

# Stress Reduction and Enrichment for Shelter Cats

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# The Amazing Cat

- Evolved from the semi-arboreal African wildcat (*Felis Libyca*).



# The Domestic Cat



Still a excellent predator



# Their Senses



# Auditory



Cats hear in the ultrasonic range

~ cats hear up to 80 kilohertz while  
humans only hear up to 20 kilohertz

This allows them to hear the high pitch  
squeaking of rodents.

# Vision

Excellent night vision  
~ a highly flexible pupil  
~ light reflecting tapetum



Cats can see in  $1/6^{\text{th}}$  the illumination  
needed by humans

- Motion-sensitive vision

# Olfaction



Cats have 67 million scent receptors compared to a humans 5 million.

Smell is a very important part of their communication.

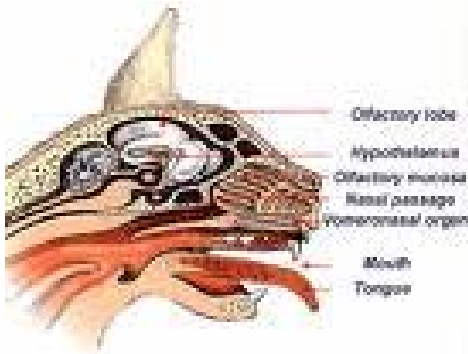
They have sebaceous glands located throughout their body (especially on the head, in the perianal area, and between their digits).

Urine and feces are also used in olfactory communication.



# Vomeronasal Organ

- Cats detect pheromones (chemical signals) through this organ.



When cats display the 'Flehmen response' they are pulling a pheromone into this organ.



# Cat's Touch Sense

Tactile Vibrissae (sensory hairs) - on face and forearms transmit sensory information and are used to determine where the cat is in its environment, especially in dim light.



Pads of feet are very sensitive to touch and vibration.





Predator



Prey



# Cats are hardwired for

## Flight



OR

## Fight



- In general – cats would rather avoid than confront a fear-provoking situation.
- They are experts at escape AND defense, but given the option they generally choose escape.

FLIGHT



- If they can't escape, a fearful cat may be overtly aggressive to try to make the scary thing go away.

FIGHT



- Once provoked, cats may remain reactive for a prolonged time and may become more reactive if they are stimulated again during that period.





- Occasionally, fearful cats become completely immobile as though catatonic rather than exhibiting aggression.

FREEZE



- A frozen cat is often teetering on the edge – if the challenge persists and no escape route is perceived, the cat may be forced into defensive aggression.





**STRESSED  
OUT!**

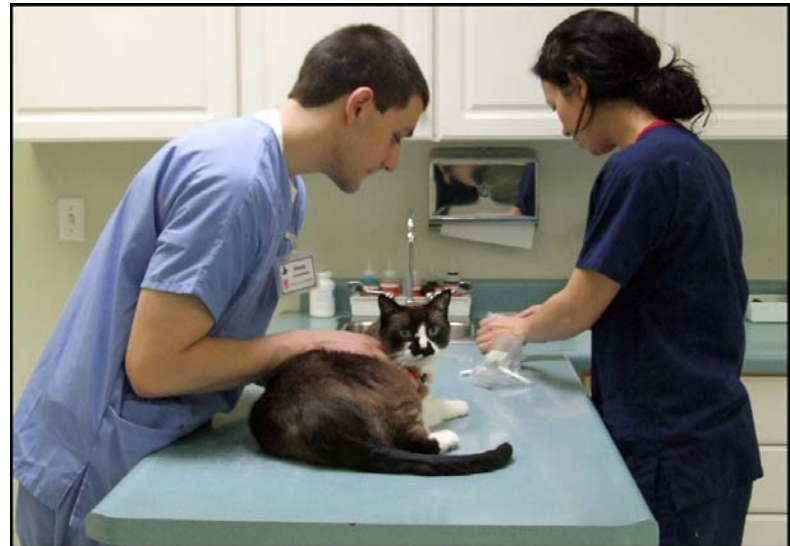
# What is Stress?

- 'Physical, mental or emotional strain or tension in response to intense or prolonged aversive stimuli'





- Stress can occur in any situation that makes the animal feel frustrated, fearful or anxious.



# Frustration

- An emotion usually attributed to external factors that are beyond the animal's control.
- Resulting from unfulfilled needs, unresolved problems or blocked motivated behavior

# Fear

- ‘An adaptive emotion initiated when an animal perceives a stimulus that is interpreted as potentially harmful.’
- Results in the initiation of the *Stress Response* and appropriate motor activity.



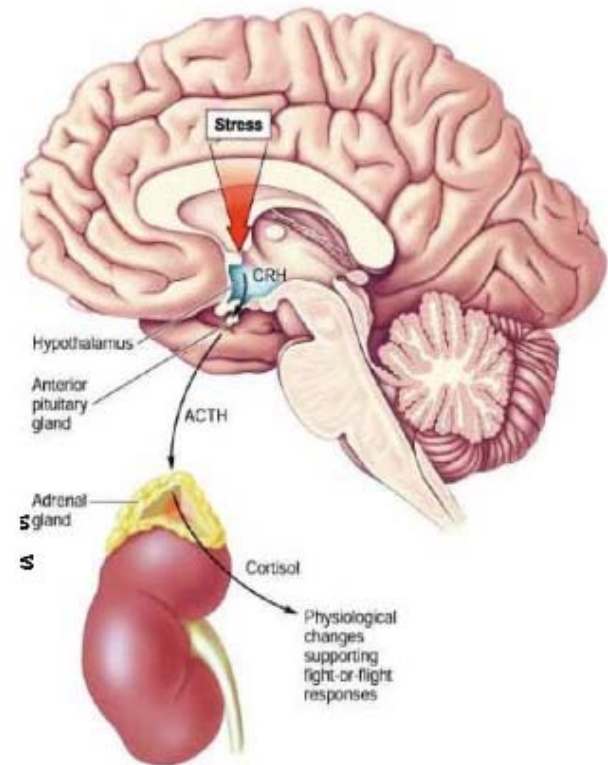
# Anxiety

- While Fear is the direct emotional response to a stimulus that is potentially harmful, anxiety is the emotional response to a stimulus that *predicts* a potentially harmful event.
- 'Anxiety' is used in those situations where an animal anticipates a negative outcome.
- Initiation of the *stress response* results from either fear or anxiety.



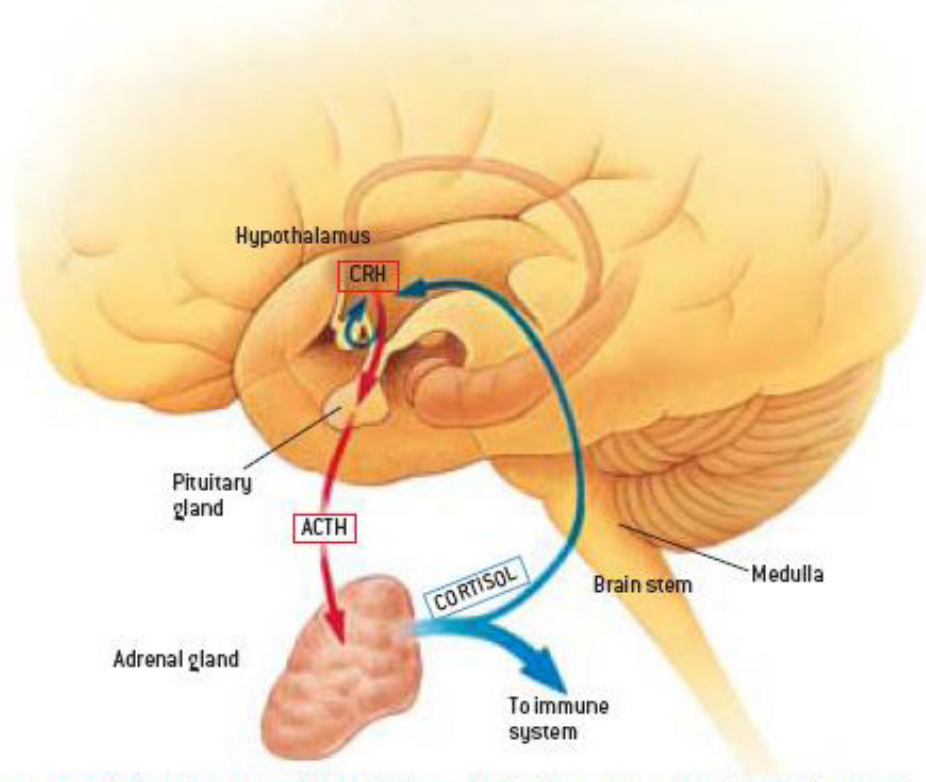
# Stress Response

- An adaptive mechanism that enables an animal to react rapidly to an event that changes its homeostasis.
- Essential for survival.



Stress releases powerful neurochemicals and hormones that prepare the body for action (to fight or flee).

### STRESS RESPONSE SYSTEM



- The sympathetic nervous system initiates all those changes that are associated with the “flight or fight” response:
  - ~ increased heart rate
  - ~ increased cardiac output
  - ~ increased vasodilation to vital organs
  - ~ increased respiratory rate
  - ~ decreases in gastrointestinal and reproductive organ activity

Preparing the body for action

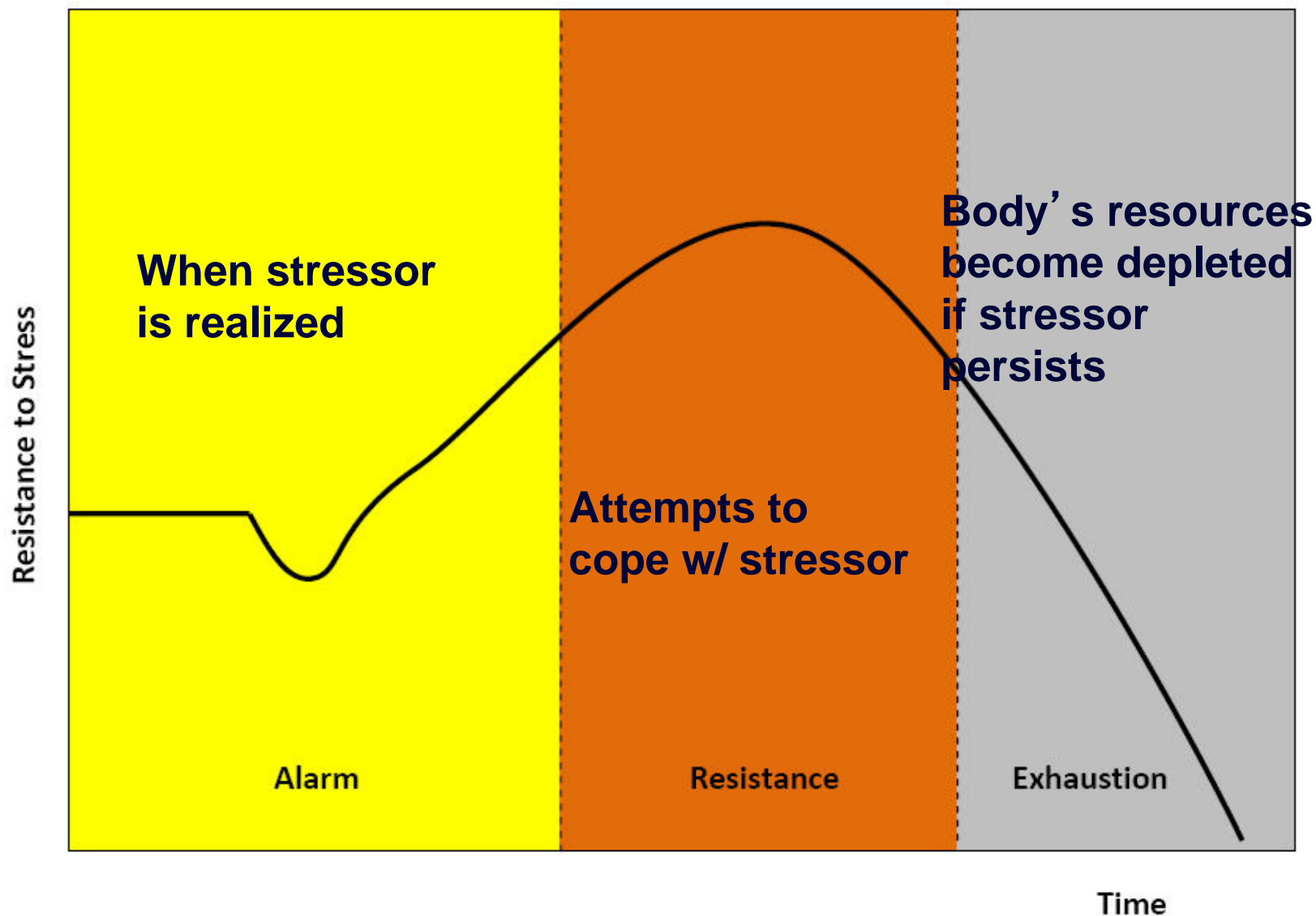
# Cortisol

- Produced by the adrenal cortex - referred to as the “stress hormone”
- It increases blood pressure and blood sugar to prepare the body for response to stress.

- The stress response system is best adapted for enabling animals to deal with acute, or short-term, stressors that they are able to escape from or deal with by using some behavioral or internal response.
- Stress responses only become problematic when an animal is unable to control the situation or to escape from the stressor.



# The stages of stress



- If stage 3 (exhaustion) is extended, long term damage may result as the capacity of glands, especially the adrenal gland, and the immune system is exhausted and function is impaired.
- This is why it is critical to recognize stress early and implement stress reduction procedures in the shelter.

# When does stress occur?

- Stress occurs when animals are introduced into a novel environment.
- Stress occurs when a demand is placed upon an animal that requires it to change or adjust.
- Stress occurs in uncontrollable or unpredictable environments.

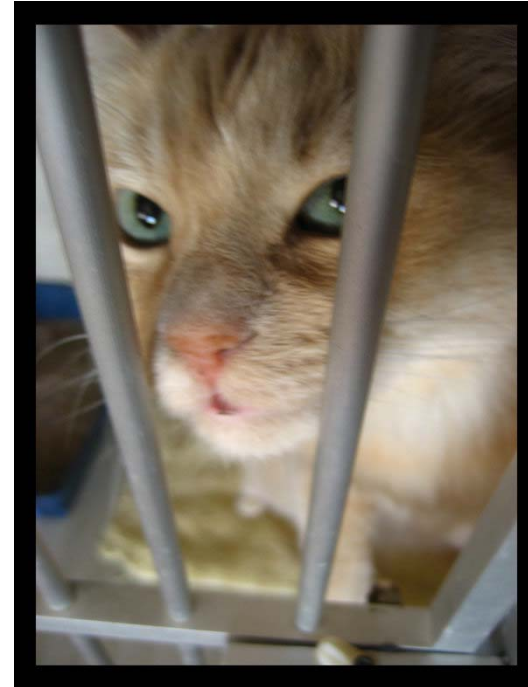
# The Shelter Environment



is stressful

# Why?

- Abandoned
- Novel environment
- Confinement
- Boredom
- Isolation
- Chaotic
- High noise levels
- Sleep deprivation
- Sight, sounds, smells of other animals
- Confusion and Frustration
- Being handled by strangers
- Lack of control over environment





Animals react to stimuli because of the input they receive from their senses.

Because of their sensitive hearing, the shelter is a **VERY** loud place at times.

Because of their incredible sense of smell, the odors of the cleaning agents can be irritating.

Because of their different vision, they respond to our movements in ways we may not expect.

Because of their sensitivity to vibration, things like radios setting on top of metal cages can add to their stress .

And they also detect the fear pheromones of other cats through their Vomeronasal organ.



When animals are housed in unnaturally restricted environments their physical and behavioral welfare is a serious concern.



- Shelters should place a priority on programs that reduce stress and promote the physical and psychological well-being of their animals.
- Keeping the animals behaviorally, as well as medically healthy is extremely important



- and the humane thing to do!



Its required by law for  
captive primates!





# 1991 Amendment to the 1985 Animal Welfare Act

Requires all facilities housing them:

“... to promote the psychological well-being of nonhuman primates.”



# What is Psychological Well-being

“Psychological well-being refers to an animal’s internal mental state that is affected by what it knows (cognition) or perceives, its feelings and motivational state, and the responses to internal and external stimuli or environments.”

(Clark et al, 1997)

# Don't they deserve it too?



- Examples of harmful stress to cats:
  - irregular and unpredictable feeding times
  - absence of stroking and petting or other positive interactions by humans
  - unpredictable and unfamiliar manipulations or handling
  - changes in environment
  - lack of mental stimulation
  - anything that acutely startles the cat such as loud noises.
  - lack of choices or control over situations

*Feline Behavior Guidelines*

*American Association of Feline Practitioners, 2004*

Sound like a condition you know?





All of these things are inherently  
part of the shelter experience



# Stress

- Reduces welfare
- Increases susceptibility to illness
- Increases the chance for development of problem behaviors



# Individual Differences

- Individuals manifest stress in different ways, and exhibit diverse behavior differences when experiencing similar physiological states.
- Responses to stress can vary greatly with species, breed, sex, neuter status, age, as well as individual differences in temperament/personality and past learning.

# Factors that affect the stress response in individuals:

- Genetics (coping ability)
- Personality (bold vs. shy)
- Socialization (3-7 weeks)
- Prior experience/exposure
- Duration of the stressor
- Severity of the stressor
- Predictability of the stressor
- Escapable vs. inescapable



“it is not the physical characteristics of an aversive stimulus, but rather the cognitive appraisal of that stimulus, which determines its aversive character and whether a state commonly described as stress is induced” (Koolhaas et al. 1999)





Generally speaking ~ cats entering the captive environment are likely to be stressed and afraid and have a hard time adapting.

- Many cats have never left the house ~ or conversely ~ have never been inside (strays)
- Many cats have never seen, smelled, or heard another cat
- The size of most of the cages in shelters make cats feel cornered and vulnerable

# Adjustment Period

- The period of time over which signs of acute stress decline and adaptation occurs can last from a few days to several weeks (individual differences vary).



# What are stressful stimuli to a cat?

Just about anything in a shelter environment!

- ~ transport
- ~ unfamiliar people
- ~ other cats
- ~ dogs barking
- ~ strange smells
- ~ loud noises



# What happens when a cat is frightened?

An Epinephrine (adrenaline) surge

- ~ that readies them for flight or fight

- ~ and it happens every time the cat is exposed to a stressful stimulus

A caged cat has few options –

FLIGHT is often not possible  
which leaves → FIGHT

Even the sweetest cat can become aggressive  
when it is scared and feeling trapped.





# Signs of Stress in Cats

Hiding

Not eating

Feigned sleep

Lethargy/depression

Social withdrawal

Lack of grooming

Diarrhea

Panting

Salivation

Hypervigilance

Dilated Pupils

Piloerection

Twitching tail

Vocalizing

Aggression

Muscle Tension (clenched)

Rapid ear carriage changes

Escape attempts



- lethargy  
- depression



hyper vigilant



- ~ attempts to hide
- ~ motionless body



Drooling saliva. Foul breath.

- drooling





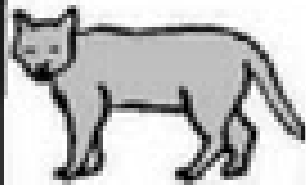
- vocalizing
- attempts to escape

Learning how to read cat body language will help you identify when a cat is stressed and needs intervention

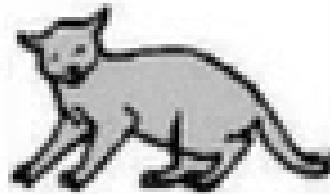
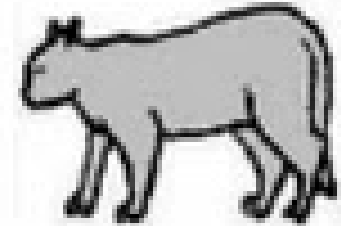
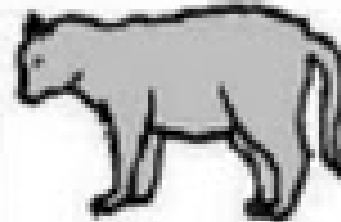
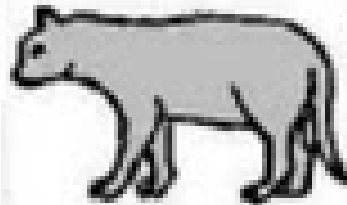


← MORE AGGRESSIVE →

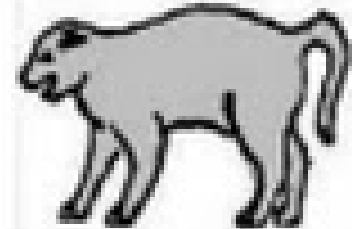
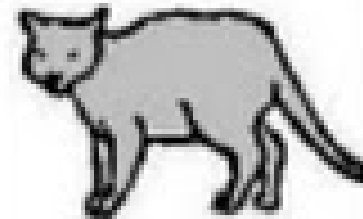
↑ MORE SUBMISSIVE  
OR MORE FEARFUL ↓



TAIL MAY BE HELD  
ALOFT



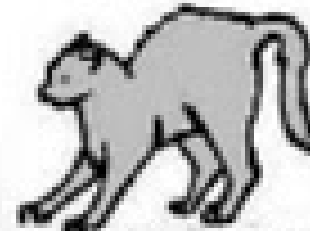
FLATTER TO THE  
GROUND



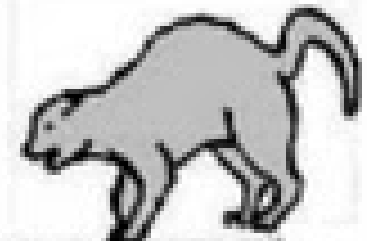
"FLINCH"



MAY EVEN FALL  
OVER IN  
SUBMISSIVE FEAR

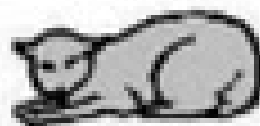


MUSTN'T CONFUSE  
THIS WITH  
STRETCHING



POSTURE ALSO SEEN  
WHEN CATS SPRAY

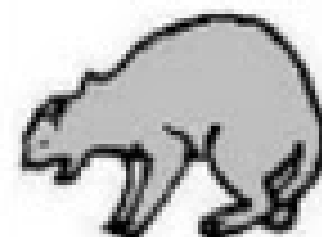
TOTALLY  
WITHDRAWN



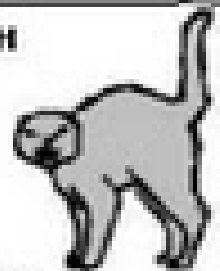
TAIL TUCKED  
UNDER



TAIL TUCKED  
UNDER



LAST DITCH



SCARED ANGRY

# Body Postures

- tense muscles
- head lowered
- dilated pupils
- whiskers forward
- ears facing forward



Alert and a little unsure

# Body Postures

- tense muscles
- leaning away
- ears pinned back
- dilated pupils
- whiskers slightly forward
- forelimb in position to strike



Defensive aggression – flight or fight mode



# Body Postures

- ~ tense muscles
- ~ ears sideways
- ~ whiskers rotated forward
- ~ arched back
- ~ body sideways
- ~ piloerection



Fearful but more confident ~ trying to chase threat away by making self look bigger ~ flight or fight possible



**Relaxed**



**Attentive**



**Fearful**



**Aggressive**





# Whiskers

- Whiskers pointed forward and fanned out means the cat is alert
- Whiskers flat against the face means the cat is very fearful



# Eyes



Dilated pupils



Direct eye contact  
with constricted pupils  
= angry/offensive



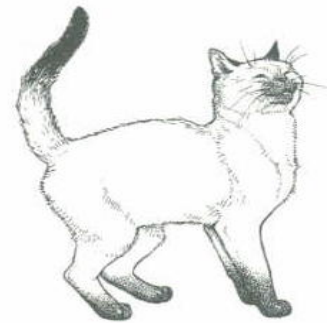
See more beautiful kitten & cat photographs at: <http://www.kitten-photos.co.uk>

# The Cat's Tail

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A good barometer of a cat's mood

- Vertical tail ~ friendly greeting
- Tail tucked between legs ~ submission or fear
- Tail piloerect ~ defensive or offensive threat
- Tail whipping back and forth ~ agitation



FRIENDLY GREETING



DEFENSIVE



# Tails

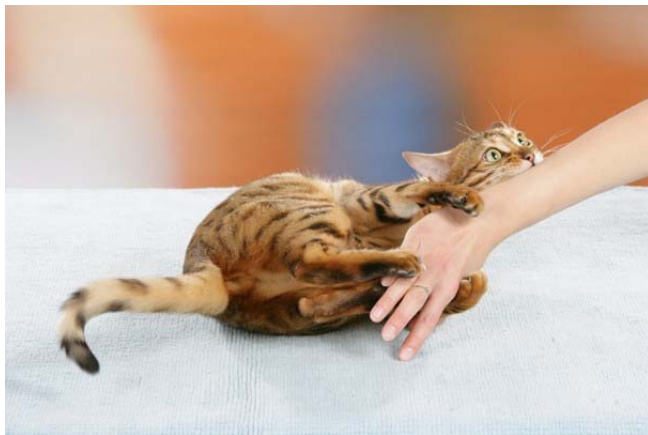


- Unfortunately, the most common sign of stress in shelter cats is lack of behavior – laying still in the cage – perhaps feigning sleep. So it can be easily missed.



# Sometimes we do see aggression

- Aggression in the shelter is most often fear based – its defensive.
- An aggressive cat can be very dangerous to staff.



# Is it safe? Is it humane?

- To keep an aggressive cat in the shelter?
- If the cat is so fearful or agitated that it is using aggression as a coping mechanism for self preservation then is it humane to keep him in that environment?
- Is it safe for the staff???







Reducing and minimizing stress in the shelter...

...is **THE** most critical component  
of a wellness program.



- Stress reduction is also important in the shelter environment in order to keep the animals physically healthy.

A stressed animal is more susceptible to disease.



# Stress Reduction for Shelter Cats



# Chronic Stress vs. Acute Stress

- Harder to identify if you are not looking closely.
- Cats INHIBIT behavior when chronically stressed (feigned sleep). They rarely exhibit stereotypic behavior like dogs do (pacing, jumping, etc.)

# Walk thru & think like a cat

Identify sources of stress

- ~ sounds
- ~ vibrations
- ~ smells
- ~ sights
- ~ temperature





Remember – each cage may experience different stressors so look at them ALL



# What do the cats SEE?

Check at THEIR eye level!



- animal traffic (dogs, other cats)
- human traffic
- cats in neighboring cages







# Cat and dog intake in same room





# What do the cats hear?



Loud, sudden, chaotic noises?

radios, power hoses, vehicles, slamming doors, overhead pagers, shouting, telephones, rolling trash cans, dropped items, dogs barking, etc.

Door to dog kennel right off cat room.



# What do the cats smell?

Cats gather a lot of information about their environment (determining safety and threat) through smells.

- ~ animal smells ~ fear, overstimulation
- ~ food smells ~ overstimulation
- ~ chemical smells ~ alien, irritating



# What do the cats feel?

Vibration or air movement

- Fans
- Drafts from doors
- Heat/AC from vent
- Radios on top of cages



- If cats don't feel safe, they don't get adequate rest.
  - The average cat sleeps a LOT.
  - A cat's natural sleep patterns are disrupted in a stressful shelter environment.
- 
- Walk through at night and check for security lights that shine on the cats





THE most important thing to provide the cats:

- and I mean ALL of the cats on their first day in the shelter and longer when needed:

A place to HIDE

- Hiding is the best coping mechanism cats have to deal with stress.



- The inability to perform species-typical coping behaviors such as hiding, prolongs the stress response.

- A number of studies have shown that providing cats with a suitable place to hide significantly reduces behavioral measures of stress.



# Where do these cats have to hide?

