Identification Guide to North American Passerines
by Peter Pyle

1987 Point Reyes Observatory
from Bander Handbook – page 21

Appendix 2
Methods and Criteria for Physical Measurements

Fat Classes

In preparation for migration birds lay down subcutaneous fat on several areas of the body. This fat can be seen easily throughout the transparent skin. It appears yellowish and is distinct from the red muscular areas. Fat is stored in three discreet areas which begin to fill up in the following order:

✓ The furcular (wishbone) region just below the throat at the top of the breast muscles,
✓ The area directly under the wing (the "wingpit"),
✓ The lower abdomen just anterior to the vent.

The following scale is used to record fat:

✓ 0 No fat in furculum or anywhere on the body.
✓ 1 A small amount of fat in the furculum which may reach up the sides of the furcululm, but a hollow may still be seen. A small amount of fat may be seen in the wing and/or abdomen areas.
✓ 2 The hollow of the furculum is nearly full. A moderate amount of fat will usually be seen under the wing and in the abdomen.
✓ 3 Fat is bulging from the furculum and may extend up the neck and around the breast area. The fat in the wing and abdomen areas will also be bulging.

Brood Patch

The brood patch (BP) may be checked for at the same time you look for fat. Holding the bird in the same position as above, gently blow the feathers away from the abdomen.

The brood patch develops in breeding birds (usually just females) as a way of transferring as much body heat as possible to egg and nestlings.

✓ 0 No incubation or brood patch; down feathers usually present in patch area.

✓ 1 Stage 1 – Defeatherization. This occurs 3-5 days before the first egg is laid. This process requires about 24 hours. It will appear to be a bare area with some edema. Beware, many young passerines, e.g. LOC and HY birds, have no down feathers on their breasts prior to postjuvenal molt. Juveniles can usually be distinguished because the abdomen will be smooth and pink.

✓ 2 Stage 2 – Vascularization. After defeatherization the blood vessels underneath the skin begin to increase in size and number. The patch is firm with distinct edema by the end of this process (about 9 days) during which time all the eggs are laid.

✓ 3 Stage 3 – Edema. During incubation there is much edema and the skin becomes thicker. The duration of this stage varies.

✓ 4 Stage 4 – Regression. When the nestlings are about 4-5 days old, the skin of the patch area becomes dry, wrinkled and scaly. Between the end of nesting and the beginning of molt, the patch will appear grayish and wrinkled.

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If a second clutch of eggs is laid, the bird goes through stages 2 and 3 again. The patch remains bare until the prebasic molt.

Unless you are a brood patch expert, a BP of 1 should not be used as the only evidence for a female. In sexually monomorphic species with BP=1 you should indicate that sex is unknown.

In most passerines only the female develops an incubation patch. However, some passerine males do develop light (some vireos, some tyranid flycatchers) or even medium to heavy (e.g. Clark's Nutcracker) patches. In woodpeckers, and many other non-passerines, males typically develop incubation patches. Check "Age and Sex Keys" if in doubt. The following species cannot be sexed by brood patch, however, check for other clues to sex in the Identification Guide to North American Passerines and the North American Bird Banding Manual:

Ash-throated Flycatcher
Tree Swallow
Violet-green Swallow
Plain Titmouse
Wrentit
Northern Mockingbird

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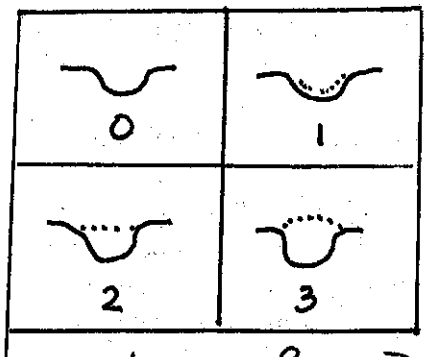

Fat diagram from Pyle, et al. 1987