

## ACARINA: METASTIGMATA: IXODIDAE OF SOUTH GEORGIA, HEARD AND KERGUELEN<sup>1</sup>

By Nixon Wilson<sup>2</sup>

*Abstract:* A study of previously reported and new material from South Georgia, Crozet, Heard, and Kerguelen Is. indicates that only *Ixodes uriae* and *I. kerguelenensis* now are known from these islands. Previous records of *I. auritulus* and *I. zumpti* from Heard I., and *I. percavatus* from Kerguelen Is., are considered misidentifications of *I. kerguelenensis*. The latter species is reported from South Georgia, Crozet Is., *Pelecanoides georgicus*, and in association with *Procellaria aequinoctialis*, and the larva is described, for the first time. *I. pterodromae* is synonymized with *I. kerguelenensis*.

Most of the material reported herein was collected under auspices of the Bishop Museum by H. Clagg and P. Temple, in cooperation with the British Antarctic Survey, and South Indian Ocean Expedition to Heard I. It is also appropriate to include information on a small collection from Crozet I., made available by L. Davies of University of Durham, England.

Five species of ticks, namely, *Ixodes auritulus* Neumann, *I. kerguelenensis* André and Colas-Belcour, *I. percavatus* Neumann, *I. uriae* White, and *I. zumpti* Arthur are reported from South Georgia, Crozet, Heard, and Kerguelen Islands. A restudy of material on which these records are based, plus the study of new material from these islands, indicate that the records of *I. auritulus*, *I. percavatus*, and *I. zumpti* are based on misdetermined specimens of *I. kerguelenensis*. In addition, *I. pterodromae* Arthur is considered a synonym of *I. kerguelenensis*. The latter is reported from South Georgia and Crozet Is. for the first time.

All new material listed here is deposited in Bishop Museum, with exception of some placed in Rocky Mountain Laboratory, Hamilton, Montana and some returned to L. Davies.

The Australian National Antarctic Research Expedition (A.N.A.R.E.) material reported originally by Zumpt (1952) is deposited, for the most part, in the School of Public Health and Tropical Medicine, University of Sydney, N.S.W., Australia. A small amount of this material is retained in the Department of Entomology, South African Institute for Medical Research, Johannesburg, South Africa (F. Zumpt), and possibly in the Department of Zoology, King's College, University of London, England (D. R. Arthur).

The holotype of *I. kerguelenensis* and specimen of *I. percavatus* reported by André & Colas-Belcour (1942) and André (1947), respectively, are deposited in the Museum of Natural History, Paris, France, the latter species under Registry No. 303. The specimen of *I. kerguelenensis*, originally mounted on a slide, is now in alcohol and in relatively good condition. The right palpus, exclusive of segment 1, is mounted on a slide.

### KEY TO SOUTH GEORGIA, CROZET, HEARD, AND KERGUELEN ISLANDS *Ixodes*

#### Adults and Immatures

1. All coxae with spurs.....**kerguelenensis**  
All coxae without spurs.....**uriae**

<sup>1</sup>Results of fieldwork supported by grants (G-23720, GA 166) to Bishop Museum from the Office of Antarctic Programs, U. S. National Science Foundation (S. Georgia only).

<sup>2</sup>B. P. Bishop Museum, Honolulu, Hawaii. Present address: Department of Biology, University of Northern Iowa, Cedar Falls, Iowa 50613, U.S.A.

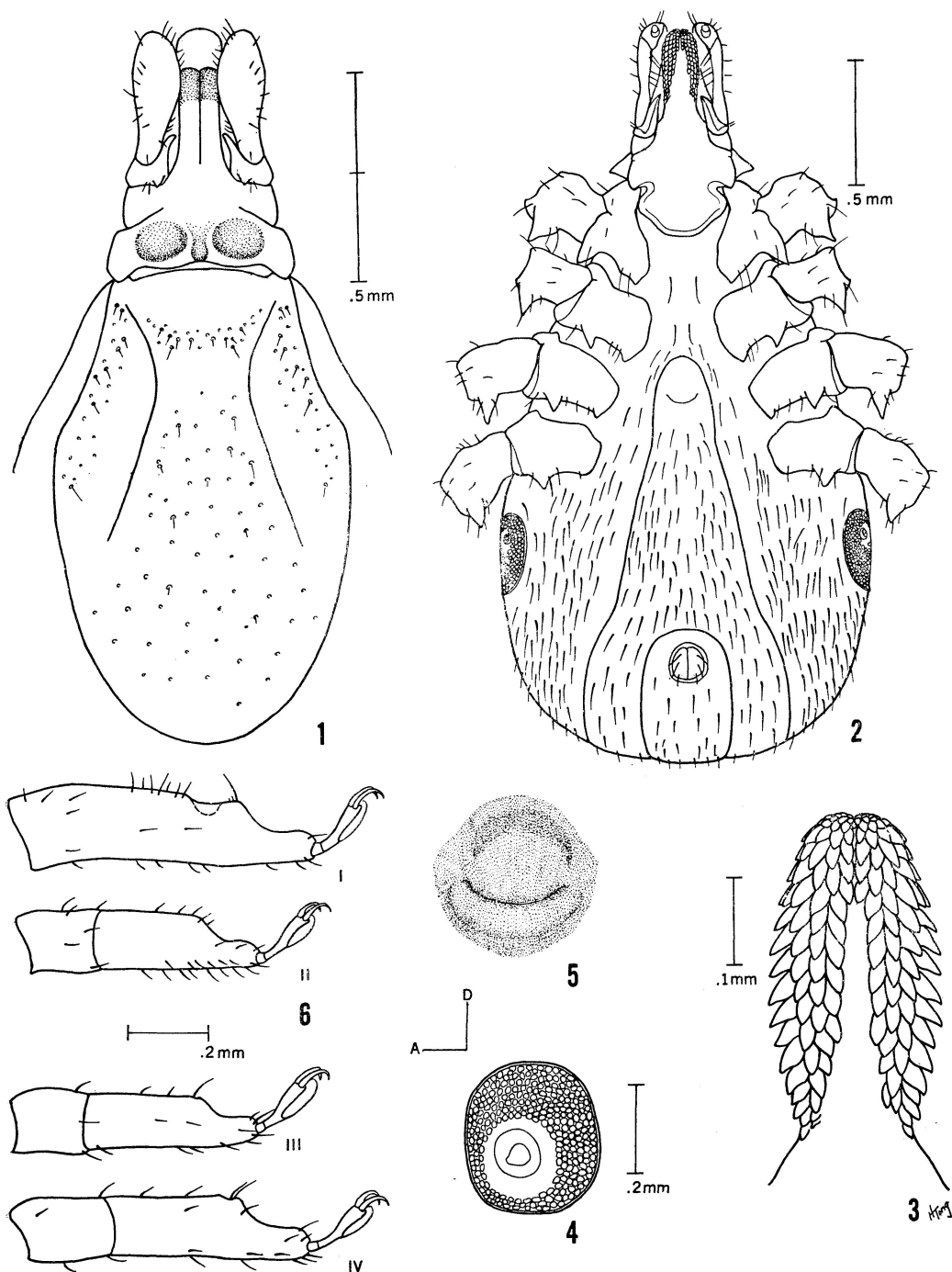


Fig. 1-6. *Ixodes kerguelenensis* André & Colas-Belcour, ♀. 1, capitulum and scutum, dorsal view; 2, ventral view; 3, hypostome; 4, spiracular plate; 5, genital area; 6, tarsi I to IV.

***Ixodes kerguelenensis*** André and Colas-Belcour Fig. 1–25.

*Ixodes canisuga kerguelenensis* André & C. Bel., 1942, *Bull. Mus. Nat. Hist., Paris, 2nd Ser.* **14**: 261 (Kerguelen Is.).

*Ixodes percavatus*: André, 1947, *Mem. Mus. Nat. Hist., Paris (NS)* **20**: 74 (1 ♀, Kerguelen Is.).

*Ixodes kerguelenensis*: Zumpt, 1952, *Aust. Nat. Antarc. Res. Exped. Rep., Ser. B.* **1**: 15 (Heard I.).—Arthur, 1960, *Parasitology* **50**: 221 (Heard I., listed by Zumpt (1952)).

*Ixodes auritulus*: Zumpt., 1952, *Aust. Nat. Antarc. Res. Exped. Rep., Ser. B.* **1**: 16 (3 ♀♀, Heard I.).

*Ixodes pterodromae* Arthur, 1960, *Parasitology* **50**: 217. NEW SYNONYMY.

*Ixodes zumpti*: Art., 1960, *Parasitology* **50**: 219, 222 (2 ♀♀, listed by Zumpt (1952) as *I. auritulus*, 1 N, Heard I.).

*Description*: ♀. Medium-sized, body  $2.62 \times 1.70$  mm unengorged,  $7.30 \times 5.38$  mm engorged, with numerous scattered hairs. Capitulum  $.72 \times .57$  mm, posterior margin of basis sinuous, cornua rounded, broader than long, porose areas large, slightly broader than long; ventrally basis constricted posterior to auriculae, latter as broad spurs. Palpal articles 1–3, .50 mm, 1 with internal anteriorly directed spur, mesodorsal spur, and slight mesoventral spur, 2 and 3 fused. Hypostome .47 mm, spatulate, broadly rounded apically, dentition 5/5 at apex to 1/1 at base, mostly 4/4. Scutum  $1.38 \times .94$  mm, scapulae slightly developed to absent, rounded, lateral margins concave anteriorly, with prominent cervical grooves. Coxae I to IV with large external spurs, I to III with small internal spurs, IV with marginal salience; trochanters I to IV with large ventral spurs, I with large dorsal spur, II with small dorsal spur; tarsus I .88 mm, II .67 mm, III .71 mm, and IV .84 mm. Spiracular plate  $.39 \times .40$  mm, macula anteroventral to center. Genital aperture opposite coxae III.

♂. Body  $3.07 \times 2.14$  mm, marginal fold prominent. Capitulum  $.48 \times .34$  mm, posterior margin of basis slightly convex. Palpal articles 1–3, .30 mm, 1 simple, without spurs of ♀, 2 and 3 fused. Hypostome .26 mm, with apical notch, dentition 3/3 anteriorly, increasing to as much as 8/8, denticles in irregular rows, of 2 sizes. Scutum  $2.87 \times 1.72$  mm, scapulae well developed, rounded, posterior margin usually eroded, cervical grooves short and shallow, pseudoscutum faintly indicated. Coxa I with external salience, II to IV with small external spur (sometimes more salient-like), coxa I with slight internal spur, II and III with slight internal salience, all coxae with anterior and posterior, external spur-like protuberance, poorly developed posteriorly on coxa I and anteriorly on coxa II; tarsus I .82 mm, II .65 mm, III .71 mm, and IV .80 mm. Spiracular plate as in ♀,  $.38 \times .37$  mm. Jugular plates between pregenital plate and coxae I, roughly rectangular, outer lateral margin usually slightly concave and extended posterolaterally; pregenital plate between coxae II, pentagonal, postgenital plate rectangular, anterior margin concave; median plate  $1.45 \times 1.05$  mm, broadest at posterolateral margins; anal plate relatively narrow, usually eroded laterally behind anus; adanal plates widest anteriorly, narrowing posteriorly, epimeral plates enclosing all except anterior margin of spiracular plates, narrowing to point posteriorly. Genital aperture as in ♀.

Nymph. Similar to ♀; body  $1.38 \times .88$  mm unengorged,  $3.88 \times 2.96$  mm engorged. Capitulum  $.39 \times .34$  mm, dorsum of basis subtriangular, posterior margin slightly convex medially, cornua rounded, well developed and extending posterolaterally; ventrally basis as in ♀. Palpal articles 1–3, .28 mm, other features as in ♀. Hypostome .26 mm, dentition 4/4 at apex to 1/1 at base, mostly 3/3. Scutum  $.74 \times .61$  mm, widest slightly anterior to midlength, scapulae and cervical grooves as in ♀. Legs similar to ♀ except coxal and trochanteral spurs not as sharp, length of tarsus I .50 mm, II .39 mm, III .43 mm, and IV .48 mm. Spiracular plate as in ♀,  $.19 \times .20$  mm. Anal groove bowed laterally, converging posteriorly.

Larva. Similar to nymph, smaller; body  $.64 \times .56$  mm unengorged,  $1.68 \times 1.34$  mm engorged. Body and capitular chaetotaxy as follows: Sc 5, Md-Cd-S 28–30, St 3, Pa 2, Pm-Mv 24–26, A 1, Ph 2, Palp 13. Capitulum  $.22 \times .20$  mm, dorsum of basis as in nymph, cornua as posterolateral flanges; ventrally basis constricted at middle; auriculae weakly developed. Palpal articles 1–3, .17 mm, 1 with small blunt internal spur, 2 and 3 fused. Hypostome .15 mm, dentition as in nymph. Scutum  $.39 \times .41$  mm, widest about midlength, scapulae lacking, cervical grooves as in nymph, with 7 pairs of sensillae plus 1 median sensilla. Legs similar to nymph except none of coxal and trochanteral spurs as well developed, length of tarsus I and III .28 mm, and II .24 mm. Anal groove incomplete anteriorly, diverging and extending to posterior body margin. Egg. Oblate, yellow brown  $.62 \times .48$  mm.

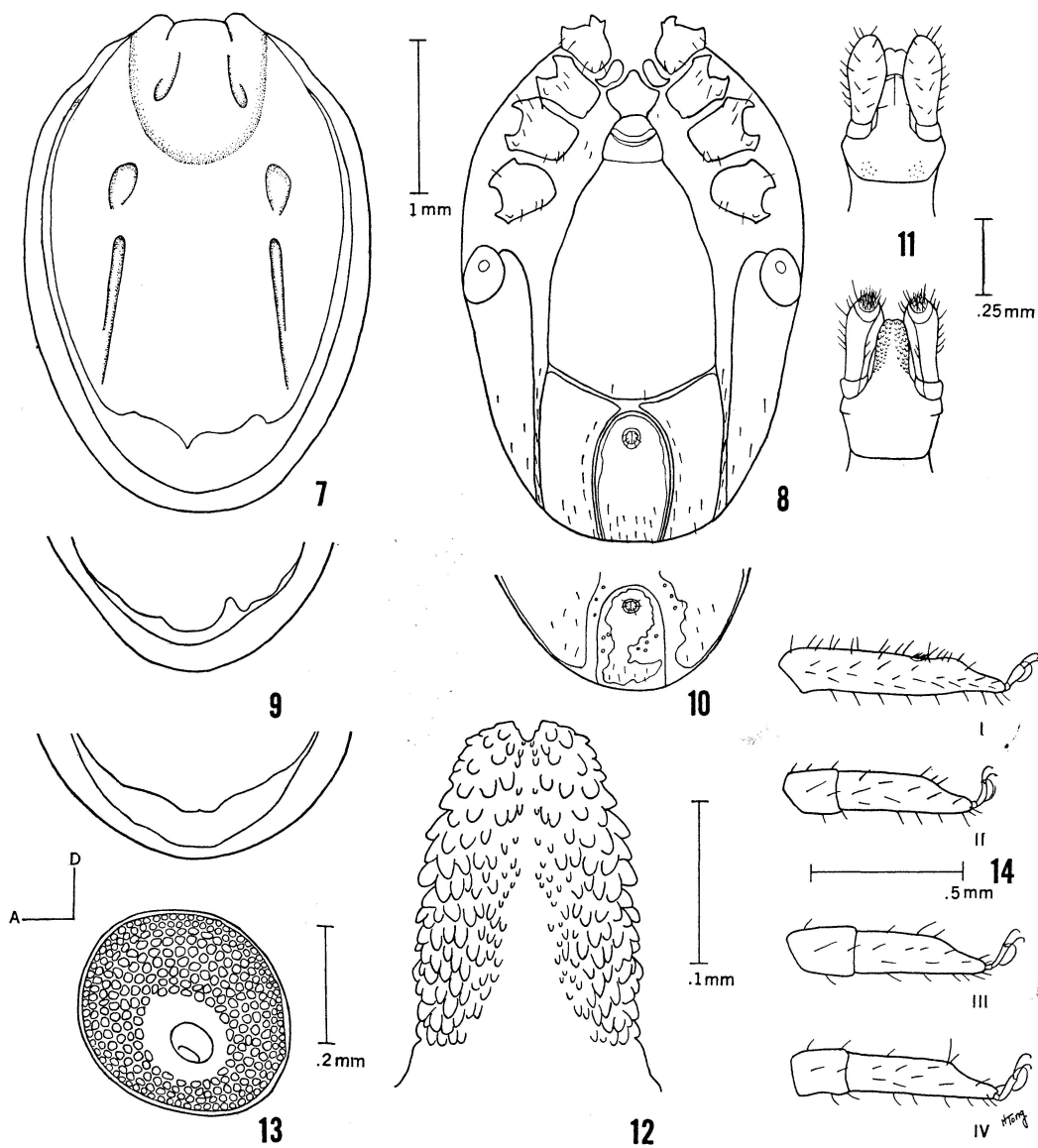


Fig. 7-14. *Ixodes kerguelensis* André & Colas-Belcour, ♂. 7, dorsal view; 8, ventral view; 9, posterior of scutum showing variation; 10, anal plate showing variation; 11, capitulum, dorsal (upper) and ventral (lower) views; 12, hypostome; 13, spiracular plate; 14, tarsi I to IV.

**DISTRIBUTION:** Australia (Bruni I., De Witt I., South Australia), Campbell I., Central Pacific (03° 10' N, 173° 45' W), Crozet Is. (Possession I.), Heard I., Kerguelen Is., Macquarie I., Prince Edward Is. (Marion I.), and South Georgia (Bird I., South Georgia I.).

**CROZET IS.:** 1 ♀, Possession I., *Pelecanoides georgicus*, 25.I.1968, L. Davies.

**HEARD I.:** 1 L (mounted), Green Valley, 0-30m, 1.II.1965, P. Temple; 2 NN, 9 LL (5 LL

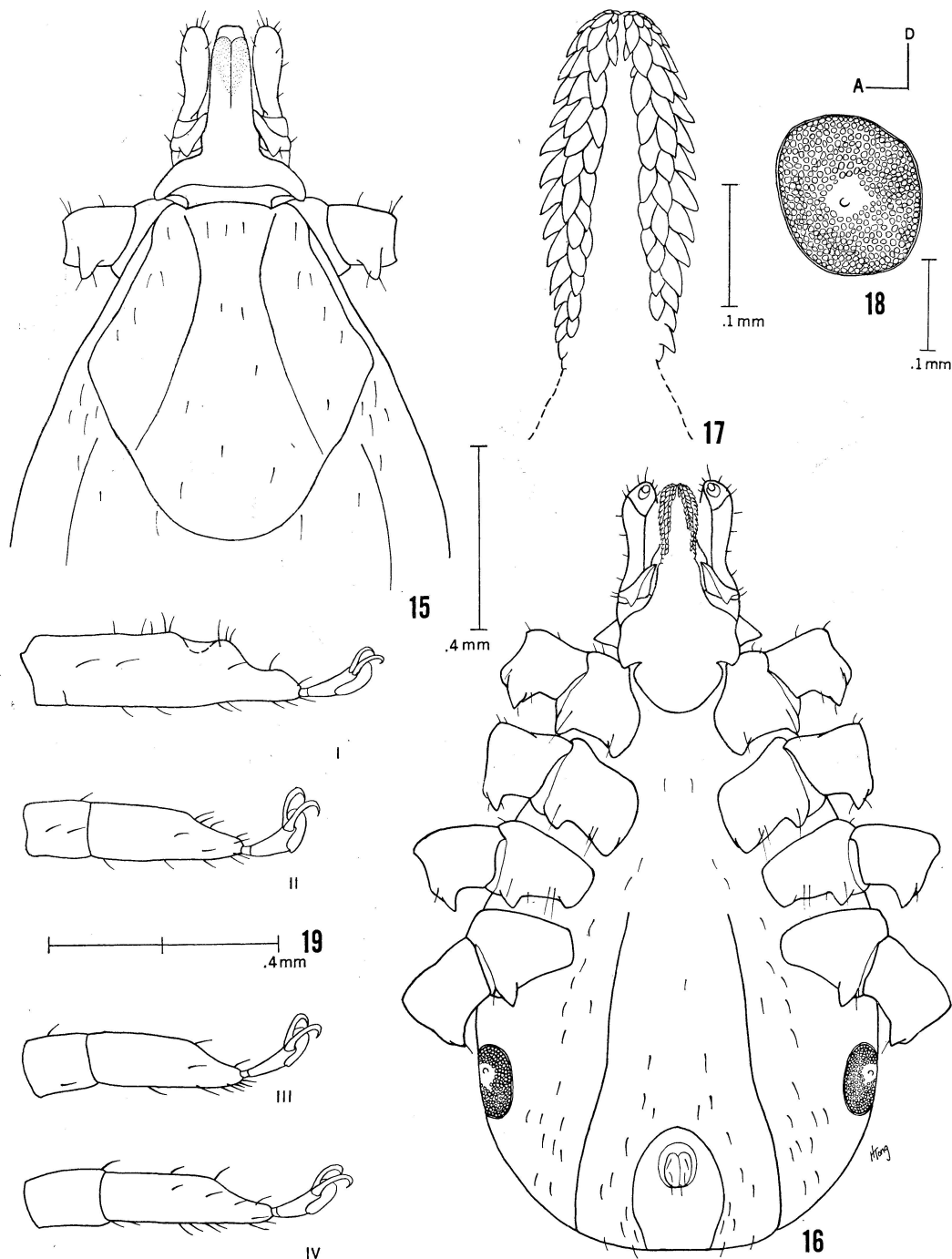


Fig. 15-19. *Ixodes kerguelensis* André & Colas-Belcour, nymph. 15, capitulum, scutum, and trochanter I, dorsal view; 16, ventral view; 17, hypostome; 18, spiracular plate; 19, tarsi I to IV.

mounted), Spit Bay, 0–30 m, *Pachyptila desolata*, 1.II.1965, PT; 5 ♀♀, Spit Bay, 0–30 m, 1.II.1965, PT; 6 ♂♂, 5 NN, 6 eggs, Spit Bay, 0–30 m, 1.II.1965, PT; 1 ♀, 2 NN, Poly Gully, 0–30 m, *Pachyptila desolata* burrow, 6.II.1965, PT; 2 ♂♂, Poly Gully, 0–30 m, 7.II.1965, PT; 1 N, Poly Gully, 0–30 m, *Pachyptila desolata* nest (Berlese funnel), 8.II.1965, PT.

SOUTH GEORGIA: 8 NN, 7 LL, Bird I., Wanderer Ridge, *Procellaria aequinoctialis* nest (Berlese funnel) (BI-217C), 21.IV.1963, H. B. Clagg; 1 ♂, 3 NN, 22 LL, Bird I., Wanderer Ridge, *Procellaria aequinoctialis* nest (Berlese funnel) (BI-218H), 21.IV.1963, HBC; 8 LL, Bird I., Wanderer Ridge, *Procellaria aequinoctialis* nest (Berlese funnel) (BI-219D), 21.IV.1963, HBC; 1 N, South Georgia I., Husvik, *Procellaria aequinoctialis* nest (12), 12.I.1964, G. M. Dunnet; 1 ♀, South Georgia I., Husvik, *Pelecanoides georgicus* nest (21), 12.I.1964, GMD; 1 ♀, 1 N, South Georgia I., Husvik, *Pachyptila desolata* nest (26), 12.I.1964, GMD.

Discussion: After restudying the A.N.A.R.E. material reported by Zumpt (1952) and Arthur (1960a, b), and comparison of my material with the holotype of *I. kerguelenensis*, and specimens from Macquarie Island determined as *I. pterodromae*, I conclude that the latter species is a junior synonym of the former species.

The two badly mutilated females (A.N.A.R.E. 720) identified tentatively as *I. zumpti* by Arthur (1960a, b) are, in fact, *I. kerguelenensis*. Arthur (1960a) suspected these specimens might be the females of *I. kerguelenensis*, but preferred more convincing evidence. I believe these two females are part (or all) of the specimens identified as *I. auritulus* by Zumpt (1952). He did not list collection numbers; however, collection data are similar and there is an unauthored determiner's label in the vial stating "*Ixodes auritulus* Neumann 2 ♀."<sup>3</sup> Zumpt (1952) lists 3, rather than 2 females; this could be an error or a specimen could have been lost.<sup>4</sup>

The ♀ reported by André (1947) as *I. percavatus* is probably the above species. The specimen (Registry No. 303) was mounted on 2 slides. One slide contained a palpus, a chelicera, and remainder of the capitulum. The latter, damaged and distorted from excessive flattening, is preserved now in alcohol. The other slide has right legs I to IV attached to a small portion of integument.

Larvae fall in the unclassified subgeneric group of Clifford & Anastos (1960) on the basis of variation, large number, and disposition, of certain dorsal and ventral setae. The following unilateral abnormalities were noted: on 1 specimen an extra Vmm seta on palpal segment 3; on another specimen a small lateral 2-segmented appendage with terminal seta on tarsus I (Fig. 25).

The eroded nature of the scutum and some ventral plates in males is reminiscent of *I. a. auritulus* and *I. kohlsi* Arthur, bird-infesting species known from the southern hemisphere. It is not as pronounced in *I. kerguelenensis* and some specimens appear not to have eroded plates.<sup>5</sup>

These are the first records of *I. kerguelenensis* from Crozet Islands, South Georgia, *Pelecanoides georgicus*, and in association with *Procellaria aequinoctialis*.

***Ixodes uriae* White** Fig. 26–34.

*Ixodes uriae* Wh., 1852, in P. C. Sutherland, Journal of a Voyage in Baffin's Bay... Vol. 2, Appendix. p. 210.

<sup>3</sup>Zumpt (1952) collection data: "...nests of *Pachyptila desolata* and *Pelecanoides* spec. at West Bay, Heard Island, 12th January 1950." Arthur (1960a) collection data: "...burrows of Prions and diving petrels at West Bay, Heard Island (A.N.A.R.E. collection 720)." A.N.A.R.E. 720 bears the date 12.I.1950.

<sup>4</sup>Examination of the A.N.A.R.E. material discloses several minor errors by Zumpt (1952) and Arthur (1960b) in their listing of data, and frequently the number of specimens in the vials now does not correspond with what was originally published. For example, H53/Ar/1 is published as 453/A1/1; A. M. Gwynn as A. M. Gwynne; 8.11.1950 as 8.1.1950; 25.3.1950 as 23.3.1950. A.N.A.R.E. 720 was said to contain 2 ♂♂, 1 ♀ *I. uriae*, 3 ♀♀ *I. auritulus* (= *I. kerguelenensis*), and 15 ♂♂ *I. kerguelenensis* by Zumpt (1952), and 1 ♀ *I. uriae*, 2 ♀♀ *I. zumpti* (= *I. kerguelenensis*), and 8 ♂♂ *I. kerguelenensis* (additional 4 ♂♂ kept by Zumpt) by Arthur (1960a). When I received this vial, there were 1 ♀ *I. uriae* and 7 ♂♂, 2 ♀♀ *I. kerguelenensis*.

<sup>5</sup>Margins of some plates are difficult to distinguish due to state of preservation and engorgement.

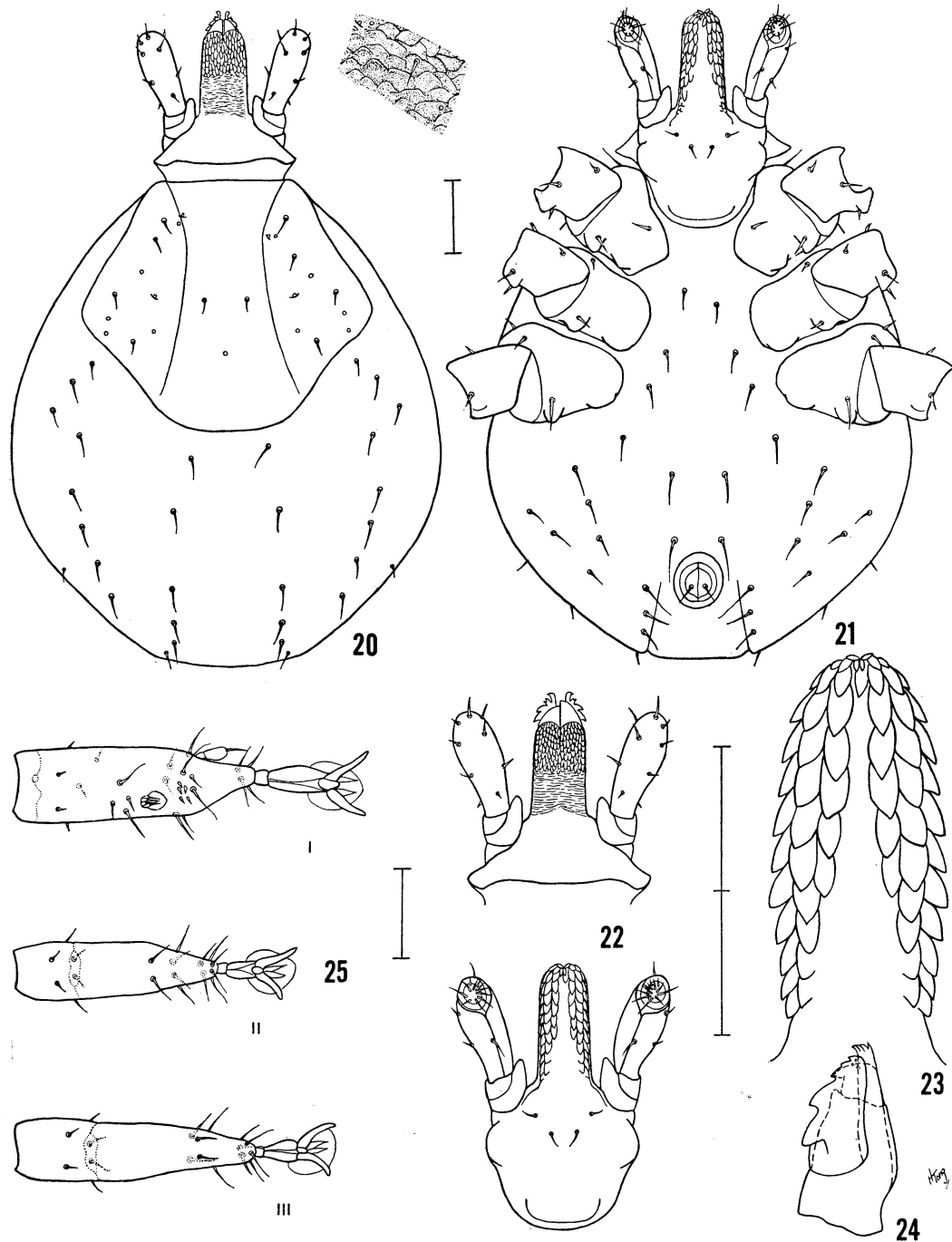
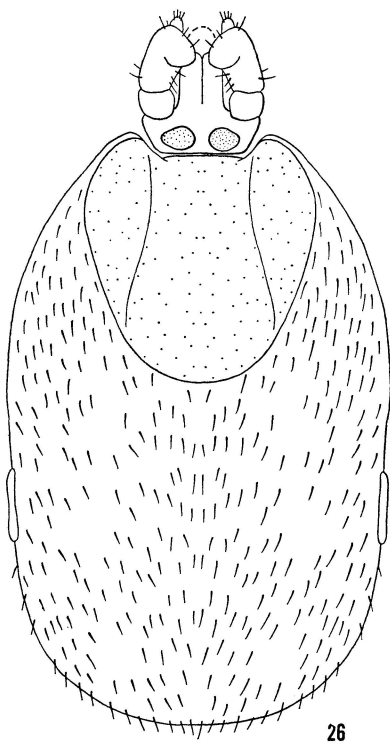
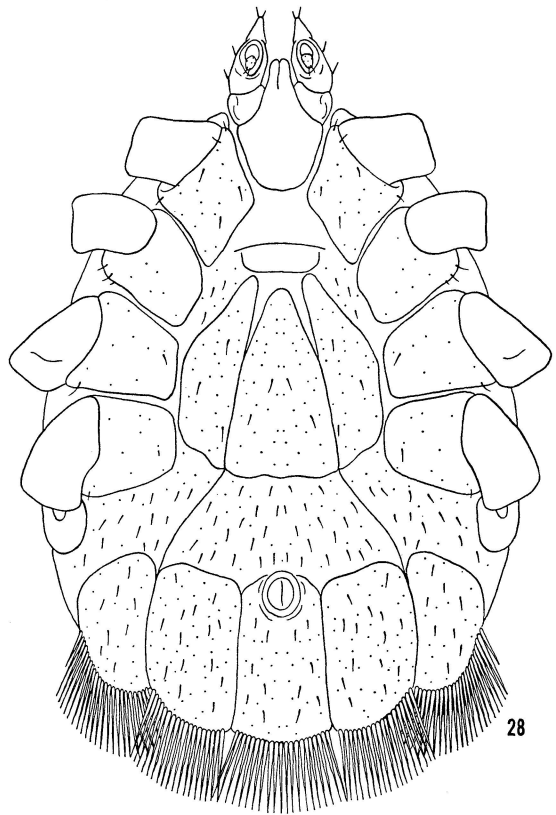


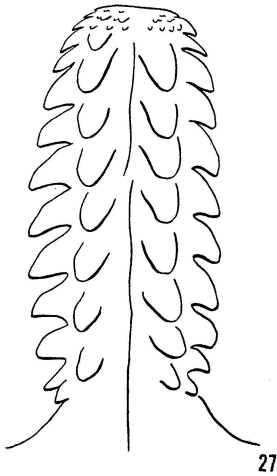
Fig. 20-25. *Ixodes kerguelensis* André & Colas-Belcour, larva. 20, dorsal view with enlarged drawing of portion of scutum; 21, ventral view; 22, capitulum, dorsal (upper) and ventral (lower) views; 23, hypostome; 24, chelicera, ventral view; 25, tarsi I to III. (Scales equal .1 mm).



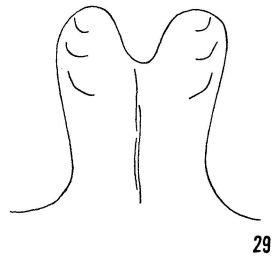
26



28



27



29

Fig. 26-29. *Ixodes uriae* White. 26, ♀, ventral view; 27, ♀ hypostome; 28, ♂ ventral view; 29, ♂ hypostome (after Cooley & Kohls, 1945).



- Cooley & Kohls, 1945, *Nat. Inst. Hlth. Bull.* **184**: 223 (South Georgia I., South Georgia).  
*Hyalomma puta* Pickard-Cambridge, 1876, *Proc. Zool. Soc. London*, **17**: 260 (Kerguelen Is.).  
*Ceratixodes putus*: Speiser, 1909, *Deuts. Südpolar-Expéd.* 1901–1903, G. Reimer, Berlin. **10**: 601 (Crozet Is., Possession I.).  
*Ixodes putus*: Nuttall, 1916, *Parasitology* **8**: 330 (Kerguelen Is.). —Hirst, 1916, *J. Zool. Res.* **1**: 74 (South Georgia I., South Georgia).  
*Ceratixodes uriae*: André, 1947, *Mem. Mus. Nat. Hist., Paris (NS)* **20**: 76 (Kerguelen Is.). —Zumpt, 1952, *Aust. Nat. Antarc. Res. Exped. Rep., Ser. B.* **1**: 12 (Heard I.). —Arthur, 1960, *Parasitology* **50**: 221 (Heard I., listed by Zumpt (1952)).  
*Ixodes (Ceratixodes) uriae*: Arthur, 1963, *British Ticks*, Butterworths & Co. Ltd., London. p. 152. (Kerguelen Is.).

*Diagnosis*: ♀. Medium-sized, body 2.52 × 1.87 mm unengorged, 10.08 × 6.43 mm engorged, with numerous scattered hairs; palpi widely separated and inwardly curved; basis broadly rounded ventrally and lacking auriculae. Hypostome broadly rounded apically, dentition 2/2. Scutum longer than broad, broadest anteriorly, with prominent cervical grooves. All coxae and trochanters without spurs. ♂. With upturned, pointed palpi and posterior fringe of 5 tufts of long hair. Hypostome rudimentary, notched and with dentition 1/1 faintly indicated. Ventrally an additional plate on each side of median plate, epimeral plates not extending to spiracular plates. Nymph. Similar to ♀, smaller. Larva. Similar to nymph, smaller; body and capitular chaetotaxy as follows: Sc 4, Md 7, Cd 5, S 0, St 3, Pa 2, Pm 4, Mv 3, A 1, Ph 1, Palp 12. Scutum with 5 pairs of sensillae plus 1 median sensilla. Egg. Oblate, yellow brown, .60 × .45 mm.

**DISTRIBUTION**: Bipolar and circumpolar. In the southern hemisphere, it is recorded from Antarctica (Anvers I., Graham Land, Humble I., Ross I., Torgersen I.), Antipodes Is., Argentina (Tierra del Fuego), Auckland Is., Australia (Five Is. Group, King I.), Campbell I., Chile (Cape Horn), Crozet Is., (Possession I.), Falkland Is., Heard I., Kerguelen Is., Macquarie I., New Zealand (South I.), Prince Edward Is. (Marion I.), St. Paul I., South Africa, South Georgia (Bird I., South Georgia I.), South Sandwich Is. (Bellingshausen I., Candlemas I.), South Shetland Is. (Cecilia I. (=Torre I.), Deception I.), The Snares, and Tristan da Cunha (Nightingale I.).

**CROZET IS.**: 1 N, Possession I., *Poa tussock*, 23.I.1968, L. Davies; 12 ♀♀, Possession I., *Phoebetria palpebrata* chick, 14.II.1968, J. L. Mougins; 6 ♀♀, 1 N, Possession I., Pointe Lieutard, *Phoebetria palpebrata* chick, 26.III.1968, JLM.

**HEARD I.**: 1 ♀, Spit Bay, 0–30 m, 31.I.1965, P. Temple; 1 ♀, 1 L, Spit Bay, 0–30 m, 1.II.1965, PT; 1 ♂, 2 ♀♀, Capsize Bay, 0–30 m, *Eudyptes chrysolophus* rookery, 5.II.1965, PT.

**KERGUELEN I.**: 4 ♀♀, 1 N, Bay of Swans, 0–30 m, (E2), 30.I.1965, M. Hay.

**SOUTH GEORGIA**: 1 L (mounted), Bird I., Wanderer Valley, *Diomedea exulans* nest (Berlese funnel) (BI-17E), 2.I.1963, H. B. Clagg; 1 ♂, Bird I., Macaroni Creek, *Diomedea chrysostoma* nest (Berlese funnel), (BI-143C), 4.IV.1963, HBC; 1 ♂, Bird I., Fresh Water Bay, *Pachyptila desolata* nest (Berlese funnel) (BI-158E), 7.IV.1963, HBC; 1 N, Bird I., North Valley, *Diomedea exulans* nest, 11.IV.1963, HBC; 1 L (mounted), Bird I., Wanderer Valley, *Diomedea exulans* nest (Berlese funnel) (BI-317F), 24.VII.1963, HBC; 3 ♀♀, Bird I., *Diomedea* sp. (*chrysostoma* or *melanophris*) chick (177), 7.I.1964, W. L. N. Tickell; 1 N, South Georgia I., Husvik, *Pachyptila desolata* (24), 12.I.1964, G. M. Dunnet; 1 ♂, 1 ♀, 1 L, South Georgia I., Grytviken Penin., Cumberland East Bay, 30 m, *Phoebetria palpebrata* nest (SG-195A), 24.II.1964, HBC; 3 ♀♀, 5 NN, South Georgia I., Grytviken Penin., Cumberland East Bay, 30 m, *Phoebetria palpebrata* nest (SG-195C), 24.II.1964, HBC; 1 N, 1 L, South Georgia I., Grytviken Penin., Cumberland East Bay, 40 m, *Phoebetria palpebrata* nest (SG-206C), 24.II.1964, HBC.

*Discussion*: This species is circumpolar in distribution in the northern and southern hemispheres; most records are from subantarctic islands where it is the predominant species. It is confined

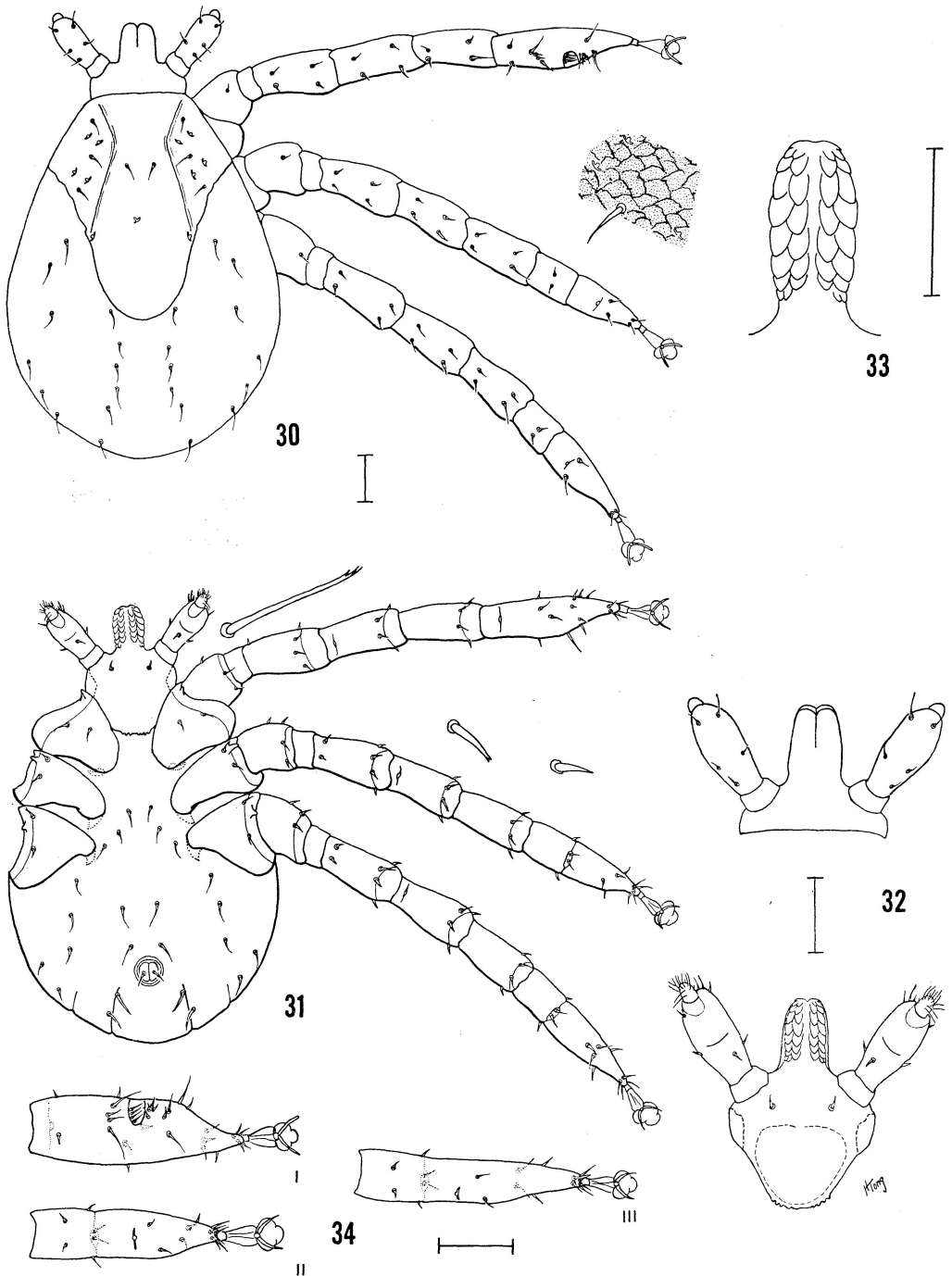


Fig. 30-34. *Ixodes uriae* White, larva. 30, dorsal view with enlarged drawing of portion of scutum; 31, ventral view with enlarged drawings of palpal and leg setae; 32, capitulum dorsal (upper) and ventral (lower) views; 33, hypostome; 34, tarsi I to III. (Scales equal .1 mm).

to sea birds and their rookeries and has been reported from, or in association with, about 48 different hosts.

*Acknowledgments:* Acknowledgments are extended to D. R. Arthur, L. Davies, G. M. Dunnet, M. H. Naudo, P. J. Tilbrook, and F. Zumpt for the loan or gift of pertinent material from the islands involved. G. M. Kohls and F. H. S. Roberts kindly examined some material and gave me their opinions.

#### LITERATURE CITED

- André, M.** 1947. Croisière du Bougainville aux îles Australes Françaises. XVII. Acariens. *Mem. Mus. Nat. Hist., Paris (NS)* **20**: 65-100.
- André, M. & J. Colas-Belcour.** 1942. Sur une nouvelle variété d'*Ixodes canisuga* Johnston (Acarien). *Bull. Mus. Nat. Hist., Paris, 2nd Ser.* **14**: 261-63.
- Arthur, D. R.** 1960a. A review of some ticks (Acarina: Ixodidae) of sea birds. Part II. The taxonomic problems associated with the *Ixodes auritulus-percavatus* group of species. *Parasitology* **50**: 199-226.
- 1960b. A review of some ticks (Acarina: Ixodidae) of sea birds. Part III. A re-description of the male of *Ixodes kerguelenensis* André & Colas-Belcour, 1942. *Parasitology* **50**: 227-29.
- Clifford, C. M. & G. Anastos.** 1960. The use of chaetotaxy in the identification of larval ticks (Acarina: Ixodidae). *J. Parasitol.* **46**: 567-78.
- Cooley, R. A. & G. M. Kohls.** 1945. The genus *Ixodes* in North America. *Nat. Inst. Hlth. Bull.* **184**: iii+246 p.
- Zumpt, F.** 1952. The ticks of sea birds. *Aust. Nat. Antarc. Res. Exped. Rep., Ser. B.* **1**: 12-20.

#### Scientific and Common Names of Birds Mentioned in Text

##### Aves

##### Sphenisciformes

*Eudyptes chrysolophus*

Royal penguin

##### Procellariiformes

*Diomedea chrysostoma*

Gray-headed albatross

*Diomedea exulans*

Wandering albatross

*Diomedea melanophris*

Black-browed albatross

*Pachyptila desolata*

Dove prion

*Pelecanoides georgicus*

South Georgia diving petrel

*Phoebastria palpebrata*

Light-mantled sooty albatross

*Procellaria aequinoctialis*

Shoemaker