POPULATIONS: BEHAVIOR

1. INTRODUCTION

behavior - an adaptation (like anat or physio)
- also evolved thru natural selection
- feeding, space, mating, movement

evolution - behavior that is partially genetic
& that increases survival & repro
will spread thru the population

anthropomorphism - hard to prove
- attribute human emotion, intellect,
motivation, morality to animals

2. ETHOLOGY

behaviorism - animal psychology in lab

ethology - animal psychology in nat'l envi

FAP - fixed action pattern
- one specific reflexive behavior

releaser - stimulus that triggers FAP

sign stimulus - most significant aspect of releaser

super normal stimulus
- exaggerate stimulus to incr FAP

drive - inner motivation for FAP

innate releasing mechanism
- nerve circuitry that produces FAP

3. MOVEMENTS

kinesis - non-directed movement

taxis - directed movement
- negative or positive
- types - photo, geo, chemo, hydro
- thigmo (touch), ameno (wind)

navigation - follow specific course
- seek food & home, also for migration
- environmental cues (sun, stars, geography,
magnetism, or polarized light)

biological clocks - brain keeps track of time
- daily, lunar, or annual cycles

4. INSTINCTS & LEARNING

instinctive behavior
- innate, reflexive, stereotypic
- most behavior (esp. if vital to survival)
- behavioral patterns stored in genes

learned behavior
- modified by personal experience
- varies with circumstance & individual
- ability to learn stored in genes

imprinting - critical age for learning

conditioning - trial & error
- reward incr & punishment decr

habituation - learn to ignore constant stimulus

nature vs. nurture - political debate
- extremes in broad range of behavior

5. SOCIAL BEHAVIOR

social behavior - vs. solitary behavior
repro - find mates, enhance sex
parenting - care for & teach young
feeding - find & share food
defense - warn, attack, schooling
division of labor - super-organism

disadvantages - predation, competition

communication - transfer of information
- visual, sounds, tactile, pheromones
- also displays (symbolic behavior)

sociobiology - evolution & genetics of behavior
- cooperation, altruism, selfish, spite
- equate animal behavior with humans

6. INSECT SOCIETIES

honeybees - 'super-organism' analysis
    - complete division of labor

workers & soldiers - sterile females
    - thousands in hive, perform all work

queen - single fertile female in hive
    - workers' sister, reproduce for entire pop.

drones - 1000 males only for sperm
    - developed from unfertilized eggs
    - only half-set of chromosomes (no father)

spring - queen & half workers to new hive
    - royal jelly to first female to hatch
    - becomes queen & sterilizes sisters

7. INCLUSIVE FITNESS

inclusive fitness - define fitness in terms of no. genes
        (rather than no. offsprings)
    - example: mother sacrifices to save offsprings
        (though only share half of their genes)

kin selection
    - if can't reproduce then assist siblings
    - increases number of shared genes

honeybees (workers + queen = sisters)
    - same diploid mother so share 25% genes
    - same haploid father so share 50% genes
    - total relatedness is 75%
    - (normal relatedness = 25% + 25% = 50%)

selfish gene hypothesis
    - gene as significant unit of life & evolution
    - infanticide, siblicide, biofilm of bacteria