

which have two spines on the anterior rim of the thorax, are marine, while those of the genus *Palæmon*, with the two spines of the thorax placed one behind the other, are exclusively freshwater forms. This is decidedly wrong, according to my own observations in the Philippines. There are genuine species of *Palæmon* and *Leander* in the sea as well as in rivers and lakes. Philippi's genus *Bithynis*, with only *one* spine on the anterior rim, may therefore be considered a third subgenus of *Palæmon*. The synonymy of this species is therefore as follows:—

Palæmon gaudichaudii, Olivier.

Palæmon cæmentarius, Poeppig.

Bithynis longimana, Philippi.

Macrobrachium africanum, Spence Bate.

I am very glad that I need not change the latter name, which I should be obliged to do if it really were a new species. Mr. Spence Bate seems to be of opinion that the Tambo River is in Africa, whereas it is really on the west coast of South America, near Islay in Peru. The original specimens were collected there by Mr. Whitely.

When Mr. Spence Bate expresses the opinion that all the four species of his supposed new genus have descended from one single primitive form, the reasons which he alleges in favour of this view are not convincing. My own observations in the Philippines make me rather doubtful of the alleged fact that only one particular and no other *Palæmonide* inhabits each river and lake.

The new genus of Mr. Spence Bate must therefore be suppressed, and also three of his supposed new species. It is not a new fact that these large species of *Palæmon* can be eaten, nor that they live in fresh water. The older naturalists, as Sloane, Parra, Leach, Poeppig, and Philippi, knew it long ago, as may be seen from their writings.

7. On the Genus *Ceyx*.

By R. B. SHARPE.

It seems necessary to say a few words on this genus, as considerable confusion still exists with regard to the correct determination of some of the species; and I am further anxious to set right a point in the synonymy of two of them, by which I myself, in my 'Monograph of the *Alcedinidæ*,' as well as other ornithologists, have been led into error.

The genus *Ceyx* was established in 1801, by Lacépède, and the species included in it have only three toes. The birds seem principally insectivorous, in contrast to the members of the three-toed genus *Alcyone*, the species of which are closely allied to true *Alcedo*, and are almost wholly piscivorous. All the members of the genus *Ceyx* seem occasionally to feed on fish, but are not generally found in the neighbourhood of streams. In their general habits they are allied to the African *Ispidinæ*.

The genus *Ceyx* may be divided into two natural sections, viz.

(1) those species having the head and rump lilac-rufous, and (2) those of which the heads are black, spotted or banded with blue. The latter section may again be divided into species which have the beak red, and those which have it black. The following synoptic table will, I think, satisfactorily set forth the distinctive characters of each species:—

- A. Capite et uropygio lilacinis: rostro corallino.
- a. Macula ad latera colli cærulea nulla.
- a'. Scapularibus lilacino-rufis 1. *C. rufidorsa*.
- b'. Scapularibus nigris cæruleo lavatis 2. *C. dillwynni*.
- b. Macula ad latera colli cærulea.
- a'. Major: capite lilacino obscuriore maculato: interscapulio et scapularibus rufis: pectore pulchre violaceo lavato 3. *C. melanura*.
- b'. Minor: interscapulio et scapularibus nigris cyaneo maculatis: subtus flava 4. *C. tridactyla*.
- B. Capite nigro, cæruleo aut cyaneo maculato: dorso postico et uropygio cyaneis, ultramarinis, aut argenteo-cæruleis.
- a. Rostro corallino.
- a'. Rostro brevior: genis et regione parotica nigris: dorso postico et uropygio argenteo-cæruleis..... 5. *C. cajeli*.
- b'. Rostro longior: genis et regione parotica cyaneo aut cæruleo maculatis: dorso postico et uropygio cyaneis aut ultramarinis.
- a''. Scapularibus nigris: dorso postico et uropygio læte cyaneis 6. *C. wallacii*.
- b''. Scapularibus cæruleo lavatis: dorso postico ultramarino; uropygio cyanescente.
- a'''. Major: rostro robustiore: maculis loralibus majoribus: capitis summi maculis et interscapulio cærulescentioribus... 7. *C. lepida*.
- b'''. Minor: subtus intense aurantia: uropygio læte argentescente.. 8. *C. uropygialis*.
- b. Rostro nigro: capite cyaneo fasciato.
- a'. Major: pectore et abdomine intense rufis ... 9. *C. philippinensis*.
- b'. Minor: pectore et abdomine flavis: gula alba 10. *C. solitaria*.

There are in the Indian Region two rufous-headed species of *Ceyx*, one of which has the whole back lilac-rufous, while the other has the middle of the back and scapularies black washed with blue; I propose to call them, for the sake of illustration, the rufous-backed and the blue-backed species respectively. These two birds are sufficiently distinct, but nevertheless they were placed together by all the old writers as being sexes or varieties of one species. The first description and figure of these birds we find in an old Dutch work, by Vosmaer, printed at Amsterdam in 1768. The Zoological Society have just acquired for their library a copy of this rare work, and we find therein the following paper:—"Beschryving van twee zeer fraaie, kortstaartige oost-Indische Ys-vogeltjes," accompanied by a full description and a coloured plate. The upper figure in this plate represents the blue-backed, and the lower figure the red-backed species.

The next mention we find made of these birds is by Pallas in 1769, one year after Vosmaer's description. In the 6th fasc. of his 'Spicilegia' we find a description of *Alcedo tridactyla*, which description I here append.

"*Vertex ferrugineus, violaceo nitens; frons ad latera dilutiôr. Genæ et tota subtus avis e croceo lactei coloris; præter gulam prorsus albam. Temporum macula lazurea, infraque eam longitudinalis, alba. Interscapulium lazereum, alares plumæ tantum apicibus. Uropygium ferrugineo-violaceum.*

"*Remiges ferrugineo nigricantes, interiorum quædam margine exteriori ferruginæ. Cauda brevis, rotundata, ferruginea.*

"*Pedes albidî, ut rostrum, etc. Unguiculi albicantes.*

"*Varietas, ut puto, fœminæ, supra tota jucunde ferruginea, alaribus quoque plumis; remigumque, præter extimis, margine. Vertex, uropygium, extremaque aliquot plumarum dorsalium violaceo nitore perfusa. Pectus magis quam in altera ferrugineum, abdomen albidius. Cærulea temporum areola deficiens."*

It will thus be seen that Pallas considers the red-backed bird to be a variety of his *Alcedo tridactyla*.

In 1771 we find that Linnæus first makes mention of *Alcedo tridactyla*; but, as Dr. Pucheran clearly shows, Linnæus's description is merely a reproduction of Vosmaer's. The following is Linnæus's description:—

"*A. brachyura, supra caudaque rufis, subtus flava, pedibus tridactylis.*

"*Hab. in India orientali.*

"*Altera avis supra tota rufa, etiam cauda; ventre postico flavo.*

"*Altera dorso cæruleo, tota subtus flava, gula alba; genæ flavæ; remiges nigræ."*

In 1783 Boddaert named the blue-backed species *Alcedo rubra* from Buffon's Pl. Enl. 778. fig. 2, upon which also the *Alcedo purpurea* of Gmelin's 'Systema' (1788) was founded. In 1846 Mr. Strickland received both birds from Malacca, and he at once saw that they constituted distinct species. Applying the name *tridactyla* of Pallas to the blue-backed bird, he gave to the red-backed one the appropriate name of *rufidorsa*.

To this decision Dr. Pucheran demurs; and the following is the argument of the learned doctor. He says that the first time Linnæus makes mention of the name *tridactyla* is in the 'Mantissa,' and the only work quoted by him is Vosmaer's 'Monographia.' Dr. Pucheran had not the original edition of Vosmaer's book; but he had the French translation, and he proceeds to show (which is undoubtedly the case) that the description of Linnæus is merely a copy of that of Vosmaer's.

The learned doctor then quotes Pallas's description, as given above, and shows that his "*varietas*" is the same to all intents and purposes as Mr. Strickland's *Ceyx rufidorsa* (P. Z. S. 1846, p. 99); and there can be no doubt, as Mr. Strickland himself observes,

that his is the same bird as the red-backed variety of Vosmaer's Ys-vogel, and of Pallas's and Linnæus's *Alcedo tridactyla*. Dr. Pucheran thus sums up his argument:—"However the case may be, it is impossible to deny that the variety, or rather the race with the back blue, of which Vosmaer, Linnæus, and Pallas have spoken, has been signalized as a distinct species by Gmelin, who gave it the name of *Alcedo purpurea*, afterwards the *Ceyx purpureus* of Cuvier. This synonymy appears to us incontestable; and this conviction results from it, that, the two types, one with the back blue and the other with the back red, having been first confounded by Linnæus, and afterwards by Pallas, under the common denomination of *Alcedo tridactyla*, and the first having been separated by Gmelin (*Alcedo purpurea*, Gm.; *Ceyx purpureus*, Cuv.), the name of *Alcedo tridactyla* ought properly to fall to the second, and to become a synonym of the *Ceyx tridactyla* of Jardine and Selby, which is the same bird as *Ceyx rufidorsa*, Strickland.

It was the conviction that Dr. Pucheran was right that induced me to coincide in his rectification of the synonymy of these two birds in my 'Monograph.' But since the examination of Vosmaer's original work, I have had occasion to be somewhat sceptical as to the value of the worthy doctor's argument.

Vosmaer, as it appears, was not a binominalist, and nowhere does he apply a Latin name to the birds he was describing in the present instance.

Then, again, Dr. Pucheran was most decidedly wrong in saying, in the above-quoted sentence, that the two birds were *first* confounded by Linnæus, and *afterwards* by Pallas; for the name of the latter has a priority of two years.

The plain solution of the difficulty seems to be that the blue-backed bird is the *Alcedo tridactyla* of Pallas, and therefore ought to bear the name. Vosmaer must be left out of the question, as he never gave a scientific name to the bird at all. And the name *rufidorsa* must be applied to the red-backed species, Mr. Strickland's being the first description of that bird. I have endeavoured to give the full and correct synonymy of the two species at the end of this paper.

I cannot reconcile the *Martin-pêcheur de l'île de Luçon* of Sonnerat exactly with any of the rufous-headed species. The descriptions of the old authors are so erroneous in many cases that they are not at all to be depended upon; but if, as Dr. Pucheran suggests, the bird described by him is really distinct from *Ceyx rubra*, it can only be referable to *Ceyx melanura* of the Philippines; and of this species his description can only be considered a loose and inaccurate one.

Ceyx melanura is a very excellent species, easily distinguishable by the obscure lilac spots on the crown. While engaged in the study of the rufous-headed *Ceyces*, my attention was attracted to a plate in Prof. Reichenbach's 'Handbuch' representing what he calls *Ceyx tridactyla*, and I could not recognize these figures as being copies of any figures in any work with which I was acquainted. They are intended to represent two Bornean birds in the Dresden Museum.

Now these figures of Reichenbach cannot be reconciled with any of the three rufous-headed species of *Ceyx*, viz. *Ceyx tridactyla* of Penang and the Indian peninsula, *Ceyx rufidorsa* of Malayana, and *Ceyx melanura* of the Philippines. Reichenbach's bird cannot be *Ceyx rubra*, because this species has the middle of the back black washed with blue, and has a conspicuous blue spot behind the ear. This spot is wanting in the Bornean bird, which also has the back rufous from beak to tail. Nor can his bird be intended for either of the other two species, as both of these have rufous scapularies. I therefore came to the conclusion that the Bornean *Ceyx* must be a distinct species; and I have had some correspondence on the subject with Dr. Salvadori of Turin, who is contemplating the publication of a paper on the genus.

In the 'Natural History of Labuan,' by Messrs. Motley and Dillwyn, I found a curious corroboration of my ideas on the subject; for there we read that a specimen of *Ceyx tridactyla* is "above, from the beak to the tail, rufous red," and has the "scapulars dusky black, tipped with rich blue." This description will not do for the Malaccan, while it answers exactly to Reichenbach's figures of the Bornean birds. I therefore wrote to Mr. Dillwyn to ask him to favour me with a sight of the bird described by him as *Ceyx tridactyla*; and he very kindly sent me the bird to examine. I immediately found all my ideas as to its specific distinctness to be quite correct, and I therefore propose to name this beautiful bird

CEYX DILLWYNNI, sp. n.,

in acknowledgment of that gentleman's kindness in enabling me thus to elucidate this difficult question. The new species has no blue spot at the side of the neck, and therefore cannot be confounded with *Ceyx tridactyla* or *Ceyx melanura*. From *Ceyx rufidorsa* it is at once distinguished by its slightly larger size, and by the scapularies, which are black washed with blue.

Of the other section of the genus *Ceyx* (that is, of those of which the heads are black with bright blue spots) the first described were *C. lepida* and *C. solitaria*, which were figured by Temminck in the 'Planches Coloriées.' The type specimen of *C. lepida*, which is a young bird, is figured by me in the plate of the species in my 'Monograph of the Alcedinidæ,' but the blue on the scapularies is not very well represented. I know, however, that the type specimen has this colour, as Mr. Keulemans made a careful examination of the specimen for me. In Bouru the very distinct species *C. cajeli*, Wall., is found, and in the Sula Islands the equally distinct species *C. wallacii*, Sharpe. The newly described *Ceyx philippinensis* of Gould, though closely allied to *Alcyone cyanipectus*, is a good species, as I have since found another specimen in the British Museum. I cannot satisfactorily make out the *Ceyx uropygialis* of Mr. Gray. I believe it to be distinct; but it is the most obscure species of the whole genus. It differs principally in its smaller size and brighter colouring of the rump. I have seen specimens from Gilolo, Batchian, and Ternate, from which latter island the type specimen

came. There is, however, another bird of which I have seen specimens from Batchian and Gilolo, which I cannot reconcile at all with any of the other species. It is larger than *C. uropygialis* and about the size of *C. lepida*, and many people would be inclined to consider it the young of the latter bird; but the blue spots on the head are very small and obscure, and the blue on the back not nearly so much developed as in *C. lepida*, while it presents the bright rump of *C. uropygialis*. I at present consider it to be a variety of the latter bird; but I think that when we know more of the different species, it may prove to be distinct.

I add a list of the species at present known to me, with a full synonymy, the descriptions being taken from my 'Monograph' when the species have already been noticed there.

I. CEYX RUFIDORSA, Strickl. Strickland's Kingfisher.

Alcedo purpurea, var., Shaw, Gen. Zool. viii. p. 97 (1811).

Ceyx tridactyla, Jard. and Selby, Ill. of Orn. i. pl. 55. fig. 2; Sharpe, Monogr. *Alced.* part 2. plate only (1868).

Ceyx rufidorsa, Strickl. P. Z. S. 1846, p. 99; Gray, Gen. of Birds App. p. 5 (1848); Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849); Reich. Handb. *Alced.* p. 8, t. cccxcviii. fig. 3070 (1851); Cass. Cat. Halc. Phil. Mus. p. 13 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Hartl. Journ. f. Orn. 1854, p. 413; Horsf. & Moore, Cat. Birds Mus. E. I. Co. p. 132 (1854); Moore, P. Z. S. 1854, p. 270; Cab. & Heine, Mus. Hein. Th. ii. p. 152 (1860); Wallace, P. Z. S. 1863, p. 484; Sharpe, P. Z. S. 1868, p. 271.

Dacelo rufidorsa, Schl. Mus. Pays-Bas, *Alced.* p. 48 (1863); id. Vog. Ned. Ind. *Alced.* pp. 40, 67, pl. 16 (1864).

Chuchack-wrang of the Javans (*Horsfield*).

Binti-abang of the Malays of Sumatra (*Raffles*).

Bintei of the Bornese (*Motley*).

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli cærulea nulla: scapularibus lilacino-rufis: subtus flava.

Hab. in regione Indo-Malayana.

Above lilac-rufous, tinged on the sides and back of the head and on the back with shining violet; wing-feathers blackish, the inner web rufous from the base, more conspicuous on the secondaries, which are almost entirely rufous; throat and a patch of feathers on each side of the neck white, tinged with light orange; a loreal spot (very faintly developed), cheeks, and under surface of the body bright orange; bill and feet coral-red. Total length 4.7 inches, of bill from front 1.2, from gape 1.09, wing 2.2, tail 0.8, tarsus 0.25, middle toe 0.4, hind toe 0.2.

Hab. Malacca (*Cantor*), Sumatra (*Mus. Lugd.*), Bangka (*Mus. Lugd.*), Java (*Mus. Lugd.*), Bavian Island (*Hartlaub*), Lombok (*Wallace*), Sumbawa (*Mus. Lugd.*), Flores (*Wallace*), Borneo (*Motley*).

The above description and measurements are taken from a nicely preserved skin obtained in Flores by Mr. Wallace, and now in my own collection. I have another specimen in my collection, which

is larger and brighter than any I have yet seen. This was purchased of a dealer, and is said to be from Singapore; but Lord Walden thinks it may have come from Camboja. The following are the measurements of this specimen. Total length 5·1 inches, of bill from front 1·4, from gape 1·7, wing 2·4, tail 1, tarsus 0·25, middle toe 0·45, hind toe 0·2.

2. CEYX DILLWYNNI, Sharpe, sp. n. Labuan Kingfisher.

Ceyx tridactyla, Reich. Handb. *Alced.* p. 8, t. ccciii. b. fig. 3389 (1851); Motley & Dillwyn, Nat. Hist. of Lab. p. 13 (1855).

Ceyx rufidorsa, Sclater, P. Z. S. 1863, p. 213.

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli cærulea nulla: scapularibus nigris cæruleo lavatis.

Hab. in insulis "Labuan" et "Borneo" dictis.

Head, neck, and the whole of the back lilac-rufous, with beautiful shades of violet; a little spot at the base of the beak blue; a longitudinal patch of feathers on the sides of the neck white; scapularies black, washed with bright blue; tail rufous, blackish towards the tips of the feathers; wing-coverts rufous; wing-feathers blackish, the inner web rufous from the base, more conspicuous on the secondaries, the outer web of the exterior primary rufous for the greater part of its length; chin and abdomen white; shoulders, upper part of the breast, flanks, and under wing- and tail-coverts rufous; bill and feet coral-red. Total length 5·8 inches, of bill from gape 1·5, wing 2·45, tail 1·2, tarsus 0·25, middle toe 0·4, hind toe 0·2.

Hab. Labuan (*Dillwyn*); Banjermassing (*Motley*).

The above description and measurements are taken from the type specimen, which has been most kindly presented to me by Mr. Dillwyn, and now forms part of my collection. I have ascertained that the specimen recorded by Dr. Sclater (*l. c.*) is referable to this species, by a personal examination of the bird, which is now in Lord Walden's collection.

3. CEYX TRIDACTYLA (Pall.). Penang Kingfisher.

Alcedo tridactyla, Pallas, Spic. Zool. vii. p. 10, t. 2. fig. 1 (1769); Linn. Mant. Plant. p. 524 (1771); Scop. Del. Faun. et Flor. Insubr. ii. p. 90 (1786); Gm. Syst. Nat. i. p. 459 (1788).

Alcedo rubra, Bodd. Tabl. Pl. Enl. p. 49 (1848).

Ceyx rubra, Gray, Cat. Fiss. Brit. Mus. p. 49 (1848).

Dacelo rubra, Schl. Mus. Pays-Bas, *Alced.* p. 49 (1863); id. Vog. Ned. Ind. *Alced.* pp. 40, 68, pl. 16 (1864).

Alcedo purpurea, Gm. Syst. Nat. i. p. 449 (1788).

Ceyx purpurea, Less. Traité d'Orn. p. 38 (1831); Reich. Handb. *Alced.* p. 9, t. cccxcviii. fig. 3071 (1851); Bonap. Consp. Vol. Anis. p. 9 (1854).

Ceyx purpureus, Cuv. Règne Anim. i. p. 120 (1829); Hartl. Journ. f. Orn. 1855, p. 423.

Ceyx tridactyla, Sykes, P. Z. S. 1832, p. 84; Strickl. P. Z. S. 1846, p. 99; Gray and Mitch. Gen. of Birds, i. p. 459 (c. 1844);

Jerdon, Ill. Ind. Orn. pl. 25 (1847); Gray, Cat. Fiss. Brit. Mus. p. 59 (1848); Bonap. Consp. Gen. Av. i. pp. 157, 158 (1850); Cass. Cat. Halc. Phil. Mus. p. 13 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Hartl. Journ. f. Orn. 1854, p. 413; Moore, P. Z. S. 1854, p. 269; Jerdon, Birds of Ind. i. p. 229 (1862); Gray, Cat. Mamm. and Birds of Nep. p. 24 (1863); Sharpe, P. Z. S. 1868, p. 271.

Alcedo erithaca, Gm. Syst. Nat. i. p. 449 (1788).

Ceyx erythaca, Blyth, Cat. Birds Mus. As. Soc. Beng. p. 50 (1849); Mason, Burmah, p. 674.

Ceyx luzoniensis, Stephens, Gen. Zool. xiii. p. 106 (1825).

Ceyx microsoma, Burton, P. Z. S. 1837, p. 89.

Martin-pêcheur de l'île de Luçon, Sonn. Voy. Nouv. Guin. p. 67, pl. 32 (1776).

Martin-pêcheur de Pondicherry, Buff. Pl. Enl. 778. fig. 2.

Dein-nyeen of the Aracanese (*Blyth*).

Raja-whodan of the Malays (*Eyton*).

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli cærulea: minor: interscapulio et scapularibus nigris, cyaneo lavatis: subtus flava.

Hab. in regione Indica.

Head and nape rufous, tinged with lilac; upper part of the back, scapularies, and wing-coverts black, washed with bright blue; lower part of the back, rump, and upper tail-coverts rufous, washed with bright lilac; wing-feathers blackish, the inner web rufous from the base; tail rufous; a spot in front of the eye, cheeks, sides of the neck, and under surface of the body pale orange; chin and a patch of feathers on the side of the neck white; a spot at the base of the bill and a patch of feathers behind the ear blue; bill and feet coral-red; eyes brown. Total length 5·3 inches, of bill from front 1·2, from gape 1·6, wing 2·3, tail 1, tarsus 0·2, middle toe 0·4, hind toe 0·2.

Hab. India and Ceylon (*Jerdon*), Nepal (*Hodgson*), Penang (*Cantor*), Singapore (*Mus. Phil.*), Sumatra (*Mus. Lugd.*), Java (*Mus. Brit.*), Philippines (*Cuming*).

4. CEYX MELANURA, Kaup. Lilac-spotted Kingfisher.

Ceyx melanura, Kaup, Fam. der Eisev. p. 15 (1848); Gray, Cat. Fiss. Brit. Mus. p. 59 (1848); id. Gen. of Birds, App. p. 5 (1848); Bonap. Consp. Gen. Av. i. p. 158 (1850); Reich. Handb. *Alced.* p. 9 (1851); Cass. Cat. Halc. Phil. Mus. p. 13 (1852); Hartl. Journ. f. Orn. 1854, p. 415; Bonap. Consp. Vol. Anis. p. 9 (1854); Cab. & Heine, Mus. Hein. Th. ii. p. 151 (1860); Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. 2 (1868).

Dacelo melanura, Schl. Mus. Pays-Bas, *Alced.* p. 49 (1863).

C. capite et uropygio lilacinis: rostro corallino: macula ad latera colli cærulea: major: capite lilacino obscure maculato: interscapulio et scapularibus rufis: pectore pulchre violaceo lavato.

Hab. in insulis Philippinis.

Above lilac-rufous, the head and cheeks obscurely spotted with faint lilac; scapularies rufous, a line of black feathers at the base; a patch of feathers on the sides of the neck blue; wing-coverts black, the tip of each feather spotted with bright blue; wing-feathers blackish, the inner web rufous from the base; tail above rufous, the exterior feathers blackish; a loral spot very faint orange; throat and a longitudinal patch of feathers under the before-mentioned blue spot on the sides of the neck white; breast shining lilac tinged with violet; centre of the abdomen whitish; under wing- and tail-coverts light rufous; bill and feet rich coral-red. Total length 5 inches, of bill from front 1·2, from gape 1·6, wing 2·1, tail 0·7, tarsus 0·5, middle toe 0·45, hind toe 0·2.

Hab. Philippine Islands (*Mus. R. B. Sharpe*): Luzon; Manilla (*Mus. J. Gould*).

5. CEYX CAJELI, Wallace. Bouru Kingfisher.

Ceyx cajeli, Wall. P. Z. S. 1863, p. 25, pl. v.; Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. i. (1868).

Dacelo cajeli, Schl. Vog. Ned. Ind. *Alced.* pp. 39, 67, pl. 16 (1864); id. Ned. Tidschr. 1866, p. 339.

C. capite nigro, cyaneo maculato: dorso postico et uropygio argenteo-cæruleis: rostro corallino, brevior: genis et regione parotica nigris.

Hab. in insula dicta "Bouru" maris Celebensis.

Crown of the head and wing-coverts black, with very minute spots of clear blue, each feather having a central streak of brighter colour; back silvery blue; scapulars and tail black; wing-feathers black, the inner web light reddish near the base; a loral spot light orange; a patch of feathers on each side of the neck white tinged with orange; throat white; under part light orange, deeper on the flanks; a considerable patch of feathers on the sides of the upper part of the breast black; bill and feet pale coral-red; eyes dark. Total length 5·5 inches, of bill from front 1·2, from gape 1·6, wing 2·5, tail 1, tarsus 0·3, middle toe 0·9, hind toe 0·2.

Hab. Bouru (*Wallace*).

6. CEYX WALLACII, Sharpe. Wallace's Kingfisher.

Ceyx wallacii, Sharpe, P. Z. S. 1868, p. 270; id. Monogr. *Alced.* pt. 1 (1868).

Ceyx lepida, Wall. P. Z. S. 1862, p. 338.

C. capite nigro cyaneo maculato: rostro corallino, longiore: genis cum regione parotica cyaneo maculatis: scapularibus nigris: dorso postico et uropygio læte cyaneis.

Hab. in insulis dictis "Sula" maris Celebensis.

Above black; head and neck spotted with cobalt, more on the latter, each feather having a central stripe of brighter blue; cheeks and wing-coverts streaked with bright cobalt; back very rich shining cobalt, the upper tail-coverts slightly tinged with ultramarine; scapularies black; wing- and tail-feathers blackish, the inner web of

the former light rufous from the base; throat whitish; a spot on each side of the base of the bill and the whole of the under surface bright orange; the characteristic spot on the sides of the neck deep rufous brown; a line at the base of the loreal spot, also the space between this spot and the eye, and a large patch of feathers on the side of the upper part of the breast deep black; bill and feet coral-red; iris dark. Total length 5.5 inches, of bill from front 1.4, from gape 1.7, wing 2.5, tail 1, tarsus 0.2, middle toe 0.5, hind toe 0.2.

Hab. Sula Islands (*Wallace*).

7. CEYX LEPIDA, Temm. Beautiful Kingfisher.

Ceyx lepida, Temm. Pl. Col. 595; Gray, Cat. Fiss. Brit. Mus. p. 59 (1848); Bonap. Consp. Gen. Av. i. p. 158 (1850); Reich. Handb. *Alced.* p. 10, t. cccxcviii. fig. 3066 (1851); Cass. Cat. Halc. Phil. Mus. p. 14 (1852); Bonap. Consp. Vol. Anis. p. 9 (1854); Gray, P. Z. S. 1860, p. 348; id. P. Z. S. 1861, p. 433; Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. 2 (1868).

Alcyone lepida, Gray and Mitch. Gen. of Birds, i. p. 82 (c. 1844).

Dacelo lepida, Schl. Mus. Pays-Bas, *Alced.* p. 48 (1863); id. Vog. Ned. Ind. *Alced.* pp. 39, 66, pl. 16 (1864).

C. capite nigro, cæruleo maculato: rostro corallino, longiore, robustiore: genis et regione parotica cæruleo maculatis: dorso ultramarino, uropygio cyanescente: major: maculis lorealibus majoribus: capitis summi maculis et interscapulio cærulescentioribus.

Hab. in insulis dictis "Ceram," "Amboina," et in Nova Guinea australi et australi-occidentali.

Head, nape, cheeks, and wing-coverts black, plentifully spotted with rich ultramarine, each feather having a central stripe of brighter blue; scapularies black, washed with rich ultramarine; back very bright ultramarine, becoming silvery blue towards the rump; wing-feathers blackish, the inner web rufous from the base; tail blackish, tinged with ultramarine; throat and a longitudinal patch of feathers on the side of the neck white, the latter tinged with orange; a large spot in front of the eye, and the entire under surface orange, paler on the abdomen; bill and feet rich coral-red. Total length 5.5 inches, of bill from front 1.5, from gape 1.7, wing 2.5, tail 1, tarsus 0.3, middle toe 0.5, hind toe 0.2.

Hab. Amboina (*Wallace*), Ceram (*Wallace*); south and southwest coast of New Guinea (*Wallace, Von Rosenberg*).

8. CEYX UROPYGIALIS, Gray. Silvery-backed Kingfisher.

Ceyx uropygialis, Gray, P. Z. S. 1860, p. 348; Sharpe, P. Z. S. 1868, p. 271.

C. capite nigro, cæruleo maculato: dorso postico ultramarino: uropygio læte argenteo: scapularibus cæruleo lavatis: minor: subtus intense aurantia.

Hab. in insulis dictis "Batchian," "Gilolo," "Ternate," maris Celebensis.

Crown of the head black, minutely spotted with ultramarine, each feather having a very faint stripe of cobalt down the centre; scapularies black, faintly washed with ultramarine; back ultramarine on the upper part and on the tail-coverts; rump silvery blue, with a tinge of greenish in some lights; wing-coverts black, tipped with ultramarine; wing-feathers blackish, the inner web rufous from the base; tail black; throat and a longitudinal patch of feathers on the sides of the neck white; a spot in front of the eye pale orange; under surface with the under wing- and tail-coverts very rich orange; bill and feet coral-red. Total length 5.5 inches, of bill from front 1.3, from gape 1.7, wing 2.4, tail 0.9, tarsus 0.25, middle toe 0.45, hind toe 0.2.

Hab. Batchian, Gilolo, Ternate (*Wallace*).

9. CEYX PHILIPPINENSIS, Gould. Philippine Kingfisher.

Ceyx philippinensis, Gould, P. Z. S. 1868, p. 404.

C. rostro nigro, longiore: capite cyaneo fasciato: gula rufescente: pectore et abdomine intense rufis: pectoris lateribus intense lazulino lavatis.

Hab. in insulis Philippinis.

Head and nape bright indigo, thickly banded with irregular markings of bright cobalt; back very bright shining cobalt, inclining to ultramarine on the rump; scapularies black, washed with bright indigo, and spotted with cobalt; wing-feathers blackish, the secondaries narrowly edged with indigo; throat whitish, tinged with rufous; a patch of feathers on the side of the neck pure white, tinged with rufous on the outer edge; a spot in front of the eye and the entire under surface, as well as the under wing-coverts, deep rufous, the lower part of the abdomen and under tail-coverts slightly tinged with indigo; shoulders, and a spot on each side of the upper part of the breast, shining laguli-blue; upper mandible brownish black, lower mandible pale orange; feet orange. Total length 5.5 inches, of bill from front 1.3, from gape 1.7, wing 2.3, tail 1.1, tarsus 0.3, middle toe 0.5, hind toe 0.2.

Hab. Luzon; Manilla (*Mus. J. Gould*).

10. CEYX SOLITARIA, Temm. Solitary Kingfisher.

Ceyx solitaria, Temm. Pl. Col. 595; Gray, P. Z. S. 1858, p. 172; id. P. Z. S. 1859, p. 155; id. P. Z. S. 1861, p. 433; Rosenb. Journ. f. Orn. 1864, p. 118; Sharpe, P. Z. S. 1868, p. 271; id. Monogr. *Alced.* pt. 2 (1868).

Alcyone solitaria, Gray and Mitch. Gen. of Birds, p. 82 (c. 1844); Bonap. Consp. Gen. Av. i. p. 158 (1859); Reich. Handb. *Alced.* p. 7, t. cccxcviii. fig. 3067 (1851); Bonap. Consp. Vol. Anis. p. 9 (1854).

Alcedo solitaria, Schl. Mus. Pays-Bas, *Alced.* p. 17 (1863); id. Vog. Ned. Ind. *Alced.* pp. 12, 48, pl. 3 (1864).

Therosa solitaria, Müller, MS.

Ceyx meninting, Lesson, Voy. Coq. i. p. 691 (1826); id. *Traité d'Orn.* p. 241 (1831).

C. rostro nigro: capite cyaneo fasciato: omnino minor: pectore et abdomine flavidis: gula alba.

Hab. in Nova Guinea et in insulis adjacentibus.

Head and nape black, banded with bright ultramarine; back and scapularies rich ultramarine; cheeks and wing-coverts black, spotted with bright ultramarine; wing-feathers blackish, the inner web fuscous from the base, the secondaries narrowly edged with blue; tail black, edged with blue; throat white; a spot in front of the eye and a longitudinal patch of feathers on the sides of the neck yellowish white; entire under surface light orange; bill entirely black; feet orange. Total length 5 inches, of bill from front 1.3, from gape 1.6, wing 2.1, tail 0.8, tarsus 0.2, middle toe 0.4, hind toe 0.2.

Hab. New Guinea (*Wallace*), Aru Islands (*Wallace*), Ceram (*Mus. Lugd.*), Mysol (*Wallace*).

The only evidence of the appearance of this species in Ceram is an example in the Leyden Museum, said to have come from that island. Mr. Wallace, whose personal acquaintance with the ornithology of the Moluccas renders him the best authority on the subject, is inclined to doubt the occurrence of the bird in that locality.

I append a few notes on the geographical distribution of the genus *Ceyx*. It will be seen by the table at the end of the present paper that representatives of the genus are found in both the Indian and Australian regions. The four rufous-backed species, however, are almost entirely confined to the former, while the blue-backed species are, on the other hand, with one exception, exclusively inhabitants of the Australian region. In the Philippine Islands one species of each section is met with. *Ceyx tridactyla* enjoys the most extended geographical range; for it is found all over India, and extends down the Malayan peninsula as far as the island of Java. At Malacca it meets with *Ceyx rufidorsa*, which is distributed over the Indo-Malayan Islands and extends a little way into the Austro-Malayan subregion, being found in Lombeck, Sumbawa, and Flores. This species is also found in Borneo, and in Labuan the new species *Ceyx dillwynni* is met with. As far as we know, the latter bird is exclusively confined to this island. In the Philippines we find *Ceyx melanura*. This bird is certainly the link connecting the two sections together, as the lilac spots on the head exhibit a tendency towards the blue-backed species of the genus. With the exception of *C. philippinensis*, all the other blue-backed species are confined to the Australian region. *Ceyx wallacii* is apparently confined to the Sula Islands, and *Ceyx cajeli* to Bouru. *C. uropygialis* may be said to be confined to Batchian, Gilolo, and Ternate, though I hear that in the Leyden Museum there are specimens of a *Ceyx* from Morotai, which may ultimately prove to be of this species. *Ceyx lepida* seems to be most plentiful in Ceram and Amboyna, but is also found in New Guinea, though apparently

confined to the south and south-west coast. Here it meets with the range of *C. solitaria*, which is a true Papuan species. I have drawn up a table which will exhibit at a glance the distribution of the various species. In this table I have followed the usual arrangement of Mr. Wallace of the various groups of islands:—

Tabular View of the Geographical Distribution of the Genus Ceyx.

	Indian Region.								Australian Region.												
	Asia.	Indo-Malay Islands.							Timor Group.			Moluccan Group.				Papuan Islands.					
	Indian Asia.	Malacca.	Sumatra.	Bangka.	Java.	Bawian.	Borneo.	Philippines.	Sula Islands.	Lombok.	Sumbawa.	Flores.	Batchian.	Gilolo.	Ternate.	Bouru.	Ceram.	Amboyna.	Aru Islands.	Mysol.	New Guinea.
1. <i>C. rufidorsa</i>	*	*	*	*	*	*	*	..	*	*	*									
2. <i>C. dillwyni</i>	*														
3. <i>C. tridactyla</i>	*	*	*	..	*																
4. <i>C. melanura</i>	*														
5. <i>C. cajeli</i>									*						
6. <i>C. wallacii</i>		*													
7. <i>C. lepida</i>										*	*	*	
8. <i>C. uropygialis</i>						*	*	*							*
9. <i>C. philippinensis</i>	*														
10. <i>C. solitaria</i>										*	..	*	*	*	*

8. A Monographic Revision of the Lepidoptera hitherto included in the Genus *Adolias*, with Descriptions of new Genera and Species. By ARTHUR GARDINER BUTLER, F.L.S., F.Z.S., &c.

(Plate XLV.)

The genus *Adolias* was monographed by Mr. Frederic Moore in the year 1859, and again by Dr. Vollenhoven in 1862; but so much has been learnt respecting the sexes and affinities of the species since that time, the species themselves have increased to such an extent, and the difficulty of classifying them has been so universally felt, that a complete revision of the group has become a necessity.

In the present paper I have been obliged to make several new genera, on account of striking differences of structure observed; the species are also arranged in natural groups to facilitate their determination.

The genus as it now stands contains sixty species, sixteen species having been separated from it to constitute new genera, and eight others being removed to the genus *Symphædra*, Hübner.