

Preparing a Bird Skeleton

Materials needed: scissors, forceps, ruler, tissue vial, skeleton tag, preparatory catalog, original data, and accession number. For additional parts you may need an alcohol vial and tag, but they are not required.

Getting started:

- **Look up your species in the field guide** – double check the species. Also look to see if there is a difference between adult/juvenile or male/female plumage.
- **Specimen tag and tissue vial** – make sure to record the catalog number and accession on your tag and on your tissue vial. Later you will add additional information, such as weight and sex. If you need a refresher on how to write your tag or vial, look at the diagrams posted on the walls in lab.
- **Original data, catalog number, and accession** – make sure you write all this information down on the prep lab data sheet. Also write the catalog number and accession on the original data sheet.
- **Weight** – remove all bandages or foreign objects (except bands) from your specimen and record the weight. Write the weight down in your preparatory catalog/prep-lab worksheet.
- **Check for molt** – do you know how many flight feathers your bird should have? If not, then look it up.
 - **Flight feathers** - count all of your flight feathers, making sure to distinguish between primaries, secondaries, and rectrices. Take a pair of forceps and gently lift up the coverts and look for pin feathers or sheaths.
 - Molt on the flight feathers will usually happen symmetrically, but you still need to check both wings.
 - **Body molt** - body molt is easiest to view on the reverse side of the skin, but you may also be able to see it by blowing on or gently lifting up the feathers along the body. You will be looking for pin feathers and sheaths, just like you did for the flight feathers.
 - **Record all of the flight feathers in molt and the location of body molt in your catalog.**

Starting the Skeleton:

- **Cutting into the skin** – push aside the feathers on the breast and stomach area until you see the skin. Lift the skin on the breast with your fingers or the forceps and cut a hole with your scissors. Widen the hole downwards until it extends from the breast to the cloaca.

IT IS VERY IMPORTANT HERE TO MAKE SURE YOU ARE JUST CUTTING THE SKIN AND NOT THE SKELETON OR THE ABDOMINAL WALL OF THE BIRD. The skin will be a thin, slightly see-through layer that covers above the muscle on the breast and down over the abdomen. When you are cutting, if you encounter anything that is hard or crunchy STOP, because that's probably a bone and you've gone too deep with your cut. The same is true if you see intestines or "guts". It's ok to ask for help here if you can't identify the skin layer.

- **Removing the skin** - once you have the hole in the skin you should be able to peel it away from the rest of the body. This is easiest with your fingers, and generally we move down the body first. The skin is like a little suit that the bird is inside, and you're essentially undressing the bird.
- **Things to watch out for** –
 - **The tail** - when you are removing the skin from the tail the tail feathers will generally be the last part you deal with. Take each feather in hand separately and pluck it out. If the feather is difficult to remove, try bending it sharply towards the body first to remove the connections to the muscle underneath. BE VERY CAREFUL OF THE CENTRAL TWO FEATHERS – if you pull too sharply you will remove the last vertebrae on the tail bone.
 - **The wings** - the wings are very similar to the tail. You can pull the skin from the wings off the arms before removing the flight feathers. WHEN PULLING THE SKIN OFF THE END OF THE HAND BE CAREFUL TO NOT RIP THE THUMB OFF. While doing this, the secondaries may come off with the skin, however the primaries will have to be plucked off individually. BE VERY CAREFUL OF THE PRIMARIES AT THE END OF THE WING – these are attached to the digits of the hand and you can tear them off accidentally.
 - **The eye** - make sure to leave the eye in the socket unless specified.
- **Checking for body molt and fat** – after removing the skin, turn it over and look at the underside. Body molt will be present as little black dots, which are the growing pin feathers. Fat can be identified as yellow/white greasy deposits, generally around the tail, limbs, and neck of the bird. Ask for clarification on the level of molt and fat before you dispose of the skin.
- **Check your skull windows** – if you are working on a passerine, then you can use the level of ossification of the skull to help determine age.

Working on the inside:

- **Opening the abdominal wall** – cut open the thin abdominal wall of the bird to expose the intestines and stomach of the bird. BE CAREFUL TO NOT CUT ANY BONES.
- **!!!STOP!!! Sex your bird** – before you do anything more inside your bird, make sure you identify the sex. Removing organs, poking around, etc. can dislodge or destroy the gonads. ASK FOR HELP AND HAVE SOMEONE DOUBLE CHECK. The gonads will be under the intestines laying on top of the kidneys.
 - Once you've identified your gonads, then measure them and record the information.
- **Tissue samples** – set aside the tissues that you will place in your tissue vial. You need a sample of the heart, liver, muscle, and kidney. You can place your tissues on a clean paper towel as you collect them, and then put them in the vial IN THIS ORDER: HEART, LIVER, MUSCLE, KIDNEY. This means the kidney is the last thing you put it in.
- **Freeze your tissue sample** – make sure all the data is on your tissue vial and you have barcoded the sample. Place the vial in the tissue box that is appropriate for your accession.

- **Stomach and digestive track** – remove the digestive track of the bird. Taking your scissors, cut into the stomach and check to see what is inside. Record what you find, even if the stomach is empty. *Lay your entire digestive track (intestines and all) out on clean paper towels. We will compare the digestive tracks of all the birds in the lab.*

Finishing up:

- **Finish filling out your skeleton tag.**
- **Clear out all of the organs from your bird.**
- **If the bird is very large, cut off extra muscle.**
- **Tie the skeleton tag to the carcass by passing it through the body cavity. Remember to leave some slack in your string and not to tie the tag too tight.**
- **Make sure the data for your catalog is complete and recorded correctly.**
- **Throw all organs and feathers in biohazard.**
- **Clean your equipment with soap and water.**
- **Wipe off your station with bleach.**

Additional parts collection:

- **Some Accessions have additional parts or tissues that need to be collected** – double check with Beth if your bird has any additional requirements.
- **Syrinx collection** – the syrinx is found high in the abdominal cavity of the bird, above or right below the heart. If you're too forceful in removing your heart, you may destroy the syrinx. To remove the syrinx, look up inside the abdominal cavity of the bird until you can see the branching structure. Take your scissors and carefully cut each end of the two branches. Now go to the neck of the bird and locate the other side of the syrinx. Before you cut this tube, make sure you have gently started to separate the syrinx from the underlining muscles. If you cut the trachea or the top branch of the syrinx first, it is easy to lose the rest of the structure within the abdominal cavity. Place the syrinx in 70% Ethanol and write out the label for your alcohol part.