

# Bats 101: Common Bat Injuries and Issues



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Bats are admitted to rehab for a wide range of issues and sometimes there are no problems. **SOME**times, they are in the wrong place at the wrong time.

Flying inside of a man made structure:

- Encounter domestic animals
- Become incapacitated in toilet, sink, bucket, fireplace etc.
- Become trapped on glue boards
- Injure themselves in tight spaces



Seen outside of a structure:

- Found in swimming pool
- Stuck under shingles, siding, shutters
- Attacked by birds, animals
- Caught in channel of barn or garage doors
- Hanging on window screen, A/C. In between windows  
and on and on and on...



## Generalized Treatments

- Clean and treat injuries topically with dilute povidone iodine or other non greasy antiseptic
- Give appropriate antibiotics when necessary, see formularies in separate handouts
- If fracture is present, ***stabilization is necessary, not an option.*** If possible, have vet surgically repair fracture. Various degrees of success with these
- Wing/uropatagium tears: < 3cm, leave as is; > 3cm bring edges together, cover with Tegaderm®; near or over bone, treat and cover with Tegaderm ***ALWAYS!***



March 2, 2019



March 11, 2019



March 17, 2019



March 30, 2019



Photos courtesy of Ceacy Henderson

## Glue Traps/Adhesives



Not necessary to do everything in one session; too much stress may kill the bat

Cover remaining sticky areas first to prevent further sticking (cornmeal; dirt; paper towel, etc. Do not use fine particles like flour or baby powder that will be inhaled causing further problems.)

Hydrate (SQ preferable) animal **before** removing

Veg oil, polysorbate 80, coconut oil, etc may be used for heavy oil/adhesive removal



## Membrane Tears

Common injury seen, wing tear from ankle to axilla

Bat was anesthetized

Edges freshened and brought together as close as possible

Tegaderm applied to ventral and dorsal aspects of the wing.





#2948, 12-15-2015, dorsal view



#3160, 4-1-2016, dorsal view



#4005, 6-23-2016, dorsal view



#4006, 6-23-2016 ventral view



## ***Words to the wise...***

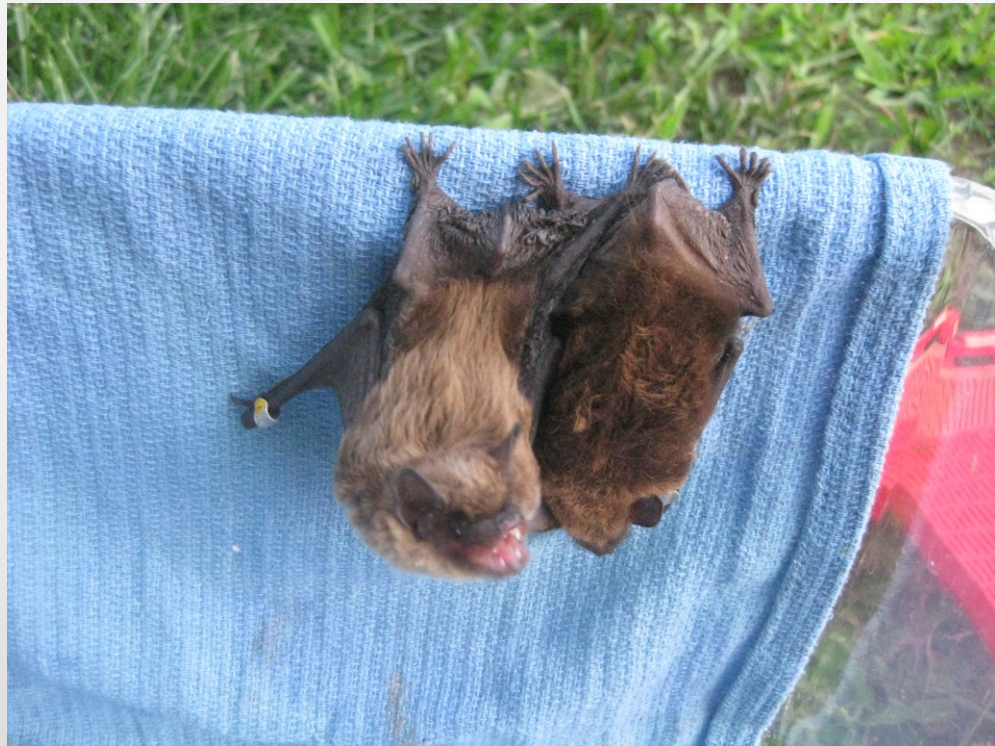
Please DO NOT use glue on bats...even if given directions by another rehabilitator **UNLESS YOU HAVE EXPERIENCE USING IT!!!** You may make the injury worse and can easily hinder healing.

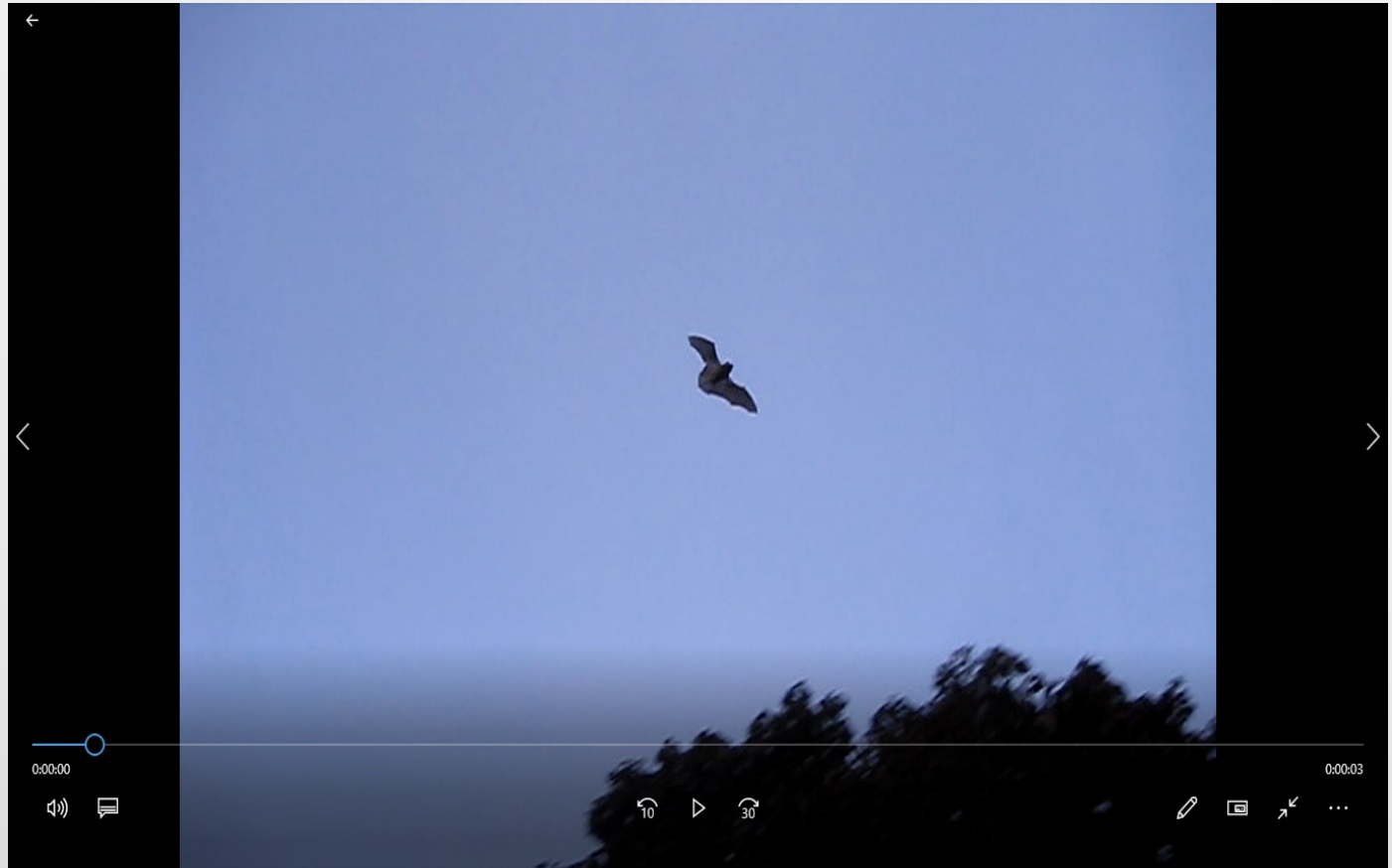
If your vet wants to use it and has had good experiences with it, that is up to them

Using glue can prevent healing and if not applied properly by skilled hands can contaminate the bat with glue and create a problem that may be worse than what the original injury was.



Mother and Pup ready for release!





This is a screen shot from the video of the mother upon release. Note her right wing which had the injury. Do not underestimate what a bat can do!



BBB from wild colony with similar wing tear as previous bat



BBB with uropatagium tear. Courtesy USFWS

Swollen wrist joints commonly seen; caused by variety of factors, many unknown.



## Humeral Fracture



Extremely difficult fxs to heal properly, poor prognosis



Large amounts of membrane missing; twisted wing; importance of stabilization. Zero chance for flight, but good prognosis as an education animal if other criteria are met.





## Previous montage particulars:

- Bat was found in a house in January
- Cat lives in the house with human occupants
- Several ticks were found on the bat
- Bat died the day after being brought to rehab
- I had recommended that they contact their vet about the cat
- They did contact their vet and also spoke to “a friend” who works at DEEP
- Cat’s owners said cat was given a booster but didn’t want to make the trip to have the bat tested.

***Do not*** give medical advice for either humans or domesticated animals. Refer to health depts, physicians or veterinarians.

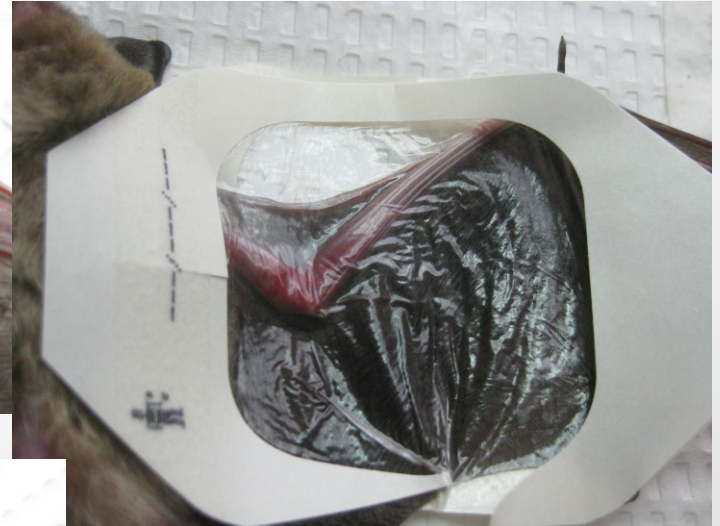


Stabilization techniques of wing fx's. Cleaning, covering and taping by rehabber is necessary prior to pinning (by vet) to prevent further injury and infection.

Housing for any bat with a wing, leg or foot injury.  
Do not allow the bat to hang or climb



This also includes any wing or leg bruising.





Bat was released...

## Key Points When Rehabbing Bats

YOU...

- MUST have a vet willing to work with bats
- SHOULD NOT give up on a bat and euthanize because you **THINK** he doesn't have a chance to fly or be released. Consult with an experienced bat rehabber.
- **MUST** be able to stabilize a fx prior to having it seen by a vet.
- MUST treat an open wound and cover an open fx.
- MUST understand physiologically stabilizing the animal prior to undergoing anesthesia.

## White Nose Syndrome Signs

- Bats are generally seen in very early spring (snow may be present) and during daylight hours, prior to flying insects appearing
- Probably will not show white fungus on body
- Usually will be emaciated and dehydrated; wings may appear sticky but no other signs
- Provide heat, hydration, mwms (must train to eat from dish) and water (follow emaciation protocols to prevent refeeding syndrome)
- May show variations in pigment on wings and/or wing tears or simply sticky wings

# White Nose Syndrome: effects of *Pseudogymnoascus destructans* (Pd)







Day 11, **May 3, 2015** ventral left wing



Day 11, **May 3, 2015** dorsal, right wing

Photos courtesy Lisa Kelly

**Day 11, May 3, 2015** Rapid onset of dry wing membranes, shredding and deterioration of both wings. Wing score = 3.

**Day 12, May 4, 2015** Bat was transferred to the author for continued care and treatment, weight: 8.4g/forearm 38mm. Bat was housed in an incubator at 85F and 60% humidity.

Treatment with dexamethasone was started to depress the immune system<sup>2</sup> to prevent IRIS<sup>3</sup> from causing further damage. No other medications were given. It is well known that dexamethasone, a synthetic glucocorticoid, is a potent immunosuppressant that inhibits the cytokine production induced by bacterial lipopolysaccharides (LPS). Overstimulation of the immune system may lead to various disease states, such as septic shock, arthritis, atherosclerosis which may lead to tissue damage.

Dexamethasone solution 2mg/ml (Dexium® Bimeda, Oakbrook Terrace, IL) was given IM (intramuscularly at alternating sites). Treatment started **May 4**: 0.1ml and tapered down incrementally to **May 15**: 0.01ml (final dose)

**NOTE: May 10**, weight was 9.2g. **NO TOPICAL TREATMENTS WERE**



Male pup born (1.9g) June 18, 2015  
Day 57 for mother's rehab.



June 28, 2015, 10 days old, 3.1g



Mother (left) and pup (right),  
July 20, 2015, pup 32 days old.



Showing milk teeth



Photo credits: Linda Bowen



Right wing/dorsal view



Left wing/ventral view



Left wing/dorsal view

**Day 91, July 22, 2015** Put mother and pup in flight cage, mother had difficulty for about 30 minutes, then was able to get lift and navigate around objects successfully. Pup flew immediately. Mother: 8.7g/38mm. Pup: 5.2g/33mm.

Photo credits: Linda Bowen



Day 11, **May 3, 2015** Dorsal right wing



Day 11, **May 3, 2015** Ventral left wing

Above photos, courtesy Lisa Kelly



Day 79, **July 28, 2015** Dorsal right wing



Day 79, **July 28, 2015** Ventral left wing

Above photos, Linda Bowen

**Day 97, July 28, 2015/RELEASE DATE** Mother's wing score = 3, but full flight was restored. Both were released where the mother was originally captured. NOTE: Release could have been 2-3 weeks sooner, but pup was not volant.

2018, a different LBB with unconfirmed WNS due to Pd with a different outcome. Since the success of using dexamethasone was not quantifiable, the medication was not given to this bat. Due to the restricted and distorted nature of the healed membrane and phalanges, the bat was non-releasable and was transferred as an education bat.

No definitive conclusions can be drawn since many factors may have affected the outcome of each bat however, the medication shows promise.

Intake April 11, 2018



February 6, 2019





### Summary of Pd Case:

- LBB was treated for a Pd infection and released
- LBB gave birth in rehab while undergoing treatment and successfully raised her pup
- Only dexamethasone was given, no other treatments or medications were used
- Supportive care appears to be sufficient in most cases but dexamethasone may be helpful in curbing severe deformities due to the overstimulation of the immune system (IRIS)

## **Additional information:**

For updated information on WNS, go to:

[www.fws.gov/northeast/white\\_nose.html](http://www.fws.gov/northeast/white_nose.html)

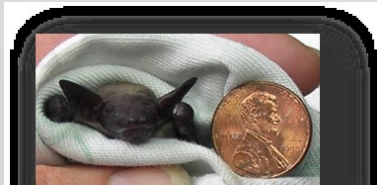
For further information on wing damage seen in WNS:

“Wing Damage Index for Characterizing Wing Condition of Bats Affected by WNS”, Jonathan D. Reichard, Center for Ecology & Conservation Biology, Department of Biology, Boston University, Boston, MA 02215





# Any questions?



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## Footnotes:

<sup>1</sup> White-nose syndrome inflicts lasting injuries to the wings of little brown myotis (*Myotis lucifugus*). Jonathan D. Reichard and Thomas H. Kunz. *Acta Chiropterologica*, 11(2): 457–464, 2009

<sup>2</sup> Suppression of LPS-induced Inflammatory Responses by the Hydroxyl Groups of Dexamethasone, Ting-Yun Chuang, An-Jie Cheng, Jean-Cheng Kuo, *Oncotarget*, 2017, Vol. 8, (No. 30), pp: 49735-49748

<sup>3</sup> Pathology in euthermic bats with white nose syndrome suggests a natural manifestation of immune reconstitution inflammatory syndrome. Carol U. Meteyer, Daniel Barber and Judith N. Mandl. *Virulence* 3:7, 583–588; November 15, 2012; G 2012 Landes Bioscience

## About the Author

Linda Bowen is licensed by CT DEEP, specializing in bats and also by USFWS to rehabilitate migratory birds, specializing in waterfowl. She works closely with CT DEEP and USFWS regarding bat populations and White Nose Syndrome and is coauthor of the nationally recognized protocol *Rehabilitating Bats with White Nose Syndrome* which is available for free download at [www.bats101.info](http://www.bats101.info). She authored the chapters on bats in both the NWRA *Topics in Wildlife Medicine: Orthopedics*, published by NWRA and *Medical Management of Wildlife Species: A Guide for Veterinary Practitioners* published by Wiley-Blackwell and the section on bats in the upcoming revision of IWRC's *Minimum Standards*. *Tabitha's Tale* is her children's book about bats which is also available through her website [www.bats101.info](http://www.bats101.info)

She has published articles in state and national rehabilitation journals and has lectured at several wildlife conferences in the northeast.