sign Stimulus (aka releaser, social releaser)

Stimulus for a FAP

### Intention Movement

Partial expression of a FAP Vacuum Behavior

### Vacuum Behavior\*

A context-specific behavior expressed w/o an apparent stimulus

### Re-directed Behavior\*

An appropriate behavior for the context, but directed at the wrong object

### Displacement Behavior\*

An inappropriate behavior for the context

## Conflict Behavior (Desmond Morris)

One possible source for evolution of signals

### THWARTING STIMULUS CONTEXTS

- I. Absence of an indispensable stimulus, following intense arousal
- II. Simple physical obstruction of aroused activity
- III. Simultaneous arousal of two or more incompatible tendencies

### RESPONSES TO ABOVE CONTEXTS

#### A. Primary Responses

##### 1. Somatic responses

- a. Perseverance (I & II) - animal attempts to continue w/aroused activity despite circumstances.
- b. Snap Decision (III) - animal quickly response to one aspect of relevant stimuli.
- c. Thwarted Intention Movements (I, II, III) animal gives partial expression of thwarted activity.
- d. Ambivalent Posturing (III) - "Law of Antithesis" - intermediate expression
- e. Alternate Ambivalent Movements (III) - animal alternates between to opposite behaviors.

##### 2. Autonomic Responses

- a. Alimentary (e.g., >, < salivation, urination, defecation)
- b. Circulatory (e.g., flushing, fainting)
- c. Respiratory (e.g., gasping, yawning, sighing, panting)
- d. Thermoregulatory (e.g., sweating, pilio erection)
- e. Lacrimary (e.g., weeping)

## B. Secondary Responses

1. Displacement Behavior
2. Re-directed Behavior
3. Regressive Behavior
4. Neurotic Behavior

## Life History Traits (trade-offs)

### I. Metabolism (caloric needs, temp regulation)

- A. Exotherm
- B. Endotherm

### II. Site of embryonic development

- A. Oviparous (egg layer) - optional parental care
- B. Viviparous (embryo w/in female) - mandatory parental care

### III. State of development upon hatching (birth)

- A. Precocial (can disperse from nest site)
  1. independent of parents
  2. follow parent, find own food
  3. follow parent, shown food
  4. follow parent, fed by parent
- B. Semi-precocial (stay at nest, but can walk)
- C. Semi-altricial (cannot leave nest, down covered)
- D. Altricial (helpless)

#### IV. Family Units

A. Maternal

B. Paternal

C. Biparental

#### V. Food habits

### Kinds of Group Patterns

#### I. Kin Groups

A. Clones

B. Families

C. Extended Families

#### II. Mating Groups

A. Pairs

B. Harems

C. Leks

#### III. Colonial Groups

A. Nesters

B. Communities

#### IV. Survival Groups

Non-breeding aggregations

#### V. Coincidental Groups

Attraction due to abiotic factors

## Why Group?

### Advantages

1. Reduce risk of predation (detection & repulsion)
2. Improve foraging (manipulate prey)
3. Improve resource defense (space, food, mates)
4. Improve offspring care
5. Improve efficiency (division of labor, habitat modification)
6. Population regulation (not necessarily to the individual's advantage)

### Disadvantages

1. Increase competition
2. Increase risk of disease & parasites
3. Increased risk of exploitation
4. Increased risk of infanticide

[Why stay in a group if detrimental to individual fitness?]

## Universal Activities

SEX & VIOLENCE makes the world go round

Individual Selection is the mechanism which fosters inter-individual conflict. Resources are limited. How is the conflict resolved?

Individual territoriality

Group territoriality

1. help defend against out groups
2. Social hierarchies resolve internal conflicts (top-down authority)

## Types of Selection

Natural Selection (& artificial Selection)

Group Selection

Individual Selection

Ecological selection ( $r/K$ , habitat, predation)

Kin selection ( $K > 1/r$ )

$K = B_r/C_a$ ,  $r$  = genetic relatedness  
inclusive fitness = direct + indirect

Sexual selection

Intra-sexual selection

Inter-sexual selection

Variable	r	K
where	temperate zone	tropics
Climate	variable	constant
Mortality	density-independent	density-dependent
Population Size	variable	constant ( $\approx K$ )
Competition	variable, frequently low	usually keen
Selected Traits	rapid develop. high reprod. (r) good colonizer short life cycle small adult body size little parental care precocial young semelparous high genetic diversity	Slow develop. low poor long large size much care altricial young iteroparous Low
Niche Community Diversity	broad low	narrow (symbiosis) high