A great, great deal has been said about the weather, but very little has ever been done.
Much of Our Scientific Knowledge of How Disasters affect Pets and Their Owners Comes from Epidemiologic Studies Conducted at Purdue

- **Oakland, CA, Firestorm**
- **Weyauwega, WI, Train Derailment**
- **Yuba County, CA, Floods**
Animal-related issues in Disasters

► Public Health
  - Evacuation failure
  - Animal Rescue
  - Food Safety
  - Hazmat

► Animal Health
  - Abandonment
  - Evacuation failure

► Economic
  - Rural economies

► Environmental
  - Farm waste

► Issues are similar but vary in their prevalence amongst pets, livestock and wildlife

► Urban and rural populations have different priorities and needs
Approximately 30% of Media Images of Humans in Disasters Include Animals.

But, what do the images convey?

Hurricane slams central Florida

By JACKIE HALLIFAX

VERO BEACH, Fla. -- Hurricane Erin hit land with winds gusting up to 100 mph and driving rain early today, stirring up bad memories of catastrophic Hurricane Andrew just three years ago.

About 70 miles of coastline north of Palm Beach was battered by sustained winds of 85 mph and sheets of rain. Hundreds of thousands of people were ordered to flee inland and some who stayed lost electricity.

The eye wall of Hurricane Erin made land at 1:11 a.m. EDT (12:11 a.m. EST) just south of Vero Beach, the National Hurricane Center said. It already had been blamed for five deaths in Jamaica.

At 1 a.m. EDT, (midnight EST) the center of Erin was about 15 miles southeast of Vero Beach moving toward the west-northwest at 15 mph.

Erin had moved farther north than was earlier expected, and late Tuesday authorities lifted an evacuation warning for 400,000 people in Dade County, which includes Miami and Homestead, the city to the south that was pulverized by Andrew in 1992.

Evacuation warnings remained in effect for 400,000 people along the central coast.

Police Chief Jim Gabbard said beaches and low-lying areas had been evacuated and police were patrolling to prevent looting.

Earlier in the day, as Erin moved through the Caribbean, its heavy rains were blamed for a plane crash in Jamaica that killed five people. Erin ripped boats from their moorings and caused extensive damage to fields of bananas, avocados, mangoes and watermelons in the Bahamas.
Typical media images involving pets: Tragedy
Typical media images involving livestock: Excitement
Typical Media Images Involving Livestock: Outrage
The Media will report things the way its understands them.

Education before an event is critical to conveying appropriate information.
Effective Preparedness Starts with Understanding Vulnerability Reduction

- Weather: Flood, wind damage
- Earthquake: Physical damage
- Morbidity Mortality, economic loss

Hazard
Impact
Consequence
Effective Interventions Limit the Impact and Reduce the Consequences of Disasters

► Hazard
  ➥ Geophysical event
  ➥ Inclement weather, earthquake, volcano

► Impact
  ➥ Loss or damage to utilities, infrastructure, buildings

► Consequence
  ➥ People, animals, economy
Many Hazards are Unavoidable ...
... it takes humans to make a disaster
Most Human Problems that Arise in Disasters are Systemic in Origin
All “Natural” Disasters Have “Man-made” Elements
What are the systemic issues underlying pet related emergencies?
Lots of Families Own Lots of Pets

► Approximately 60% of US households own pets

► 31.6% own dogs
► 27.3% own cats
► 5.2% own birds
► 1.5% own horses
Situations that arise with pets in disasters

- Animals are displaced with their Owners
- Animal unattended at impacted residence
- Stray animal in impacted area

Owner concern

Public concern
Actions Pet Owners Take in Disasters

Pet Owner

- Evacuates with Pet
- Fails to Evacuate
- Evacuates without Pet

  Rescues Pet

  Leaves Pet
    - At Home
    - Run Loose

Public Health

Animal Health
Animals without Identifiable Owners

Pet Owner

- Evacuates with Pet
- Fails to Evacuate
- Evacuates without Pet

Rescues Pet

Leaves Pet

- At Home
- Run Loose

Public Health

Animal Health
The Most Commonly Reported Issue surrounding Pets in Disasters is Rescue of Abandoned and Neglected Animals
Pet Owners who Evacuate with their Pets Behave Similar to Non Pet Owners

► >80% of evacuees seek shelter with friends and family
► Approximately 15% of evacuees go to community shelters
► Pet admission policies to community shelters are locally driven
Percent of public warned as a function of available warning times

Proportion Pet-owning Households that Did Not Evacuate Their Pets from Disaster

- **Rapid Onset (Chemical Spill)**: 50.6% of evacuated pet-owning households, n=122
- **Slow Onset (Riverine Flood)**: 22.2% of evacuated pet-owning households, n=101
Characteristics of Pets Found in Disasters

► Sexually intact
  ▪ 3/400 dogs found after Hurricane Floyd in NC had been neutered or spayed

► Very young, very old or chronically ill
  ▪ Animals found after the Oakland Firestorm were significantly older than animals found at other times

► Carry no identification
  ▪ Approx. 10 times less likely to have collar than animals that are reunited with owner

Conclusion: Most pets found in disasters are strays at the time of the event
Characteristics of Pets Reunited with Owners after Disasters

► Reunion is rare <10%
► Owner initiates effort to find pet
► Pet is neutered
► Pet has collar or other form of identification
► >95% of pets reunited within 4 weeks

Conclusion: Most pets found in disasters are strays at the time of the event
The Role of the Human-Animal Bond in Pet Evacuation Failure in Disasters

<table>
<thead>
<tr>
<th>Pet Attachment-Commitment Score</th>
<th>Chance of Pet Evacuation Failure (Odds Ratio)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (high)</td>
<td>0.5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1 (low)</td>
<td>4</td>
</tr>
</tbody>
</table>

Rapid Onset (Chemical Spill), n=108

Slow Onset (Riverine Flood), n=121

Reference Category
Who abandons pets?

Very common:
Pet abandonment: owner leaves pet to fend for itself

Less common:
Pet evacuation failure: owner evacuates without pet

However, most animals found in disasters are strays with no identifiable owner at the time of the event.
What is the Systemic Problem Underlying Pet Abandonment in Disasters?

► 6-8 million cats and dogs (6.5% of pets) are euthanized each year
► Only 1 in 5 pets stays with the same owner throughout the pet’s life
► Disasters illustrate the problem with pet overpopulation in the US

Conclusion: Pet overpopulation and irresponsible owners have been and continue to be the underlying cause of problems with pets in disasters
Pets Left Behind

Pet Owner

Evacuates with Pet
Fails to Evacuate
Evacuates without Pet

Rescues Pet
Leaves Pet
At Home
Run Loose

Public Health
Animal Health
Proportion of Households that Rescued Pets after Failing to Evacuate them from Disaster

- Rapid Onset (Chemical Spill): ~20% of all evacuees
- Slow Onset (Riverine Flood): ~5% of all evacuees
Pet Rescue

Secondary event to pet evacuation failure

Principally seen in families with children

Frequently confused with capture of stray animals
Pet Rescue

- Pet rescue occurs most commonly in families with children
Animal Rescue is Hazardous
Preparation for Safe Rescue Operations takes Firefighters over 150 hours of Training
Local Resources Can Facilitate Evacuation of Pet Owners
Pet Owners not Evacuating

- Pet Owner
  - Evacuates with Pet
  - Fails to Evacuate
    - Evacuates without Pet
      - Rescues Pet
      - Leaves Pet
        - At Home
        - Run Loose

Public Health

Animal Health
Human evacuation failure

- Major public health issue
- Secondary animal health issue
- Pet ownership is the single most important cause for human evacuation failure and can be effectively addressed
Risk of evacuation failure for pet-owning households in Yuba County, CA, affected by floods in January, 1997

(Adjusted for household income, educational attainment of the head of household, presence of seniors, and a "total number of dogs and cats - presence of children" interaction term)
Pets may be a Risk Factor for approx. 300,000 Cases of Human Evacuation Failure each Year

Distribution of evacuations in the US, 1980 - 1984
(From: Sorensen JH. Evacuations due to chemical accidents. Oak Ridge National Laboratory, TN, 1986)
Public Health Implications (households WITHOUT children)

Pet Ownership explains much of human evacuation failure in disasters

- 68.8 % for dog ownership
- 44.4 % for cat ownership
Public Health Implications
(All households)

Overall evacuation rates in disasters could be improved by up to 30% if pet owners could evacuate their pets.
Disasters Present Unique Opportunities to Educate

WRONG Message

RIGHT Message
Effective Preparedness Starts with Understanding Vulnerability Reduction

Weather
- Damage to Infrastructure from flood, snow, wind, hail, etc.
- Morbidity Mortality, economic loss

Earthquake
- Damage to Infrastructure from earth movement and structure failure
- Morbidity Mortality, economic loss

Hazard
- Damage to Infrastructure from flood, snow, wind, hail, etc.
- Morbidity Mortality, economic loss

Impact

Consequence
Effective Preparedness

Anticipate consequences
- Prepare for commonly observed events
- Reduce impacts with largest scope

Identify effective points for intervention
- Mitigation
- Preparedness
- Response
Emergency Management Planning

The notion of an emergency or disaster refers to the disruption of social systems, rather than to physical and material damage.

Ineffective planning

- Directed to specific disaster agents
- Diverts attention from more generalized planning principles
- Is segmented, which undercuts a primary need for coordination
- Creates new ad hoc structures, while old and usual structures are often ignored

Roles and Responsibilities

Lead

Government

Impact

Infrastructure protection

Community

Policy setting

Citizens

Personal preparedness

Hazard

Consequence

Lead Actions

Actions
Roles and Responsibilities in the PETS Act

Lead Actions

...take into account the needs of individuals with pets and service animals prior to, during and following a major disaster or emergency

The Director may make financial contributions on the basis of programs or projects approved by the Director, to States and local authorities for animal emergency preparedness purposes, including the procurement, leasing, construction or renovating of emergency shelter facilities and materials that will accommodate people with pets and service animals

Consequence

The PETS Act will not substitute the impact of personal preparedness or lack of effective measures to reduce pet over population
Human and Animal Evacuation Failure and Animal Rescues Can Be Mitigated Simultaneously by Addressing Animal Evacuation Early

► Neighborhood Care Groups for high risk populations
► Distribute cages and leashes when evacuation orders given
► Socialization training for dogs
► Transportation for cats
Animal-related issues in Disasters

- **Public Health**
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- **Animal Health**
  - Abandonment
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- **Economic**
  - Rural economies

- **Environmental**
  - Farm waste

- Issues are similar but vary in their prevalence amongst pets, livestock and wildlife.

- Urban and rural populations have different priorities and needs.
The mysterious Innate Intuition of some animals

Earthquake's a-comin'.

Yup.