

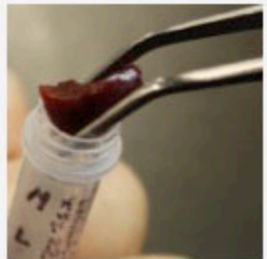
HOW TO



PREPARE BIRD SPECIMENS

Part 10a – Recording fat levels

Part 10b – Cleaning fatty and stinky birds



The Migratory Bird Conventions Act regulates the take and possession of birds in Canada. The Migratory Bird Treaty Act regulates the take and possession of birds in the United States. In addition, the provinces (in Canada) and the states (in the United States) also require permits. For some species SARA, ESA, or CITES permits may be required.

Always check the laws of your country and obtain the proper permits; failure to do so may result in civil and/or criminal penalties.

When handling dead birds, it is probably impossible to tell if a bird is infected with a pathogen that may cause human illness even if you know the cause of death to be a wound or an injury. Take reasonable precautions to protect yourself. The Ornithological Council offers a peer-reviewed fact sheet on avian zoonotic disease and safety precautions for those who handle birds in the field and in the lab.

<http://www.nmnh.si.edu/BIRDNET/documents/WNV&H5N1-FactSheet.pdf>



Photo taken at the Canadian Museum of Nature

Oilbird

Fat loads are important clues to a bird's physiological, breeding, or migratory fitness. The only time a bird's overall fat can be assessed is during the skinning process.



These Barred Owls illustrate how fat alters internal anatomy. Finding heavy or extreme fat loads in pre-breeding female owls is common.



Winker, 2000 recommends the following fat categories adapted from McCabe, 1943, Auk 60: 550-558 and Foster and Cannell, 1990, Condor 92:277-283.

None = Little or no fat exists anywhere on the bird
(even a starving bird can retain tiny amounts of fat in the abdominal cavity and on the dorsal tract).

Very light fat = Some fat in the dorsal tract and a trace in the furcula area
(usually adheres to skin).

Light fat = Thicker than previous category with some fat in the abdominal cavity.

Moderate fat = Added depth to the dorsum and furculum, and includes significant abdominal fat (inside and out) as well as small plates or pads of fat on the sides and elsewhere on the skin.

Heavy fat = When all of the feather tracts and much of the skin is covered with heavy pads of fat and large deposits are present in the abdominal cavity.

Very heavy fat = Body entirely encased in thick fat, as are the intestines.

(pdf available on resources section of this website)



Remsen and Cardiff, 2011 recommends the following fat categories modified from McCabe, 1943, Auk 60: 550-558

No fat = No fat found

Trace fat = Hardly more than a trace in a dorsal tract or around the pygostyle

Light fat = A substantial depth, perhaps 1 mm or so in a 20 g bird, in the dorsal tract; some fat in the furcula area

Moderate fat = Quite heavy in the tracts, with small plates elsewhere on the skin; crotch of furcula fairly well-filled

Heavy fat = Considerable amounts of fat removable from many parts of the skin; fat in the abdominal cavity

Extremely heavy fat = Deep sheets of fat everywhere between skin and muscle, even over the back; intestines solidly embedded and overlaid, hardly visible.



At the Beaty Biodiversity Museum, we use the fat categories developed at the University of Washington Burke Museum:

Emaciated = pectoral muscles partly reabsorbed; no fat anywhere

No fat = hardly more than a trace in dorsal tract

Trace fat = small quantities of fat in feather tracts or furcula

Little fat = a depth of 1" mm of fat in dorsal tract, some fat in furcula

Moderate fat = quite heavy in feather tracts: furcula well filled

Very fat = heavy in feather tracts, considerable solid fat inside body cavity

Extremely fat = deep sheets everywhere, intestines hidden by blocks of fat;
preparatory vows to change career

Consistency is very important. Create a poster of your collections fat categories. Post in a prominently place in the prep lab and the databasing/ accessioning area.

Do not use a NUMERIC RANKING SYSTEM

The code may be lost leaving a researcher in doubt as to what "3" means.
(i.e. 3/3, 3/5, or 3/10).





Emaciated:

- Some birds are so emaciated that you barely have to disturb the breast feathers to see the protruding sternum
- Check the organs to see if they have been partially reabsorbed

Fat levels are a continuum. The same wording may have a different meaning at other institutions.

The following photo essay reflects the UBC Beaty Biodiversity Museum avian fat definitions.

Photo taken at
Rock Point Bird
Observatory



The furcula is the depression near the throat formed by the clavicle Bones (wishbone). Find it by parting the breast feathers at the base of the neck.



Northern
Flicker

No Fat:

- Are the breast muscles well fleshed and the same colour as the furcula
- Are the feather tracts devoid of fat

If everything is fat free,
label the bird as “no fat”.



Black-billed Magpie

Trace fat:

- Small deposit of fat in the furcula
- Check that the feather tracks do not have fat

If you see a small amount of fat anywhere, label as "trace fat".



European
Starling



Savannah
Sparrow



Little Fat:

- Fat may or may not be visible in the furcula before skinning the bird
- Either the furcula or the feather tracks have a 1 mm layer of fat

Trace Fat vs. Little Fat:

- These are the hardest two categories to separate
- Use little fat when trace fat seems inadequate but moderate fat overstates your findings



Moderate Fat:

Look for two or more of the following:

- Furcula depression filled with fat
- Significant fat in feather tracks
- Fat under the wing pits
- Fat around the base of the tail

Different avian orders store fat in different areas.

Psittaciformes (parrots) frequently have no fat in the furcula yet have large fat deposits at the base of the tail.

Passerines (perching birds) tend to store fat in the furcula first.



Lapland Longspur



Moderate Fat:

- Fat deposited in all major feather tracks
- Some fat in the body cavity but not coating the organs.

Fat comes in many colours: white, off white, yellow, orange, and gray.



Western Tanager



Deciding on a fat category after the first incision is premature.
If one of these owls exhibited “extreme fat”, no breast muscle would be visible
or the inside of the skin would have a thick layer of fat.

Moderate Fat



Western Screech-owls

Heavy Fat



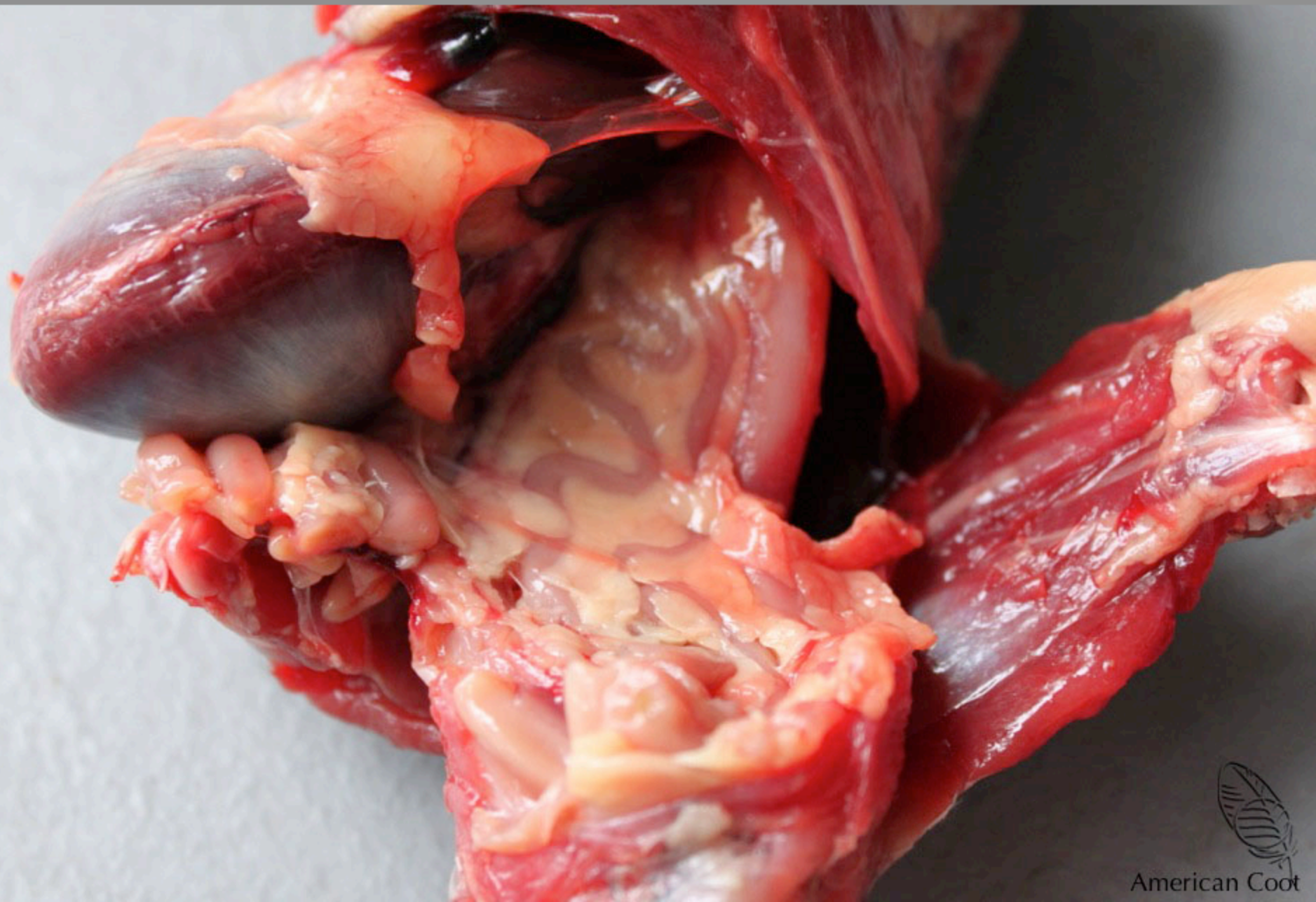
Heavy Fat:

Note that the fat layer is patchy on the back skin rather than a solid blanket.



Extreme Fat:

Intestines embedded in a block of fat is the defining characteristic.



Extreme Fat:

Waterfowl often have a thick, continuous lining of fat.



Dealing with fatty and stinky skins

Few people enjoy removing fat from avian skins or working on birds that reek of fish or carrion – take heart and read the following quote:

*“For fat birds, special tools such as toothed spoons, scraping wires, and wire wheels can be of great assistance in fleshing. With very greasy birds it is often best to wash them thoroughly after fleshing, first in soapy water, then in a solvent that dissolves fat (e.g., white gas, mineral spirits, paint thinner, hexane). Such cleaned skins dry up very nicely. Oils left in the skin leach out onto the plumage and also acidify over time, hastening deterioration of the skin. **Well-fleshed skins and formerly fatty birds that have been washed in a fat-dissolving solvent are some of the best-preserved in museum collections.**”*

Kevin Winker, 2000. Obtaining, preserving, and preparing birds. *Journal of Field Ornithology* 71:250-297.



Yet given the opportunity, there are some fat birds like penguins and oilbirds that most preparers hope to prepare at least once. Oilbirds are exceptionally difficult because they have very thin skin. Note how the residual oil has stained the label and eyes.

Département des Sciences Biologiques, Université de Montréal, Montréal

Steatornis carolinensis

Colombia. Huila Dept. Cueva del Guacháro.
10. mi. S. J. Duran. 11. V. 1962.



Fat and oil are a serious problem and, if not removed, will cause a skin to rot and the feathers to fall off.

Finding large amounts of fat is common in:

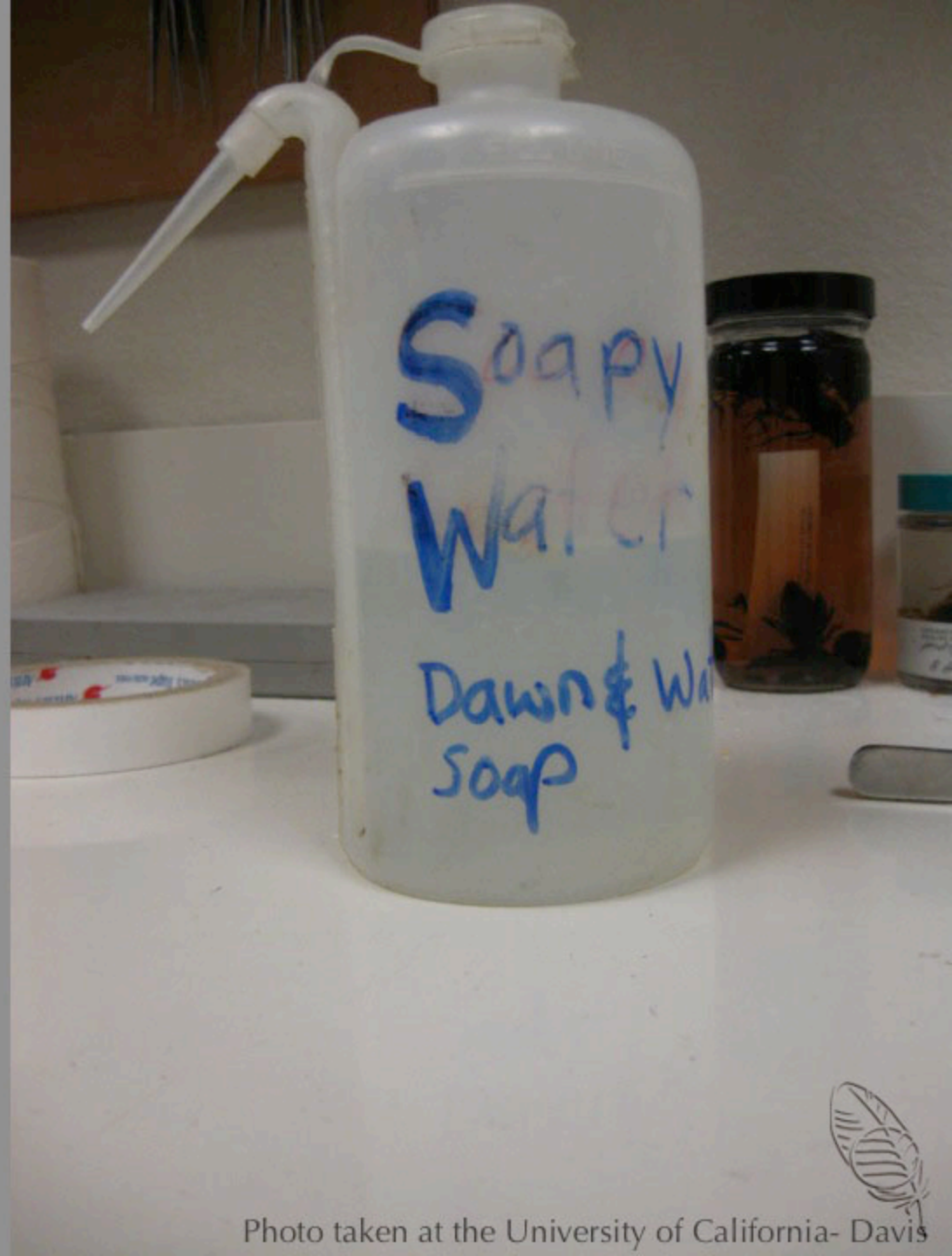
- Seabirds
- Duck, geese, etc.
- Pre-breeding raptors
- Pre-migration birds
- Backyard feeder birds
- Domestic birds

Luckily, the majority of wild birds have either no fat, trace, or little fat.



Finding a thick layer of fat is common in auklets, ducks, and other birds that use a combination of fat and dense feather coats to keep warm while floating on water.

Try using a soap and water solution to flatten the feathers away from the incision and the fat layer. The addition of a small amount of Dawn soap slows the evaporation rate of the water.



Fat come in varies types. Sometimes you get lucky, the bird has tough skin and the fat is solid enough to peel off in layers.
Fat removal, washing, and drying this Sooty Tern took less than a hour.



Photos taken at the Louisiana State University
Museum of Natural Science



Removing fat is time consuming.
Experimentation is the only way to
learn. Try as many of the following
methods as possible:

- Grapefruit spoon
- De-flesher scraper
- De-fleshing wheel
- Rubbing with absorbent powder
- Chemical treatments

A combination of several methods
works best.

If you are in the field and time
is an issue, salt or freeze the skin.
De-grease and stuff the bird when
you return to the lab.



Use a tool with blunt serrations to scrape the fat off.
Because of how it fit in your hand, a grapefruit spoon works well.



Green-winged
Teal





De-fleshing machines typically have a 1/2 hp engine, an on/off switch, a belt, and a spindle with a detachable wire brush. They can be homemade or bought at a taxidermy supply store.



Dakota bird de-flesher



Check that you are using an avian skin wire brush. It should not harm your hand.



Except for Dakota insert,
photos taken at the Smithsonian
National Museum of Natural History



Under the fat layer, the round nubs are feathers bases.



Turn on the machine. Put your hands under the skin. Raise the skin until it is contact with the spinning wire brush. The brush liquefies the fat.



Trumpeter Swan

Only the portion in the middle has been de-greased.
The veined fat around the perimeter has not been removed.



The de-fleshing wheel liquefaction process can create fat waves.
Removing large waves with a paper towel speeds up the process.



Green-winged Teal



To much abrasion results in the feathers falling out.

Note the heavy moult (blood supply to growing feathers looks black on the inside of the skin).




Most of the fat ends up under this ledge. Clean frequently to prevent jelly-fat dripping onto the skin.



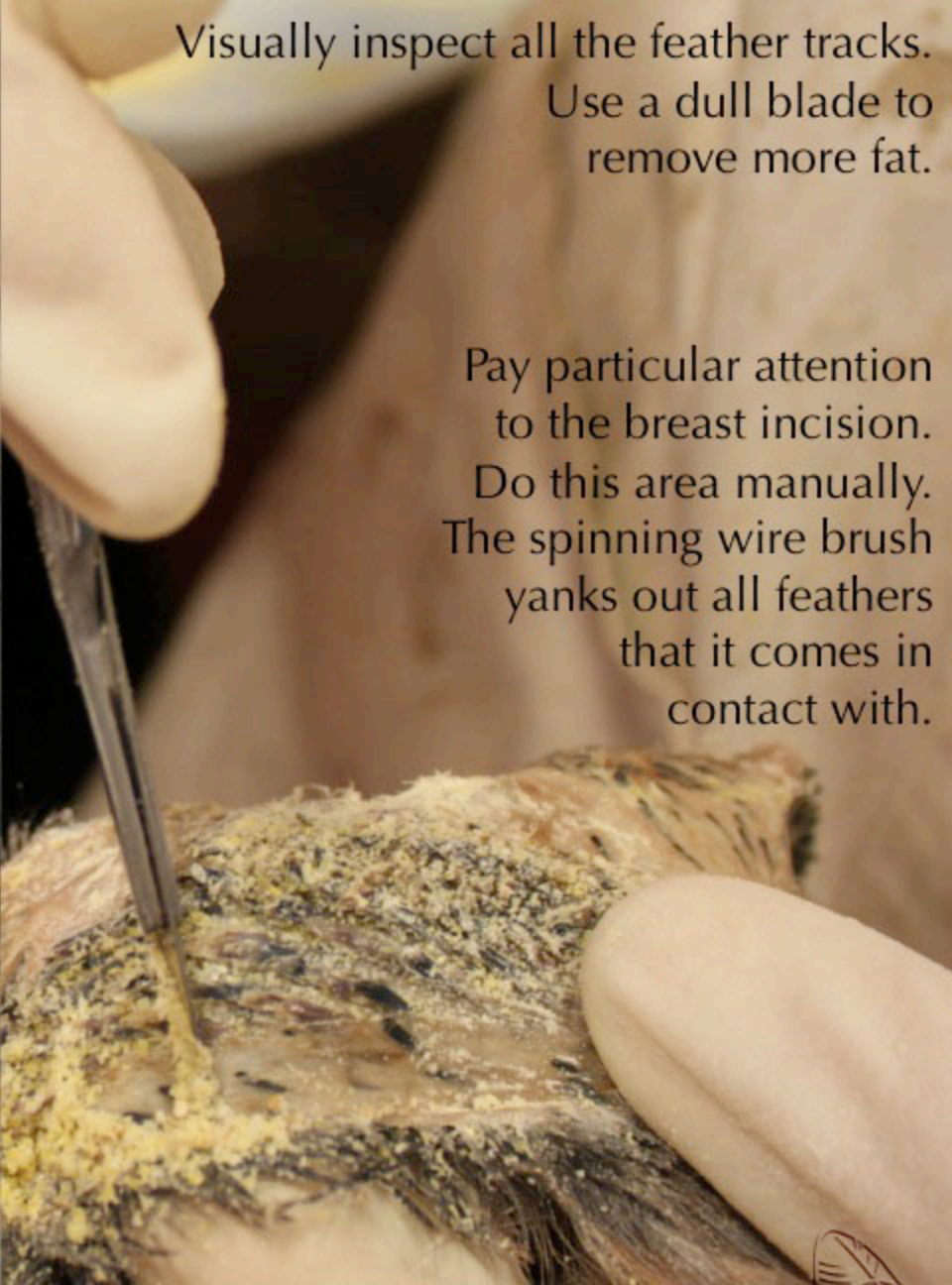
Giant
Wood
Rail

De-fleshing wheel fabricated
by Glen Browning
Birds only Taxidermy





Rub cornmeal,
corncob,
or another
absorbent
into the
feather tracks.



Visually inspect all the feather tracks.
Use a dull blade to
remove more fat.

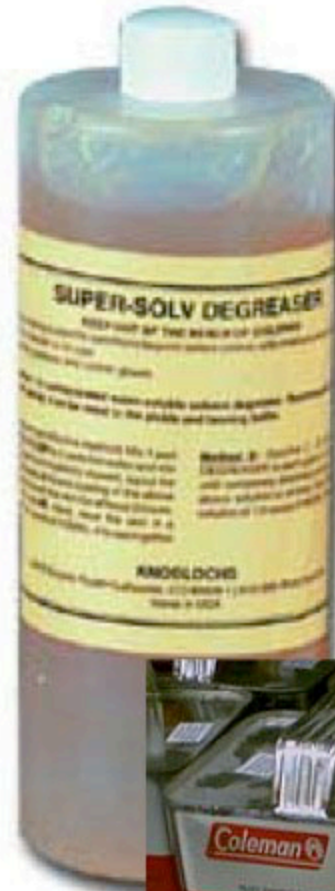
Pay particular attention
to the breast incision.
Do this area manually.
The spinning wire brush
yanks out all feathers
that it comes in
contact with.

Either stop here or use a chemical solvent to remove more grease
before stuffing the bird. Some type of washing is usually required.



The following solvents will dissolve grease and remove fish or carrion smells:

- Acetone
- Coleman camping fuel - white gas
- Dry cleaning fluid - white gas
- Paint thinner (usually the cheapest option)
- Specific de-greasing solvents available from taxidermy supply stores (most expensive option)



Most of these solvents dissolve surgical gloves.
Purchase heavy duty rubber gloves.



Salvaged birds might be odiferous for several reasons:

- Length of time and ambient temperatures between death and when it was found.
- The bird has regurgitated at the time of death. Fisheries by-catch).
- Partially digested meat in the crop rots rapidly and then taints the rest of the bird.

It is best to create a solvent cleaning station inside a fume hood or outside the building.

Photo taken at the University of Washington
Burke Museum





Read Part 9a in this series if you have never washed a bird.
(Squirt the Dawn soap directly on the inside of the bird skin. Rub the soap into the feather tracks. Rinse several times. Towel dry the bird.)

Then degrease by:

- Place the bird in a jar of solvent
- Swirl around for a few minutes
- Remove the bird.
- Squeeze the bird to remove the majority of the solvent





Use a salad spinner to remove excess solvent:

- Drain the liquid collected at the bottom of the salad spinner and return it to the solvent container
- Reuse the solvent multiple times



Read Part 9b if you have never dried a bird.

Use one of the following drying methods:

- Compressed air
- Manual or electric drum tumbler
- Ziploc bag with cornmeal or corncob dust



Do not use a hairdryer.

Any type of heat will melt residual fat.

IN MEMORIAM



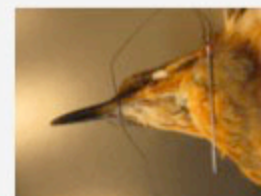
DR. REX KENNER

Former Curator of the Cowan Tetrapod Collection who encouraged me to begin this project.

Special thanks to Glen Browning, Donna L Dittmann, Eve Szabo, Chris Wood, Kevin Winker, Steve W Cardiff, Ellen Paul, and all museum curators and collection managers who has helped and encouraged me to complete this project. I take full responsibility for any remaining mistakes.

Without the technical assistance of Derek Tan, this project would never have gotten off the drawing board. Dr. Darren Irwin kindly suggested and made the arrangements for this series to be posted on the Beaty Biodiversity Museum website. A huge thank you to the staff and volunteers at the Cowan Tetrapod Collection for providing space and creating a terrific work environment.

Unless otherwise indicted, all pictures were taken by the author at the Cowan Tetrapod Collection, University of British Columbia Beaty Biodiversity Museum.



OTHER



PRESENTATIONS IN THIS SERIES

Introduction: The look of the bird & A few things to look for

Part 1 - Spread wings, a good way to start

Part 2 - Skinning your first bird

Part 3 - Other skinning methods

Part 4 - Stuffing your first bird

Part 5 - Other stuffing and pinning methods & Bird parts

Part 6 - Sexing birds using gonads (includes 2 quizzes with answer sheets)

Part 7 - Determining skull pneumatization & Skeleton preparation

Part 8 - DNA tissue sampling & Gut analysis

Part 9 - Washing skins for ectoparasites & Drying washed skins

Part 10 - Recording fat levels & Cleaning fatty or stinky skins

Part 11 - Flat skins, shmoos, and other types of study skins

Part 12 - Preserving eggs and shell fragments (in prep)

Part 13 - Determining cause of death

Part 14 - Labelling: the most important step

To download another PowerPoint presentation in this series go to:

<http://www.beatymuseum.ubc.ca/research/birds>

