

FIELD STUDIES OF THE ANATIDAE OF THE
ATLANTIC COAST.*

BY LUDLOW GRISCOM.

THE Anatidae or waterfowl, including the ducks, geese and swans, constitute one of the last groups of birds with which the student of birds in life becomes familiar. This is due to several factors. First, waterfowl are confined to marshes and bodies of water, whereas, the common land birds, as the Robin for example, are widely distributed in settled country. Several species of ducks are numerically equally abundant, but the individuals are massed in a restricted environment. Secondly, for centuries waterfowl have been subjected to constant persecution as game, resulting in a great decrease of their numbers. Most important of all is the steady invasion of their breeding-grounds by civilization.

The struggle for existence has accordingly become more acute as the birds have become fewer and many of their old haunts have disappeared. By nature shy and wary these qualities have become greatly accentuated. The cleverness of Black Ducks and wild geese in eluding schemes for their destruction is proverbial. With care almost any land bird can be approached within a hundred feet, but the student may consider himself fortunate indeed if he approaches within as many yards of a duck. Many species are crepuscular or nocturnal, hiding by day in dense reed-beds or riding the water far from shore. The sea ducks are to be found almost invariably far "off shore." The writer has seen thousands of Scoters so far out at sea that they appeared as mere specks. This is probably an acquired habit, since they are fond of riding the surf in uninhabited stretches of coast.

To the beginner, therefore, the waterfowl are a source of continual discouragement. Much time is spent in the field with few results other than a note-book filled with question marks. The difficulty is greatly increased by one fact, that in popular treatises

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or bird manuals many species of ducks are omitted entirely because of their rarity, and those included are identified by means of plumage or structural characters, which in many cases cannot be employed in the field. The more technical manuals are arranged mainly for the identification of specimens in the hand, some characters of great importance in the field, but others entirely useless. Thus the subfamily *Fuligulinae* is distinguished by having a broadly lobed hind toe, but by no stretch of the imagination could this be determined in a wild bird. The inexperienced student is unable to discriminate, and accordingly unable to make use of these manuals to any great extent. Even the plumage characters have never received thorough treatment. There are only two books extant which treat the subject of field identification competently:—Hoffman's 'Guide to the Birds of New England and New York' and Eaton's 'Birds of New York.' The former is confessedly a popular treatise and most admirably adapted to its purpose. Naturally enough the rare species are omitted and "fine points" are not discussed. Eaton is the only author who has given attention to shape, manner of flight, and such other features as would aid in field identification. As is so often the case, however, this work is not within the reach of most students and cannot be carried in the field because of its physical proportions.

I. METHODS OF IDENTIFICATION.

Fortunately this family of birds exhibits a certain lack of homogeneity in external characteristics. Few groups show a greater variation in color pattern. No other order of birds except the Ralliformes is divided into so many genera in proportion to the number of species. The field characters which I have found useful for the purposes of identification fall into two groups.

(1) *Color markings*—to be used at close range under favorable conditions of light. The maximum distance at which color of plumage can be used safely is about 150 yards, very much less than that for several species. This method, is, of course, the only one which the beginner should use.

(2) *Characteristics of shape and flight, combined with color pattern.*—It is well known that experienced ornithologists, sportsmen and

the better class of baymen are able to name many species of waterfowl with certainty at great distances when color markings are more or less indistinguishable. Tricks of flight, peculiar shapes of body, and the varying amounts of white are in time noted and remembered. The ability to do this for more and more species grows with practice until finally many can be named with certainty when they appear only as black specks to the naked eye, a feat seeming little short of miraculous to the unskilled.

A much more difficult task, however, is that of passing this knowledge on to others in a way to be readily understood and, therefore, useful. It is also much easier to name a duck at a great distance than to prove the identification, without which an observation is devoid of scientific value. In the writer's experience a longer period of years was necessary to prove that certain ducks could be identified accurately at long range than to acquire the ability to do so. This was done by taking advantage of the well known habit of ducks to rise from the water against the wind and then to double back with the wind. To get just the right conditions, a flock of ducks should be approached against a strong wind in a boat. As they flush they can be identified at long range and when they double back past the boat the identification can be made positive thus supplying an excellent check. This check has been employed many times for most species mentioned in this paper.

The second difficulty, that of analyzing and defining these characteristics of shape, flight and color pattern, can be overcome only by visiting favorable localities where many species occur together either during migration or in winter quarters. Gardiner's Island and Currituck Sound are good examples. Another excellent method which aids the solution of both problems at once is the use of a blind in some pond or creek resorted to by several species. The ducks come so close that they may be identified with certainty. By flushing them the differences between them can be noted at great distances with the added advantages of comparison. What is equally important, the distance at which the various species are no longer identifiable can be determined approximately. In most cases it is astonishing how great this distance is. This method has been used successfully in many parts of the country.

A few words should be said by way of definition concerning the field characters used in this paper:—

(1) *Shape*.—The shape of waterfowl varies considerably. Those who are familiar with the common barnyard varieties can distinguish a duck, goose, swan, or even different varieties of poultry by shape alone. It is a matter of common experience. Many species of ducks differ no less decidedly from each other, though in a lesser degree. The Mergansers with their thin heads, long thin necks, and narrow bodies, can be readily contrasted with the Sea Ducks, possessing round, thick heads, short necks and stout bodies. It is not, however, to be supposed for a moment that a person observing a Merganser for the first time would at once recognize it by this characterization. Since these differences in shape are of degree only, hence purely comparative, an acquaintance with the majority of types being a prerequisite to recognizing a new one.

The length of the neck is one of the best methods of separating Anatidae into groups. In flight Swans appear to be about half head and neck, Geese and the Pintail one third, the *Anatinae* Canvasback, Scoters, and Mergansers about a quarter of the total length, and the remaining species even less.

(2) *Flight*.—This is undoubtedly the character which gives the student most trouble. It is also the most difficult of description and illustration. It is best treated under three heads:—

(a) *Shape of wings*.—The wings of the Anatidae differ to a considerable extent. Geese and swans have very broad wings; fresh water ducks, as a rule, possess a long, narrow wing, tapering gradually to a point; the sea ducks are provided with a short, broad wing which tapers rapidly to a blunt point. There are, of course, exceptions and variations in each subfamily which will be discussed later. The point to be emphasized here is the relation of shape of wing and manner of flight. The rapidity of the wing-beats, necessary to maintain a given rate of speed, is much greater in the sea ducks than in the fresh water species. In swans and geese with very broad wings, the flight is a slow flapping, rather than a rapid beating of the wings.

(b) *The arc described by the wings during a single beat*.—Flight is accomplished by raising the wings above the body and then bring-

ing them down forcibly below the body to a greater or less extent. If we can imagine the wing-tip describing a line in space, that line will obviously assume the form of an arc, since the other end of the wing is permanently attached to the body. The figure thus described will be referred to in this paper as the wing-arc. It follows that any peculiarity in flight will produce a variation in this arc. The Black Duck, for instance, rarely brings its wings below the level of the belly except when rising from the water. The arc in this case is little more than half its length in other species. The Baldpate brings its wings way below the body at the down-stroke. The Ruddy Duck raises its wings but little above the body and does not bring them very far below it. The wing-arc in the former will be very long, and in the latter very short. Once the principle of its formation is grasped, an illustration of the wing-arc of any species presents a much better mental picture than an unavoidably lengthy and involved description.

Finally the wing-arcs of all ducks appear to the eye to be at right angles to the median line of the body, with the single exception of the Old-squaw. This is very far from being actually the case. The movements of a bird's wing are very complicated, but they are so very rapid that the eye is entirely unable to distinguish them. It is not in the province of this paper to discuss the mechanics of flight or the reasons why it appears to the eye as it does. The characters used in this paper are those clearly visible to the eye, and as such the wing-arc is taken to be at right angles to the body, unless otherwise stated.

(c) *Position of the body in flight.*—This is an excellent character and is easy of accurate determination. The Mergansers, for instance, hold the bill, head, neck, and body in a straight line during horizontal flight. The Black Duck always flies with the body tipped up at the front. Nearly all ducks fly with the head higher than the body; some point the bill downwards, others hold it parallel to the direction of flight.

(3) *Color pattern.*—At any considerable distance colors resolve themselves into dark and light areas, finally even the light areas becoming dark also. Ducks are usually so far away from the observer that their colors can only be expressed in terms of dark and light. Color markings consequently reduce themselves to

color patterns, namely, the arrangement of dark and light areas for any given species. The Black Duck, for instance, is not really black at all, but appears so only a few yards away. White, unless in very small quantities, is evident at very great distances. Red and blue soon appear black. Light grays and blues appear as light areas. Yellow or buffy tints soon change to brown. Brown in strong sunlight can be distinguished from black up to a quarter of a mile, finally appearing black. With practice the color pattern of every species is easily determinable beforehand for various distances.

So much for the general lines along which these field studies of the Anatidae have been conducted. Every means to identification which the student can employ will be described. The majority of species possess several characters each, so that if conditions make the determination of one impossible, there are others equally good upon which to rely. Unless a duck is so near that every color marking can be made out, the student is advised to flush or scare up his bird if possible, as most of the characters other than color markings show in flight only. Ducks sitting on the water 100 yards from shore are almost invariably unidentifiable on a dull day. If, however, they can be made to fly away they are equally certain to leave their names behind.

It should be understood that when characters are given for any species when on the wing, the line of flight must be past the observer not away from or toward him. Certain expressions with regard to distance have been found convenient, and are employed consistently through the paper. They are as follows: "close range," from 10-150 yards; "short distance," same as the preceding; "moderate distance," 150 yards to one quarter of a mile for geese and swans; "long range," one quarter of a mile or more. The use of prism binocular glasses is taken for granted throughout the paper.

These investigations were started originally to find out how far the accurate identification of *Anatidae* could be carried, not to prove that they could be named much more easily than supposed.

II. DESCRIPTIVE.

The Anatidae of North America are divided into five subfamilies according to the 'Check-List' of the American Ornithologists' Union, a division based naturally upon structural differences. Fortunately there are characteristics of shape, size, and color which readily distinguish most of these groups in the field. The differences between the *Anatinae* and the *Fuligulinae* are comparatively slight, several species in each group varying towards the other in some of their characters.

FIELD KEY TO THE SUBFAMILIES.

- A. Plumage pure white; head and neck $\frac{1}{2}$ total length; wings very long and broad; size very large, length 55 inches. *Cygninae*.
- AA. Plumage never entirely white, neck $\frac{1}{3}$ of total length or less; length under 43 inches.
 - a. Wing-beats slow; wings very broad; neck $\frac{1}{3}$ of total length; size comparatively large. *Anserinae*.
 - b. Wing-beats more rapid; wings not broad; neck not of striking length (except in Pintail); size comparatively small.
 - 1. Bill, head, neck, and body held in a straight line in flight; bill long, narrow and slender; head, neck, and body very slender. *Merginae*.
 - 2. Bill, head, neck and body not held in a straight line in flight; bill short and comparatively stout; shape not so slender as the last.
 - a. Neck long; head narrow; body slender; wings narrow and tapering gradually to a point. *Anatinae*.
 - b. Neck usually short and always stout; head stout and round; body stout; wings broad and suddenly pointed or else rounded; wing-beats much more rapid than in last. *Fuligulinae*.

SUBFAMILY MERGINAE.

Three species of Mergansers occur more or less commonly in the Eastern United States. In the water at close range they can always be recognized by the narrow slender bill, and slender head and neck. In flight these characteristics are even more apparent; moreover the bird holds itself with the bill, head, neck, and body in a straight line. The flocking formation of Mergansers is also characteristic. They fly in long lines over the water; regularly, in single file. In flocks containing fifty or more birds,

there is a certain amount of bunching in the middle, but the flock is always longer than broad or deep. Mergansers fly as a rule just above the water. I have never seen a Merganser more than 150 feet in the air. Their flight and flocking habits are shared by the Scoters only, which are mostly black, while the Mergansers always show a considerable amount of white in the plumage. Finally Scoters are not nearly so slender in build as Mergansers. Members of this subfamily can be made out satisfactorily at a distance of a quarter mile or even more.

1. **Mergus americanus.** AMERICAN MERGANSER.

2. **M. serrator.** RED-BREASTED MERGANSER.

These two species can best be discussed together. Color markings alone must be used to distinguish them, as the difference in size is not sufficient. The males are readily separable. The crest of the Red-breasted is noticeable at a considerable distance even in poor light. The reddish-brown band across the breast shows even when the bird is swimming, being well above its "waterline." At any distance or in poor light it appears merely as a dark area, but as the male American never has a dark area below, this mark is useful in the field at all times. On the wing the Red-breasted shows much less white than its relative, because the bend of the wing and the outer scapulars are almost entirely black, whereas they are pure white in the American. This character is the one observable at the greatest distance. The females of the two species are very difficult to separate. The American has a dark reddish brown head and neck sharply defined from the gray or white of the adjoining areas. In the other species the reddish brown is lighter in shade and blends gradually into the adjacent areas.

A good many students are content to separate the two species by the character of the water in which the bird is found. Incredible as this may seem, there is a certain basis of truth in it, founded on the habits of these birds. The American undoubtedly prefers fresh water, rivers and lakes; the Red-breasted the ocean, and salt bays, and estuaries. Unfortunately many exceptions may possibly prove the rule, the Red-breasted Merganser being a regular migrant to all large inland bodies of water, and the American frequently noted in bays and estuaries, though rarely in the ocean itself. The student must realize then that a Merganser on a river or lake is not necessarily an American, and similarly a flock of birds in some bay are not necessarily to be considered the Red-breasted species.

3. **Lophodytes cucullatus.**—HOODED MERGANSER.

This rather uncommon species is found in all types of aquatic environment, and hence associates frequently with its larger relatives. On such occasions its much smaller size and the darker coloration of both sexes readily distinguish it. Should the birds be alone on some quiet mill-pond

or estuary, the adult male can be identified by its bushy, black and white crest, the large amount of black in the wings, and the two bars of black on the sides of the breast in front of the wing. The female and immature have the back dark grayish-brown and not gray as in the other two species, a distinction which distance accentuates; the head is also dark grayish-brown and not reddish-brown in marked contrast to the head. In rapid flight the exact proportion of light and dark does not show well, but the male differs from its relatives in the wholly black appearance of the wing, which has a small white mirror only; the female can only be identified by its smaller size.

SUBFAMILY ANATINAE.

Eleven species of this subfamily occur more or less regularly in the eastern United States, but only one, the Black Duck, is abundant and generally distributed. Most of them are now uncommon in most of the North-east. Three are rare everywhere; the European Widgeon while a rare visitor to North America, is likely to occur anywhere with Baldpate in localities suited to that species; the Shoveller and Gadwall are western species, regular winter visitors to the Southern States only, and very rare north of Maryland, along the Atlantic Coast. The Wood Duck, owing to persistent persecution and the reclamation of its breeding grounds, is now common only in the South. In the Montezuma Marshes of central New York one Teal is seen for every thousand, twenty-five years ago. Several years are usually required to meet all the members of this subfamily, unless the student can reach a few chosen localities.

Most of the species can, however, be recognized at considerable distances by marked characteristics of shape and flight. The bill is relatively longer than in Sea Ducks, deeper and much broader than in Mergansers. The neck is slender, never stout, and from $\frac{1}{3}$ to $\frac{1}{4}$ the total length, when outstretched in flight. The Scoters (Sea Ducks) have rather slender heads and long necks, but the neck is much stouter, as is also the body, which is slender in the *Anatinae*. The wings are long, narrow and sharply pointed, never rounded and abrupt. In flight the members of this subfamily never assume an attitude like that of the Mergansers, but rather one in which the neck is inclined upwards from the body, and the head slightly downward thus forming an angle with the neck. The wing-beats are slow compared with Sea Ducks, the wing-arc

being very long. The Mallard and Black Duck are two exceptions. In these the wing-arc is short due to the rapid wing-beats, but the wings are raised high above the body during the up-stroke, thus differing markedly from Sea Ducks. All *Anatinae* rise from the water very abruptly or steeply, at an angle of 75-80°.

4. **Anas platyrhynchos.**—MALLARD.

The male Mallard at close range can be confused with no other species, whether sitting on the water or on the wing. When flying directly away from the observer, the white tail feathers and black tail coverts are very conspicuous and furnish an excellent distinguishing mark. The female Mallard most closely resembles the Black Duck but is of a light chocolate brown, instead of dark blackish brown, with a conspicuous white stripe in the wing. These characters can frequently be made out at the distance of a quarter mile in strong sunlight.

On the wing this species and the Black Duck share the peculiar wing-arc described above. At long range the white underparts of the male show as a light area even in poor light, and the paler coloration of the female is very noticeable, as mentioned above. The female also bears a superficial resemblance to the female Baldpate, many students believing that the white belly of the latter must be made out to distinguish the two species. As a matter of fact there is much more white in the wing of the Baldpate, and at any distance the peculiar flight of the Mallard is noticeable. Moreover it has a much stockier build.

5. **Anas rubripes.**—BLACK DUCK.

The Black Duck, owing to its uniform dark coloration and peculiar flight, is distinguishable at any distance. The white lining of the wings is an excellent character which is obvious at a distance of a quarter mile in good light. The thin line of white on the tips of the secondaries is not visible for more than a hundred feet, and is indistinguishable when the bird is on the wing. There is, therefore, no danger of confusing it with a female Mallard, which has a conspicuous stripe of white in the wing.

When Black Ducks are startled by a sudden approach or when in some manner suspicion is aroused, the head and neck are stretched straight up in the air to the fullest possible extent, and the bird for several seconds is absolutely motionless. All *Anatinae*, when alarmed, raise the head to look about, but no other species comports itself in quite the same way as the Black Duck.

Encamped on the bank of a pond in some marsh during the migrations, the student is often awakened by the whirring of wings, the quacking and whistling of various *Anatinae* which appear as mere shapeless shadows. Their notes identify them. The male Mallard and Black Duck have a low reedy quack, *kwek-kwek-kwek-kwek*, given much more rapidly than the resonant *quack, quack, quack*, of the females.

6. **Anas fulvigula.**—FLORIDA DUCK.

This species is easily distinguishable from the Black Duck in life. The lack of streaks on the buffy throat gives this part a much lighter appearance at a distance than the rest of the underparts or the head, thus affording a contrast in color pattern which is noticeable in a good light at a considerable distance. The two races of this species are, of course, not distinguishable in life.

7. **Chaulelasmus streperus.**—GADWALL.

This species is the rarest of its subfamily in the North-east, and I doubt if it is really common anywhere in Eastern North America east of the Mississippi. The male is quite unmistakable at close range. At a distance it has a gray effect, the wing with a large white and dark area. The female is the most difficult of its subfamily to identify. The color pattern is precisely like that of the Baldpate. At close range the absence of a vinaceous tone is obvious. At a distance in flight this distinction becomes impossible, and it can then be distinguished only by its shape, which is like that of a Pintail, slenderer and more rakish. The conspicuous white in the wing will distinguish it from the latter. In most parts of the Eastern United States it should be identified with the greatest care and caution.

8. **Mareca penelope.**—EUROPEAN WIDGEON.

This beautiful species is by no means so rare as was formerly supposed in the Eastern United States. On Currituck Sound, North Carolina, where Baldpates winter in great numbers, this species is well known to the better class of local gunners who call it the Red-headed Widgeon. It is likely to occur wherever Baldpates are particularly abundant.

In size, shape, and flight characters it closely resembles its relative, and is indistinguishable from it on the wing at any distance. At close range on the water, however, the male differs from any other species in its cinnamon red head and cream buff crown. The female is indistinguishable in the field from the female Baldpate.

9. **Mareca americana.**—BALDPATE.

Like all the members of this subfamily, the male Baldpate is unmistakable at close range. The female resembles that sex of the Mallard, but is much paler in general color and smaller. The amount of white in the wing is also much greater. When tipping for food Baldpates leave only the rear end out of the water. On such occasions the pure white of the belly is sharply contrasted with the black under tail-coverts, a very striking field mark.

On the wing even at close range the white top of the head in the male is usually invisible and the thick speckling of black elsewhere on the head give it a dark appearance. The whole fore-part of the wing is, however, snowy white and very conspicuous, this mark alone serving to distinguish it from any other member of the family. The body is much paler in coloration than the Mallard and is strongly vinaceous in tint.

The lower breast and belly are white. The last two characters serve also to distinguish the female very readily.

On the wing at long range this species is readily determinable by its shape which is noticeably slenderer than the Mallard and Black Duck. This shows especially in the body which is not so deep or so stout. The flight is also diagnostic, the wings being brought way below the body in the down-stroke, thus making the wing-arc a long one. The bird seems to rise from the water, when flushed, with much less effort than the other two species.

The note of the male is a mewling whistle which might be rendered as *whew, whew, whew*. More rarely there is another note, a *ji-éw, whew*, with a pronounced burr in it, making it suggest a common call note of the Pine Siskin to a surprising extent. The female utters a loud cry which Eaton renders *kaow, kaow*. Unlike the Black Duck, the female is not particularly loquacious, while the drake gabbies incessantly. The Baldpate is easily the tamest of the Anatinae.

10. **Nettion crecca.**—EUROPEAN TEAL.

At close range in good light the male can be separated without difficulty from our Green-winged Teal. While well acquainted with both birds in life, this species is so rare in North America that I would not regard a sight record as of any real scientific value.

11. **Nettion carolinense.**—GREEN-WINGED TEAL.

The male Green-winged Teal at close range is unmistakable because of its small size; chestnut colored head; white crescent in front of the wing, and absence of white in the wing. The female is more or less uniformly colored, a paler shade than the male Mallard, and no white in the wing.

In flight, at any distance, this species is easily determined by its very small size, 3-5 inches smaller than the Baldpate for instance. The flight is also exceedingly rapid, equalled by the Canvasback alone, and it is remarkable how the great speed is attained and maintained without apparent effort, while the Canvasback displays effort in its movements.

The male utters a short mellow whistle, somewhat like the first syllable of a Baldpate's note. The female quacks like a Black Duck but the notes are higher pitched, more often repeated and much less strident. Neither sex is particularly loquacious.

12. **Querquedula discors.**—BLUE-WINGED TEAL.

The male is easily recognized at close range by the crescentic patch of white in front of the eye, and both sexes by their small size and grayish blue wing-coverts, which at a distance seem to occupy about a third of the wing. This species is obviously a Teal by its small size, although it is a trifle larger than its relative.

At long distance in flight when color details are lost, the white crescentic patch of the male is invisible, and it then appears to all intents and purposes like the female. Under these circumstances it can be confused with the female Shoveller and the Green-winged Teal. The grayish-blue

wing coverts are conspicuous as a light area at a considerable distance, which serves to eliminate the uniformly brown Green-winged Teal. The Shoveller also has grayish-blue wing-coverts, but its bill is over $2\frac{1}{2}$ inches long, longer than any member of the family in this continent except the Swans, the bill of the Teal but little over an inch long.

The flight of this species is fully as rapid as its near relative. Both species drop suddenly into the water like Snipe, and frequently wheel about over the marsh in an erratic manner in a densely massed company like Sandpipers.

The male's note is a whistling "peep," repeated five or six times. The female quacks less plainly and in a hoarser voice than the Green-wing. The notes are seldom heard.

13. *Spatula clypeata*.—SHOVELLER.

The Shoveller is still a very rare bird in the North-east, but is not uncommon in parts of the South and the Mississippi Valley.

The drake is an absolutely unmistakable bird, even at long range. In shape and size it looks like a Blue-winged Teal with a tremendously long bill, which gives the wings an effect of being way to the rear. The color pattern is unmistakable. Below there are 5 alternating areas of dark and light. The head looks black; from there to the front edge of the wing is an area of pure white, which appears like a broad ring around the body; the chestnut abdomen appears as a dark area, separated from the black under tail-coverts by a narrow band of pure white. At a great distance this narrow white band becomes invisible. If the upper-parts are seen, the back is dark, the white ring appears continuous, and the whole front half of the wing is pure white. The female has already been discussed.

Shovellers, while resembling Teal in shape and appearance, do not resemble them in speed of flight or other flight characteristics. In a large mixed flock of Anatinae the Shoveller will be at the top level of the flock, Teal will be at the bottom level towards the rear, and are the first to break away and dart back to the marsh. Teal will frequently not flush at all when surprised, but stretching the head and neck over the water will creep among the reeds along the bank and are astonishingly hard to detect. I have never known the Shoveller to attempt this. In fact, as a rule, most Anatinae will flush, even when invisible to the hunter in a canoe, and will rise to almost certain death above the shelter of the reeds.

14. *Dafila acuta*.—PINTAIL.

The male at close range is readily determined by the long tail feathers and a narrow line of white running up the sides of the neck between the bronzy brown of the sides of the head and the back of the neck. Both sexes at any distance can be determined by the length of their necks which are proportionately almost as long as in Geese. The female is more or less uniformly colored, about the same shade as a Mallard but without any white in the wing.

In flight this species can be distinguished at any distance by shape alone. The female is about as long as a Black Duck and the male considerably longer, though at any distance the long tail-feathers become invisible making it appear but little longer than the female. The long slender neck and slender body are, therefore, very striking. Compared with a Black Duck, the body is much narrower and less deep. The wings are also much narrower at the base than any other fresh water species. The flight resembles that of the Baldpate.

The female has a hoarse, guttural quack, the male a mellow, piping whistle like the syllables *wee, ee, ee, ee*, very rapidly uttered.

15. *Aix sponsa*.—WOOD DUCK.

The beautiful plumage of the male Wood Duck is unique, and unexcelled by any other North American species. On the wing the brilliancy of the colors is lost. The head is ornamented with a long crest, however, and there are conspicuous white markings on the sides of the head and neck, and a broad crescent of white in front of the wing. The female has a noticeable crest, is dark brown in general color, and resembles a female Baldpate in general appearance. The chin, is however, pure white, and there is a conspicuous white eye-ring. There is also very much less white in the wing.

In flight at any distance a stray female Wood Duck mixed in with other species could not be distinguished with certainty. It prefers wooded swamps and flooded lands, however, where the other species of Anatinae rarely occur. The Wood Duck is rarely seen in the marshes or on large bodies of water. It is perfectly at home in the woods, darting through the trees at top speed, and frequently alighting on branches and stumps, a habit shared by no other species.

The commonest note of the male is a *hoo-éek-hoo-éek*, given when alarmed. It also, according to Eaton, has a mellow *peet, peet*. The call of the duck closely resembles her mate's.

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(To be concluded)

THE WINTER BIRDS OF THE BILOXI, MISSISSIPPI, REGION.

BY JULIAN D. CORRINGTON.

HAVING occasion to spend the latter half of the winter of 1920-1921 on the Gulf Coast, I took the opportunity of making a study of the fauna, and particularly the birds of Biloxi, Mississippi, and its environs, and found this territory to be a veritable paradise for winter birds of all groups.