

A study of certain *Aythya* hybrids

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Summary

Six distinct types of drake *Aythya* hybrids which may be seen in Britain are described both from museum specimens and as seen in the field. These are the progeny of various combinations of four species: Pochard, Tufted Duck, Ferruginous Duck and Scaup. A description is also given of a drake hybrid between two North American species, the Redhead and Ring-necked Duck. Female *Aythya* hybrids must often remain unrecognised: four specimens are described. The relatively frequent occurrence of hybrids resembling species rarely found in Britain necessitates very careful scrutiny of all records purporting to be of Lesser Scaup, Ring-necked Duck and Ferruginous Duck.

Introduction

The problem of hybridisation among the diving duck of the genus *Aythya* was brought into prominence in this country by the now famous 'Lesser Scaup' dispute, in which a bird, eventually obtained at Sutton Courtenay, Berkshire, was finally identified as a hybrid, probably between a Pochard *Aythya ferina* (Linnaeus) × Tufted Duck *Aythya fuligula* (Linnaeus). The hybrid was described by Perrins (1961), in comparison with a Lesser Scaup *Aythya affinis* (Eyton), but no attempt was made at that time to compare it with other *Aythya* hybrids, of which there are at least six types to confuse ornithologists in Britain today. For this reason we have brought together a series of field observations on these and have linked them with a comparative study of all the specimens we could assemble.

These different types may be loosely defined as a 'Lesser Scaup type' (if one accepts the fact that the Sutton Courtenay bird resembles that species to some extent); a 'Pochard type'; a 'Tufted Duck type'; a 'Baer's Pochard type'; a 'Scaup type', and 'Paget's Pochard' or a 'Ferruginous type'.

As a result of our studies, we are able to confirm the correct diagnosis of the Sutton Courtenay bird, the parentage almost certainly and rather surprisingly being Pochard ♀ × Tufted Duck ♂. When the cross occurs in the reverse direction, a completely different type of hybrid results, as will be seen. We are also able to show that there is a New World equivalent of the 'Lesser Scaup type' hybrid.

Part One: The museum specimens

Table I sets out the data of the sixteen specimens we have examined comprising all six types of hybrid, the final column on parentage being of considerable importance, when these findings are linked with the field observations.

It will be noted that only four records refer to females. Their resemblance to

one or other of the parent species is so close that they are likely to be overlooked. We have, however, examined one skin of a female Pochard × Tufted Duck and watched female Paget's Pochards in the field.

I. POCHARD *A. ferina* × TUFTED DUCK *A. fuligula*, ♂ 'LESSER SCAUP TYPE'. The Sutton Courtenay specimen. (See Plates 16, 17, 18 in Photographic Section I, opposite page 64.)

The description and relevant comparisons have already been published elsewhere (Perrins, 1961). These include the important differences of colour, pattern and measurements between this bird and the Lesser Scaup *A. affinis*, and also a description of the bill colour, stressing the presence of black at the tip and base, pigmentation which is absent in *A. marila* and *A. affinis*, in which the nail only is black. The importance of the wing-bar is stressed as this reflects the intermediate character of the individual. Similarly the iris is stated to have been intermediate in colour.

There would be little point in repeating the detailed description of the plumage of the specimen which appears in the Appendix to Perrins' paper (*loc. cit.* p. 53). In our opinion the identification of the specimen is correct, *i.e.* it is a presumptive hybrid between *A. ferina* ♀ and *A. fuligula* ♂. (See field notes, numbers 18 to 23.)

We would add the following particulars:

Measurements (in mm.)

Wing:	222
Bill:	
length from feather margin	45
width at nostrils	21
width at widest point	21
nail	9 × 9
Tarsus:	38
Middle toe without nail:	59.5

Our only comment on the description already published is that the black on the tip of the bill appears to be more extensive, 4mm. proximal to the nail and for about

Table I. Museum specimens of *Aythya* hybrids examined in this study.

<i>Ref. No.</i>	<i>Hybrid and Type</i>	<i>Data</i>	<i>Reference</i>	<i>Observations re parentage</i>
1.	Pochard × Tufted Duck ('Lesser Scaup type')	3 Mar. 1960. Sutton Courtenay, Berkshire ♂ Oxford University Museum B.4171	Perrins (1961)	An identical hybrid of known parentage Pochard ♀ × Tufted Duck ♂ is alive at the Wildfowl Trust and was bred by J. P. Williams
2.	Pochard × Tufted Duck ('Lesser Scaup type')	23 Nov. 1962. ♂ Sevenoaks, Kent	*	Wild shot
3.	Pochard × Tufted Duck ('Pochard type')	28 Mar. 1937. ♂ Lake near Ismaning. Bezzel Coll. Munich Museum No. 37.106	Bezzel (1960)	Wild shot
4.	Pochard × Tufted Duck	4 Jan. 1939. ♀ Hickling Broad, Norfolk. Norwich Castle Museum No. 119,939	*	Wild shot
5.	Redhead × Ring-necked Duck. ('New World representative of Lesser Scaup type')	2 Nov. 1962. Wildfowl Trust collection. ♂ ad. Bred in captivity	*	This hybrid was thought to be Redhead × Ring-necked Duck. We support this and suggest it results from Redhead ♀ × Ring-necked Duck ♂
6.	Pochard × Tufted Duck ('Tufted Duck type')	30 Mar. 1959. J. M. Harrison collection ♂ Bred in captivity	*	These hybrids were of the same brood of known parentage Pochard ♂ × Tufted Duck ♀ and were bred by T. Jones
7.	Pochard × Tufted Duck ('Tufted Duck type')	2 Mar. 1962. J. M. Harrison collection. ♂ ad. Bred in captivity	*	
8.	Scaup × Tufted Duck ('Scaup type')	- Dec. 1960. B. L. Sage collection. ♂ Bred in captivity	Sage (1963)	Of known parentage Scaup ♂ × Tufted Duck ♀ bred by J. O. D'eath Wild shot. Same type as 8 and therefore probably of same parentage
9.	Scaup × Tufted Duck ('Scaup type')	10 June 1940. Durgedam, Holland. ♂ Coll. Zoological Museum, Amsterdam No. 5050	Voous (1955)	
10.	Scaup × Tufted Duck ('Scaup type')	20 Feb. 1947. Landroost-Ymuiden, Holland. ♂ Coll. Zoological Museum Amsterdam No. 28771	Voous (1955)	Wild shot. Same type as 8 and 9 and therefore probably of same parentage
11.	Pochard × Ferruginous Duck. ('Ferruginous Duck type'). Paget's Pochard	16 April 1909. Hickling, Norfolk. ♂ ad. Norwich Castle Museum No. 208.949	Zoologist (1909)	Wild shot. An identical hybrid of known parentage Ferruginous Duck ♀ × Pochard ♂ was bred by J. P. Williams in 1964.
12.	Pochard × Ferruginous Duck ('Ferruginous Duck type')	- Jan. 1897. Soham Toney Mere, Norfolk. ♂ ad. Norwich Castle Museum No. 7423	Riviere (1930)	Wild shot
13.	Pochard × Ferruginous Duck. ('Ferruginous Duck type')	3 Nov. 1928. Hickling Broad, Norfolk. ♂ ad. Norwich Castle Museum No. 179.928	Riviere (1930)	Wild shot
14.	Pochard × Ferruginous Duck. ('Ferruginous Duck type')	8 Dec. 1933. Heigham Sound, Norfolk. ♂ imm. Norwich Castle Museum No. 66.934	*	Wild shot
15.	Tufted × Ferruginous ('Baer's Pochard type')	'Zoo.Soc.' ♂ by plumage. British Museum No. 1858	Harrison C.J.O. (1963)	Bred in London Zoo
16.	Tufted × Ferruginous ('Baer's Pochard type')	'Zoo.Soc.' ♂ by plumage. British Museum No. 71.3.20.3	Sage (1962) and C.J.O. Harrison	Bred in London Zoo

*Not previously recorded

12mm. on the edges of the culmen on either side (cf. sketch, *loc. cit.* p.51).

2. POCHARD *A. ferina* × TUFTED DUCK *A. fuligula*, ♂, 1st w. 'LESSER SCAUP TYPE'. (See Plates 19, 20, 21.)

November 23rd, 1962, Sevenoaks, Kent. Harrison collection.

Crown, head and neck: strong purplish-red, darker on the chin and on front of neck; a well marked white chin spot. (The Sutton Courtenay bird is possibly a little brighter on these parts, but has no chin spot.) A distinct but stubby crest, which is also present in the Sutton Courtenay specimen. Upper breast: purplish-black; at lower edge, narrow whitish crescentic markings to feathers. In the Sutton Courtenay bird this area is a little brighter and the white crescentic markings are more pronounced. Over shoulder regions blackish-slate with minimal purplish-red reflections, which are slightly stronger laterally; lower edge wedge-shaped on mantle, the apex somewhat brownish, directed towards the tail. In the Sutton Courtenay bird this area is brighter and shows fairly strong purplish-red reflections; the lower edge is the reverse to that of the Sevenoaks specimen. Breast: whitish, flecked greyish-brown, particularly on the right side; left side less flecked, but a strong slate-coloured spot towards the vent. (Sutton Courtenay bird is more regularly flecked and spotted.)

Vent: barred pale greyish-brown, also finely vermiculated grey (Sutton Courtenay specimen is washed with brownish-grey, but still shows barred effect and paler greyish vermiculations here).

Under tail-coverts: blackish-sepia (Sutton Courtenay bird pale brownish-sepia).

Upper parts: moderately dark grey, very finely and closely vermiculated white (Sutton Courtenay bird a trifle lighter and brighter).

Rump and upper tail-coverts: blackish-sepia with very weak reflections, closely resembling Sutton Courtenay bird.

Rectrices: greyish-sepia, outer vanes and tips a trifle darker. (Sutton Courtenay bird brownish-sepia, outer vanes and tips slightly darker.)

Wing: coverts almost uniform greyish-brown to sepia; greater wing-coverts at speculum darker (Sutton Courtenay bird considerably lighter and greyer, and shows fine greyish vermiculations).

Speculum: whitish, broadly-edged below with strong sepia, extending on to primaries. (Sutton Courtenay specimen whitish, at lower edge greyish-sepia, considerably speckled whitish.)

Long scapulars: innermost uniform dark sepia, longest paler brownish-sepia. (Sutton

Courtenay bird grey, tipped brown.) Axillaries and under wing-coverts, white; fore edge of wing grey. (Sutton Courtenay bird paler.)

Primaries: sepia, outer vanes and tips dusky. (Sutton Courtenay specimen very pale brownish-sepia, outer vanes and tips dusky.)

Flanks: pale grey, vermiculated white.

Measurements (in mm.)

Wing:	224
Bill:	
length from feather margin	44.5
width at nostrils	18
width at widest point	20
nail	9 × 7
Tarsus:	37
Middle toe without nail:	58

Specimens 1 and 2 agree very closely; the difference appears to be due to advancing maturity in the Sutton Courtenay specimen.

3. POCHARD *A. ferina* × TUFTED DUCK *A. fuligula*, ♂, ad. 'POCHARD TYPE'. (See Plates 22, 23, 24.)

March 28th, 1937. Lake near Ismaning, Bezzel Collection, Munich Museum, Registered No. 37.106.

Crown, head and neck: rather deep rich chestnut-red, reflecting some purple, weakly on the face, but strongly on the back of the neck; chin and front of neck dull sepia faintly reflecting green. This bird has a short truncated crest. Upper breast and over shoulders: purplish-black; at lower edge of breast, the feathers narrowly edged silvery-white. Shoulder regions adjacent to mantle rather duller; central area extending on to mantle of pale brownish-sepia. This area is roughly triangular with the apex directed towards the tail.

Lower breast and belly: white merging into grey belly, becoming darker at vent. Under tail-coverts: black.

Upper parts: rather a strong dark grey, closely and finely vermiculated white. Long scapulars similar, but longest darker and more uniform on inner vanes, tone sepia.

Mantle: as upper parts, on sides paler and greyer than rest.

Rump and upper tail-coverts: dull black.

Rectrices: sepia.

Wing: coverts dark grey, very finely vermiculated, contrasting markedly with the edges of adjacent mantle; edges of wing coverts at speculum somewhat darker.

Speculum: white, at lower edge speckled grey; axillaries and under wing-coverts white, fore edge of wing faintly and narrowly grey.

Primaries: buffy-sepia, outer vanes and

tips darker sepia giving the extended wing a light bar.

Flanks: white, very faintly and closely vermiculated pale grey.

Measurements (in mm.)

Wing:	217
Bill:	
length from feather margin	44.5
width at nostrils	20
width at widest point	21
nail	6 × 6
Tarsus:	34
Middle toe without nail:	57

There is no record of the soft parts: a pattern is clearly visible on the bill, which was presumably bluish-grey with a black tip and black at the base.

Comments: compared with the other two drake hybrids of this cross, this bird presents much greater contrast. It is closer in appearance, superficially, to a drake Pochard, but has the truncated, but nevertheless noticeable crest. Possibly this enhanced contrast is due to greater maturity, but this is more likely to be a different type of hybrid resulting from the same parentage - i.e. *A. ferina* ♀ × *A. fuligula* ♂ or one of these hybrids × *A. ferina*. It has been found that sibling Wigeon *A. penelope* × Shoveler *A. clypeata* hybrids (Harrison, 1964) can show quite marked individual differences in colour. In this case, the general external morphology of the 'Pochard type' hybrid is so similar to the 'Lesser Scaup types' described, the essential differences being in colour only, that it is reasonable to presume the same parentage. (See also field notes, number 27.)

4. POCHARD *A. ferina* × TUFTED DUCK *A. fuligula*, ♀ INTERMEDIATE TYPE. (See Plates 28, 29.)

January 4th, 1949, Hickling Broad, Norfolk, Norwich Castle Museum No. 119.939 (Lord Desborough Coll.).

Crown, head and neck: dark chestnut brown, crown to nape and cheeks slightly darker; white chin-spot and imperfect whitish facial mask not joining on forehead, i.e. confined to sides of face and freely spotted with chestnut.

Breast: pale Ecru-drab* (Ridgway, 1886, Pl. III, No. 21), barred silvery-white.

Belly: silvery-white, obscurely barred and blotched with Ecru-drab.

Vent: pale grey, Ecru-drab proximally.

Under tail-coverts: stronger brownish Ecru-drab, speckled grey and white on tips.

Flanks: whitish, barred obliquely pale fulvous and vermiculated grey and white. Upper parts: warm dark chestnut-brown, at shoulders bright chestnut-brown.

* Capitalized names of colours appearing later in the text are also those of Ridgway.

Lower back, rump and upper tail-coverts: dark purplish-brown.

Rectrices: dark purplish-sepia.

Wing: coverts almost uniform dark brownish-grey.

Speculum: grey, lower border narrowly edged sepia and tipped white.

Primaries: outer vanes and tips dark sepia, rest of feathers palish-sepia, forming a broad pale wing-bar.

Scapulars: as upper parts generally, but finely speckled, grey on proximal series and brownish-ash on tips of next in size, longest dark chocolate-brown.

Under-wing: axillaries and coverts white, fore edge of wing mottled fulvous-grey.

Measurements (in mm.)

Wing:	203
Bill:	
length from feather margin	42
width at nostrils	19
width at widest point	20.5
nail	9.5 × 8.5

Tarsus: 37

Middle toe without nail: 58.5

This is an intermediate type of female hybrid.

5. AMERICAN REDHEAD *A. americana* (Eyton) × RING-NECKED DUCK *A. collaris* (Donovan), ♂ by plumage. (See Plates 16, 17, 18.)

It is of more than passing interest to be able to make a direct comparison of the foregoing specimens with a similar hybrid of the New World. The hybrid now discussed was reared at the Wildfowl Trust and was found dead on 2nd February, 1962.

Crown, sides of face and ear-coverts: coppery-red, brighter than in the Sutton Courtenay specimen and as in that example feathers narrowly tipped black. Throat rather dusky and there is a white chin spot, smaller than in *A. collaris*.

Sides of neck: at back and on occiput strong dusky-green reflections, rest of neck as crown and face.

Breast: black, glossed dark purple; this colour extends upwards over the shoulders, where there is a suggestion of a pale crescent as in *A. collaris*. On lower breast, feathers tipped greyish-white.

Belly and sides of body: pale greyish-white, in the centre finely peppered black; on sides and flanks pronouncedly grey, very finely vermiculated greyish-white and black. The flanks are narrowly-edged whitish, more distinctly so at the caudal end. This character is clearly indicative of *A. collaris* blood.

Vent: brownish-black, tips of under tail-coverts finely vermiculated brownish-grey. Axillaries: white.

Under wing-coverts: large innermost white, lightly vermiculated grey-brown, but mostly white; rest white. Fore edge of wing grey, narrowly edged white.

Back: at edge of mantle a triangular area, apex directed towards tail, of dusky-brown, speckled finely with dull greyish-white. Rest of mantle dark dusky-grey, very finely vermiculated greyish-white.

Scapulars: as mantle, but vermiculations more pronounced.

Rump and upper tail-coverts: dark brownish-black.

Rectrices: sepia.

Wing: wing-coverts and bastard-wing sepia.

Speculum: outer vanes of secondaries forming the French-grey speculum paler at bases and more intense medially, where also narrowly tipped white and edged black. Primaries: outer vanes and tips, sepia; inner vanes pale brownish-sepia, forming a pale wing bar.

Scapulars: innermost as mantle and back; longest dark sepia, dully reflecting metallic green.

Measurements (in mm.)

Wing: 226

Bill:

length from feather margin 51

width at nostrils 19

width at widest point 21

nail 11 × 8

Tarsus: 38

Middle toe without nail: 64

We would comment upon the following points in this specimen:

1. The broad similarity to 'Lesser Scaup type' hybrids.

2. The presence of a well marked chin spot.

3. Some characteristics referable to *A. collaris* inheritance.

4. The bill colouration which shows the presence of a black tip as distinct from a black nail; this pigmentation extends to a depth of 16 mm.

6 and 7. POCHARD *A. ferina* × TUFTED DUCK *A. fuligula*, ♂♂ 'TUFTED DUCK TYPES'. (See Plates 10, 16-21 and 30.)

The two specimens now to be described are both captive birds of known parentage and age, from the same brood, the male parent being *A. ferina*, the female *A. fuligula*. Both were anatomically sexed male. They were hatched in 1958, one dying on 30th March, 1959, the second on 2nd March, 1962. They are almost identical in plumage and, as can be seen from the plates, present a very different morphology to individuals in which the cross was in the opposite direction.

The description which now follows is

that of the younger bird of 30th March, 1959.

Crown, sides of face and ear-coverts: purplish-black, on sides of face and ear-coverts reflecting green; the crest which is shorter than that of *A. fuligula* males, but longer than 'Lesser Scaup type' hybrids, is of the same purplish-red.

Neck: purplish-red as far as the mantle.

Mantle: dark brownish-ash, very finely vermiculated ashy-white, rest of upper-parts dark sepia, finely vermiculated greyish-white.

Rump and upper tail-coverts: uniform dark sepia.

Rectrices: dark purplish-sepia.

Breast: purplish-sepia, feathers narrowly edged ashy-white.

Rest of under parts: greyish-white, irregularly barred transversely pale sepia, overall appearance dark.

Vent: purplish-sepia.

Under tail-coverts: ashy-white, finely speckled pale sepia.

Flanks: ashy-white, washed pale cinnamon and finely vermiculated ashy-white.

Wing: coverts uniform brownish-sepia.

Speculum: white, extending on to primaries, edges of outer vanes narrowly margined in sepia.

Primaries: brownish-sepia, tips and outer vanes dark sepia.

Scapulars: innermost same as mantle, longest warm brownish-sepia, dully reflecting greenish-bronze.

Axillaries: white, finely speckled greyish-brown.

Measurements (in mm.)

Wing: 212

Bill:

length from feather margin 43

width at nostrils 22

width at widest point 23

nail 11 × 8

Tarsus: 39

Middle toe without nail: 63

Specimen of 2nd March, 1962.

Resembles the preceding bird, but is generally brighter from advancing maturity. The breast-shield lacks the fine white edges to feathers; flanks are a richer shade of cinnamon-brown and sides of face reflect a stronger green; under tail-coverts reflect a stronger purple.

Measurements (in mm.)

Wing: 224

Bill:

length from feather margin 40

width at nostrils 21

width at widest point 22.5

nail 10.5 × 9

Tarsus: 37.5

Middle toe without nail: 61.5

Comments: The strikingly different mor-

phology according to which way the cross goes is of considerable interest; in one case the resulting hybrid appears as a 'Lesser Scaup type', in the other direction as a 'Tufted Duck type'. The extremely dark under parts in the latter are also noteworthy. It seems that *A. fuligula* male characters are largely transmitted by the female, while the exposure of the dark under parts is probably reversionary towards other dark-bellied *Aythya* species. This same feature has been revealed in a female *A. nyroca* × *A. fuligula* (see under Baer's Pochard type), and in variant female Tufted Ducks (Harrison 1961) and Scaup (Harrison 1962) in winter plumage. Both species normally have dark or darker under parts in summer.

8, 9 and 10. SCAUP *A. marila* (Linnaeus) × TUFTED DUCK *A. fuligula*, ♂♂. 'SCAUP TYPES'. (See Plates 14, 16, 17 and 18.)

Three individuals of this type of hybrid have been available to us; two of these have already been the subject of a communication (Voous, 1955), and were taken in the wild. The third is a captivity-bred bird of known parentage (Sage 1963), the specimen having been prepared in December, 1960. All three examples present a very similar morphology, differing only within a range of individual and seasonal variation.

In view of this, a detailed description of the captivity specimen (8) will suffice for all three. (See Plates 16, 17 and 18.)

Crown, throat and front of neck: predominantly dark purple with very slight dull green reflections. It is difficult, due to the make of skin, to assess the presence of any crest. Sides of face, ear-coverts and neck: predominantly dark rich green.

Breast: dark sooty-black, reflecting dull purple; feathers on lower aspect finely-edged ashy-white.

Belly: white, lower belly finely speckled with grey.

Flanks: white very finely vermiculated with palest cinnamon. Vent and under tail-coverts: dark purplish-black.

Rectrices: sepia.

Shoulder region: dark purplish-black, extending on to back.

Mantle: whitish-grey, finely vermiculated black, narrow area in centre rather brown above extending into black area of back. Vermiculations finer and duller. Lower back, comprising tips of long scapulars noticeably darker and duller; vermiculations finer and indistinct.

Wing: coverts dark sooty-sepia, indistinctly vermiculated ashy-white; median coverts uniform. Greater coverts and long scapulars, sepia, reflecting dull greenish-bronze.

Speculum: white, extending on to the

innermost primaries and edged with dark sepia.

Primaries: sepia, darker on outer vanes and tips.

Rump and upper tail-coverts: dark purplish-black.

Measurements (in mm.)

Wing:	222
Bill:	
length from feather margin	45
width at nostrils	22.5
width at widest point	25
nail	9.5 × 8

Tarsus: 40

Middle toe without nail: 60.5

9. Amsterdam Museum Specimen Reg. No. 5050.

This specimen, when compared with the preceding bird, is darker on the mantle and the vermiculations of greyish-white and black are a good deal coarser, though not as coarse as in *A. affinis*. The head and neck reflections are very similar. On the flanks the vermiculations of pale cinnamon are faint, but rather more marked than in the last specimen. There is an abortive crest. The white of the speculum extends on to the primaries.

Measurements (in mm.)

Wing:	210
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Bill:

length from feather margin	43
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width at nostrils	20
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width at widest point	23
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nail	11 × 9
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Tarsus: 36

Middle toe without nail: 59

10. Amsterdam Museum Reg. No. 28771, Mounted Specimen. (Plate 14.)

Resembles No. 5050 but is browner and duller on the head and neck reflecting less green. An abortive crest is well shown.

The mantle vermiculations are even coarser, but do not match those of *A. affinis* in this respect. The white of the speculum extends on to the innermost primaries and the flank vermiculations are very faint.

Measurements (in mm.)

Wing:	not measured
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Bill:

length from feather margin	43
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width at nostrils	20
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width at widest point	23.2
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nail	10 × 8
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Tarsus: 33

Middle toe without nail: 57

11. POCHARD *A. ferina* × FERRUGINOUS DUCK *A. nyroca*, ♂ 'PAGET'S POCHARD' or 'FERRUGINOUS TYPE'.

April 16th, 1909, Hickling, Norfolk. (E. S. Montagu Coll.) Norwich Castle Museum No. 208.949.

Crown, head and neck: rich chestnut-

red, slightly darker on crown and nape; small white spot on chin.

Upper breast and over shoulders: a deep coppery-red.

Above mantle: a broad area of dark purplish-red.

Lower breast: light coppery-brown.

Belly: white, lightly speckled palest grey.

Vent: sooty-grey, finely vermiculated paler greyish-white.

Under tail-coverts: white, vermiculated greyish-brown.

Upper parts: immediately above mantle an ill-defined triangular area of brownish-grey with the apex towards the tail, finely vermiculated white and sepia.

Rump and rectrices: dark sepia.

Flanks: pale brownish-grey, finely vermiculated pale sepia.

Wing: coverts dark grey, almost uniform, but quills darker with slight coppery-purple reflections. Tips of greater wing-coverts at speculum broadly tipped sepia.

Speculum: white, broadly-edged grey and narrowly white, extending on to primaries. Innermost secondaries strong grey.

Primaries: outer vanes and tips dark sepia, inner vanes and quills pale buff forming a broad light wing-bar.

Long scapulars: uniform dark sepia, faintly reflecting purplish.

Underwing: white, fore edge mottled greyish.

Measurements (in mm.)

Wing: 210

Bill:

length from feather margin 42

width at nostrils 19.5

width at widest point 22

nail 8.5 × 9.5

Tarsus: 37.5

Middle toe without nail: 59.5

12. POCHARD *A. ferina* × FERRUGINOUS DUCK *A. nyroca*, ♂ 'PAGET'S POCHARD' or 'FERRUGINOUS TYPE'. (See Plates 25, 26, 27.)

January 1897. Soham Toney Mere, Norfolk. (J. H. Gurney Coll.) Norwich Castle Museum No. 74.23. Died at Keswick, 6th July, 1906.

Crown and head: rich coppery-chestnut, on crown and at nape slightly darker; small white chin spot; upper parts of neck as head, rest of neck deep coppery-purple. This colour extends on to shoulders on upper parts. On front, feathers are narrowly edged ash.

Breast: as neck, feathers broadly edged ash.

Belly: white, vermiculated greyish, strongly so on lower belly.

Vent: greyish-sepia.

Under tail-coverts: parti-coloured grey and white, speckled grey.

Upper parts: dark greyish-sepia, vermi-

culated sepia, somewhat uneven in tone due to moult.

Rump, upper tail-coverts and rectrices: rich dark sepia.

Flanks: coppery-brown, mixed with grey and rather strongly vermiculated.

Wing: coverts brownish-grey obscurely vermiculated, quills slightly darker and with darker edges. Coverts at speculum slightly darker.

Speculum: white, narrowly edged grey and white.

Primaries: outer vanes and tips dark sepia, inner vanes and quills buff, forming a broad wing-bar.

Long scapulars: dark brownish-sepia; innermost obscurely vermiculated, those adjacent to speculum reflecting dull green, then becoming grey.

Underwing: white, fore edge mottled grey.

Measurements (in mm.)

Wing: 212

Bill:

length from feather margin 44.5

width at nostrils 19.5

width at widest point 21

nail 9.5 × 7.5

Tarsus: 36

Middle toe without nail: 57

13. POCHARD *A. ferina* × FERRUGINOUS DUCK *A. nyroca*, ♂ 'PAGET'S POCHARD' or 'FERRUGINOUS TYPE'. (See Plates 25, 26, 27.)

November 3rd, 1928. Hickling Broad, Norfolk. (Lord Desborough Coll.) Norwich Castle Museum No. 179.928.

Crown, head and neck: rich chestnut-red, with a small white chin spot.

Breast: rich coppery-red, edges of feathers outlined paler.

Belly: whitish, finely vermiculated grey.

Vent: strong smoky-grey, obscurely vermiculated greyish-white.

Under tail-coverts: sepia, slightly paler above and below.

Rectrices: sepia.

Flanks: greyish, vermiculated pale sepia and white.

Upper parts: over shoulders dark coppery-red, edges of feathers paler. Rest of upper parts dark brownish-grey, obscurely vermiculated. Overall, a very dark individual.

Wing: coverts uniform brownish-grey, slightly darker at edge of speculum.

Speculum: white, below edged smoky-grey and narrowly with white.

Primaries: outer vanes and tips sepia, inner vanes and quills buffish-white, forming broad pale wing-bar.

Scapulars: as mantle, but longest uniform rich sepia, reflecting dull purple.

Underwing: white, fore edge mottled greyish.

Measurements (in mm.)

Wing:	212
Bill:	
length from feather margin	43.5
width at nostrils	17
width at widest point	19.75
nail	10 × 8
Tarsus:	39
Middle toe without nail:	57

14. POCHARD *A. ferina* × FERRUGINOUS DUCK *A. nyroca*, ♂ imm. 'PAGET'S POCHARD' or 'FERRUGINOUS TYPE'.

December 8th, 1933. Heigham Sound, Norfolk. (Lord Desborough Coll.) Norwich Castle Museum No. 66.934.

Crown, head and neck: chestnut-red, crown to nape slightly darker; a white chin-spot present.

Breast: dark coppery-red; feathers broadly edged ash.

Belly: white, feathers edged pale coppery-red giving an irregular barred effect.

Vent: grey, washed dilute coppery-red, and faintly vermiculated white.

Under tail-coverts: proximal as vent; distal ash-white, tipped pale coppery-red.

Rump and upper tail-coverts: dark sepia, reflecting coppery-red.

Rectrices: as rump (two outermost faded juvenile, colour ash-brown).

Flanks: a mixture of greyish-white, vermiculated pale sepia, and rather coarse fulvous-brown and coppery-brown.

Upper parts: over shoulders and mantle a warm coppery-brown, paler at edges of feathers. At shoulders coppery-red (rich by contrast). Colour of mantle forms a broad U-shaped area, directed forwards.

Wing: coverts, brownish-grey, becoming greyer and broadly edged sepia at speculum.

Speculum: white, at lower border becoming grey merging into sepia, some of the feathers minutely tipped white.

Primaries: outer vanes and tips sepia, dark on tips; innermost paler, rest of feather a pinkish-buff forming a broad wing-bar.

Scapulars: proximal dark grey, finely vermiculated whitish; longest uniform warm coppery-brown, outer vanes dully reflecting green.

Underwing: white, fore edge mottled grey.

Measurements (in mm.)

Wing:	201
Bill:	
length from feather margin	48.5
width at nostrils	17
width at widest point	20.5
nail	10 × 7
Tarsus:	35.75
Middle toe without nail:	50.5

Note: There is no record of the colour of

the iris or soft parts in any of the above Pochard × Ferruginous Duck.

15. TUFTED DUCK *A. fuligula* × FERRUGINOUS DUCK *A. nyroca*, ♂ by plumage. 'BAER'S POCHARD TYPE'. British Museum Collection, Reg. No. 1858. 'Zoo. Soc.'

Crown, head and neck: crown dark coppery-red with a short crest which hangs over nape. Cheeks are predominantly dark green with slight coppery-red reflections; throat is generally dusky and there is a smallish white chin spot. Rest of neck presumably greenish, but hidden as specimen is mounted with head down on shoulders.

Note: Artificial eye pale orange-yellow; bill has been coloured grey, the nail is blackish; this is almost certainly incorrect and it is more likely that the tip was blackish and that there was also some black at the base of the bill.

Upper parts: the mantle is nearest to Ridgway's Seal Brown (Pl. III, No. 1). It is very finely and obscurely vermiculated fawn. Rest of the upper parts are similar, although the upper tail-coverts are blacker. The rectrices are the same Seal Brown, reflecting a coppery sheen.

Under parts: the breast is a dark coppery red-brown, at the lower edge with some broad whitish fringes. Centre of breast silvery-white, lower abdomen to vent washed pale reddish-brown, finely vermiculated white. Under tail-coverts whitish, mixed with paler reddish-brown, vermiculated palely, with a few feathers tending to white.

Flanks: pale reddish-brown, slightly grey, vermiculated white.

Rectrices: pale sepia.

Wing: (Note: a proper examination not possible owing to the specimen being mounted and fragile.) Upper wing-coverts appear a uniform Seal Brown becoming darker at the speculum, which is white and extends on to primaries.

Primaries: sepia with darker tips and outer vanes.

Scapulars: longest Seal Brown with outer vanes dull oily green; lower edge of speculum dark sepia; fore edge of wing warm brown mottled whitish. (Under surface of wings could not be examined.)

The tarsi and feet have been crudely coloured dark grey.

Measurements (in mm.)

Wing:	214
Bill:	
length from feather margin	47
width at nostrils	20
width at widest point	22
nail	10 × 8
Tarsus:	37
Middle toe without nail:	50.05

Note: this specimen is disintegrating rapidly.

16. TUFTED DUCK *A. fuligula* × FERRUGINOUS DUCK *A. nyroca* (sex not recorded). 'BAER'S POCHARD TYPE'. No data. 'Zoo. Soc.' British Museum Collection, Reg. No. 71.3.20.3.

Crown, head and neck: crown dark coppery-red, short dependent crest of same colour; cheeks similar but less bright. Behind ear-coverts and at sides of nape strong dark irridescent green. Throat and front of neck dusky coppery-red and a small white chin spot (neck has been shortened considerably in make of skin). Upper parts: shoulder regions dark coppery-red.

Mantle: dark Seal Brown, very obscurely vermiculated fawn.

Rump and upper tail-coverts: similar but uniform, the coverts being darker.

Rectrices: dark sepia.

Under parts: breast dark chestnut-red, at lower edge with paler fringes to feathers.

Breast: silvery-white.

Belly and vent: warm brownish-grey, finely vermiculated white.

Under tail-coverts: mostly white.

Flanks: reddish-chestnut, pale, finely and obscurely vermiculated white, more uniform towards tail.

Wing: upper wing-coverts uniform Seal Brown, slightly paler than upper parts generally.

Speculum: white extending on to innermost primaries giving a broad white wing-bar; fore edge of wing mottled warm brown and white.

Primaries: sepia, tips and outer vanes darker.

Measurements (in mm.)

Wing: 186 (tip worn)

Bill: length from feather margin 39

width at nostrils 18.5

width at widest point 20.05

nail 10 × 7.5

Tarsus: 34.5

Middle toe without nail: 52.5

Note: bill still shows black tip and some black at base. This latter bird was recorded by Sage (1962) together with a wild shot female, thought to be of the same parentage (Van Oort 1908) from Nieuwkoop, Holland, which we have not seen. The illustration of this bird in Sage's paper shows the dark flecking of the under parts, bearing a remarkable resemblance to some female Ringed-necked Duck and variant female Tufted Duck and Scaup (Harrison, 1961 and 1962) in winter plumage.

Part Two: Live hybrids studied (See Table II).

We have observed in the field or in

captivity all of the types of hybrid already mentioned in this paper, and these are now discussed under several headings with special reference to their likeness to parent or different species. For easy identification in the text the live birds are listed and numbered in Table II, the numbering following on that of the museum specimens.

17. 'Baer's Pochard type'. (See Plates 3, 4, 5.)

In full plumage at close quarters, this bird was very much like a drake Baer's Pochard. At a distance, however, and especially when displaying, there was a strong superficial resemblance to a male Ring-necked Duck. This likeness to the latter was mainly due to its dark plumage with lighter flanks and distinctly altered head-shape when the crest feathers were elevated. Our side view photograph, taken in 1962, shows the 'cut-off' crest lying flat. It is of interest to record that this particular bird was reported as a Ring-necked Duck to the editors of *British Birds* in 1962.

In eclipse plumage, its striking resemblance to a Ferruginous Duck was such as to suggest that late summer and autumn records of that species require the closest scrutiny by those responsible for County or National records, and it may be advisable to review all past records of Ferruginous observed between July and October. In passing one may ponder on what the juvenile drake of this type looks like.

In full winter plumage the crown, forehead and crest (tapered to a point), appeared to have a purple-bronze sheen quite distinct from the green sheen on the rest of the head and neck. The side panels appeared dusky with a white edging along the top and there was a small amount of white on the under tail-coverts, especially at the sides. These last two features can be seen in our side view photograph.

In eclipse, the plumage was brownish, the sheen on the head and neck being absent. The under tail-coverts were whiter than earlier on (if, of course, it was the same bird as the one present five months before). Since some adult male Tufted Duck acquire white under tail-coverts at this season an increase of white would not be surprising.

The eyes on *all* occasions were the palest of yellow to white. Almost the same size as a Tufted Duck.

On all occasions Tufted Duck were its associates, and each year it was commonly a member of Tufted Duck courting parties. Pochard were always present on the lake, but it did not associate with them.

This bird was seen to make the 'neck-stretch' and 'head-throw' postures of the Tufted Duck. The crest feathers were

Table II. Live *Aythya* hybrids observed by the authors, 1959-65

<i>Ref. No. Type</i>	<i>Where seen</i>	<i>Date</i>	<i>Photographs</i>
17. 'Baer's Pochard type' ♂	St. James's Park, London	Mar.-April and 29 Aug. 1959; 27 April-4 May 1960; 11 Mar.-8 May 1961; 28 April-24 May 1962. Possibly the same bird each year	4, 5, 6
18. 'Lesser Scaup type' ♂	St. James's Park, London	21, 23, 25 Feb. and 11 Mar. 1959	
19. Two ♂♂, pinioned	Slimbridge, Gos.	Various dates in 1962 and 1963	2
20.			
21. ♂ (specimen No. 2)	Sevenoaks, Kent	23 Nov. 1962	
22. ♂	Leybourne, Kent	4 April 1964	
23. ♂	Sundridge, Kent	24-27 Feb; 16 Nov.-21 Dec. 1965	
24. 'Scaup type' ♂	St. James's Park, London	9 Jan.-15 Sept. 1960	
25. 'Tufted Duck type'	Reykjavik, Iceland	9 May 1965	14
26. Two ♂♂ (specimen no. 6 & 7)	Sevenoaks, Kent	In captivity 1958-1962	10
27. 'Pochard type' ♂	St. James's Park, London	27 Jan. 1962	
28- 30. 'Ferruginous Duck type' Two ♂♂, one ♀	Regent's Park, London	From 28 Nov. 1963; bred in park about two years previously. One pair full winged.	
31.- 34. Two pairs Pochard ♂ × Ferruginous Duck ♀	Sevenoaks, Kent	Bred by J. P. Williams, 1964, in captivity	7 and 8

frequently elevated and the cheek feathers fluffed out. The 'hoi' note like that of the drake Tufted was heard.

18. 'Lesser Scaup type'.

This bird was even more like a drake Lesser Scaup than the Sutton Courtenay bird on account of the absence of black at the base of the bill. Apart from this difference it closely resembled the Sutton Courtenay bird, especially in lacking green reflections on the head and having a similar eye colour. It associated closely with Tufted Ducks during its stay, though Pochard were present on the lake.

19 and 20. 'Lesser Scaup types.' (See Plate 2.)

These two Wildfowl Trust birds were very much like other drake 'Lesser Scaup types' but with one important difference. At our request, Dr. G. V. T. Matthews kindly studied their plumage over a period and noted a distinct green tinge towards the back of the head. Dr. Matthews also comments on eye colour which was clearly changing with time. In December 1962, it was chrome yellow, and early in

March 1963, was more reddish, while in April 1962, one of us noted it as orange.

Early in September 1963, these two birds were almost certainly in eclipse - a dull version of full plumage. A third bird, which closely resembled them, was in the same pen, its only apparent difference being a whitish line around the base of the bill as in the male Ring-necked Duck. This bird was probably the American counterpart of our 'Lesser Scaup type'.

The 'head-throw' display posture of the drake Tufted Duck was noted in April 1962.

21. 'Lesser Scaup type.'

Closely resembled the Sutton Courtenay bird. Its eyes, however, were noted as light brown. It was observed swimming with five Tufted Ducks though a party of eight Pochard were on the lake.

22. 'Lesser Scaup type.'

Virtually identical to 21. There were about 25 Tufted Ducks on the same water.

23. 'Lesser Scaup type.'

Also virtually identical to 21. This was the only hybrid of this type to associate

with Pochard. At the time there were 65 Tufted and 83 Pochard on the water, but the hybrid kept exclusively with the Pochard.

24. 'Scaup type.'

This bird so closely resembled a drake Scaup that some observers refused to believe it was anything else! Similar hybrids have already been described (Sage, 1963), and the most important differences between this bird and those described by Sage are (a) the rounded Scaup-like head without any peaked appearance, (b) absence of any purple reflections on the neck in full plumage. At all times this 'rounded-head type' presents an identification problem to the un-critical, especially in juvenile plumage or in eclipse. Size as Scaup and Pochard. It was distinctly larger than any Tufted with heavier build and thicker neck. Head-shape as Scaup without any suspicion of a crest or kink.

Early in July this bird started its wing moult which lasted for 32 days.

It associated exclusively with Tufted Duck and on a number of occasions between 16th April and 26th May was in close attendance on individual female Tufted Duck.

On 21st May it was seen to adopt the 'head-throw' posture of a drake Tufted Duck.

25. 'Scaup type.' (See Plate 14.)

This drake was observed at close range on a pond near Reykjavik airport in May 1965. In size it was intermediate between a Scaup and a Tufted Duck. The head and

neck were black with green reflections and there was a minimal stubby crest. The mantle and scapulars were grey with coarse white vermiculations, the back being much darker than a drake Scaup. The flanks and belly were white, the upper breast black. The wings, tail and tail-coverts were dark sepia and the speculum was white, extending on to the primaries. The bill was all blue with a black triangular tip and the iris pale yellow.

Although both Scaup and Tufted Duck were present, it associated with neither species; in fact it was frequently chased by drakes of both species and by Eiders. When the pond was revisited on 9th and 10th June it was not seen.

General Comments

A bird which appeared in St. James's Park, London, in 1942 was identified, and reported, as a Scaup, and its photograph appeared in *The Times*. Of this bird Bannerman (1958) writes, 'I saw the bird myself on several occasions ...' and, '... to everyone's delight this, or another similar bird, turned up again in a succeeding winter'. Through the courtesy of *The Times* we have obtained prints of their photograph (see Plate 15), and in our opinion it is clearly a 'Scaup type' hybrid closely resembling the bird No. 24. The Tufted Duck-sized bill, definitely not a character of the Scaup, is shown clearly in the photograph. See also bill characters.

In the Royal Parks Report* a Scaup was reported in St. James's Park every winter

Main plumage points as follows:

	<i>Immature Plumage</i>	<i>Full adult plumage (from 16th April to early August)</i>	<i>Eclipse</i>
Head Colour	Brownish with patches of green sheen	Blackish with green gloss and a little mauve gloss on crown and forehead	Dull dark brown with pale drooping crescent behind eye (as in female Pochard) and a whitish crescent on the cheeks
Neck Colour	As head	As head	As head
Upper parts	Rump and upper breast brown. Mantle and back brownish with odd patches of Scaup grey. Tail brown.	Upper parts blackish. Mantle and scapulars greyish finely vermiculated with blackish-brown. The markings were more like those of a Lesser Scaup than a Scaup. Tail blackish.	Upper parts dull dark brown except for mantle and scapulars which were a little browner than earlier on. Tail brownish.
Flanks	Brownish with some white showing along waterline.	White, as a drake Tufted Duck.	Pale brownish-grey.
Under parts	Upper breast brown mottled black. Under tail-coverts brown.	Upper breast blackish no green gloss. Under tail-coverts black. Rest of under parts white.	Upper breast dull dark brown with some black markings. Under tail-coverts dark brown.
Wings	Wing bar similar to drake just meeting when bird was on water.	Tufted Duck. Primaries were noticeably short, the wing tips	
Eye	Pale yellow.	Pale yellow.	Pale yellow.

* by Committee on bird sanctuaries in Royal Parks (England).

from 1939 to 1946, whereas in a subsequent period of 11 years covering the time of hybrid notoriety, only hybrids have been reported. In view of this we suggest that past records of single Scaup in Inner London might well be reviewed.

26. 'Tufted Duck type.' (See Plate 10.)

The general posture and appearance of these birds was that of a drake Tufted Duck, in some ways rather like some drake Tufted Ducks in post-breeding moult. In its eclipse plumage this type of hybrid would be virtually indistinguishable in the field from an eclipse drake Tufted Duck.

The head had the full rounded appearance of a Tufted drake, whereas the Pochard tends to have a more sloping forehead. The neck was noticeably thinner than a Pochard and was much like that of a Tufted Duck. In eclipse the crest was totally lost and the whole of the head, neck and breast became a dark sepia-brown. The fine vermiculations were lost on the mantle and this became browner. The belly remained very much as it was in full plumage. The flanks became browner and lost their vermiculations. There was no significant change in iris or bill colour. The former at all seasons was pale yellowish-brown.

Our photograph, taken in February 1962, shows the flanks somewhat lighter than in life. The short, well-defined crest is clearly to be seen.

The 'head-throw' posture of the drake Tufted Duck was seen on many occasions.

27. 'Pochard type.'

Of all the hybrid types we have studied in life, this bird, although seen well, did not come under such close observation as the others. It was present only on one day, during which it remained some twenty yards off-shore. It looked more like a Pochard drake than a Lesser Scaup drake in colour and pattern, but its thinner neck, very short loose crest, and absence of black at the base of the bill, set it apart from the former species. Body size as a drake Tufted Duck or perhaps a trifle larger, but longer in the neck; head-shape also recalled a Tufted Duck because it was more rounded and with a short loose crest. The latter was visible when the bird was alert or dozing. Head colour a dull dark brown with a copper tinge. That part of dorsal area and wings visible when the bird was resting on water was a mousy-grey, similar to the 'Lesser Scaup type'. Upper breast blackish-brown, not as black as in the male Tufted Duck. Flanks whitish, but not as white as in the drake Tufted Duck and recalling the side panels of the 'Lesser Scaup type'. Stern end black as in drake Pochard.

It was seen among a group of 30 Tufted Ducks, though Pochard were present on the lake.

General Comments

Our translation of Bezzel's (1960) paper indicates that most hybrids at Ismaning were 'Pochard types', i.e. like the specimen from his collection which we ourselves have examined (our ref. No. 3). Perrins (1961) however, remarks that Bezzel's descriptions differ little from the Sutton Courtenay specimen, which is somewhat confusing, and due, no doubt, to Perrins not having examined the Bezzel skin. 28/29/30. 'Ferruginous Duck type' (See Plates 7 & 8).

The drake hybrid of this type bears a strong superficial resemblance to a male Ferruginous Duck and it is only on the finer points of detail that it can be distinguished in the field. Size as drake Ferruginous and drake Tufted Duck, but head and body shape as a drake Common Pochard. Head, neck and breast are the Pochard's rather than the Ferruginous' rich chestnut with some black feathers on the forehead (as in the Pochard) and on the upper breast. Tail and wings a medium grey-brown, not so dark and rich as in the Ferruginous. Flanks similar to wings but much paler and the tail-coverts a darker brown than the wings. One of the drakes had a little white on the under tail-coverts just below the tail but this was not apparent in the second drake. Belly appeared silvery-white sharply demarcated from the chestnut breast. A broad white wing bar extended on to the primaries as in the Ferruginous. The eyes were orange and the bill similar to a male Pochard—quite distinctive from the male Ferruginous (cf. bill sketches).

In eclipse it was more difficult to separate from the drake Ferruginous as among the differences the eyes were paler, and the under tail-coverts whiter, than earlier on (but under tail not as brilliantly white as in drake and duck Ferruginous at the same time of year). The head was similar to an old drake Common Pochard in eclipse and the flanks and wings still lacked the richness of colour of the drake Ferruginous though this contrast was less obvious than in full plumage. (See Plate 8.)

The 'head-throw' posture of the drake Pochard was given by both drakes (less quick than in the drake Tufted Duck). A second posture, the 'neck-stretch', was like that given by drakes of both Pochard and Ferruginous, as was a third posture, in which the head and neck was extended flat along the surface. This last is not characteristic of drake Tufted Ducks.

Adult female:

The separation of this bird from the duck Ferruginous in the field presents an even greater problem; in fact at any distance over fifty feet there could be no certainty unless a duck Ferruginous was on hand for detailed comparison.

In general colour, the likeness to a duck Ferruginous was close, but the loreal area and cheeks were less rich. The breast and flanks were a dusky chestnut brown, again less rich than in the Ferruginous. Wings, tail-coverts and tail dusky brown with a faint grey tinge and a small amount of white was visible just below the tail. Bill colour and shape similar to a duck Pochard. The head was a little more rounded than in that species, a character particularly noticeable when the two were side by side. Size only a trifle smaller than a duck Pochard and as big as, if not slightly larger than, the male hybrid of this type.

In wing moult the duck hybrid still closely resembled the duck Ferruginous, both having almost pinky chestnut foreheads. Apart from the duck Ferruginous' more conspicuous white under tail-coverts the only obvious differences were: (a) body and head shape of the duck hybrid resembled a Pochard, whereas the Ferruginous was more like a Tufted Duck; (b) the duck hybrid was nearer a duck Pochard in size whereas the duck Ferruginous approached a duck Tufted in build.

General Comments

The drake hybrid is sufficiently well known in British ornithology to have acquired the name of Paget's Pochard and one cannot help feeling that if the editors of *British Birds* had brought the Paget's Pochard problem to the notice of their readers, the 'Lesser Scaup problem' as such might never have existed, or, at any rate, might not have dragged on for so long. In reviewing their handling of Ferruginous Duck records since the last war, one gets the impression that Paget's Pochard never existed! Warnings concerning the acceptance of sight records of Ferruginous Ducks in these islands given by the editors of *British Birds* dwell on such points as justification for believing birds to be genuine immigrants because few were kept in captivity (about 1949-50) and caution over identification because some duck Tufted have prominent white under tail-coverts. Our examination of eight issues of *British Birds* giving some 20 records of Ferruginous observed between April 1947 and October 1951 failed to produce any reference to the possibility of confusing this species with the hybrids known as Paget's Pochard. Of

the 20 records, 7 appear to us as perfectly satisfactory Ferruginous Ducks, 10 have too few details (or none at all) upon which judgment can be passed, while 3 are unsatisfactory since the birds are not clearly separable from Paget's Pochard. Concerning descriptions of some Ferruginous seen in 1950-51, the editors of *British Birds* say (vol. XLIV, p. 352) 'the white eyes of the drakes did not always show up as conspicuously as might be expected', a statement which causes us some misgivings. As we have expressed elsewhere, a reappraisal of Ferruginous Duck records is not untimely if the high standards of British ornithology are to be maintained. In addition to the specimens we have examined (Nos. 11-14) and the recent sight records we know of another sight record in 1936 (Harrison 1953) making six occurrences at intervals in the past 65 years.*

The two pairs bred by Jack Williams in 1964, three of which are now at Sevenoaks (Plate 7) are virtually identical with the above.

Variable characters in the *Aythya* hybrids

In general, all six types of hybrid described tend to be intermediate in character between their parent species. Only the 'Tufted Duck type' shows a character not present in either parent in winter, that is the dark under parts, which are darker than could be expected if this was referable to a Pochard character. The probable explanation of this is that it is a reversionary character revealed by the hybridisation, as has been strikingly demonstrated in the bimaculated face pattern of Wigeon *Anas penelope* Linnaeus × Teal *A. crecca* Linnaeus and Wigeon × Shoveler *A. clypeata* Linnaeus hybrids (Harrison 1954

* A drake Paget's Pochard was identified on a gravel pit near Dungeness, Kent, on 16th October, 1965, by R. E. Scott. It was smaller than the accompanying eight Tufted Duck and female Pochard. The body plumage in sunlight was reminiscent of a Ferruginous Duck with reddish head and back, which showed little or no contrast. The flanks were a uniform smooth dark grey. The white under tail-coverts were conspicuous in the rear view with the tail raised, otherwise indistinct and sometimes not visible on side view with tail depressed.

The eye colour was as a drake Tufted Duck—perhaps a little less yellow—certainly not white. The beak was sketched in the field and was typical of Paget's Pochard, as shown in our sketch.

This record gives further support to our views on Ferruginous Duck, if the records are to be put right.

and 1964). In this case, the dark under parts are probably reversionary towards other dark-bellied *Aythya* species.

The remarkably different morphology, according to the direction of the cross in Pochard and Tufted Duck hybrids has already been referred to (see specimens 6 and 7). One has now to consider the 'Lesser Scaup type' hybrids in comparison with the 'Pochard type.'

We have no knowledge of the parentage of the 'Pochard type' hybrids described, but in general, the external morphology is similar to the 'Lesser Scaup type' hybrids, the main difference being the much brighter, more drake Pochard-like colouration. We think that these two types of hybrid will prove to be individual variations originating from the same cross, but possibly the 'Pochard type' might be the result of back breeding with Pochard predominance. In due course this should be solved by hand-reared hybrids of known parentage.

In this respect, it is noteworthy that Bezzel (1960) mentions a surplus of duck Pochard and drake Tufted Duck at Ismaning in April, suggesting that this is the time when pairing may occur between the species. The same conditions apply at St. James's Park, but there has only been one instance of mixed pairing here, during 12 years of intensive observation. It may be that geographical differences in the breeding season of the two species may give rise to a zone where the breeding seasons of the two species coincide, thus favouring hybridisation. The pair involved was a drake Tufted and duck Pochard.

Sage (1963) considers that Scaup × Tufted Duck hybrids show fairly constant characters. However, while they seem to be more Scaup-like in size compared with the slightly smaller 'Lesser Scaup types' the following appear variable:

(a) head may be either distinctly peaked or rounded in shape.

(b) head and neck may have either a predominantly green gloss or a predominantly purple gloss.

The flanks and belly of all specimens of this type referred to herein, are whiter than in the 'Lesser Scaup type', a difference not stressed by Sage (1963).

A two-year old bird of this type observed on an ornamental water at St. Neot's, Hunts., on 24th May, 1958, had white flanks, a purple-black head with a green sheen over a very wide area; a distinct kink at the back of the head and lemon yellow eyes (from notes by B. Rose, sent to us by *British Birds*). A similar bird at Theale, Berks., in February and March 1960, also appears to have had a green

glossed head, a kink at the back of the head, white flanks and bright yellow eyes (from notes of R. Gillmor).

Sage (1963) considers that the 'Lesser Scaup type' hybrid lacks the green gloss of the 'Scaup type' and that it always has a black base to the bill. However, in our opinion these characters are variable:

(a) there may or may not be some green tinge or gloss on the head.

(b) there may or may not be any black at the base of the bill.

A bird at Barn Elms, Surrey, in February 1958, had a purple head-gloss, a distinct kink at the back of the head, no black at the base of the bill and yellow eyes (from notes by P. Fullager).

One of the curious features about the *Aythya* hybrids described is their resemblance to the six different species of the genus, of which the 'Lesser Scaup' type presented a sufficient problem to deceive several experts, and for one of the latter to produce meteorological evidence in support of a transatlantic drift in explanation!

Perhaps the most striking of the hybrids is the Ferruginous × Tufted Duck, resulting in the 'Baer's Pochard type', resembling *Aythya baeri* (Radde), a far eastern species.

With this in mind, the possibility that some of these species may have arisen by reticulate evolution is worthy of consideration.

Mayr (1942) stated 'Reticulate evolution is possible only where different species, genera and families can hybridize successfully, and this occurs only exceptionally in animals . . .'

Doubtless speciation can arise as a result of inter-specific hybridization, but it is evident that this process must, and no doubt does, take aeons of time to establish a new species.

Most of the Anatidae are very fertile *inter se* and for speciation to result from hybridization it is essential for some additional isolating factor, either biological or ecological to operate in favour of any particular inter-specific cross, otherwise constant gene dilution would effectively prevent or delay speciation arising.

Bill comparisons of some *Aythya* hybrids

In his interesting paper Perrins (1961) stresses the diagnostic bill pattern of the Sutton Courtenay bird and gives sketches comparing its bill markings with those of drake Lesser and Common Scaup, Tufted Duck and Pochard. This key to identification would have been valuable if the sketches of the last two species had been both accurate and typical. Neither of the sketches of the bills of Tufted Duck and

Pochard are like those figured in *The Handbook of British Birds*, vol. III, pp. 301 and 292 (a fact not alluded to by the author), and it is extremely doubtful if an adult drake Tufted Duck in full winter plumage ever has a bill tip like Perrins' drawing in *British Birds* 54:51. To focus attention on the importance of bill characters we have reproduced both Perrins' and *The Handbook's* sketches alongside our own diagrams relating to various hybrids, in particular those observed in life (Figure 1).

Based on our material the bill tips of adult drakes in full plumage of five species and six types of hybrid may, generally speaking, be divided into three distinct groups as follows:

(Note: The letter preceding each species or type is the reference to our diagrams.)

Crescent or 'Mr. Moon' - shape black bill tips.

(i, j, k, l, m) 'Lesser Scaup type' (with or without black at base).

(o) 'Tufted type' (no black at base).

(n) 'Pochard type' (the St. James's Park bird had no black at base).

(f, g, h) Common Pochard (also extensive black at base. The light area on the bill is sometimes noticeably enclosed by black through black edges of the bill joining the black base to the black tip. cf. Figure 1).

(p) 'Ferruginous Duck type' (with dusky basal $\frac{1}{4}$ of bill).

Fan - or inverted cone-shaped bill tips.

(q, r) 'Scaup type' (black extending over the nail a little way and no black at base).

(s) 'Baer's Pochard type' (black extending a little way over the nail and, apart from a pale area just behind nail, rest of bill dusky. cf. Plate 3).

(d) Tufted Duck (black extending over nail and no black at base).

In the above three the black is confined to the extreme tip and does not extend so far round the edges of the bill as in those with crescent-shaped bill tips.

(e) Ferruginous Duck (dusky area over basal $\frac{1}{4}$ of bill. The bill of the 'Baer's Pochard types' closely resembles the Ferruginous Duck's).

Small irregular-shaped or finger-nail shaped black circlet on bill tip.

(a) Lesser Scaup	} Black on bill tip confined to actual nail and no black at base.
(b) Scaup	

Note: rarely, a drake Tufted Duck may have the black confined almost wholly to the nail, recalling a Scaup.

Conclusions

At the present time too much cannot be

written to warn observers of the identification problems posed by certain known *Aythya* hybrids, because even ornithologists with previous experience of both Scaup and Lesser Scaup have been misled by hybrids of these types. One expert who saw both the Sutton Courtenay and the St. James's Park 'Lesser Scaup types' and who was warned of this hybrid's diagnostic bill tip, still maintained that both were genuine Lesser Scaup. It is all too easy for observers with many years experience to talk themselves into wrong identifications.

It seems that in the case of the Sutton Courtenay bird, the weight of opinion was in favour of a Lesser Scaup rather than a hybrid, which was symptomatic of the rarity hunter outlook. In our opinion the Nature Conservancy were entirely right to issue the licence to collect the Sutton Courtenay bird, but some of the confusion and uncertainty over this and similar birds referred to by Nicholson (1961) could have been resolved had the bill characteristics been better understood.

As knowledge on *Aythya* hybrids accumulates, it is clear that a number of their field characters are variable, so that no identification key could be relied upon to separate them from the species they closely resemble. We feel that for the time being the following precautions should be observed:

1. No sight record of a Lesser Scaup should be admitted to the British List, unless it is a fully adult male showing every field characteristic of the species and seen for a long period at close quarters and confirmed by several waterfowl experts. The same should apply to Ring-necked Duck records.

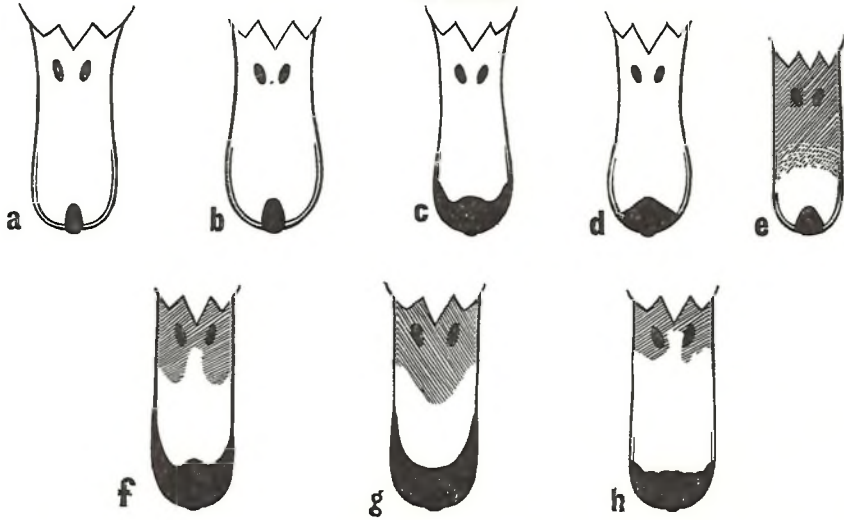
2. More caution should be exercised over the acceptance of Ferruginous Duck sight records. Only fully adult drakes showing all field characters should be dealt with on a county basis. Females and males in other plumages should be considered by experts.

3. Single adult Scaup among Tufted Duck and Pochard flocks well inland, where the Scaup is always a rare visitor, should be treated with suspicion and should be confirmed by experts. Immature Scaup in such localities are essentially an expert's province.

This paper shows the value of co-operation between the museum worker, the wildfowler, the field observer, the photographer and the aviculturalist.

AYTHYA BILL CHARACTERS

SPECIES



HYBRID TYPES

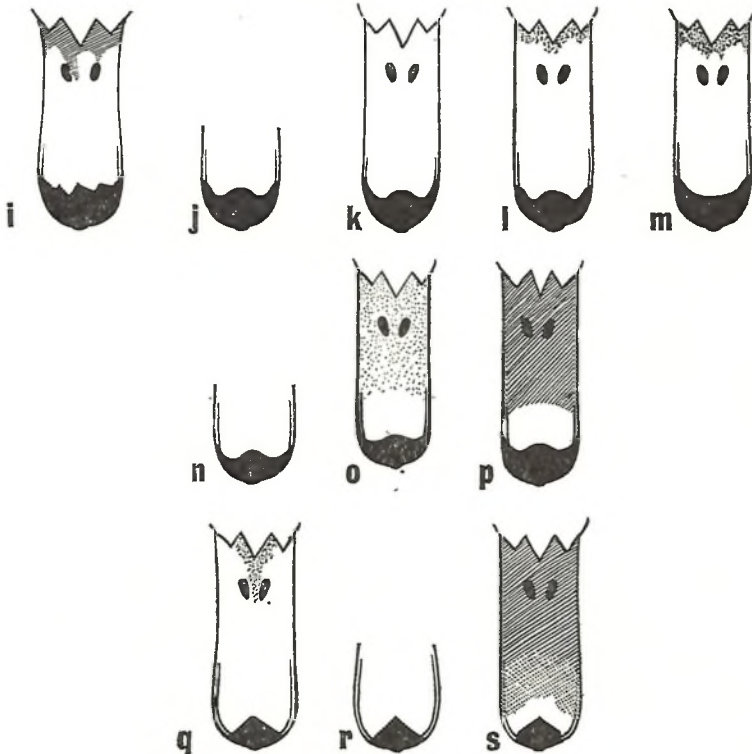


Figure 1. Key to diagram of *Aythya* bill characters:

- Species:* (a) Lesser Scaup; (b) Scaup; (c) Tufted Duck (after Perrins, see note 1); (d) Tufted Duck (after *Handbook*, and from life); (e) Ferruginous Duck (from life); (f) Pochard (from life); (g) Pochard (after *Handbook*, and from life); (h) Pochard (after Perrins, see note 2).
- Hybrid types:* (i-m) 'Lesser Scaup type'; (i) Sutton Courtenay (after Perrins, see note 3); (j) Sutton Courtenay (from skin and photograph in *British Birds*); (k) St. James's Park bird; (l) a Wildfowl Trust bird, April, 1962; (m) a Wildfowl Trust bird, March, 1963 (after Matthews).
(n) 'Pochard type' Bezzel's skin (tip only of bill); (o) 'Tufted Duck type' Harrison's bird (from life); (p) 'Ferruginous Duck type' Regent's Park and Harrison's birds (from life); (q) 'Scaup type' St. James's Park bird (from life, and photograph); (r) 'Scaup type' Sage's bird (tip only from photograph in *British Birds*); (s) 'Baer's Pochard type' St. James's Park (from life).

Notes

1. Tufted Duck (c): in spite of close examination of over 1,000 adult drakes in full plumage, we cannot substantiate this type of bill tip in the Tufted Duck.
2. Pochard (h): this type of bill tip in adult drake Pochard in full plumage is unknown to us in spite of close examination of about 100 adult drakes.
3. 'Lesser Scaup type' (i): questionable whether tip is accurate.

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