

ON THE CLASSIFICATION OF THE ALBATROSSES,
PETRELS, AND DIVING PETRELS.

BY LEVERETT MILLS LOOMIS.

PRINCIPAL ATTEMPTS TO CLASSIFY TUBINARES.

TAKING Dr. Coues's monograph as a starting point, the following schemes illustrate the principal attempts to classify the Albatrosses, Petrels, and Diving Petrels into genera and higher groups.¹

*The Coues System (1864-1866).*²

Family Procellariidæ

Subfamily Procellariinæ

Section Procellariæ

Oceanodroma, Cymochorea, Halocyptena, Procellaria, Oceanites,
Fregetta, Pelagodroma

Section Puffinæ

Majaqueus, Adamastor, Thiellus, Nectris, Puffinus

Section Fulmareæ

Fulmarus, Thalassoica, Ossifraga

Section Æstrelatæ

Æstrelata, Pagodroma, Daption

Section Prioneæ

Halobæna, Pseudoprion, Prion

Subfamily Diomedeinæ

Diomedea, Phœbetria

Subfamily Halodrominæ

Pelecanoides

This system is a modification of that proposed by Bonaparte,³ and is founded upon external characters. It is noteworthy, that Dr. Schlegel⁴ assigned generic rank to the Petrel, Albatross, and Diving Petrel groups, with the respective designations, *Procellaria*, *Diomedea*, *Halodroma*.

¹ Cf. Forbes, Voy. Chall., Zool., vol. iv, pt. xi, pp. 4-11, on the literature relating to the anatomy and classification of the Tubinares.

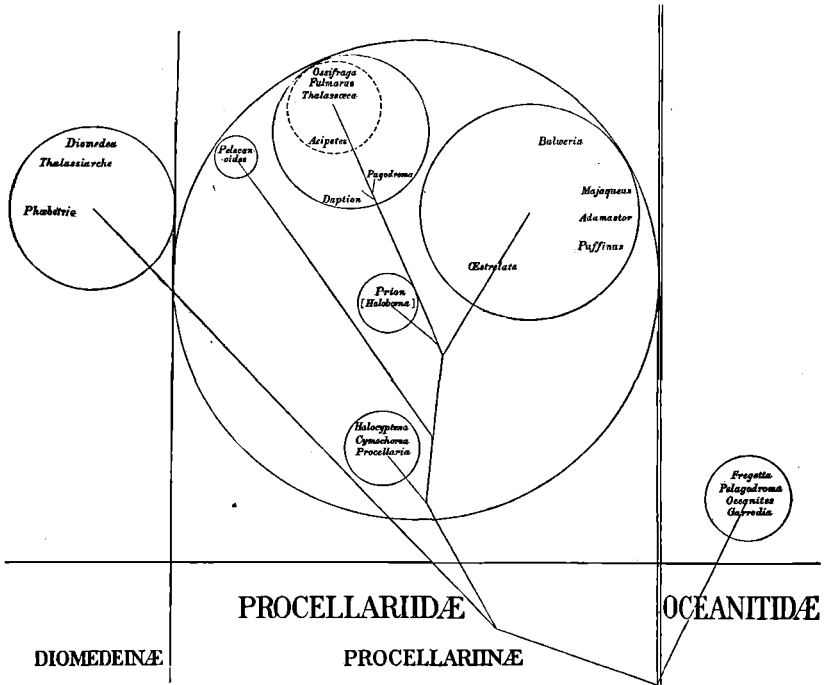
² Proc. Acad. Nat. Sci. Phila., 1864, pp. 72-91, 116-144; 1866, pp. 25-33, 134-172, 172-197.

³ Consp. Gen. Av., vol. ii, 1857, pp. 184-206.

⁴ Mus. Pays-Bas, vol. vi, Procell., 1863, pp. 39, 40.

*The Forbes System (1882).*¹

The Forbes system was based on internal as well as external characters. The group, as a whole, was ranked as an order and Illiger's term, Tubinares,² applied to it.



Mr. Ridgway, in his 'Manual of North American Birds' (1887), adopted the following classification for the higher groups:

Order Tubinares	{	Family Diomedeidæ	{	Subfamily Procellariinæ
		Family Procellariidæ		Subfamily Oceanitinæ
		Family Halodromidæ		

¹ Voy. Chall., vol. iv, pt. xi, p. 61.

² Prodrumus, 1811, p. 273.

*The Salvin System (1896)*¹.

Order Tubinares

Family Procellariidæ

Subfamily Procellariinæ

Procellaria, Halocyptena, Oceanodroma

Subfamily Oceanitinæ

Oceanites, Garrodia, Pelagodroma, Pealea, Cymodroma

Family Puffinidæ

Subfamily Puffinæ

Puffinus, Priofinus, Thalassœca, Priocella, Majaqueus, Œstelata,
Pagodroma, Bulweria

Subfamily Fulmarinæ

Ossifraga, Fulmarus, Daption, Halobæna, Prion

Family Pelecanoididæ

Pelecanoides

Family Diomedeidæ

Diomedea, Thalassogeron, Phœbetria

In this system osteological characters are freely employed in the definition of the families.

Mr. Evans, in volume IX of 'The Cambridge Natural History' (1899), used the following groupings:

Order Procellariiformes

Suborder Tubinares

Family Procellariidæ

Subfamily Diomedeinæ

Subfamily Oceanitinæ

Subfamily Procellariinæ

Subfamily Pelecanoidinæ

In 'The Auk' for July, 1897, p. 315, and in the fifth edition of the 'Key to North American Birds,' Dr. Coues classified the higher groups as follows:

Order Tubinares	}	Family Diomedeidæ	}	Subfamily Fulmarinæ
		Family Procellariidæ		Subfamily Puffinæ
				Subfamily Procellariinæ
				Subfamily Oceanitinæ
	Family Pelecanoididæ			

¹ Cat. Birds Brit. Mus., vol. xxv.

REVISION OF HIGHER GROUPS AND GENERA OF TUBINARES.

In nature bird units, conventionally styled species, abound. Each unit is a fundamental group of bird individuals, which is absolutely separated from all other bird individuals by a peculiar assemblage of characters. The individuals of the Laysan Albatross, or of the White-faced Petrel, constitute such a unit.

Within bird units occur environmental, dichromatic, individual, sexual, seasonal, and age variations. Environmental variation is well exemplified in Kuhl's Shearwater and the Song Sparrow, dichromatic variation in the Wedge-tailed Shearwater and Swainson's Hawk, individual variation apparently in the Galapagos Albatross, sexual variation in the Huia, seasonal variation in the Tufted Puffin, and age variation in the Herring Gull.

In the progress of the science of ornithology conspicuous variations have frequently been mistaken for bird units, later to be reduced to their proper category of variations of units. So it happened that the sexes of the Huia were described by Gould as distinct species. Ornithologists have groped their way. Advances have been followed by retreats. Under the spell of the nineteenth century theories of evolution, the subspecies of the "American school," with the trinomial nomenclature, was evolved. It was assumed that geographic (environmental) variations are incipient species, notwithstanding the fact that we do not know the history of any bird unit and can not foretell the future of any variation having evolutionary possibilities. Of late there has been a tendency to enroll dichromatic variation in the ranks of subspecies. Moreover some systematists appear to use the term subspecies in the sense of variety, or under species without the incipient species element. In this scheme trinomials simply give a fictitious unit value to variations of units. Lastly polynomials have come into vogue; witness, "*Galerida cristata cristata* L. ξ *caucasica* Tacz."

It is apparent that the subspecies situation is one created by ornithologists themselves, complicating instead of simplifying the study of birds. Another retreat is inevitable. We are to cease making definite on paper with trinomials or polynomials what is indefinite in nature, and treat environmental variation simply as one of the six normal variations of bird units.

Groups of bird units also abound in nature, but there is not sufficient coördination among them to permit any arrangement that is not largely arbitrary. Under such conditions, it is not surprising that systems have multiplied and that there exists to-day much diversity of opinion respecting taxonomic values.

In a classification that must be largely arbitrary, the most that can be attained is an arrangement that will simplify the attainment of knowledge. The subjoined system is a simplified one, based on differences and resemblances, and not on theories of ancestry. External structural characters are employed in the genera and both external and internal ones in the higher groups. Subgenera are excluded, for no vantage ground appears to be gained by burdening the memory with such subdivisions.

Order TUBINARES

Family DIOMEDEIDÆ

Diomedea, Thalassarche, Phœbetria

Family PROCELLARIIDÆ²

Subfamily Procellariinæ

Macronectes, Fulmarus, Daption, Pachyptila, Pagodroma,
Bulweria, Procellaria, Puffinus

Subfamily Hydrobatinæ

Hydrobates

Subfamily Oceanitinæ

Oceanites, Fregetta

Family PELECANOIDIDÆ

Pelecanoides

REMARKS.

DIOMEDEIDÆ. The characters assigned by authors to *Diomedea* and "*Thalassogeron*" break down in Buller's Albatross, which has the base of the culmen widely spatulate and the latericorn and culminicorn separated by a membrane. The basal width of the latericorn, however, divides the round-tailed Albatrosses into

¹ Further, trinomials have been wittingly applied to bird units having a close resemblance and occupying separate areas.

² I do not concur with the nomenclatural ruling that displaces Procellariidæ by Hydrobatidæ.

two distinct groups. According to the current rules of nomenclature, these should be designated *Diomedea* and *Thalassarche*. In passing, it should be noted that Dr. Hartert¹ unites these groups in one genus, *Diomedea*.

PROCELLARIINÆ. This subfamily is equivalent to the Puffininae and Fulmarinae of Mr. Salvin and of Dr. Coues. The following is the ruling of the former:²

Sides of the palate without lamellæ Puffininae
Sides of the palate with more or less distinctly developed lamellæ [i. e., striæ and lamellæ] Fulmarinae

It happens, however, that the striæ may be indistinct in the Fulmar and, according to Mr. Forbes,³ can "just be traced" in the Antarctic and Slender-billed Fulmars, which Mr. Salvin included in his Puffininae.

Dr. Coues⁴ defined his associations as follows:

Under mandible not hooked at end Fulmarinae
Under mandible hooked at end Puffininae

The well hooked gonyes of the Blue Petrel and of certain variations of the Prion were overlooked in this definition.

FULMARIUS. *Priocella* and *Thalassoica* are included in *Fulmarus*, for the three bird units involved form a definite group with *Macronectes* on one hand and *Daption* on the other. In his 'Manual of North American Birds,' Mr. Ridgway ranked *Fulmarus*, *Priocella*, and *Thalassoica* as subgenera of one genus, *Fulmarus*. As before indicated, Mr. Salvin treated *Priocella* and *Thalassoica* as genera of his Puffininae.

PACHYPTILA. The structural characters of the Blue Petrel do not differ greatly from those of the slender-billed variations of the Prion. Consequently, the two species are included in *Pachyptila*, *Halobæna* being eliminated.

BULWERIA. *Pterodroma* is united with *Bulweria*, for the long, wedge-shaped tail of the White-breasted Petrel (*hypoleuca*) externally links the smaller *Pterodromæ* with Bulwer's Petrel. As genera in the present system are based solely on external

¹ Vög. pal. Fauna, 1920, p. 1438.

² Cat. Birds Brit. Mus., vol. xxv, p. 368.

³ Voy. Chall., Zool., vol. iv, pt. xi, p. 19.

⁴ Key to N. A. Birds, ed. 5, p. 1027.

characters, absence of the accessory femoro-caudal muscle is ignored as a generic character. It should be recalled that Dr. Coues, in his monograph, relegated *Bulweria* to the synonymy of *Æstrelata* (= *Pterodroma*).

PROCELLARIA. *Priofinus* is included in *Procellaria*. Mr. Ridgway, in his 'Manual of North American Birds,' treated *Priofinus* as a subgenus of *Puffinus*, while Mr. Mathews in Volume II of his 'Birds of Australia' included it in *Procellaria*.

HYDROBATES. *Halocyptena* and *Oceanodroma* are united with *Hydrobates*. Following the precedent set in *Fregetta*, the shape of the tail is not given generic value in the present association. It should be observed that Mr. Salvin, in his monograph, placed the Galapagos Petrel in *Procellaria* (= *Hydrobates*) notwithstanding its emarginate tail.

OCEANITES. The booted tarsus proves to be a variable character in *Oceanites*, as defined by Mr. Salvin. For example, a specimen of the Graceful Petrel (*O. gracilis*), now before me, has the lower half of the tarsus indistinctly scutellate. As a whole, the long-legged Storm Petrels (*Oceanitinæ*) are trenchantly divided into two groups by the relative proportions of the feet, and these groups are here recognized as two genera, namely, *Oceanites* and *Fregetta*, the former including *Oceanites*, *Garrodia*, *Pelagodroma*, and *Pealea* of Mr. Salvin's monograph. In the present instance, no clearer view appears to be gained by elevating the structural characters of species to characters of monotypic genera.

To recapitulate: Bird units (commonly called species) and variations within bird units are realities and no theories of evolution can change their status. Genera and higher groups of birds are composed of these units and are arbitrary distinctions that should simplify the study of birds.

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