

THE ANATINE GENUS NYROCA AND ITS NEAREST ALLIES.

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The following pages present the results of an investigation, begun many years ago, into the generic relationships of the ducks commonly included in the genera *Nyroca* Fleming (*Marila* auct. rec.) and *Fuligula* Stephens. These species are:

- Nyroca ferina* (Linnaeus)
- Nyroca americana* (Eyton)
- Nyroca calisineria* (Wilson)
- Nyroca baeri* (Radde)
- Nyroca nyroca* (Güldenstädt)
- Nyroca innotata* Salvadori
- Nyroca australis* Eyton
- Nyroca brunnea* Eyton
- Nyroca nationi* (Sclater and Salvin)
- Nyroca erythrophthalma* (Wied)
- Fuligula marila* (Linnaeus)
- Fuligula affinis* Eyton
- Fuligula fuligula* (Linnaeus)
- Fuligula noraeaeclaudiae* (Gmelin)
- Fuligula collaris* (Donovan).

Of the fifteen species thus comprised, we have examined all but two—*Nyroca innotata* and *Nyroca nationi*. Study of the structural characters of these birds has resulted in the discovery of some hitherto unnoticed characters, which indicate that to include all these species in a single genus would be manifestly improper, and that in view of important differences, some additional genera need recognition. The characters here used as generically diagnostic are constant and trenchant so far as it has been possible for us to verify them, and a number of other characters we have omitted because they fail to come up to this standard. It is becoming fairly well understood that many differences that are apparently good generic characters fail when several individuals of a species, or when species of other supposed generic groups are critically examined; and while a mere abnormality in a single individual can not be held as invalidating a generic character, it is quite evident that a character which is not practically constant in all individuals of a species can scarcely be usable in the diagnosis of a genus. It is evidently thus unsafe to base generic characters on examination of a single specimen of a species, but sufficient examples should be examined to eliminate the factor of individual variation. As in many ducks, so in the birds at present under consideration, the form, shape, and proportions of the bill are of prime importance as the indicators of generic relationships. Of other characters made use of in the present connection, those of the relative proportions of the wing and of inner toe with claw, compared with the exposed culmen, are apparently of most importance. While coloration as a primary generic character is of little or no value among these ducks, it is of interest to note that the generic classification

here adopted corresponds fairly well with the general coloration of the species concerned, although *Nyroca bacri* is, of course, an exception. Furthermore, the sequence of species is virtually the same as that adopted by Mr. N. Hollister in his recent notes on the relationships of *Fuligula col-laris*,¹ except that, of course, the sequence is reversed.

The measurements of which use is made in proportional comparisons in this paper have been taken as follows:

Length of wing.—The distance from the bend of the wing to the tip of the longest primary, taken with dividers without straightening the quills.

Exposed culmen (length of bill).—The chord of the culmen, taken from its tip to the point where the feathers of the forehead impinge on its base.

Height of bill at extreme base.—The distance in a straight line from the highest point on the base of the maxilla to the nearest point on the ramus of the mandible.

Width of bill.—Measured with dividers at the widest point near the end of the bill; at base; at point of greatest width; or at the posterior end of the nail where this coalesces with the culmen.

Length of the nail of bill.—The chord of the dertrum, measured in a straight line from its tip to the point where it coalesces with the culmen.

Inner toe with claw.—Measured with dividers along the upper side from the middle of the joint between the metatarsus and the inner toe, in a straight line to the tip of the claw.

The writer is indebted to Dr. C. W. Richmond for a number of references to generic names cited in this paper.

Fulix SUNDEVALL.

Marila OKEN, Isis (von Oken). 1817, Heft VIII, col. 1183 (nomen nudum).

Fulix Sundevall, Kongl. Vetensk.—Acad. Handl., for 1835 (1836), p. 129 (proposed for "*Anates lobatae*," with no species mentioned) (type by subsequent designation [Baird, Brewer, and Ridgway, Water Birds North Amer., II, 1884, p. 17], *Anas marila* Linnaeus).

Marila BONAPARTE, Compt. Rend. l'Acad. Sci., XLIII, Sept. 30, 1856, p. 651, (Reichenbach, MS.) (type by tautonymy, *Anas frenata* Sparman [= *Anas marila* Linnaeus]) (nec *Marila* Reichenbach quae *Aithya* Gloger).

Nettion BAIRD, Rep. Explor. and Surv. R. R. Pac., IX, 1858, p. 790 (in text) (substitute name for the group to which *Fulix* Sundevall is simultaneously restricted) (type by subsequent designation [Baird, Brewer, and Ridgway, Water Birds North Amer., II, 1884, p. 17], *Anas marila* Linnaeus).

Marila STONE, The Auk, XXIV, No. 2, April, 1907, p. 191 (Oken MS.) (type by original designation and monotypy, *Anas marila* Linnaeus) (nec *Marila* Reichenbach).

Description.—Wing 4 1/2-5 times the length of exposed culmen; bill relatively but little flattened terminally, its width near end 1 1/10-1 3/10 times its width at base, its tip squarish, its width at posterior end of nail 2 1/2-3 1/3 times the length of its nail; tip of maxilla much hooked; nail of bill broad and triangular, or narrow and strap-like; height of bill at extreme

¹The Auk, XXXVI, No. 4, October, 1919, pp. 460-463.

base $5/6-1\ 1/10$ times its greatest width; base of culmen not deeply concave; exposed culmen $1\ 4/5-2\ 1/5$ times the height of bill at extreme base, $1\ 3/4-2$ times the greatest width of bill, and decidedly less than the length of inner toe with claw; anterior outline of feathering at the base of culmen triangular and acutely pointed; feathering on sides of maxilla not reaching forward as far as that at the base of the culmen; no occipital crest.

Type.—*Anas marila* Linnaeus.

Remarks.—At first sight *Fulix noruasecelandiae* (Gmelin) differs somewhat from the two other species of this genus in the relatively greater height of its bill at base; in having the wing but little more than $4\ 1/2$ times the exposed culmen; the nail of the bill narrow with its sides parallel (not triangular); the exposed culmen usually slightly less than 2 times the height of the bill at extreme base; and the width of bill at posterior end of nail usually about 3 times the length of the nail. None of the characters, however, are trenchant or constant enough to warrant the separation of this species even subgenerically. The narrow, strap-like nail of the bill appears to be one of the best differences, but this character is present, though not constant, in *Fulix affinis*.

The generic name *Marila* Oken¹ is here regarded as a nomen nudum, in common with all the other names proposed by Oken in this now famous article giving his own equivalents for the generic groups in Cuvier's classification. Oken's proposed equivalents seem not with sufficient definiteness introduced as substitutes, and, consequently, are not removed from the category of nomina nuda. The particular name, therefore, which we have now under consideration we must reject for the group of ducks to which it has been commonly applied, at least as dating from 1817. The next name in point of time, which can be used for this group, seems to be *Fulix* Sundevall.² It was originally proposed for the "Anates lobatae," to include all the ducks with a lobed hind toe, but no species was mentioned, although the group was stated to contain the generic groups *Platypus* Brehm, *Hydrobates* Temminck, and *Fuligula* "a Bonaparte acceptum". Professor S. F. Baird³ was the first author to restrict *Fulix* Sundevall to a definite modern genus of ducks, and he circumscribed the group to include the American species *Anas marila* Linnaeus, *Fuligula affinis* Eyton, and *Anas collaris* Donovan, but at the same time implying that his type was one of their European relatives. However, the type of this group was later definitely fixed by Baird, Brewer and Ridgeway⁴ in the following language: "No type designated, but restricted to the group of which *Anas marila*, Linnaeus, is typical, by Professor Baird in B. N. Am. 1858, 790." There thus seems no doubt of the propriety of using the name *Fulix* for the Scaup Ducks. The term *Nettarion* Baird⁵ is a name proposed for the same group in case the designation *Fulix* Sundevall could not properly be restricted as Professor Baird intended.

¹Isis (von Oken), 1817, Heft VIII, col. 1183.

²Kongl. Vetensk.—Acad. Handl., for 1835 (1836), p. 129.

³Rep. Explor. and Surv. R. R. Pac., IX, 1858, p. 790.

⁴Water Birds North Amer., II, 1884, p. 17.

⁵Rep. Explor. and Surv. R. R. Pac., IX, 1858, p. 790.

The species now referable to this genus are:

- Fulix marila marila* (Linnaeus)
Fulix marila mariloides (Vigors)
Fulix marila nearctica (Stejneger)
Fulix affinis (Eyton)
Fulix novaeaeclandiae (Gmelin).

Fuligula STEPHENS.

Fuligula STEPHENS, Shaw's Gen. Zool., XII, pt. ii, 1824, p. 187 (type by tautonymy, *Anas fuligula* Linnaeus).

Ania BONAPARTE, Ann. Lyc. Nat. Hist. N. Y., II, 1828, p. 386 (in synonymy of *Fuligula*: type thus by virtue of substitution, *Anas fuligula* Linnaeus).

Glaucium GRAY, List Genera Birds, 1840, p. 75 (Brisson MS., in synonymy of *Fuligula* "Ray" [= Gray]) (type by virtue of substitution, *Anas fuligula* Linnaeus).

Diagnosis.—Similar to *Fulix*, but tip of bill much rounded, its width at posterior end of nail less than 2 1/2 times the length of nail; and head with a long occipital crest.

Description.—Wing 5 times the length of exposed culmen; bill relatively little flattened terminally, its width near end 1 1/10-1 2/10 times its width at base, its tip rounded, its width at posterior end of nail 2-2 1/4 times the length of nail; tip of maxilla much hooked; nail of bill broadly triangular; height of bill at extreme base 5/6-19/20 of its greatest width; base of culmen not deeply concave; length of exposed culmen 2-2 3/8 times the height of bill at extreme base, 19/10-2 times the greatest width of bill, and decidedly less than the length of inner toe with claw; anterior outline of feathering at the base of culmen triangular and acutely pointed; feathering on sides of maxilla not reaching forward as far as that at the base of culmen; a long (75 mm.), slender occipital crest.

Type.—*Anas fuligula* Linnaeus.

Remarks.—This bird is much more closely allied to the genus *Nyroca* than to *Fulix*, despite its coloration, as may be seen from the diagnosis herewith given. Its long, pointed crest is unique among the species here considered, although some of the others have the feathers of the pileum lengthened into a short, bushy crest.

The name to be applied to this genus is, of course, clearly *Fuligula* Stephens,¹ as its type is, by tautonymy, *Anas fuligula* Linnaeus. The name *Platypus* Brehm,² by some others cited in the synonymy of *Fuligula*, is a synonym of *Somateria* Leach, as is established by the designation of its type by Lesson³ as *Anas mollissima* Linnaeus.

The only species of this genus is *Fuligula fuligula* (Linnaeus).

Nyroca FLEMING.

Nyroca FLEMING, Philos. Zool., II, 1822, p. 260 (type by tautonymy, *Anas nyroca* Gldenstdt).

¹In Shaw's Gen. Zool., XII, pt. ii, 1824, p. 187.

²Lehrb. d. Naturg., Eur. Vg., II, 1824, p. 805.

³Man. d'Ornith., II, June, 1828, p. 415.

Hyonetta HEINE. Nomencl. Mus. Hein. Ornith., 1890, p. 347 (nom. emend. pro *Nyroca* Fleming, 1822; type, therefore, *Anas nyroca* Gldenstdt).

Diagnosis.—Similar to *Fuligula*, but length of wing less than 5 times the length of exposed culmen; head without a long occipital crest.

Description.—Wing $4\frac{2}{5}$ – $4\frac{4}{5}$ times the length of exposed culmen; bill relatively somewhat flattened terminally, its width near end $1\frac{1}{2}$ – $\frac{2}{10}$ times its width at base, its tip rounded, its width at posterior end of nail $\frac{19}{10}$ – $\frac{23}{10}$ times the length of nail; tip of maxilla much hooked; nail of bill broad and triangular; height of bill at extreme base $\frac{9}{10}$ – $1\frac{2}{10}$ times its greatest width; base of culmen not deeply concave; exposed culmen $1\frac{4}{5}$ – $2\frac{1}{5}$ times the height of bill at extreme base, and $\frac{19}{10}$ – $2\frac{1}{3}$ times the greatest width of bill; exposed culmen decidedly less than the length of inner toe with claw; anterior outline of feathering at the base of culmen triangular and acutely pointed; feathering on sides of maxilla not reaching forward as far as that at the base of culmen; a short occipital crest or none.

Type.—*Anas nyroca* Gldenstdt.

Remarks.—The species included under this heading seem at first sight to be a heterogeneous assemblage, but, as in the case of *Fulix*, the examination and comparison of all the species involved and the proper consideration of individual variation show that no further generic division is possible without virtually making a genus of each species on characters either trivial or not wholly constant. It is quite true that *Nyroca americana* differs in structure considerably from *Nyroca nyroca*, the length of the wing in the former being more than $4\frac{1}{2}$ times the exposed culmen; the bill less widened at tip, its width at posterior end of nail less in proportion to the length of the nail, its height at extreme base decidedly more than its greatest width; and the length of the exposed culmen decidedly more than 2 times the greatest width of bill; but all these differences are more or less unsatisfactory, as they either by individual variation or through the characters of other species here referred to *Nyroca* grade insensibly into each other. The same situation exists in the other species. Two forms, *Nyroca nationi* and *Nyroca innotata*, have not been examined in the present connection, but the relationship, of at least the latter, in so far as determinable, seems to be doubtless with the present group.

No complication exists in the generic synonymy of this group, for the name *Nyroca* Fleming¹ has for its type by tautonymy *Anas nyroca* Gldenstdt. The *Hyonetta* of Heine² is, of course, merely a substitute name for *Nyroca* Fleming, for reasons of purism.

The species belonging to this genus are as follows:

- Nyroca erythrophthalma* (Wied)
- Nyroca brunnea* Eyton
- Nyroca nationi* (Sclater and Salvin)
- Nyroca americana* (Eyton)
- Nyroca nyroca* (Gldenstdt)
- Nyroca innotata* Salvadori
- Nyroca australis* Eyton
- Nyroca baeri* (Radde).

¹Philos. Zool., II, 1822, p. 260.

²Nomencl. Mus. Hein. Ornith., 1890, p. 347.

Perissonetta, gen. nov.¹

Diagnosis.—Similar to *Nyroca*, but length of exposed culmen equal to length of inner toe with claw (instead of decidedly shorter); feathering on sides of maxilla extending forward as far as the feathering at the base of the culmen; anterior outline of feathering at the base of culmen broadly convex; and length of wing only about 4 times the length of exposed culmen.

Description.—Wing 4 times the length of exposed culmen; bill relatively little flattened terminally, its width near end about $1\frac{1}{8}$ times its width at base, its tip rounded, and its width at posterior end of nail about 2 times the length of the nail; tip of maxilla much hooked; nail of bill rather wide and subtriangular; height of bill at extreme base, $1\frac{1}{8}$ times its greatest width; base of culmen not deeply concave; exposed culmen about $2\frac{1}{4}$ times the height of bill at extreme base, $2\frac{2}{5}$ times the greatest width of bill, and equal to the length of inner toe with claw; anterior outline of feathering at base of culmen broadly convex; the feathering on sides of maxilla reaching forward as far as that at the base of culmen; a short, bushy occipital and coronal crest.

Type.—*Anas collaris* Donovan.

Remarks.—Mr. N. Hollister's excellent article on this species² serves but to emphasize the distinctness of this duck from its Old World relatives. As the characters that we have above given show, this species forms one of the most trenchantly distinct groups among the genera allied to *Nyroca*. Most of its distinctive characteristics are here for the first time presented, and it is quite evident that had they been appreciated before, the bird would long ago have figured as the type of a new genus, a fate that it seems to have escaped until now. In addition to the other characters by which it is readily and variously distinguishable from each of the generic groups here treated, it differs from all of these in the shape of the frontal feathering at the base of the culmen, and in the relative anterior extent of the feathering on the sides of the maxilla; and also, from all but *Aristonetta*, in having the exposed culmen equal to the length of the inner toe with claw. Notwithstanding its coloration, it is fully as well differentiated from *Fuligula* as from *Nyroca*, as the following differences from the former show: wing only 4 times the length of exposed culmen; height of bill at extreme base much more than the greatest width of bill; length of exposed culmen about $2\frac{1}{2}$ times the greatest width of bill; exposed culmen equal to inner toe with claw; anterior outline of feathering at the base of culmen convex, that on sides of maxilla reaching as far forward as that at the base of culmen; occipital crest short.

The only species assignable to this group must now be called *Perissonetta collaris* (Donovan).

Aithya GLOGER.

Aythya BOIE, Isis (von Oken), 1822, Heft V, col. 561 (type by subsequent designation [Degland, Ornith. Europ., II, 1849, p. 455.], *Anas ferina* Linnaeus) (nec *Aethya* Dumont, quae *Aethya* Merrem [Alcidae]).

Aithya GLOGER, (Froriep's) Notizen Gebiete Natur u. Heilk., XVI, No. 18, March, 1827, col. 279 (nom. emend. pro *Aythya* Boie; type, therefore, *Anas ferina* Linnaeus).

¹perissós, mirabilis; nēta, anas.

²The Auk, XXXVI, No. 4, October, 1919, pp. 460-463.

Aethya GLOGER, (Froriep's) Notizen Gebiete Natur u. Heilk., XVI, No. 18, March, 1827, col. 279 (nom. emend. pro *Aythya* Boie; type, therefore, *Anas ferina* Linnaeus).

Aethya GLOGER, (Froriep's) Notizen Gebiete Natur u. Heilk. XVI, No. 18, March, 1827, col. 279 (nom. emend. pro *Aythya* Boie; type, therefore, *Anas ferina* Linnaeus).

Aithya BOIE, Isis (von Oken), 1828, Heft III-IV, col. 359 (nom. emend. pro *Aythya* Boie; type thus *Anas ferina* Linnaeus) (nec *Aethya* Dumont).

Fuligula SWAINSON, Nat. Hist. and Classif. Birds, II, July 1, 1837, p. 368 (Ray MS.) (type by monotypy, *Fuligula ferina* Selby [= *Anas ferina* Linnaeus]).

Athya BRANDT, in Helmersen, Lehmann's Reise Buchara und Samarkand, 1852, p. 329 (type by monotypy, "*Fuligula ferina* Linn." [= *Anas ferina* Linnaeus]).

Marila REICHENBACH, Avium Syst. Nat., 1852, p. VIII (type by original designation, *Anas ferina* Linnaeus).

Aythia SALVADORI, Cat. Birds Brit. Mus., XXVII, 1895, p. 334 (Boie MS.) (type by original designation, *Anas ferina* Linnaeus).

Diagnosis.—Similar to *Perissonetta*, but length of exposed culmen decidedly shorter than inner toe with claw, and less than twice the height of bill at extreme base; feathering on sides of maxilla not extending forward as far as the feathering at the base of the culmen; anterior outline of feathering at the base of culmen triangular and reaching anteriorly to an acute point; length of wing more than 4 times the length of exposed culmen, tip of bill squarish, its width at posterior end of nail $2\frac{1}{2}$ times the length of nail; height of bill at extreme base $1\frac{1}{4}$ - $1\frac{3}{8}$ times its greatest width; and base of culmen deeply concave.

Description.—Wing $4\frac{1}{4}$ - $4\frac{2}{5}$ times the length of exposed culmen; bill somewhat flattened terminally, its width near end about $1\frac{1}{20}$ times its width at base, its tip squarish, its width at posterior end of nail about $2\frac{1}{2}$ times the length of nail; tip of maxilla moderately hooked; nail of bill rather narrow and strap-shaped; height of bill at extreme base $1\frac{1}{4}$ - $1\frac{3}{8}$ times the greatest width of bill; base of culmen deeply concave; length of exposed culmen $1\frac{4}{5}$ - $1\frac{6}{7}$ times the height of bill at extreme base, about $2\frac{2}{5}$ times the greatest width of bill, and decidedly less than inner toe with claw; anterior outline of feathering at base of culmen triangular and acutely pointed; feathering on sides of maxilla not reaching forward as far as the feathering at the base of culmen; a short occipital crest.

Type.—*Anas ferina* Linnaeus.

Remarks.—This, the type of this monotypic genus, is very much more different from the species above included in *Nyroca* than authors have heretofore realized, largely because its distinctive characteristics have apparently been unappreciated. Its separation now as a distinct genus is based almost entirely on new characters. From *Nyroca* it may readily be separated by the deep longitudinal cavity at the base of the culmen, squarish tip of bill, and in having the width of the bill at the posterior end of nail at least $2\frac{1}{2}$ times the length of the nail; tip of maxilla less strongly hooked; nail of bill relatively narrow and strap-like; and the height of bill at base $1\frac{1}{4}$ - $1\frac{3}{8}$ times the greatest width of bill.

This genus in some respects resembles *Aristonetta*, as for instance in the much concave base of culmen, in which character it differs from all the other groups here considered. It is, however, well differentiated from *Aristonetta*, as may be seen from the diagnosis under that genus.

The generic name *Aythya* Boie¹ is the earliest name applicable to this group, but it is preoccupied by *Aethya* Dumont,² which is a synonym of *Aethia*, the earliest name for the genus of Alcidae formerly known as *Simorhynchus*. The *Aithya* of Boie³ is, of course, merely an emendation of *Aythya* Boie, and is also preoccupied by *Aethya* Dumont. Likewise, *Fuligula* Swainson,⁴ the type of which by monotypy is *Anas ferina* Linnaeus, is preoccupied by *Fuligula* Stephens.⁵ The name *Aithyia* Gloger,⁶ proposed as an emendation for *Aythya* Boie, is, however, by virtue of its additional syllable, a different word, therefore tenable under the present rules of nomenclature, and should be brought into use for this genus as its earliest valid designation.

The only species referable to *Aithyia* is *Aithyia ferina* (Linnaeus).

Aristonetta BAIRD.

Aythya BONAPARTE. Compt. Rend. l'Acad. Sci., XXXVIII No. 14, April 10, 1854, p. 664 (type by monotypy, *Anas valisineria* Wilson) (nec *Aithyia* Gloger).

Aristonetta BAIRD, Rep. and Explor. Surv. R. R. Pac., IX, 1858, p. 793 (in text) (type by original designation and monotypy, *Anas valisineria* Wilson).

Aythya LE MOINE, Ornith. Canada, pt. 1, 1860, p. 90 (type, *Anas valisineria* Wilson).

Diagnosis.—Similar to *Aithyia*, but length of exposed culmen about equal to length of inner toe with claw, more than twice the height of bill at extreme base, and about 3 times the greatest width of bill; length of wing less than 4 times the length of exposed culmen; bill rounded at tip, and not wider near end than at base; tip of maxilla little or not at all hooked.

Description.—Wing 33/4-3 4/5 times the length of the exposed culmen; bill much flattened terminally, its width near end not more than its width at base, usually less; tip of bill rounded; width of bill at posterior end of nail 2 1/5 times the length of nail; tip of maxilla little or not at all hooked; nail of bill narrow and straplike; height of bill at extreme base 1 1/4—times the greatest width of bill; base of culmen deeply concave; length of exposed culmen 2 2/5 times the height of bill at extreme base, about 3 times the greatest width of bill, and equal to the length of inner toe with claw; anterior outline of feathering at base of culmen triangular and acutely pointed; feathering on sides of maxilla not reaching forward as far as the feathering at the base of culmen; no occipital crest.

Type.—*Anas valisineria* Wilson.

Remarks.—This monotypic group seems to be most nearly allied to *Aithyia*, although by no means to be included in the same genus. It forms

¹Isis (von Oken), 1822, Heft V, col. 564.

²Diet. Sci. Nat., rev. ed., I, 1916, suppl., p. 71.

³Isis (von Oken), 1828, Heft III-IV, col. 359.

⁴Nat. Hist. and Classif. Birds, II, July 1, 1837, p. 368.

⁵Shaw's Gen. Zool., XII, pt. II, 1824, p. 187.

⁶(Froriep's) Notizen Gebiete Natur u. Heilk., XVI, No. 18, March, 1827, col. 279.

one of the most easily separated groups of those now under consideration. Some of its characters are here for the first time elucidated.

Its only species is *Aristonetta valisineria* (Wilson).

The following key to the genera here treated is added for convenience of reference and as a more graphic exposition of salient characters.

ANALYTICAL KEY TO GENERA ALLIED TO NYROCA.

- a*¹. Length of exposed culmen about equal to length of inner toe with claw.
 - b*¹. Base of culmen deeply concave; anterior outline of feathering at base of culmen acutely pointed; feathering on sides of maxilla not reaching anteriorly as far as that at base of culmen; bill more flattened anteriorly, longer and slenderer, not wider near end than at base; length of exposed culmen 3 times the greatest width of bill; tip of maxilla not at all or very slightly hooked; nail of bill narrow and with parallel sides.....*Aristonetta*.
 - b*². Base of culmen not deeply concave; anterior outline of feathering at base of culmen not acutely pointed, but broadly convex; feathering on sides of maxilla reaching anteriorly as far as that at base of culmen; bill less flattened anteriorly, shorter and stouter, decidedly wider near end than at base; length of exposed culmen only 2 1/2 times the greatest width of bill; tip of maxilla strongly hooked; nail of bill rather wide and subtriangular....*Perissonetta*.
- a*². Length of exposed culmen decidedly shorter than inner toe with claw.
 - b*¹. Base of culmen deeply concave.....*Aithya*.
 - b*². Base of culmen not deeply concave.
 - c*¹. Tip of bill squarish, its width at posterior end of nail not less than 2 1/2 times the length of nail.....*Fulix*.
 - c*². Tip of bill much rounded, its width at posterior end of nail less than 2 1/2 times the length of nail.
 - d*¹. Length of wing less than 5 times the length of exposed culmen; no long pointed occipital crest.....*Nyroca*.
 - d*². Length of wing not less than 5 times the length of exposed culmen; a long (75 mm.) pointed occipital crest.....*Fuligula*.

