

Ethology

MAMMALOLOGY 2019



What is Ethology?

- Ethology – the study of the proximate mechanisms and adaptive value of animal behavior
- Why is it important to study animal behavior?
- What are some examples of unique mammalian behaviors?



Ethology Topics

- Ethology is a diverse field that includes many topics of study such as:
 - Activity Patterns – actions that occur over a defined period of time (what we're doing today)
 - Kinematics – the physiological mechanics of motion
 - Acoustics – specifically examining communication or sensory reception of sound (often uses waveforms and sonograms)
 - Learning – examining an animal's adaptations to environmental cues over a defined period of time

Types of Behaviors

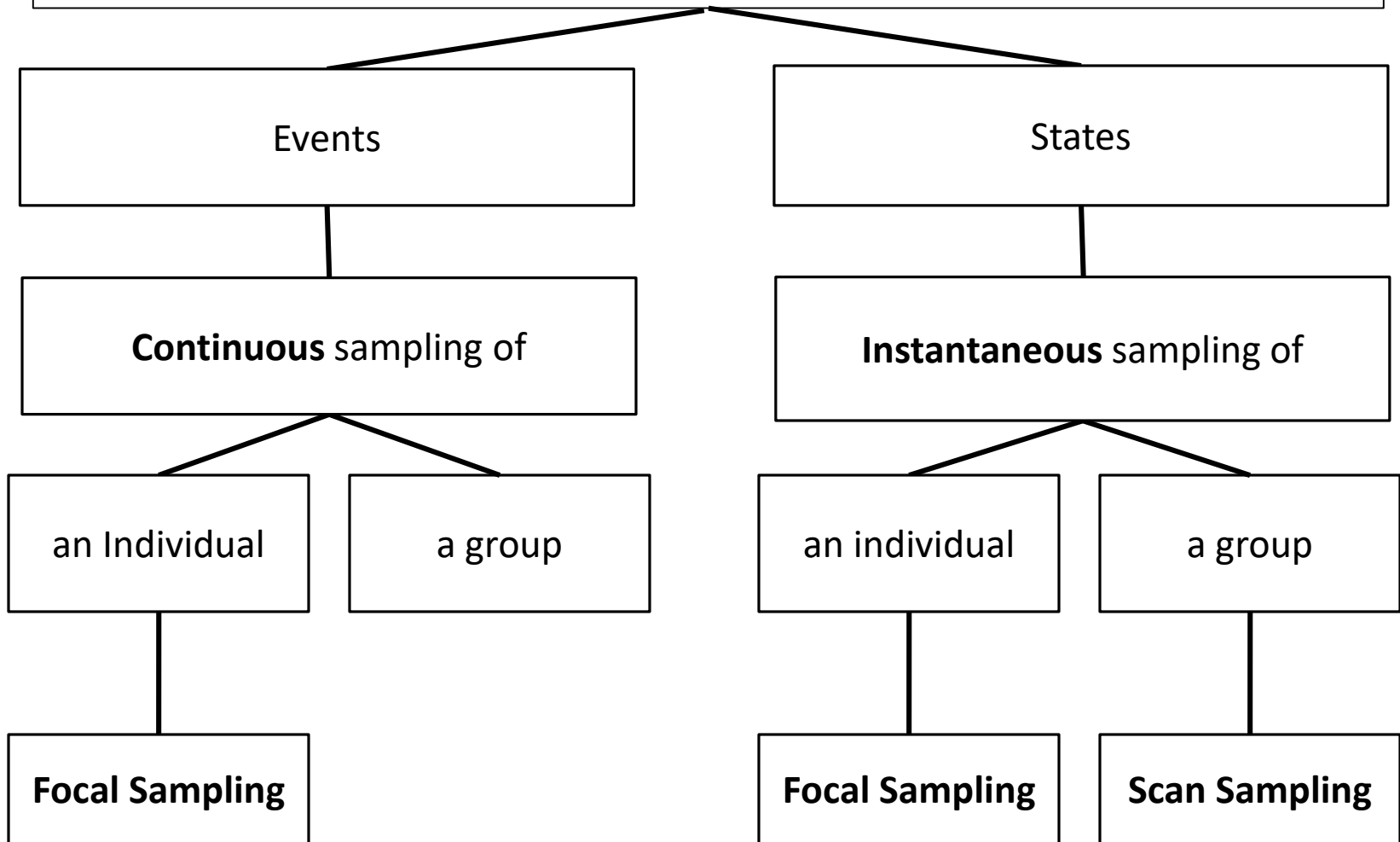
- State – a behavior with an extended duration (e.g. sleeping, moving)
- Event – a behavior that can be quantified by number of occurrences (e.g. a single call, or single step)



Types of Sampling

- Instantaneous – sampling at predetermined time intervals
- Continuous – sampling throughout the entire time period
- Focal – sampling one individual
- Scan – sampling multiple individuals

What Are You Sampling?



Types of Sampling

- Continuous Focal Sampling – constantly recording all behaviors of one individual
- Instantaneous Focal Sampling – recording the state of a single individual at set intervals
- Instantaneous Scan Sampling – recording the state of multiple individuals at set intervals

Types of Analyses

- Sequence Analysis – sampling recorded behaviors to determine if a pattern exists
- One-Zero Analysis – sampling for the presence of a specific behavior across each of the predetermined time periods

Caveats to Ethological Studies

- You must predetermine the length of time over which you're going to study the behavior
- You must predetermine the categories of behaviors you're going to use
- You must avoid anthropomorphisms



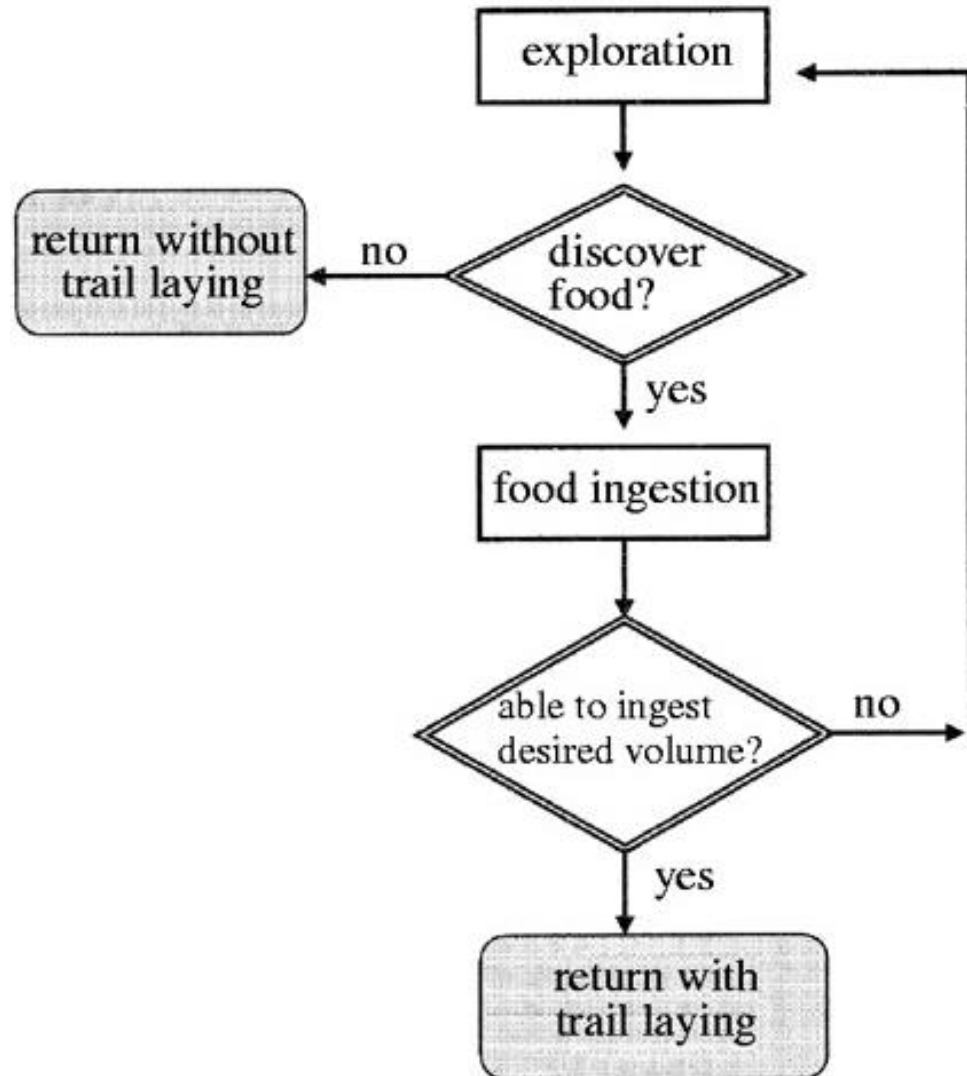
Displaying Behavioral Data

- Ethogram – a table of predetermined behaviors listed in alphabetical order with a detailed description of each behavior
- Flow Diagram – a list of these behaviors in sequence as determined by your sequential analysis
- Time Budget – a graph (usually a pie chart) depicting the breakdown of behaviors

Ethogram

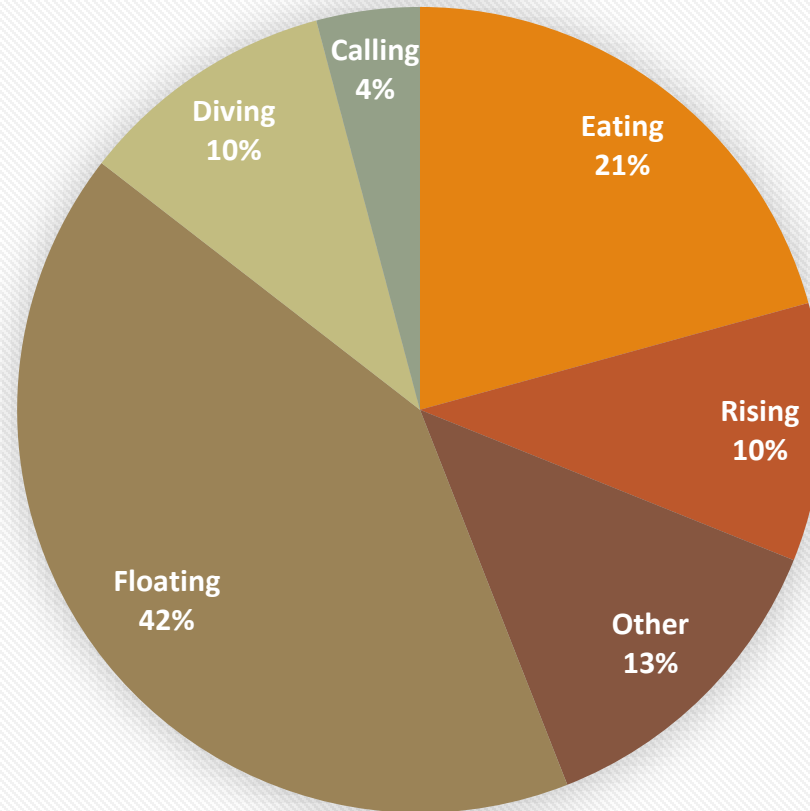
Behavioural elements	Definition
Active	Standing upright, moving around or sitting/lying moving head around
Inactive (social)	Lying without any activity (except twitching) – in physical contact with pen mate(s)
Inactive (solitary)	Lying without any activity (except twitching) – no physical contact with pen mate(s)
Drinking	Snout in contact with water (water in bowl)
Eating	Snout in contact with feed (feed in bowl)
Rooting	Manipulating bedding, straw or hay with snout firmly to the floor
Mounting	Placing forelimbs on back of a pen mate
Non-agonistic social contact	Snout contact to any part of a pen mate's head, ears, body, tail or legs (massage-like movements might occur)
Aggression	
Biting	A rapid clear bite to any part of the pen mate's head, ears, body, tail or legs
Head knock	A rapid thrust with the head against any part of a pen mate's head, ears or body
Body pressing	Shoulder pushed hard against a pen mate, parallel or inverse parallel position, often accompanied by head knock
Levering	Snout under the body of a pen mate, lifting it from the floor

Flow Chart



Time Budget

Time Budget of Whale

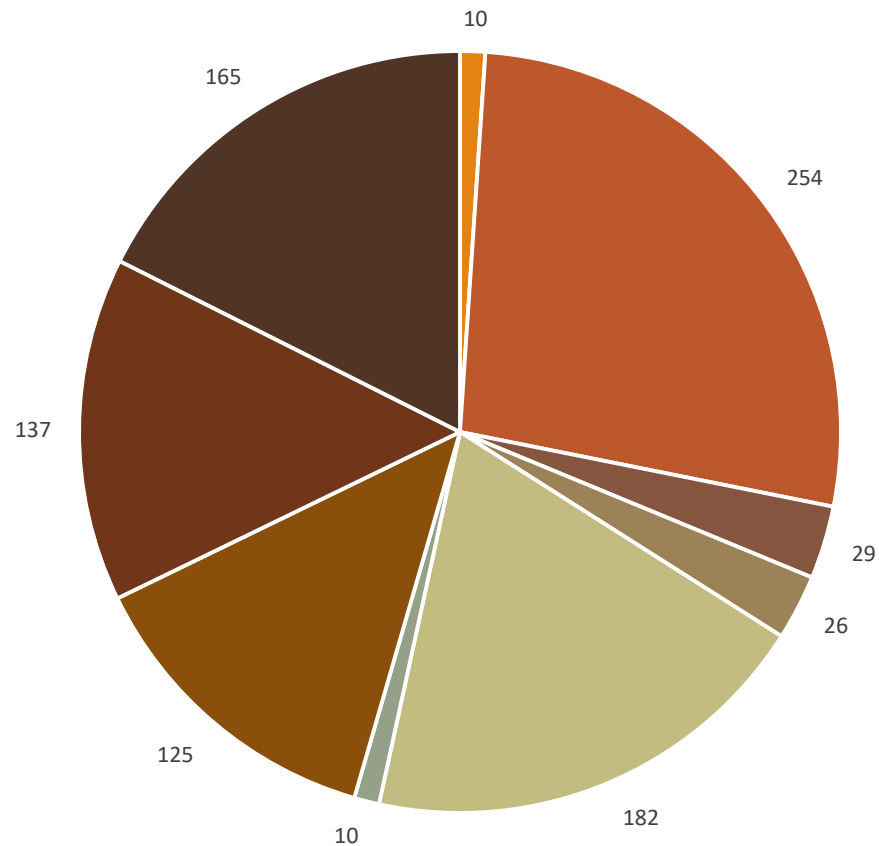


Things you need to know:

- Difference between states and events and examples of each
- Types of behavioral sampling and when to use them
- Ways to display behavioral information (ethograms, flow charts, and time budgets)
- Caveats and challenges to studying animal behavior

Time Budget

Fox Squirrel Behavior Allotments



■ Alarm Call ■ Consuming ■ Defending ■ Grooming ■ Movement ■ Other ■ Resting ■ Scanning ■ Searching

Allotment Averages

Squirrel Time Allotments +/- SD

