

8. In September 1919 we found 28 occupied Dove nests, four containing eggs as late as September 18, and one September 22; the last young Doves left the nest during the first week of October. In 1920 we found 14 nests in September, the last birds leaving September 17. In 1921 we saw eight broods in September, the last leaving the nest September 27.

9. Sixty-one nests were known to have succeeded and 80 to have failed. The majority of early nests were failures and the majority of late nests were successes.

10. Thirty-nine nests raised two young, twenty-one raised one young and one raised three; an average of 1.7 young for each nest.

*Norman, Oklahoma.*

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## A REVIEW OF THE GENUS CYANOCOMPSA.

BY W. E. CLYDE TODD.

A STUDY of the series of specimens (193 in all) of the Fringilline genus *Cyanocompsa* in the collection of the Carnegie Museum, in connection with pertinent material from other sources, shows that certain changes in the systematic arrangement of the forms composing the group are desirable. It is the object of the present paper to bring these proposed changes to the notice of other ornithologists, with a view to clearing up the confusion in which the members of this genus seem to have become involved. While it has been thought best to restrict the synonymy to a citation of the first reference for each name, it is hoped that the statements defining the respective ranges of the several forms, and the remarks in connection therewith, may suffice to properly allocate all the published records. Measurements, where given, are in millimeters, and unless otherwise stated are the average of a series of specimens. The names of colors are from Mr. Ridgway's 'Color Standards and Color Nomenclature.' Acknowledgments are due to the authorities of the American Museum of Natural History, the Museum of Comparative Zoology, the U. S. National Museum, and the Bureau of Biological Survey for their courtesy in the loan of specimens.

Genus **CYANOCOMPSA** Cabanis.

*Cyanocompsa* CABANIS, Journ. f. Orn., IX, 1861, 4 (Type, by original designation, *Fringilla parellina* Lichtenstein, MS. = *Cyanoloxia parellina* Bonaparte).

The oldest known member of this group is the *Loxia cyanea* of Linnæus, 1758, of which name *Fringilla brissonii* of Lichtenstein, 1823, is a synonym. Next came the *Coccororus cyanooides* of Lafresnaye, 1847, and the *Cyanoloxia parellina* of Bonaparte, 1850, which latter was made the type of the new genus *Cyanocompsa* by Cabanis in 1861. In the meantime (1855) DuBus had described *Cyanoloxia concreta* from Mexico, but in listing the forms of the genus Cabanis mentioned only *C. parellina*, *C. cyanea*, and his new species *C. minor*. He failed to secure general recognition for the new generic name, however, most authors ranging the several forms involved under *Guiraca* or its equivalent, down to and including Sharpe in 1888. This author described a race of the *cyanea* group under the name *argentina*, while Bartlett separated *Guiraca rothschildii* two years later. In 1898 Mr. Ridgway inadvertently gave a new name to *C. cyanooides*, which latter he considered to be the same as Bartlett's *rothschildii*, owing to a mixup in Lafresnaye's type-specimens. That very year Mr. Bangs described the Santa Marta bird of the same species as a new race, *sanctæ-martæ*, and in 1901 Dr. Oberholser described *Cyanocompsa sterea* from Paraguay, comparing it with *C. cyanea*. *C. parellina* of Mexico had in the meantime been split up by Mr. Ridgway into three subspecies, to which Mr. Bangs in 1915 added a fourth. Dr. Chapman described a bird from western Colombia as *C. cyanea cauca* in 1912. There are thus fifteen specific and subspecific names to be considered in dealing with this group. In the present review we recognize three species and eight additional subspecies, two of which are here described as new.

The three specific types included in the group, while resembling each other closely in general coloration, are very different in form and proportions—more so than many other species which by common consent are separated generically. *C. parellina* differs from the other two species in its nearly even tail and much smaller bill, in this respect closely approximating *Passerina*. In fact, the

northern race of *C. parellina*, *C. p. beneplacita*, is so close to *Passerina versicolor*, both in color-pattern and general form, that they could readily be held to be congeneric—and have indeed been so considered by sundry authors. *C. cyanea* has a short, "stubby" bill, suggesting *Oryzoborus*, while in *C. cyanoides* this member is longer and stouter, approaching that of *Guiraca*. Despite these differences, it is probably best to keep all three in the one genus, which may be placed between *Guiraca* and *Passerina*. *Cyanoloxia* Bonaparte (type, *Pyrrhula glaucocærulea* D'Orbigny) is doubtless an offshoot of *Cyanocompsa*. The genus as here understood is purely Neotropical, ranging from northern Mexico to Argentina, in the Tropical Zone. The range of *C. cyanea* is discontinuous, but this may be apparent rather than real. The ranges of the several species overlap to some extent, so that over large areas two species occur together.

In the key which follows the aim has been to arrange the forms in what appears to be an orderly sequence. Unless otherwise specified the characters are based on adult males.

#### KEY TO THE SPECIES AND SUBSPECIES OF CYANOCOMPSA.

- A. Bill relatively larger, the exposed culmen not less than two-thirds the tarsus; tail obviously rounded.
  - a. Bill relatively more elongated, much longer than deep, the exposed culmen nearly or quite equal to the tarsus; female deep brown. (*Cyanocompsa cyanoides*).
  - b. Male darker and duller blue; female deeper brown.
    - c. Darker (bluish black to dusky slate blue).
      - d. Bluish black, the forehead scarcely brighter, the throat and sides of the head blackish.
        - Cyanocompsa cyanoides concreta*.
      - d'. Dusky slate blue, the forehead brighter, the throat and sides of the head distinctly bluish.
        - Cyanocompsa cyanoides cærulescens*.
    - c'. Brighter (indigo blue, brighter on the forehead and lesser wing-coverts) . . . . *Cyanocompsa cyanoides cyanoides*.
  - b'. Male lighter and brighter blue (Hortense blue); female lighter brown . . . . . *Cyanocompsa cyanoides rothschildii*.
- a'. Bill relatively more shortened, almost as long as deep, the exposed culmen decidedly shorter than the tarsus; female buffy brown. (*Cyanocompsa cyanea*).
- b. Larger (wing over 80 mm., tail over 70 mm.).

- c. Lower abdomen without white.  
*Cyanocompsa cyanea argentina.*
- c'. Lower abdomen with more or less white.  
*Cyanocompsa cyanea poliogastris.*
- b'. Smaller (wing under 80 mm.; tail under 70 mm.).
  - c. Rump duller (deep dull violaceous blue).  
*Cyanocompsa cyanea cyanea.*
  - c'. Rump brighter (cadet blue). *Cyanocompsa cyanea minor.*
- B. Bill relatively smaller, the exposed culmen little more than half the tarsus; tail nearly even (*Cyanocompsa parellina*).
  - a. General coloration brighter blue (urania blue to indulin blue).
    - b. Slightly brighter; bill relatively larger; female richer brown.  
*Cyanocompsa parellina parellina.*
    - b'. Slightly duller; bill relatively smaller; female duller brown.  
*Cyanocompsa parellina beneplacita.*
  - a'. General coloration lighter blue (dusky blue).  
*Cyanocompsa parellina indigotica.*

**Cyanocompsa cyanoides concreta** (DuBus).

*Cyanoloxia concreta* DuBus, Bull. Acad. Roy. Belgique, XXII, i, 1855, 150 (Playa Vicente, Oaxaca, Mexico).

*Subspecific characters.*—Similar to *Cyanocompsa cyanoides caerulescens*, but male darker, more bluish black, the throat and sides of the head distinctly blackish, the forehead scarcely brighter than the crown; slightly larger in size.

*Range.*—Southern Mexico (Vera Cruz and Oaxaca) eastward to Guatemala and British Honduras.

*Remarks.*—“*Guiraca concreta* does not appear to be found northwards of the hot forests of the State of Vera Cruz in Mexico, the limit of its range in altitude being, according to Sumichrast, about 2500 feet” (Salvin and Godman). Examples from this region may readily be distinguished from those from Honduras and southward by their darker coloration in the male and slightly larger size. Guatemala and British Honduras birds are not typical, but are best referred here.

**Cyanocompsa cyanoides caerulescens**, subsp. nov.

*Type*, No. 28,271, Collection Carnegie Museum, adult male; Esparta, Costa Rica, June 5, 1907; M. A. Carriker, Jr.

*Subspecific characters.*—Similar to *Cyanocompsa cyanoides concreta*, but male brighter throughout, more dusky slate blue, the throat and sides of the head distinctly bluish, the forehead appreciably brighter than the crown; slightly smaller in size. Similar also to *Cyanocompsa cyanoides*

*cyanoides*, but decidedly darker blue throughout, and size larger. Wing (type), 86; tail, 73; bill, 21; tarsus, 20.5.

*Range*.—Honduras to Costa Rica (probably to western Panama).

*Remarks*.—Costa Rican birds differ from typical *concreta* of Mexico in their brighter coloration throughout in the male, the color being dusky slate blue, a little brighter (Tyrian blue) on the forehead. The throat is a little darker, but never distinctly black, as in *concreta*. Salvin and Godman (*Biologia Centrali-Americana*, Aves, I, 1885, 346) remarked these differences, and intimated that the Central American bird might prove to be separable. Mr. Ridgway (*Auk*, 1898, 229, and *Bulletin U. S. National Museum*, No. 50, I, 1901, 597) also discussed the case, but erred in selecting a type for the southern form from Panama, as well as in considering the birds from that country the same as those from Costa Rica and Nicaragua, whereas they are really the same as those from Colombia. By recognizing the birds from Costa Rica to Honduras as a distinct race we avoid the difficulty in which Mr. Ridgway and later Mr. Carriker (*Annals Carnegie Museum*, VI, 1910, 884) became involved in trying to determine where they belonged.

#### ***Cyanocompsa cyanoides cyanoides* (Lafresnaye).**

*Coccyborus cyanoides* LAFRESNAYE, *Rev. Zool.*, 1847, 74, part (Panama; descr. female).

*Cyanocompsa concreta cyanescens* RIDGWAY, *Auk*, XV, (May 13), 1898, 229 (Panama).

*Cyanocompsa concreta sanctæ-martæ* BANGS, *Proc. Biol. Soc. Washington*, XII, June 3, 1898, 139 ("Santa Marta," Colombia).

*Subspecific characters*.—General color of male indigo blue, the forehead and lesser wing-coverts somewhat brighter (Tyrian blue). Smaller than either of the other two northern races of this species, with a weaker bill, and general coloration brighter blue.

*Range*.—From Panama eastward to central northern Venezuela, and southward to western Ecuador.

*Remarks*.—Lafresnaye's name *cyanoides* was primarily based on a female example from Panama in the Delattre Collection, which later found its way into the museum of the Academy of Natural Sciences of Philadelphia. His description of the adult male tallies with the bird now known under the name *rothschildii*, which circumstance, taken in connection with the fact that the female of a

pair of birds in the collection of the Boston Society of Natural History, erroneously supposed at the time to be Lafresnaye's type, was really a specimen of *Guiraca caerulea*, misled Mr. Ridgway into transferring *cyanooides* to the Guiana bird and renaming the one from Panama. The actual type-specimen, however, is the one in the Academy of Natural Sciences of Philadelphia, as long ago indicated by Dr. Stone (Proceedings Academy of Natural Sciences of Philadelphia, 1899, 51), and later pointed out by Dr. Hellmayr (Novitates Zoologicae, XIII, 1905, 277). Mr. Ridgway's *cyanescens* is thus a pure synonym of Lafresnaye's *cyanooides*, and the latter being the earliest name applicable to any form of this particular group becomes its proper specific appellation. We are indebted to Mr. Outram Bangs for calling our attention to this fact.

Comparison of a good series from the Santa Marta region of Colombia with another from Venezuela reveals no essential differences, nor do these taken together differ materially from Panama examples. There is certainly no difference in general size, although the bill in the Panama birds seems to average very slightly larger, and the alleged difference in color, to which Mr. Bangs and Messrs. Hellmayr and von Seilern (Archiv für Naturgeschichte, LXXVIII, 1912, 67) have called attention, breaks down completely when a sufficient series are brought together.

*Cyanocompsa cyanooides cyanooides* is not known from the Cauca Valley in Colombia, but ascends the Magdalena Valley as far at least as El Tambor, in the State of Santander, and has been found also at the eastern base of the Eastern Andes, in the State of Boyaca.

#### ***Cyanocompsa cyanooides rothschildii* (Bartlett).**

*Guiraca rothschildii* BARTLETT, Ann. and Mag. Nat. Hist., (6), VI, 1890, 168 (Carimang River, British Guiana).

*Subspecific characters.*—Much brighter blue (Hortense blue) in the male than any of the other forms of this species, the forehead, superciliary and malar regions, and lesser wing-coverts still brighter (mazarine blue). Female appreciably paler brown (Brussels brown above, buckthorn brown below) than in the allied races.

*Range.*—From Venezuela (south of the Orinoco) and Guiana south to the lower Amazon, and west to the base of the Andes in Peru and Bolivia.

*Remarks.*—This is a very distinct form, easily distinguished by its much brighter coloration, and is possibly entitled to specific

rank. By most authors, down to and including Sharpe in 1888, it was confused with *Cyanocompsa cyanea*, until distinguished by Bartlett in 1890. In coloration it greatly resembles that form so far as the male is concerned, but females are readily distinguishable, this sex of *cyanea* being much lighter and more buffy brown. The bill of *rothschildii*, however, is of the *cyanooides* type, and its color-characters are merely an exaggeration of those of that form. It enjoys an extensive range in northern and western Brazil, reaching the Orinoco River on the north, but we do not yet know where it meets the range of *cyanooides*. Bolivian specimens seem not to differ by any constant characters from a series from French Guiana and the lower Amazon.

***Cyanocompsa cyanea argentina* (Sharpe).**

[*Guiraca cyanea*] Subsp. *α*. *Guiraca argentina* SHARPE, Cat. Birds Brit. Mus., XII, 1888, 73 (Argentina; no type-locality specified; Fuerte del Andelgala, Catamarca, fide Brabourne and Chubb).

*Subspecific characters*.—Similar to *Cyanocompsa cyanea cyanea*, but decidedly larger, and general coloration of male lighter (dark cadet blue), the frontal, superciliary, and malar regions much paler (forget-me-not blue).

*Range*.—Northern Argentina to east-central Bolivia (except the Guanacos region in the Province of Cordillera).

*Remarks*.—This form is readily separable from true *cyanea* by its much larger size, the wing of the male ranging from 83 to 89 mm., and the tail from 74 to 81 mm., while the color in the same sex is a lighter blue. Females vary somewhat in depth of color below.

According to Dr. Alexander Wetmore this is the form which is found in the Chaco of Argentina, also in Formosa. Its range thus appears to be separated from that of typical *cyanea* by the Paraguay River. It would be well, however, to compare a good series from northeastern Argentina with the form next to be subscribed.

***Cyanocompsa cyanea poliogastris*, subsp. nov.**

*Type*, No. 32,948, Collection Carnegie Museum, adult male; Guanacos, Province Cordillera, Bolivia, August 21, 1909; José Steinbach.

*Subspecific characters*.—Similar to *Cyanocompsa cyanea argentina*, but posterior under parts of male more or less mottled with white. Wing (type), 87; tail, 79; bill, 15.5; tarsus, 20.5.

*Range.*—Known only from the Guanacos region in the Province of Cordillera, Bolivia.

*Remarks.*—Five adult males from this region agree in having the posterior under parts more or less mottled with white tips to the feathers, becoming almost “solid” in the middle of the abdomen in the specimen selected as type. None of the other examples of *argentina* which have been examined in this connection show any sign of this character, so that it cannot be seasonal. The single young male is rather paler than the same stage of *argentina*, but no females are yet available. *Cyanocompsa cyanea poliogastris* is evidently a local race of rather restricted range, comparable to certain others already described from this region—unless, indeed, it should turn out that this is merely the western edge of a much more extensive faunal area invading Bolivia from the east.

#### ***Cyanocompsa cyanea cyanea* (Linnæus).**

*Loxia cyanea* LINNÆUS, Syst. Nat., ed. 10, 1758, 174 (ex Edwards) (“Angola” = East Brazil, fide Hellmayr = Bahia).

*Fringilla brissonii* LICHTENSTEIN, Verz. Doubl., 1823, 22.

*Cyanocompsa sterea* OBERHOLSER, Proc. Biol. Soc. Washington, XIV, 1901, 188 (Sapucay, Paraguay).

*Description.*—Male: above and below dusky blue, the feathers with blackish bases, the forehead, superciliaries, and rump slightly brighter (deep dull violaceous blue), the lesser wing-coverts markedly brighter (grayish violaceous blue); wings and tail black with slight dusky bluish edgings, broader and very conspicuous on the middle and greater coverts and inner secondaries; lores and feathers at the base of the bill all around black; “iris brown; bill and feet black.” Female: above Brussels brown, duller on the pileum, brighter on the rump; wings and tail dusky brownish with pale brown edgings; under parts between ochraceous tawny and buckthorn brown. Immature males resemble the adult female, but are usually darker brown, with indications of blue about the head.

*Measurements.*—Male: wing, 75.5; tail, 68; bill, 15; tarsus, 20. Female: wing, 72; tail, 64; bill, 15; tarsus, 19.5.

*Range.*—Eastern Brazil, from Pernaebuco to Rio Grand do Sul, and west to Goyaz and Paraguay.

*Remarks.*—The *Loxia cyanea* of Linnæus was based primarily on Edwards’ “Blue Grosbeak from Angola,” which must have come, not from Angola, but from the eastern coast of Brazil, as pointed out by Dr. Hellmayr (Novitates Zoologicae, XV, 1908, 32). We therefore select Bahia as the type-locality, and the above de-

scription is based on a small series of fresh specimens from that place, collected by Mr. Rollo H. Beck.

In 1901 Dr. Oberholser described a bird of this group from Sapucay, Paraguay, carefully distinguishing it from *C. cyanea*. He had no adult male, but only a young male and a female example, which are now before us. We fail to separate them satisfactorily from the Bahia series, the type being comparable with Mr. Beck's No. 5747. Mr. Chubb (*Ibis*, 1910, 631-2), with a series (including both sexes) from Sapucay before him, also finds that they are indistinguishable from true *cyanea*, so that it would seem as if Dr. Oberholser had been misled into describing his bird as new by reason of its rather darker coloration, which is not unusual in young birds.

#### **Cyanocompsa cyanea minor** Cabanis.

*Cyanocompsa minor* CABANIS, Journ. f. Orn., IX, 1861, 4 (Caracas, Venezuela).

*Cyanocompsa cyanea caucæ* CHAPMAN, Bull. Am. Mus. Nat. Hist., XXXI, 1912, 163 (La Manuelita, near Palmira, Colombia).

*Subspecific characters.*—Similar to *Cyanocompsa cyanea cyanea*, but male with rump brighter blue (cadet blue), and under parts slightly darker blue. Female averaging slightly paler brown above. Male: wing, 74; tail, 65; bill, 14.5; tarsus, 19.5.

*Range.*—North-central Venezuela, reappearing in western Colombia.

*Remarks.*—Cabanis' original description of this form—"similima cyaneæ, sed omnino minor"—is barely sufficient to save the name from the *nomen nudum* class, but it evidently pertains to this form rather than to *C. cyanoides*, and is so accepted by Dr. Hellmayr (*Archiv für Naturgeschichte*, LXXVIII, 1912, 68), who has probably seen the type. It may be doubted, however, if Cabanis had a specimen of *cyanea* before him when he wrote this diagnosis, for *minor* is certainly *not* smaller than *cyanea*. In fact, it is so very close to that form that we can find only one character of value by which to distinguish it—the brighter blue color of the rump. In view of this close relationship the gap existing between its range and that of *cyanea* is remarkable. Not only so, but the range of *minor* itself is discontinuous, apparently at least. It is found along the coast of Venezuela from Cumaná west to Caracas and the Sierra de Carabobo, and again in the Cauca Valley of western Colombia, but not (so far as we know) in the intervening

region. Dr. Chapman has described the Colombian bird as a distinct race, but with a good series of specimens from both regions for comparison we are unable to tell them apart. The only differences are those which are fully accounted for by wear.

**Cyanocompsa parellina parellina** (Bonaparte).

[*Cyanoloxia*] *parellina* BONAPARTE, *Consp. Avium*, I, 1850, 502 (Alvarado, Vera Cruz, Mexico).

*Description*.—Male: general color urania blue to indulin blue, the rump and pileum light violet blue, the forehead paler, inclining to mazarine blue; chin and sides of head blackish, with a patch of light violet blue on the malar region; rest of under parts blue like the back; wings and tail black with narrow blue edgings, wider on the upper coverts; lesser wing-coverts mazarine blue; "maxilla blackish or dusky horn color; mandible grayish horn color; iris brown; legs and feet brownish black or dusky horn color" (Ridgway). Female: above Brussels brown to Dresden brown; below similar, paler posteriorly (near clay color or cinnamon buff).

*Measurements*.—Male: wing, 70; tail, 54; bill, 12; tarsus, 18. Female: wing, 65; tail, 51; bill, 12; tarsus, 17.5.

*Range*.—Tropical Zone of eastern Mexico, from Yucatan to Vera Cruz, south to central Nicaragua.

*Remarks*.—This bird was formally described by Bonaparte from specimens in the Berlin Museum which had been brought from Mexico by Deppe, and which had in the meantime received a manuscript name of Lichtenstein's. It was made the type of a new genus, *Cyanocompsa*, by Cabanis in 1861, but all other authors referred it to the groups now known as *Guiraca* and *Passerina*, down to as late even as 1896. It is in fact related to *Passerina versicolor*, both in form and pattern of coloration, but on the whole it seems better to associate it with "*Coccororus*" *cyanooides* and "*Loxia*" *cyanea* to constitute a single genus. This, the typical race, is an inhabitant of the hot region of Vera Cruz, not going above 800 meters, extending thence eastward to Yucatan and the islands off the coast and southward at least to Matagalpa, Nicaragua. Specimens from these extremes are fully as richly colored as those from Vera Cruz, so far as we can see. Nothing is on record concerning its habits.

**Cyanocompsa parellina beneplacita** (Bangs).

*Cyanocompsa parellina beneplacita* BANGS, Proc. Biol. Soc. Washington, XXVIII, 1915, 126 (Santa Leonor, Tamaulipas, Mexico).

*Subspecific characters.*—Similar to *Cyanocompsa parellina parellina*, but male slightly duller blue; female obviously paler, duller, less rufescent brown; and bill averaging smaller and blacker.

*Range.*—States of Tamaulipas and Nuevo Leon, northeastern Mexico.

*Remarks.*—With the ample series brought together for use in this connection we are able to confirm the characters claimed for this race by its describer. While not a strongly marked form, it is true, it may be told in series by its usually blacker and smaller bill (exposed culmen about 11 mm., and depth of bill at base 7.5 mm., as against 12 mm. and 9.5 mm. in the typical race), and the paler, duller coloration of the female, which latter is its best character. This is evidently not seasonal, since the series examined are comparable in this respect. Birds from Alta Mira, in the southern part of Tamaulipas, are not typical, and are referred here mainly on the ground of the color of the females, but specimens from Nuevo Leon are easily separable from Vera Cruz skins by their smaller bills. There is no difference in general size.

**Cyanocompsa parellina indigotica** (Ridgway).

*P[asserina] parellina indigotica* RIDGWAY, Man. N. Am. Birds, 1887, 447 (Manzanillo Bay, Colima, Mexico).

*P[asserina] sumichrasti* RIDGWAY, Man. N. Am. Birds, 1887, 447 (Tehuantepec City, Mexico).

*Subspecific characters.*—Similar to *Cyanocompsa parellina parellina*, but averaging slightly larger, and male lighter blue, the back and upper parts dusky blue, becoming forget-me-not blue on the forehead, malar region, lesser wing-coverts, and rump; female lighter brown. Male: wing, 73.5; tail, 60.5; bill, 13; tarsus, 18.3. Female: wing, 69.5; tail, 57.5; bill, 13.5; tarsus, 17.8.

*Range.*—Pacific coast region of Mexico, from Oaxaca north to Mazatlan.

*Remarks.*—A well-marked form, readily distinguished from the typical race by the characters above indicated. It is restricted to the Pacific slope of Mexico, and probably meets the range of *parellina* at the Isthmus of Tehuantepec. The *C. p. sumichrasti* of Ridgway, based originally on a young male example from this region, we refer here with but little hesitation, since an adult male in fresh plumage from Pluma, Oaxaca (No. 144,198, Collection

U. S. National Museum), although described by Mr. Ridgway as "identical in coloration with *C. p. parellina*," we find upon examination is not to be told from specimens of *indigotica* from farther north as regards coloration, and is closely approached by some of them in size.

*Carnegie Museum, Pittsburgh, Pa.*

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## FIELD STUDIES OF THE ANATIDAE OF THE ATLANTIC COAST.

BY LUDLOW GRISCOM \*

### SUBFAMILY FULIGULINAE.

THIS subfamily is at first very puzzling to the student because, for the group as a whole, there are hardly any generalizations without exceptions. The build, however, is much more stocky than in the *Anatinae*. The head is frequently rounded, and always stouter than in Mergansers. The neck is short except in the Canvasback, Old Squaw, Eiders, and Scoters, and then it is much thicker than in other ducks. The wing is very broad at the base, narrowing much more rapidly to a point than in *Anatinae*. In the Ruddy Duck this is carried to an extreme, so that the wing appears almost round in flight. The wing beats are much more rapid than in *Anatinae*, the wing arcs shorter. The flocking habits are also subject to variation. The members of the genus *Marila* fly either in dense clouds or else strung out in lines at right angles to the direction of flight. The Eiders and Scoters flock like Mergansers, as does also the Old Squaw. The other species rarely gather in flocks of any size and then exhibit no peculiar formation. With the exception of the Golden-eye and possibly *Marila*, the species of this subfamily rise from the water less steeply than the *Anatinae*, and alight more awkwardly. As a rule *Marila*, the Golden-eye and Bufflehead fly high; the Old Squaw, Eiders, Scoters and Ruddy Duck just above the water. There is, generally, a difference in the bill of the *Anatinae* and

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\* Concluded from Vol. XXXIX, p. 530.