

Capillaria Inspection Protocol for Sharp-shinned Hawks

Background: Banders with Braddock Bay Raptor Research, near Rochester, NY have been observing some rather extreme and graphic cases of a host infection due to a capillaria nematode in Sharp-shinned Hawks. In some cases, there is an extreme reaction to this parasite in ways that will be immediately obvious. Typically, though, you have to look into the bird's mouth. Small lesions can be seen on the top and/or sides of the bird's mouth and there will sometimes be a waxy-looking substance under the tongue or around the edges of the mouth.

- Females seem to be showing the effect at a much higher rate than males; the infection rate in males historically has been very low but that might be changing.
- During the spring migration banding at Braddock Bay, the percent of females with observed capillaria is around 50%. For males it is now more than 25%.
- Similar results are being seen during the spring banding at Mackinac Straights.
- The results from fall banding stations across the country vary greatly.



We are asking banders to participate in a study to document the extent of this observed infection. Minimally, please take a look in the bird's mouth. Last fall we asked banders to pull feathers for a possible isotope study. With the lack of funding for isotope analysis, we are not requesting that this year. (Though feel free to collect feathers for possible future funding proposals if you feel so inclined.)

This disease is transmissible to other birds. We encourage banders to keep two separate sets of holding cans, one for birds that show signs of infection and another set for those that don't. Routine disinfecting of cans will not prevent the spread of this nematode.

It is good practice to start looking at other species too, just in case, especially Cooper's Hawks. At Braddock Bay, we examine every bird.

Procedure:

1. Inspect the bird during the extraction process.
2. If there is no evidence of capillaria infection, then write down a score of zero (0) in the appropriated column of your data sheet and move to the next bird.

If there is no capillaria score recorded, then necessarily we will assume that you did not look – and that is perfectly fine. We all sometimes get busy or simply forget. Please only write a score of zero if you checked the bird and did not observe any infection. This is important for calculating the percentage of birds that are infected.

3. If you do see evidence of infection:
 - a. Band the bird.
 - b. Score the extent of that infection using the 0-5 scoring paradigm that has been supplied. The scoring paradigm is not a perfect representation of all possible visualizations; do the best you can. A score of 3 and above typically means there is some slight distortion of the edge of the beak (the commissure or gape).
 - c. Continue with collecting and recording the usual data on your standard banding form.
 - d. If possible, please also record a fat score and muscle (keel) score. Again, this might only be possible in certain situations and we understand that.
4. Envelopes with feathers need to be labeled, minimally with band number, location species, sex, date, and capillaria score.
5. When submitting your data to the banding lab:
 - a. Please record the capillaria score in one of the User Fields available. Name that field Capillaria.
 - b. If the bird has a capillaria score greater than zero, use the 500 series for status: 500 for normal release of sick bird, 518 if blood sample also taken, etc.

These two submission details are at the request of the Banding Lab.

6. We would like a data export (in excel) of all data involving sharp-shinned hawks. This will allow analyses involving the overall condition of the birds and possible association with capillaria score. If possible, and only if agreed to by all banders involved, please send data spreadsheets to david.mathiason@gmail.com.

Data Considerations

Naming User Fields

Please name User Field 1 (or other field if you are already using that) to be 'Capillaria'. This is done in the Data Submission Settings Tab, as shown below. Please use that field to record the capillaria scores (numbers only) 0-5, as shown in the data page. Do the same for User Field 2, if you do muscle scoring

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Label for User Field 1

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My goal is to create an aggregate collection of data for use by anyone who wants to work on this project (including myself, of course). My intention is that all data, and any analyses that I do, will be made available to anyone who wants it. Such data is critical to monitor changes in the spread (increase or decline) of this infection both regionally and across seasons.

By adopting a common data submission format, it will be also possible in the future for anyone to obtain meaningful data from the banding lab. For now, I would like to summarize results for all to use. And if someone objects to this, that is OK too.

A portion of my band size 3B data is shown below. Note that the status code 300 doesn't show up very much, due to the fact that I was doing mouth swabs on accipiters. You'll see status 314 for birds that did not display lesions, 514 for those that did, and status 300 for some kestrels.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Band Number	Species	Banding Year	Banding Month	Banding Day	Age	Sex	Bird Status	Wing Chord	Bird Weight	Fat Score	Feather sample taken	Mouth Swab	User Field 1	User Field 2	
2	1893-38852	amke	2023	04	19	sy	m	300	196	124	1	N	N	0	2	
3	1893-38853	ssha	2023	04	20	sy	f	514	194	193	0	Y	Y	1	3	
4	1893-38854	amke	2023	04	20	sy	f	300	188	109	0	N	N	0	3	
5	1893-38855	ssha	2023	04	21	sy	f	514	196	185	4	Y	Y	2	3	
6	1893-38856	ssha	2023	04	21	sy	f	514	189	183	2	N	Y	1	3	
7	1893-38857	ssha	2023	04	21	ty	f	314	195	185	2	N	Y	0	3	
8	1893-38858	ssha	2023	04	21	asy	f	314	204	194	3	N	Y	0	3	
9	1893-38859	ssha	2023	04	21	asy	f	314	191	177	1	Y	Y	0	3	
10	1893-38860	ssha	2023	04	21	sy	f	314	190	190	2	Y	Y	0	3	
11	1893-38861	ssha	2023	04	21	asy	f	314	196	190	2	N	Y	0	3	
12	1893-38862	ssha	2023	04	21	asy	f	314	200	186	3	N	Y	0	3	
13	1893-38863	ssha	2023	04	21	asy	f	514	200	176	2	N	Y	1	3	
14	1893-38864	ssha	2023	04	21	asy	f	514	201	178	2	N	Y	5	3	
15	1893-38865	ssha	2023	04	21	sy	f	314	196	207	3	N	Y	0	3	
16	1893-38866	ssha	2023	04	21	ty	f	314	196	160	1	Y	Y	0	3	
17	1893-38867	ssha	2023	04	21	sy	f	514	196	203	2	Y	Y	1	3	
18	1893-38868	ssha	2023	04	21	asy	f	314	193	217	1	Y	Y	0	2	
19	1893-38869	ssha	2023	04	24	sy	f	514	196	172	2	Y	Y	3	2	
20	1893-38870	ssha	2023	04	24	sy	f	514	197	160	1	Y	Y	3	2	
21	1893-38871	ssha	2023	04	24	sy	f	514	196	162	1	Y	Y	2	2	
22	1893-38872	ssha	2023	04	26	sy	f	514	201	174	2	Y	Y	1	3	
23	1893-38873	ssha	2023	04	26	ty	f	314	200	191	1	N	Y	0	3	
24	1893-38874	ssha	2023	04	26	sy	f	514	196	174	2	Y	Y	2	2	
25	1893-38875	ssha	2023	04	26	asy	f	514	205	188	2	N	Y	1	3	
26	1893-38876	ssha	2023	04	26	sy	f	514	194	178	2	Y	Y	2	2	
27	1893-38877	ssha	2023	04	26	sy	f	514	193	174	2	Y	Y	1	3	