Notornis, 2012, Vol. 59: 15-31
0029-4470 © The Ornithological Society of New Zealand, Inc.

Discovery and extinction of the South Island snipe (*Coenocorypha iredalei*) on islands around Stewart Island

COLIN M. MISKELLY
Museum of New Zealand Te Papa Tongarewa, PO Box 467, Wellington 6140, New Zealand

Abstract The South Island snipe (*Coenocorypha iredalei*) was described by Walter Rothschild in 1921 based on 3 specimens collected on Jacky Lee I, off Stewart I, in 1897 & 1898 and purchased from Henry Travers. The last 3 birds were seen 43 years later on Big South Cape I, and the species is considered extinct following introductions of weka (*Gallirallus australis*) or ship rats (*Rattus rattus*) to its 2 last strongholds. I surveyed surviving museum skins, literature, and personal accounts of the South Island snipe, including a previously unpublished account from the type locality, to learn more of the bird's discovery and extinction. Seven only of the 24 known specimens had correct locality data associated with them; as a result, many were assumed until recently to be Snares Island snipe (*C. huegeli*). Based on specimen records, historic correspondence, and forensic examination of specimen labels, I conclude that Henry Travers never visited Jacky Lee I, and that the unknown collector of the type specimens of *C. iredalei* also collected bird specimens from Rangatira I in the Chatham Is in 1899 and 1900.

Miskelly, C.M. 2012. Discovery and extinction of the South Island snipe (*Coenocorypha iredalei*) on islands around Stewart Island. *Notornis 59 (1&2):* 15-31.

Keywords South Island snipe; *Coenocorypha iredalei*; discovery; extinction; specimens; Jacky Lee Island; Henry Travers; John McLean; Sigvard Dannefaerd

INTRODUCTION

Few naturalists saw the South Island snipe (*Coenocorypha iredalei*) before it became extinct in 1964. Apart from a possible record from Dusky Sound in 1773 (Medway 2007), the only sites where naturalists encountered South Island snipe (known also as Stewart Island snipe) were Jacky Lee I and Big South Cape I (Taukihepa), both muttonbird islands off the coast of Stewart I. Jacky Lee I (30 ha, 46°51'S 168°13'E) lies 8 km north-east of Half Moon Bay, the only current settlement on Stewart I. The island's name is also given as Jack Lee, Jacka Lee, Jacques Lees I, or even "Jackless Island" (Mathews 1936); all refer to the Englishman John Lee who settled in the district in the 1830s. Big South Cape I or Taukihepa (939 ha, 47°14'S 167°25'E) is the largest muttonbird island; it lies just west of the southern tip of Stewart I, about 73 km south-west of Jacky Lee I.

The published history of snipe on Jacky Lee I is brief and poignant. *Coenocorypha aucklandica iredalei* was described by Walter Rothschild (1921) based on 3 specimens collected there and received from Henry Travers. Hartert (1927) mentioned that he had seen 5 specimens, and nominated a lectotype labelled as collected in Jun 1898. Edgar Stead and Major Robert Wilson failed to find the snipe during 12 days on Jacky Lee I in Dec 1932 (Wilson 1959)

Received 18 Oct 2011; accepted 28 Mar 2012
Correspondence: *colin.miskelly@tepapa.govt.nz*

Table 1. Bird specimens labelled as collected by H.H. Travers on Jacky Lee I between 1897 and 1901. The date and locality name are reproduced as written on the original labels. AMNH 740423 is the lectotype for *Coenocorypha aucklandica iredalei*, and AMNH 740424 and AMNH 740425 are the paralectotypes. AMNH = American Museum of Natural History; NMNZ = Museum of New Zealand Te Papa Tongarewa. Fernbird = *Bowdleria punctata stewartiana*; New Zealand pigeon = *Hemiphaga novaeseelandiae*.

Registration no.	Date	Locality	Species
NMNZ OR.1523	18/3/97	Jack Lees Islands	South Island snipe
AMNH 598183	June 1897	Jack Lee I., South I.	Fernbird
AMNH 740425	July 1897	Jack Lees Isld, Southland	South Island snipe
AMNH 740424	Oct 1897	Jack Lees Isld, Southland	South Island snipe
AMNH 740423	June 1898	Jack Lees Isld	South Island snipe
AMNH 598184	June 1898	Jack Lee I., South I.	Fernbird
NMNZ OR.533	14/7/99	Jack Lees Island	New Zealand pigeon
NMNZ OR.1522	24/4/01	Jack Lee	South Island snipe

and attributed its extinction to the introduction of weka (*Gallirallus australis*).

Oliver (1930) considered *iredalei* to be a subspecies of the Snares Island snipe (*C. huegeli*) and gave its distribution as "Islands off Stewart Island (Jack Lees, Cundy)". The latter location was apparently an error; Edgar Stead stayed on Kundy I for 26 days late in 1929 (about 8 years before weka were introduced), with Major Wilson joining him for the last 8 days; they did not mention the presence of snipe (E.F. Stead unpublished diary, David Macmillan archive Canterbury Museum ARC2001.12, Item 206; Wilson 1959). By 1955, Oliver followed the OSNZ checklist (Fleming 1953) in considering both Stewart Island snipe and Snares Island snipe to be subspecies of *C. aucklandica*, and gave the distribution of the Stewart Island snipe as "Islands off Stewart Island. Big South Cape Island. Jacky Lee Island (now extinct)"; he then added "On Jacky Lee Island, off the east coast, snipe were formerly found and it was here that the type of the subspecies was collected. The snipe were subsequently exterminated on Jacky Lee Island by introduced wekas".

The first naturalist to see snipe on Big South Cape I was Herbert Guthrie-Smith in Dec 1913, and he subsequently studied them there in Nov-Dec 1923 (Guthrie-Smith 1936; Miskelly & de Lange 2006). Subsequent observations were made on Big South Cape I in Nov-Dec 1931 by Edgar Stead, Major Robert Wilson and Sir John Hanham (Wilson 1959; Miskelly & de Lange 2006), in Jan 1945 by Lance Richdale (Richdale 1945), and in Apr 1961 by Brian Bell and Don Merton (*Weekly news* 8 Aug 1962; Miskelly 1987). The last observations of the species were made by members of the Wildlife Service in Aug-Sep 1964 when they tried to capture birds for translocation after ship rats (*Rattus rattus*) invaded the South Cape islands (Bell 1978; Miskelly 1987; Ballance 2007).

HISTORICAL ACCOUNTS

Henry Travers and Jacky Lee Island, 1897-1905

Henry Hammersley Travers (1844-1928) is credited as the 1st scientific discoverer of the South Island snipe in 1897; however, other than his name on 8 bird specimens labelled as being from Jacky Lee I (Table 1), there is no independent evidence that he ever visited the site.

Travers first came to the attention of the ornithological community in 1869 and 1873 when, along with his father William Travers (who sponsored the trips) he published information on birds seen and collected on his first 2 trips to the Chatham Is, including Chatham Island snipe (*C. pusilla*; see Travers 1869; Travers & Travers 1873). Henry Travers continued to collect and trade in bird and plant specimens for the rest of his life (Nelson 1989; this paper); he gained familiarity with 3 other snipe taxa when he visited the subantarctic islands of New Zealand aboard the government steamer *Hinemoa* in 1890 and 1894 (Chapman 1891; Warham 1967; Cumpston 1968; Warham & Bell 1979).

One of the mysteries of the South Island snipe is why it was not described until 1921 when the type specimens were collected in 1897 & 1898. It is likely that Travers did not sell these specimens to Lord Rothschild until shortly before 1921. Rothschild displayed and named his new snipe at the 12 Jan 1921 meeting of the British Ornithologists' Club (Rothschild 1921). Rothschild was known to name rare birds promptly, and it is also unlikely that the specimens were in his possession in 1913 when Gregory Mathews inspected Rothschild's collection during preparation of his reference list of New Zealand birds (Mathews & Iredale 1913) – Mathews would surely have named the taxon himself! (M. LeCroy, *pers. comm.*). Although no correspondence referring to the purchase of the snipe specimens has been found, Travers wrote to Ernst Hartert

(Rothschild's curator) several times between Dec 1920 and Aug 1921 offering to provide specimens, including the statement "I have a considerable number of skins from all parts of this country" (BMNH Rothschild Correspondence Box 41, Travers to Hartert, 7 Dec 1920).

Although there are 5 only South Island snipe skins labelled as from Jacky Lee I and collected by Travers (Table 1), it is probable that he obtained at least 15 snipe skins from the island. There are another 5 South Island snipe skins labelled as Travers specimens but with incorrect or no locality data, and 5 skins without an identified collector (all with incorrect or no locality data) that have been in museum collections since the 1920s, *i.e.*, before snipe specimens were known to have been collected on Big South Cape I (Table 2). Further to the 3 type specimens, 2 additional specimens were apparently purchased by Rothschild between 1921 and 1927, as his curator Hartert (1927) mentioned that he had viewed 5 *iredalei* specimens. Four of these 5 Rothschild specimens were sold to the American Museum of Natural History (AMNH) in 1932 (along with the bulk of Rothschild's bird skin collection; Rothschild 1983); the 1 remaining (BMNH 1939.12.9.50) was retained by Rothschild and bequeathed to the British Museum of Natural History (now the Natural History Museum, London). The 4 specimens sold to the AMNH included the 3 type specimens (identified by Hartert 1927, and designated by him as the lectotype and 2 paralectotypes) plus AMNH 740426 labelled as from 'Snares I.'. This specimen has an annotation in Gregory Mathew's handwriting (M. LeCroy, *pers. comm*.) with 'Snares I.' struck out and stating "Prob. Jack Lees Island"; this annotation is likely to have been made before 1927, as Hartert (1927) apparently counted this bird among the 5 specimens of *iredalei* he examined.

A likely causative factor of incorrect labelling by Travers was the long time that elapsed between specimen collection and on-selling to museums. All of the 'pre-1930' dated snipe specimens with incorrect labels were collected between 1893 and 1905 (Tables 2 & 3). Many of the snipe skins ex Travers received by Rothschild were apparently purchased between 1920 and 1927 (see above), and a further 25 snipe skins (including at least 7 with incorrect locality data) were sold to the Dominion Museum (now the Museum of New Zealand Te Papa Tongarewa) by Travers in 1923 and 1925 (Department of Internal Affairs file Series 13 Sub-No. 27/78, in Te Papa archives). Six of the 11 *iredalei* skins in the Te Papa collection are labelled as having been collected on the Snares Is, and 1 as from the Auckland Is (Table 2). Six of these specimens plus 2 others correctly labelled as from Jacky Lee I were almost certainly among the 25 snipe skins purchased from Travers in 1923 & 1925, but Te Papa's acquisition records confirm this for 5 only of the *iredalei* skins (OR.715, OR.1521, OR.1522, OR.1523 & OR.4721). A further specimen (OR.707, labelled as from the Snares Is) was originally in the Newtown Museum (= Petherick Collection) in Wellington, where Travers worked as a curator from 1913-15, and it was probably acquired as part of a bulk lot by the Dominion Museum in 1936 (Dell 1965). The errors in locality data (= misidentifications) for 7 of the *iredalei* specimens in the Te Papa collection were identified sequentially over many years, by Robert Falla (Director of the Dominion Museum 1947-1965) at an unknown date (based on his handwriting on specimen labels): OR.706 & OR.11534; Colin Miskelly (then a post-graduate student) in Mar 1987: OR.715, OR.1521 & OR.4721; David James (researching snipe plumages for Higgins & Davies 1996) in Oct 1993: OR.4722; and Colin Miskelly (again) while researching this paper in May 2011: OR.707. David James in 1993 confirmed also the 3 identifications made 6 years previous by Miskelly (vide dated catalogue card annotations made by Sandy Bartle, former Curator of Birds).

A specimen of *c.*1900 vintage in Canterbury Museum (AV1817) was originally in the collection of Dr Benjamin Moorhouse. The Moorhouse collection was loaned to the museum following the outbreak of World War I, then acquired by the museum following the death of Moorhouse in 1921 (P. Scofield, *pers. comm*.). AV1817 has a printed Moorhouse label "*Gallinago pusilla* Buller" (*i.e.*, Chatham Island snipe *C. pusilla*), and was identified as being *C. iredalei* by Robert Falla, based on signed pencil annotations on the Moorhouse label. Falla was the Director of the Canterbury Museum between 1937 & 1947; he concluded that AV1817 was "Probably immature and almost certainly a skin by H.H. Travers, Jack Lees Is Oct 1897, Sim type C. aucklandica iredalei". Falla's logic for concluding the collection date as Oct 1897 is unknown, and it is safer to conclude that the specimen was probably collected between 1897 and 1905 (Table 2).

Analysis of the handwriting on 1897-1905 'Travers' Stewart I region specimen labels undertaken by Trish James, Document Examination Section, New Zealand Police indicated that 2 different people wrote on the original labels: Henry Travers on 30, and an as-yet unidentified hand on 4 (Fig. 1). The 4 specimens labelled in a different hand are all in the Te Papa collection: OR.533 & OR.1993, both New Zealand pigeon (*Hemiphaga novaeseelandiae*), Jacky Lee I, 14 Jul 1899; OR.4780, New Zealand pigeon, Stewart I, 4 Jul 1899; OR.4972, yellow-crowned parakeet (*Cyanoramphus auriceps*), Te Marama [Herekopare] I, undated. None of these has Travers's name on the original label, although 2 have subsequently had his name added as the collector.

Table 2. Details of all 24 known skin, mount and spirit specimens of South Island snipe. Date, age/sex, locality and collector data are all from the original labels or catalogue records. The first 15 specimens listed are all likely to have been collected on Jacky Lee I, the type locality, between 1897 and 1905, by (more likely for) Henry Travers. AMNH = American Museum of Natural History; BMNH = Natural History Museum; CMNZ = Canterbury Museum, New Zealand; NMNZ = Museum of New Zealand Te Papa Tongarewa.

Registration no.	Specimen	Date	Age/Sex	Locality	Collector	Type status, and comments based on this review
NMNZ OR.1523	Skin	18 Mar 1897	Male	Jacky Lee I	H.H. Travers	
AMNH 740425	Skin	Jul 1897	Female	Jacky Lee I	H.H. Travers	Paralectotype
AMNH 740424	Skin	Oct 1897	Male	Jacky Lee I	H.H. Travers	Paralectotype
AMNH 740423	Skin	Jun 1898	Male	Jacky Lee I	H.H. Travers	Lectotype
NMNZ OR.1522	Skin	24 Apr 1901	Female	Jacky Lee I	H.H. Travers	
BMNH 1939.12.9.50	Skin	24 Apr 1901	Female	-	-	Probably from Jacky Lee I, ex H.H. Travers
NMNZ OR.4721	Skin	Jun 1905	Female	Snares Is	H.H. Travers	Probably from Jacky Lee I
NMNZ OR.1521	Skin	Jun 1905	Male	Snares Is	H.H. Travers	Probably from Jacky Lee I
NMNZ OR.715	Skin	July	-	Snares Is	H.H. Travers	Probably from Jacky Lee I
NMNZ OR.707	Skin[1]	-	-	Snares Is	H.H. Travers	Probably from Jacky Lee I
NMNZ OR.4722	Skin	July	-	Snares Is	H.H. Travers	Probably from Jacky Lee I
NMNZ OR.11534	Skin	-	-	Snares Is	-	Probably from Jacky Lee I, ex H.H. Travers
NMNZ OR.706	Skin	-	-	Auckland Is	-	Probably from Jacky Lee I, ex H.H. Travers
AMNH 740426	Skin	-	-	Snares Is	-	Probably from Jacky Lee I, ex H.H. Travers
CMNZ 1817	Skin[2]	-	?Imm	-	-	Probably from Jacky Lee I, ex H.H. Travers
BMNH 1932.10.25.1	Skin	-	Male	Solomon I	E.F. Stead	Big South Cape I , 2-9 Dec 1931
CMNZ 2762	Mount[3]	1 Nov 1931	Male	Jacky Lee/Solomon I	E.F. Stead	Big South Cape I , 2-9 Dec 1931
CMNZ 729	Skin	-	Male	Jacky Lee/Solomon I	E.F. Stead	Big South Cape I , 2-9 Dec 1931
CMNZ 731	Skin	-	Juv	Jacky Lee/Solomon I	E.F. Stead	Big South Cape I , 4 Dec 1931
CMNZ 732	Skin	-	Male	Jacky Lee/Solomon I	E.F. Stead	Big South Cape I , 2-9 Dec 1931
CMNZ 733	Skin	-	Female	Jacky Lee/Solomon I	E.F. Stead	Big South Cape I , 2-9 Dec 1931
CMNZ 734	Skin	-	Female	Jacky Lee/Solomon I	E.F. Stead	Big South Cape I , 2-9 Dec 1931
NMNZ OR.11206	Skin	1 Sep 1964	Male	Big South Cape I	B.D. Bell	Died during attempted rescue translocation
NMNZ OR.11146	Skin & spirit	1 Sep 1964	Male[4]	Big South Cape I	B.D. Bell	Died during attempted rescue translocation

[1]Specimen ex Petherick Collection (Newtown Museum); [2]Specimen ex Moorhouse Collection; [3]Specimen ex O'Connor Collection; [4]Sex determined genetically and anatomically in 2011-12 when the specimen was prepared as a study skin, with the torso kept in alcohol.

Travers or his collector apparently labelled most specimens with their date and sex at the time of collection or preparation, and so the dates should be more reliable than the localities, which in some cases appear to have been added years later. The accuracy of date data was checked with 2 South Island snipe specimens in the Te Papa collection that are labelled as having been collected on Jacky Lee I on 18 Mar 1897 and 24 Apr 1901. Based on field observations of Snares Island snipe, most adult snipe moult their primary feathers in Mar and Apr, soon after their chicks become independent: 20 of 35 adults handled 23-28 Mar 2011 were in primary moult, as were 7 of 30 adults handled 11-13 Apr 2005 (Charteris & Miskelly 2005; Miskelly 2005; Miskelly *et al*. 2012). Both NMNZ OR.1522 and OR.1523 have partially grown outer primaries, corroborating Travers's collection dates. Four further specimens labelled as collected in Jun and Jul have completed their primary moult. The specimens are too fragile for further moult analysis.

If the dates on snipe, fernbird and pigeon specimens supposedly collected on Jacky Lee I by Henry Travers or his collector are taken at face value (Tables 1 & 2), the island was visited on at least 8 occasions between 1897 and 1905; 15 snipe specimens were collected, with apparently few collected on any 1 visit (8 specimens lack complete dates and 4 are undated).

Herbert Guthrie-Smith and John McLean on Jacky Lee Island, 1911

Herbert Guthrie-Smith's 1910-1923 adventures photographing the birds of Stewart I and its offshore islands were documented in 3 books (Guthrie-Smith 1914, 1925, 1936). These fascinating accounts make frustratingly little reference to snipe other than on Big South Cape I (which Guthrie-Smith called Long I, or by the fictitious name Kaipara) in 1913 & 1923. The only other comment was "I knew [snipe] to be resident on many of the islands east of Half Moon Bay; I had seen specimens of them during former expeditions" (Guthrie-Smith 1936: p.175).

It is less well known that Guthrie-Smith's companion during 3 months of field work on Stewart I in 1911 was an extremely competent ornithologist in his own right. John Chambers McLean (1871-1918) like Guthrie-Smith was a sheep farmer, managing a family-owned run north-west of Gisborne (Anon. 1919; Turbott & Galbreath 1990). Although New Zealand-born, McLean was admitted as a member of the British Ornithologists' Union in 1897, and he became an early member of the Australasian Ornithologists' Union established 4 years later (Robin 2001). McLean published 8 papers on New Zealand birds in the journals *Ibis* and *Emu* between 1889 and 1912; his substantial egg collection and more than 650 of his photographs are held in the Auckland

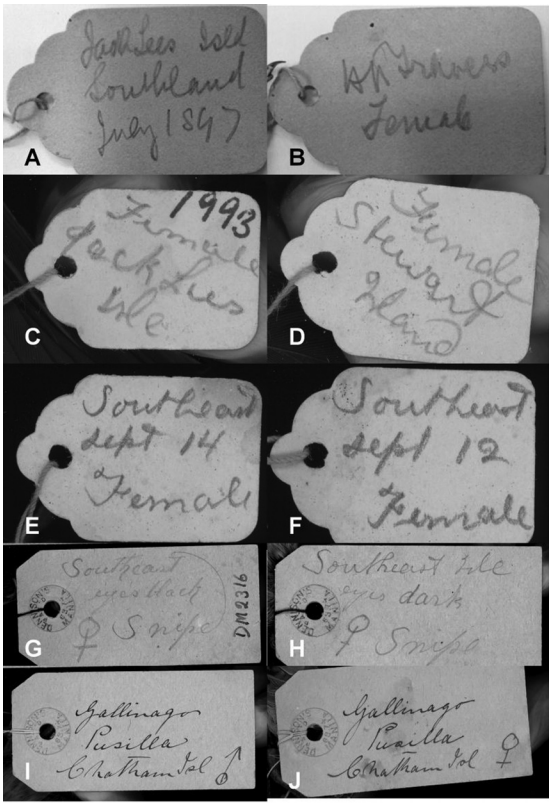

Fig. 1. Samples of handwriting on labels attached to South Island snipe and New Zealand pigeon specimens from Jacky Lee I (A-D), and 6 Chatham Island snipe specimens (probably all from Rangatira I; E-J). The first 6 images show labels characteristic of Henry Travers (28 x 19 mm, attached with pink cotton). The last 4 images show labels characteristic of Sigvard Dannefærd (72 x 25 mm, attached with black or white cotton, shown at reduced scale). A & B are the two sides of a label written by Henry Travers; I & J are labels written by Sigvard Dannefærd; C to H show 6 labels written by an unknown collector apparently providing specimens to both Travers and Dannefærd, and using labels provided by both men. A & B = AMNH 740425, South Island snipe (paralectotype); C = NMNZ OR.1993, New Zealand pigeon; D = NMNZ OR.4780, New Zealand pigeon; E = NMNZ OR.713; F = NMNZ OR.2473; G = NMNZ OR.2316; H = NMNZ OR.2310; I = NMNZ OR.2317; J = NMNZ OR.723.

Museum (Gill & Taylor 2010). In Jan 1912, McLean wrote 4 indexed volumes of notes regarding his visit to Stewart I with Guthrie-Smith (Sep-Dec 1911), based on notes "written on the spot"; the volumes are held in the Alexander Turnbull Library, and contain detail that puts modern naturalists to shame (ATL Manuscripts Collection, MS Papers 2145, Folder One). These notes provide an explanation for the quote from Guthrie-Smith (1936) about snipe on islands east of Half Moon Bay.

Guthrie-Smith and McLean visited Jacky Lee I on 3 days: 22 Sep, 26 Oct & 1 Nov 1911, staying for about 3 hours each time. They were unaware of the presence of snipe on islands around Stewart I until an encounter with a snipe on 26 Oct (see below), but subsequently learnt more about the birds from Stewart I residents Walter Traill, Mrs [Gretchen] Traill, and Mr Bragg (probably Tom Bragg; Cockayne 1909; 'Island dweller', *NZ Truth* 26 Apr 1928, p.4). McLean noted that Jacky Lee I had been 'birded' (*i.e.*, the chicks of sooty shearwater [*Puffinus griseus*] harvested for food) for the 1st time the previous season [Apr-May 1911] and that there was no sign of weka being present (Vol. 1, p.24; Vol. 3, p.78).

McLean's snipe observations on Jacky Lee I on 26 Oct 1911 are in his diary (Vol. 2, pp 34-35):

> Description of Gallinago ? sp
> On the top of the island right in the bush [Stewart I. resident John] Leask called my attention to some bird he did not know. I scrambled up & soon saw the bird moving about on the ground amid the open ferns under the trees. At once I saw it was a snipe of some kind – no doubt a new species of the Island snipe (Auckland, Snares & Chathams each have their peculiar species). It was neither wild nor cautious & although it never shewed the slightest interest in my presence yet kept some 5 or 6 yds from me as I carefully followed it while it dodged about with light running here & there in its eager search for food. It would run a foot or so then stop & half turning probe the ground with its long slightly curved bill which appeared when viewed from the front to swell towards the tip.
> The bill seemed about 2¼ inches [57 mm] and very slightly curved. It was I should say of a rusty colour marked with large black splashes to back feathers. A light band ran above the eye from the bill to the back of the head & another from the gape ran back below the eye. These stripes appeared to be greyish. The top of the head when facing & bill down feeding, was greyish striped with black. The tail short & the legs short too but the tarsus was longish comparatively. Bill dark brown. Legs & feet yellow. My notes read "– New bird trotted a few paces & probed in ground. Chestnut with black splashes, legs yellow. Bill snipe fashioned & dark brown. Size that of O. affinis [*Ortygometra affinis* = marsh crake *Porzana pusilla affinis*] but plumper – legs stronger (or little larger). An Island Snipe, no rail-like action at all. Let me follow it, simply busy probing – not pecking. Bill 2¼" Legs heavy."
> I now called GS to let him see it. Up he came but we had now lost sight of the little bird in the ferns & creepers over stumps. He & Leask went where it was last seen & though Leask did see it GS failed to. On this following of it it was sent towards me & I got another view but because of the distance & the bad light could not as before get a good enough view to satisfy myself. It came across a little open space under a creeper & stopped to probe giving me a fair view of the bill its size & shape and also a view of the head when facing me – bent down for probing. 2nd note read –
> "Bill 2¼ slightly curved (sketch taken [Fig. 2]) down wards & when seen in front swollen towards tip (lower 3rd) Legs heavy. Climbed over butt of small konini. Had neither the careful walk or quick run of Rail, but a run like a plover. Did not appear frightened or try to hide but fed along dodging the other 2 in quest [Guthrie-Smith & Leask]. Colour like the surrounding dry fern fronds. Chestnut with black longitudinal markings. Short tail. Lighter head & distinct strip each side of head when facing"
> I may say I was thinking of the "Mioweka" [banded rail *Gallirallus philippensis*] of the muttonbirders – which is I believe a rail & something of the sort has been seen by a friend of Leasks lately climbing about the branches of the trees on this same island. It was described as like a small weka. So I was rather prepared for a rail & was much surprised to see a snipe in the bush!
> I can add nothing more to this note. GS went back again shortly after we lost it the second time & had a good view luckily. His idea tallies with mine. I heard no note of any sort. As said before, the bird shewed no concern at my presence except that it kept amid the patch of ferns & creeper & I never got closer than 12 – 15 feet & even then it was often hidden. Its manner of running a few feet & then stopping to probe amid the fallen leaves was very noticeable & it was too intent upon this work to take any more heed of us than to keep just out of our way.

The snipe was mentioned again in Vol. 3, p.68 as part of a summary of birds seen during "3 hours on Jacky Lees I., Thursday Oct 26":

> 16 Gallinago. sp nov. ? An Island snipe was seen & watched for some time as described above elsewhere. It frequented a small patch of short open Lomaria [*Blechnum* fern] & open creeper [probably *Muehlenbeckia*

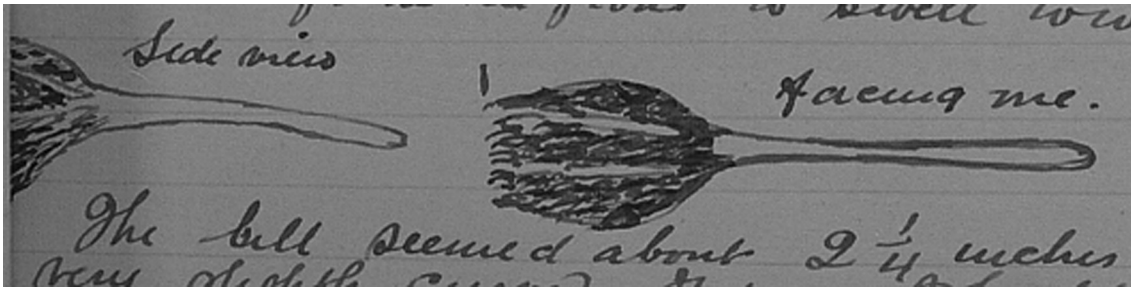

Fig. 2. John McLean's head sketches of the snipe seen on Jacky Lee I on 26 Oct 1911, reproduced from the 4-volume diary he wrote in Jan 1912 (Alexander Turnbull Library Manuscripts Collection, MS Papers 2145, Folder One, vol. 2 p. 34).

> *australis*] in fairly open bush not far from the 2nd penguin nest. Right in the bush on top of the Island. For full particulars see the yellow sheet of this date.
> Of course it may be the Snares species but this is doubtful more likely an undescribed one. Strange it should have escaped observation so long. The Muttonbirders speak of a bird – the "Mioweka" as to be found on the Mutton bird Islands – but from the description it is not this bird but a rail. However they could easily make the mistake of identifying this bird as a Mioweka, which is credited with climbing about the trees.
> Only the single bird was seen eagerly running trotting plover fashion a few steps & then stopping to probe amid the leaves. Possibly sand hoppers are here and constitute the greater part of its food. It was not seen to use its wings & kept a yard or so (say 15 feet) off the observer & no note was heard. We hope it has a mate & may yet get its nest.
> [Footnote] The old saying – "a bird in the hand etc. Was very applicable here. We never saw the Island snipe again & never got a creepers nest. We should have at once investigated here!

McLean and Guthrie-Smith returned 6 days later to Jacky Lee I (Vol. 3, pp 75 & 78):

> Tuesday Nov 1st Leask and Sandy Phillips took us over to Jacky Lees where we hoped to see again the Island snipe. In this we were unsuccessful but saw & heard the Long tailed Cuckoo. A tent fly stores & blankets were landed with water in case they could not get us off again & we should have to stay the night... Gallinago sp? A very systematic search failed to shew us the snipe again. See Oct 26th. Called Tutukiwi by Brag [sic] & stated to be now & then seen on odd islands.

A few days later McLean reported that Guthrie-Smith saw Bragg. "He called the Island snipe 'Tutukiwi' & said they very seldom saw it but that it was on all the Islands..." (Vol. 3, p.81). McLean also gave the Maori name as "Tutuweka – The Island Snipe (Gallinago pusilla?)" (Vol. 1, p.9).

Edgar Stead and Major Robert Wilson on Jacky Lee Island, 1932

Edgar Stead (1881-1949) and Robert Wilson (1876-1964) encountered the South Island snipe for the 1st and only time on Big South Cape I in 1931 (see below). Neither Cockayne (1909) nor Oliver (1926) recorded snipe among the birds of the Stewart I region, but by 1931 the presence of snipe on Jacky Lee I was well documented (Rothschild 1921; Meinertzhagen 1926; Hartert 1927; Oliver 1930). Stead noted in his 1932 diary "We are going to Jacques Lees Id, chiefly in the hope of getting the snipe from there" (David Macmillan archive Canterbury Museum ARC2001.12, Item 206). They camped on the island 7-18 Dec 1932; on 14 Dec Wilson noted "Wekas are extremely numerous on the island & I consider they would have quickly exterminated the snipe if it was really here. If the snipe was here previously it may be that there were no wekas these being later introduced by the maoris or if they were here they would be kept in check by the maoris snaring them for food every muttonbird season or when they were living here" (unpublished diary held by Hilary Haylock, Bulls). Muttonbirding on Jacky Lee I was undertaken by Charles Goomes and family of Bluff, and ceased *c.*1929 (Wilson 1959).

Edgar Stead and Robert Wilson on Big South Cape Island, 1931

Observations of snipe on Big South Cape I by Guthrie-Smith in 1913 & 1923, and Stead and Wilson in 1931 were described in detail by Miskelly & de Lange (2006). This included photographs, and excerpts from Stead's unpublished diaries, which came to light 57 years after his death. Additional information on snipe recorded by both Stead and Wilson has been since found in the David Macmillan archive (see above) and in Major Wilson's unpublished diaries and correspondence

held by his daughter Hilary Haylock at the stately Wilson home 'Lethenty' in Bulls.

Stead and Wilson stayed on Solomon I, just north of Big South Cape I, from 10 Nov to 14 Dec 1931. Snipe were encountered on Big South Cape I only, which they visited on 13 days (mostly in Dec) using a small boat. Stead and Wilson saw snipe on 6 days between 2 Dec and 10 Dec 1931, plus their companion Sir John Hanham saw a snipe on Big South Cape I on 11 Nov 1931.

Stead collected 7 snipe specimens during the expedition (Table 2); 6 are in the Canterbury Museum, and he gifted 1 to the British Museum during a visit in 1932. Stead had taken snipe specimens to England to compare with Lord Rothschild's Jacky Lee I specimens (export permit issued 14 Mar 1932; Department of Internal Affairs file 47/123), and he was disappointed to find that Rothschild's bird collection had just been sold to the American Museum of Natural History. "Everybody here is frightfully wild about it" (Edgar Stead letter to Robert Wilson, 26 May 1932; Lethenty archive).

None of the Stead specimens had collection details affixed; over subsequent years all have been assigned incorrect locality data, and the only date assigned is also wrong (Table 2). Stead's 1931 diary (quoted extensively by Miskelly & de Lange 2006) described the collection of 4 clutches of snipe eggs, but made no mention of adult or juvenile snipe being collected. Wilson's diary describes 5 snipe specimens being collected between 2 & 9 Dec 1931, all on Big South Cape I. Based on the opportunities Wilson described, it is likely that the 2 remaining specimens were collected on 4 Dec and/or 7 Dec:

> Wednesday 2nd Dec. After lunch about 3 o'clock we set out for South Cape Is in the boat & got there about 3.30...Hanham & I went on up to the top. Shortly after we reached the open country Hanham flushed a snipe & exclaimed "Here is its nest with two eggs!" We tried to capture the bird but it disappeared so we left the nest & went on. We saw some burrows high up which I think were Oestrelata [mottled petrel *Pterodroma inexpectata*] but no storm petrels. Soon afterwards I flushed a snipe with a nest of two eggs but failed to catch it. The eggs were just chipping but I brought them in for Edgar...Coming back we had difficulty finding the nest of the snipe & nearly came in without getting it as it was getting late. We had not marked it at all well. However eventually I found it with the bird on & killed it with a stick when she rose from the ground...The snipe eggs were a beautiful brown colour. Edgar says they are the only eggs collected.

Thursday 3rd Dec. ...so we returned & went on to South Cape landing where we pulled the boat up & went up after snipe...We then spread out in a line & beat an area for snipe. Edgar flushed one & shot it & it proved to be a female. After about an hour I flushed a bird off her nest with two eggs fairly fresh. It flew a few yards & then stopped & squeaked in a protecting manner. We left the eggs with the intention of photographing it tomorrow... We saw a good many (about 8 or 10) woodhens [weka] walking about in the scrub country we were looking for snipe in.

Friday 4th Dec. A beautiful fine morning with a slight breeze from the N.W. We got up before seven and got away about 9 o'clock & reached for South Cape Is. We landed at the near landing (Timaru) & climbed up with Edgar's camera up through the bush to where we had found the snipe's nest the day before. We approached it carefully and it allowed us to photograph it on the nest – Edgar even cutting away the scrub around it to get a better photograph. Finally he pushed it off & we photographed the eggs. We then went on further & found a couple of snipe about 2 miles further on after a lot of beating the bushes. One was a young one – this years bird. Edgar shot both of them & we returned home, getting in about 7.

Monday 7th Dec. ...we decided to turn back & go to Timaru, where we landed & pulled the boat up. We then started up the hill & looked for Oestrelata in various burrows but only found muttonbirds on their eggs. We got to the top of the bush & Edgar & Ebb had gone on ahead when suddenly a snipe flew up at my feet & I saw she sprang from a nest with two eggs. These were not so dark as the first eggs I found or so pale as the second lot being rather intermediate...We went on further & Edgar found another snipe nest with 2 dark eggs – quite fresh. The nest I found was partly incubated.

Wednesday 9th Dec. It rained for about an hour about seven & afterwards for another hour about 9 & then cleared up except for a slight shower...After lunch about two o'clock we went over to South Cape Island taking cameras. On the way up I saw a snipe on the track which Edgar shot.

Thursday 10th Dec. Today broke with a moderate W. wind which was favourable for Murderers Cove. So we set off after breakfast after mending the boat which was stove in yesterday. We reached there [at]

> nearly high tide about 11 o'clock & pulled the boat up on the same spot as before. We set off for the top...On reaching the scrub line we beat about for snipe. Edgar saw one but we did not get a chance at it...We walked over a good deal of scrub country but saw no more snipe.

A thorough search of the David Macmillan archive in Canterbury Museum located additional pages from Stead's 1931 diary, including 2 notes on snipe over-looked by Miskelly & de Lange (2006):

> 4th Dec...Took more side view of the Snipe giving ½ sec. Exposure at F10 in rain... The plateau on B.S.C. is covered chiefly by windswept Manuka, interspersed with Dracophyllum longifolium. It is all peat, with odd rocky outcrops; open places being covered with lichens or moss. The Snipe nest in short Manuka, on the edge of taller stuff, and the ones we have found were not in thick cover. There are a good many weka, robins [*Petroica australis*] and Mockies [bellbirds *Anthornis melanura*] up there, as well as a few Fernbirds [*Bowdleria punctata*]...The alt varies from about 600 to 1000 feet.

> 7th Dec...The snipe rise and fly about twenty yards, if pursued, but, for the most part run among the heavy scrub and stand watching you. Their flight is very like that of a woodcock [*Scolopax rusticola*] only not so strong. Both sexes take their turn at incubating the eggs.

Stead's observation of snipe flying when pursued was probably the basis for Guthrie-Smith's (1936, p.186) footnote, referring to the South Island snipe: "That *Gallinago aucklandica* can fly is I believe the experience of a friend whose ornithological abilities cannot be gainsaid. What, however, each field naturalist himself observes that he is bound to declare. My particular cronies did not use their wings and I leave it at that."

Stead and Guthrie-Smith knew each other well, and were regarded as "old colleagues" even before they travelled together to the Auckland Is on the government steamship *Tutanekai* in 1929 (Headland 2009; John Ross unpublished ms papers 1500, folder 22, Alexander Turnbull Library). They were frequent correspondents up until Guthrie-Smith's death in 1940 (David Macmillan archive, Canterbury Museum, and note the photograph of the 2 of them together in Stead's garden in 1937 published in *Notornis* vol. 20, p.89, 1973).

Lance Richdale on Big South Cape Island, 1945

The depredations of Stead, Wilson and weka notwithstanding, snipe persisted in low numbers on Big South Cape I for another 33 years. Lance Richdale and William Denham visited Big South Cape I from 3-16 Jan 1945 (Richdale 1945). They observed 4 snipe, including 1 pair (probably an adult and fully-grown chick, given the time of year):

> We saw only four individuals. After spending a day on the tops we were homeward-plodding our weary way, not a great distance above the bush, we observed two birds feeding together in soft mud under some Manuka about six feet high. Four days later we found another on top of one of the peaks. Returning that afternoon, and when in the bush, Mr. Denham nearly trod on one, causing it to fly some fifteen feet through the trees and about two feet above the ground.

Richdale expressed concern at the presence of weka on the island, stating "The gravest danger to its existence is the Weka, which eats the eggs and young…In 1945, we found few Wekas and few Snipe; we also saw one Weka well above the bush line. The species [snipe] still exists on this island, but obviously all the elements for the loss of the valuable bird are present. Because the Wekas are not plentiful and are largely in the bush, the Snipe are experiencing a temporary respite only."

Wildlife Service staff on Big South Cape Island, 1964 – the final chapter

Brian Bell and Don Merton of the New Zealand Wildlife Service saw a single snipe only during a month-long visit in Apr 1961, but did hear the hakawai (*Weekly news* 8 Aug 1962; Miskelly 1987). Three years later they were shocked into action by reports from muttonbirders that the island was over-run by rats (Bell 1978; Ballance 2007). The devastation caused by recently colonised ship rats on the South Cape islands (Big South Cape, Solomon and Pukeweka) was one of the greatest tragedies in modern New Zealand conservation history (Morris & Smith 1988, chapter 5; Young 2004; Ballance 2007). Although South Island saddlebacks (*Philesturnus carunculatus*) were saved, the last remaining populations of 3 vertebrate species were wiped out: greater short-tailed bat (*Mysticina robusta*), bush wren (*Xenicus longipes*), and South Island snipe.

A Wildlife Service team spent 5 weeks on Big South Cape I in Aug-Sep 1964 attempting to save saddlebacks, snipe and wrens. Three snipe were caught by the team beating in a line through scrubby vegetation until a snipe flushed, then surrounding it and catching it with 1 of 2 large handnets. One bird escaped after capture; the 2 others (both male) were placed in an aviary on 30 Aug (Fig. 3), but the team was unable to supply them with enough live food and they both died on 1 Sep (Table 2; Morris & Smith 1988; Ballance 2007). There have been no confirmed sightings of South Island snipe since.

Fig. 3. One of the 2 South Island snipe held in an aviary on Big South Cape I from 30 Aug to 1 Sep 1964. A different image from the same series was reproduced in Morris & Smith (1988) and Ballance (2007). Photo: Don Merton.

DISCUSSION

Who collected snipe on Jacky Lee Island?

Henry Travers was both a collector and dealer of New Zealand bird specimens, and so it cannot be assumed that all specimens bearing his name were personally collected by him. Based on Jacky Lee I bird specimen labels (Tables 1 & 2), plus other bird specimens in the Te Papa collection, Travers appears to have visited the Stewart I region at least 14 times between 1895 and 1905, with Jacky Lee I visited on at least 7 of these trips. This is unlikely, as Travers was based in Wellington and was a man of insubstantial means: he was declared bankrupt in 1888 (*Evening Post* Wellington newspaper 5 & 26 Sep 1888) and he often (and unsuccessfully) sought financial assistance from museums for his collecting activities (correspondence in Te Papa and Tring archives).

Travers signalled his intention to travel to Stewart I in letters to Ernst Hartert (the curator of birds at Lord Rothschild's Tring museum) dated 24 Dec 1895 and 13 May 1896 (Tring archive), however, other than bird specimen labels, there is no evidence that he ever went. There is no mention of Henry Travers in the *Southland Times* (Papers Past website viewed 27 May 2011), but this absence of evidence is not evidence of absence: Guthrie-Smith visited Stewart I at least 6 times between 1910 and 1923 (Guthrie-Smith 1914, 1925, 1936) and also escaped mention in the *Southland Times* (*op. cit*.).

There is some evidence that Travers already had a collector active around Stewart I before he told Hartert (24 Dec 1895) that "[I] am myself intending shortly to proceed to Stewarts island, for the purpose of trying to procure Phalacrocorax chalconotus & P. glaucus [synonyms for the dimorphic Stewart Island shag *Leucocarbo chalconotus*], as that is the only locality where there is a chance of obtaining them." In an earlier letter to Rothschild (10 Jul 1895) Travers referred to "a man who is collecting for me on the Southern west coast", and there is a 'Travers' Stewart Island shag specimen in the Te Papa collection dated Jun 1895.

It is surprising that Guthrie-Smith's and John McLean's Stewart I contacts – John Leask, Walter Traill, Gretchen Traill and Mr Bragg – apparently did not know (or did not mention) that snipe specimens had been collected on Jacky Lee I 6-14 years before Guthrie-Smith and McLean's visit: McLean was convinced that they had made a new discovery. Stewart I then as now had a small community, and it seems unlikely that anyone

based on Stewart I could have made at least 7 bird-collecting visits to Jacky Lee I without this being known to local naturalists. The Traills in particular were well known naturalists (Natusch 1996); Walter Traill and Arthur Traill were the half-brothers of Charles Traill (1826-1891) of Ulva I, Stewart I (Natusch 1996). Charles Traill, ironically, collected the type specimen of the Chatham Island snipe on his only visit to the Chatham Is in 1867, beating Travers by 4 years (Buller 1869; Travers & Travers 1873; Natusch 1999; Miskelly 2008). Traill, however, failed to discover the South Island snipe just 10 km from his home.

The labels attached to Stewart I region bird specimens sold by Travers appear to have been written by 2 different people, *i.e.*, Travers and 1 other. Note, however, that Travers may have replaced some of the original field labels (if they existed) before on-selling specimens.

Travers was unusual among 19th century New Zealand bird collectors in that he was equally well known as a plant collector (Nelson 1989; Miskelly 2008). If Travers visited Stewart I on multiple occasions between 1895 and 1905, then it is likely that he collected many plants there. The Te Papa Tongarewa, Landcare Research, Auckland Museum, and National Herbarium of Victoria plant collections contain 828 data-based records attributed to Henry Travers dated between 1863 and 1909; none is from Stewart I (P. Brownsey, *pers. comm*.; J. Cruikshank, *pers. comm*.; E. Cameron, *pers. comm*.; A. Vaughan, *pers. comm*.), strongly suggesting that Travers never visited there.

The mystery handwriting on 2 New Zealand pigeon labels from Jacky Lee I (both collected Jul 1899) closely matches the handwriting on a large series of Chatham Island snipe (Fig. 1) and shore plover (*Thinornis novaeseelandiae*) specimens in the Te Papa collection, collected on Rangatira (South East) I on dates including Jan and Aug 1899 and Sep 1900 (many of these specimens lack dates). Intriguingly, these specimens from both Jacky Lee and Rangatira Is bear labels otherwise considered characteristic of both Henry Travers (distinctively shaped thin card 28 x 19 mm, with a bulbous proximal lobe and ornate curved shoulders, tied with pink cotton; Fig. 1) and Sigvard Dannefærd (rectangular brown card 72 x 25 mm, with truncated shoulders, and "DENNISON'S MANILA PAT'D 6374" printed on the eyelet, tied with black or white cotton), yet are apparently written in neither of their hands (Trish James, *pers. comm*.). Sigvard Jacob Dannefærd (1853-1920) was a New Zealand-based photographer and curio dealer, who sold bird specimens to Walter Rothschild and the Dominion Museum; he twice visited and collected on the Chatham Is in Jan-Feb 1894 and Jan 1895 (Dianne Dannefaerd, *pers. comm*.). The distinctive handwriting by a 3rd party suggests that the same unknown collector who visited the Chatham Is on multiple occasions in 1899 and 1900, and the Stewart I region in at least Jul 1899, not only provided specimens to 2 different dealers, but took blank labels sourced from both men into the field.

Incorrect locality data on specimen labels.

Hartert (1927) followed his listing of *Coenocorypha aucklandica iredalei* with a diatribe bemoaning the abysmal standard of specimen data on all the *Coenocorypha* specimens in the Rothschild collection:

> Not one of the 100 skins of the genus *Coenocorypha* in the Tring Museum has been properly labelled on the spot, with precise locality, date, etc., none having been collected by sufficiently skilled scientific collectors. There is thus no authority for the localities, which were apparently put on the luggage labels, attached to the skins, when shipped to Europe.
> It is regrettable that Mrs. Meinertzhagen, in her up-to-date Review of the *Scolopacinae*, *Ibis*, 1926, has published these wrong localities; she says of *C. auckl. aucklandica*, that there is one from the Snares in Tring, where *huegeli* nests, of "*C. a. tristrami*," meaning the Antipodes form, that there are Snares I. specimens, of *huegeli* (the Snares subspecies), that there are three from the Auckland Islands!

Lord Rothschild continued in the same vein on the same page (in Hartert 1927):

> In 1893-1895 there were in Great Britain hardly any examples of the snipe ("Semi-woodcocks") of the genus *Coenocorypha*, and so there was no reason to doubt the labelling of the few we had. Some years later, however, I received from Henry Palmer a large series from the Chatham Islands and from H. H. Travers & Dannefaerd numbers from the Chatham, Auckland, Snares, and Jack Lees Islands, and it is quite clear that a number of the examples have been wrongly labelled. It is quite impossible for these birds with their heavy bodies and soft plumaged, rounded wings to fly more than short distances, and if driven out to sea by gales they would inevitably be drowned; therefore we cannot suppose that these odd birds labelled from different islands to their home can have been strays.

It is likely that Henry Travers was a major source of incorrect locality data attached to *Coenocorypha* specimens both in the Rothschild collection (now in

Table 3. Examples of *Coenocorypha* snipe specimens with incorrect locality data on their original labels. This list does not include 15 *C. iredalei* specimens with incorrect locality data listed in Table 2. Taxa listed are Snares Island snipe *C. huegeli*, Auckland Island snipe *C. aucklandica aucklandica*, and Antipodes Island snipe *C.a. meinertzhagenae*. Date, locality and collector are based on the original labels; supplier is either stated or inferred from handwriting. Museum acronyms as per Table 2 caption. It is likely that most of these specimens were collected by crew members of government steamships (especially the *Hinemoa*) and were sold to Sigvard Dannefærd or Henry Travers, who on-sold them to Lord Rothschild.

Registration no.	Taxon	Date	Locality	Collector	Supplier	Comments on true collection locality
AMNH 740436	*C. huegeli*		Antipodes I		Dannefærd	Snares Is
AMNH 740437	*C. huegeli*	1895	Auckland Is		Travers	Snares Is (Ernst Hartert)
AMNH 740438	*C. huegeli*		Auckland Is		Dannefærd	Snares Is (Ernst Hartert)
BMNH 1939.12.9.49	*C. huegeli*	1895	Auckland Is		Travers	Snares Is (Ernst Hartert)
BMNH 1939.12.9.165	*C.a. aucklandica*	1894	Snares Is	Travers		Auckland Is
AMNH 740476	*C.a. aucklandica*	May 1894	Snares Is		Travers	Auckland Is (Ernst Hartert)
AMNH 740477[1]	*C.a. aucklandica*		Antipodes I		Dannefærd	Auckland Is (Ernst Hartert)
AMNH 740453	*C.a. meinertzhagenae*		Stuarts I [sic]			Antipodes I
AMNH 740452	*C.a. meinertzhagenae*		Snares Is		Dannefærd	Antipodes I (Ernst Hartert)
AMNH 740454	*C.a. meinertzhagenae*		Auckland Is		Dannefærd	Antipodes I
AMNH 740455	*C.a. meinertzhagenae*		Auckland Is		Dannefærd	Antipodes I
AMNH 740456	*C.a. meinertzhagenae*		Auckland Is		Dannefærd	Antipodes I

[1]Holotype of *Gallinago tristrami* Rothschild, 1894. The error in locality on the label led Rothschild to use this specimen to describe it as the form from Antipodes I. (Rothschild 1894a). He corrected the mistake 33 years later when he described *Coenocorypha aucklandica meinertzhagenae* (in Hartert 1927).

AMNH and BMNH) and in New Zealand, but he was by no means the only one. As early as Jan 1894, Rothschild (1894b) had noted:

> Since I laid before the B.O.C. the description of *Gallinago tristrami* I have received seven more specimens of *G. huegeli*, Tristr., and *G. aucklandica*. Of these the two *G. huegeli* are labelled, one as coming from Auckland Island and the other from Antipodes Island. Now *G. huegeli* is supposed to be confined to the Snares, the two only known specimens having come from there. Mr. Danneferd [sic], who sent my specimens, gets most of his island-birds from the crew of the 'Hinemoa,' and I have more than once noticed in collections made by them for Sir Walter Buller that the labelling was most careless and incorrect. On the other hand, Danneferd positively states in a letter that one Snipe came from Antipodes Island and the other six from Auckland Island, and specially mentions that he sent examples of two species from Auckland Island. Personally I am more inclined to doubt the accuracy of the labelling than the possibility of two isolated islands (Auckland and Antipodes Is.), more than 500 miles apart, presenting the very unusual fact of two quite distinct species of Snipe (*G. huegeli* and *G. aucklandica*) on the one, and one of them only (*G. huegeli*) on the other, while on a neighbouring group (Chatham Is.) we have a third distinct and somewhat intermediate form. Lastly, we should have the still more incredible fact that *G. huegeli* occurs in company with *G. aucklandica* on Auckland Island and with *G. tristrami* on Antipodes Island, while on the Snares it is the sole species of Snipe, and on the Chatham Islands *G. pusilla* alone is found. The rather unfortunate doubt as regards the locality of some of my specimens, however, does not, in my opinion, interfere with the fact that there are four distinct species of Antarctic Snipe, as the series laid before you by Mr. Hartert shows.

Gallinago tristrami Rothschild 1894 was the name proposed for the Antipodes Island snipe, until Bowdler Sharpe (1896) pointed out to Rothschild that it was inseparable from "*G. aucklandica*". After true (correctly labelled) Antipodes Island snipe were received by Rothschild, he realised that the *G. tristrami* type was an incorrectly labelled Auckland Island snipe, and he named the Antipodes Island snipe *Coenocorypha aucklandica meinertzhagenae*,

honouring Annie Meinertzhagen (Rothschild in Hartert 1927). The type specimen of *G. tristrami* was labelled as collected by Dannefærd, yet Dannefærd never travelled to the subantarctic islands (Henry Travers letter to Lord Rothschild 14 May 1895, Tring archives; D. Dannefaerd, *pers. comm*.). All the snipe specimens associated with Dannefærd (other than Chatham Island snipe collected in 1894 or 1895) were collected by someone else.

Dannefærd took umbrage at the suggestion that the snipe he forwarded to Rothschild were incorrectly labelled, writing in his idiosyncratic style (in a letter apparently sent after Jul 1897, in Tring archives): "…as to the doubt of corect Labeling of the Snipe I am satisfied they are corect, and ther is a further variety of Snipe in the colection I send you now as you will see from the three diferent Island and the are corectly Labeled and should form a very interesting series. Ther must be Thre or Four diferent kinds."

The Dannefærd/Rothschild correspondence also contains a tantalising but incorrect suggestion that snipe were known from Stewart I before 1897. In a letter dated 16 May 1895, Dannefærd wrote "As I have mentioned before the Snipe from Stewards Isl is no dought different from the Auckland Isl, the Striped marking and more yellow you never find in the Auckland Isl spessemens. I send two of Each verry distinctly marked, the are getting scarce now, & also send two young from Aucklands Isl thes should be interesting…" The mention of "Stewards Isl" was apparently meant to be "Snares Isl", as the accompanying list had "2 Gallinago Aucklandica, 2 Galinago Snares Isl" plus "2 Young snipe Auckland Isl".

The fact that Travers mislabelled at least 6 (and probably as many as 10) of the snipe specimens thought to have come from Jacky Lee I argues against him being the person who collected them. Up until 1921, there was no published record of snipe on islands off Stewart I. There would have been much interest in birds that would prove to be a new species, and it is unlikely that Travers deliberately reduced the cachet of these specimens by labelling them as being from an island already known to have snipe. It is equally unlikely that Travers would 'forget' that he had collected 15 or more snipe over at least 8 visits to Jacky Lee I over at least 9 years. As only 5 of the specimens ended up labelled as being from Jacky Lee I, this points to Travers being confused by a large number of poorly labelled snipe specimens sourced from multiple locations.

Using genetic techniques, Boessenkool *et al*. (2010) detected 8 yellow-eyed penguin (*Megadyptes antipodes*) specimens sourced from Travers as having erroneous locality data. They were unable to determine whether the errors were mistakes or deliberate falsifications. The fact that over 50% of the snipe specimens likely to have been sourced from Jacky Lee I (belonging to a then unnamed taxon) ended up being labelled by Travers as from the Snares Is or Auckland Is strongly suggests that his labelling errors were inadvertent due to the specimens being collected by another party, poor record keeping, and the passage of time between collection and on-selling to Rothschild and New Zealand museums and collectors.

The poor data associated with the 7 snipe collected by Edgar Stead in 1931 is doubly frustrating, as it is apparent that these data were lost as opposed to never being recorded. Robert Wilson (1959, p.4) wrote that "when [Stead] obtained a specimen he spent great care on skinning and preserving it. When it was arranged to his satisfaction he tied a label on it, giving date and locality and sex." It is unknown when or why Stead's 1931 snipe specimens became separated from their collection data. Much of the Stead bird collection was unlabelled at the time of donation (Nov 1948), yet the eggs were meticulously labelled. "All the information was in his head apparently. Robert Falla had made an appointment to visit him in Feb 1949 to get all the data" (P. Scofield, *pers. comm*.) – unfortunately Stead died on 7 Feb before Falla could visit. The incorrect locality data on the Stead snipe specimens were apparently written by Falla (*pers. obs*.).

McLean's description of a South Island snipe

John McLean's detailed description of the behaviour of the snipe he saw on Jacky Lee I on 26 Oct 1911 will resonate with anyone who has had the privilege to observe a *Coenocorypha* snipe foraging: he captured perfectly their stop-start motion with frequent probing, constantly on the move, but unconcerned about the presence of an observer unless pressed too hard. McLean's original note of the bird being "Chestnut with black longitudinal markings" matches well with Rothschild's (1921) type description made 10 years later, but based on birds collected 13-14 years before McLean's sighting. South Island snipe had richer and darker dorsal plumage than other *Coenocorypha* snipe; Rothschild described the dorsal plumage as "The hind-neck, interscapular region, and back have the centres of the feathers black, not brown, and the pale borders much reduced. The wing-coverts are black, not pale cinnamon brown...The tertials are black narrowly edged with pale buff, with a few indistinct dark rufous bars…"

McLean and Guthrie-Smith (1936) were the only field observers to describe the leg colour of South Island snipe (yellow and pale yellow, respectively). Their descriptions contrast with "pink-brown" given by Higgins & Davies (1996) based on a Peter Johns photograph of 1 of the 2 birds in the aviary on

Big South Cape I. in Aug-Sep 1964 (*author, unpubl.*). The Peter Johns photograph was a duplicate slide, and has a more yellow tone than the Don Merton photograph of possibly the same bird reproduced here (Fig. 3), where the legs appear grey.

The bird in Fig. 3 is an adult, based on the deeply grooved upper mandible (see Barker *et al*. 2005). It is very unlikely that snipe could have bred successfully in 1963-64 in the presence of rats that were in plague proportions when the muttonbirders arrived on Big South Cape I in Mar 1964 (Bell 1978), supporting the supposition that the 2 birds captured 4 months later were adult. The leg colour in other *Coenocorypha* snipe varies with locality (taxon), sex and individual, ranging from rich yellow in some adult males of Chatham Island snipe and Snares Island snipe (though typically paler yellow), through pale yellow (female Chatham Island snipe, both sexes of Auckland Island snipe and Campbell Island snipe *C. aucklandica perseverance*), green-yellow (female Snares Island snipe), olive green (immature Snares Island and Chatham Island snipes) to grey (Antipodes Island snipe, immature Auckland Island and Campbell Island snipes) (Miskelly & Baker 2010; author, *pers. obs*.). McLean's description of leg colour from Jacky Lee I does not conform with the leg colour of the adult bird photographed 53 years later on Big South Cape I.

Edgar Stead evidently noticed plumage differences between the populations on Jacky Lee and Big South Cape Is, as he presented a paper entitled "A new race of island snipe" to the Canterbury Branch of the Royal Society on 5 Jun 1940 (Anon. 1942); unfortunately the paper was never published, and no such text has been found among the Stead papers in the David Macmillan archive in Canterbury Museum. Stead in the 1930s had no way of knowing that most of the Jacky Lee I snipe specimens remained in New Zealand. Not only were the bulk of them labelled as from the Snares Is (Table 2), but due to the Dominion Museum shifting premises and the intervention of World War II, the 546 bird skins (including 25 snipe) purchased from Travers in 1923 & 1925 remained unpacked until the 1950s (Sandy Bartle, *pers. comm*.).

In addition to providing hints of differences between snipe from Jacky Lee I and those from Big South Cape I, McLean's diary narrows the time window for the introduction of weka to Jacky Lee I. They were not there in 1911, and are likely to have been introduced before muttonbirding ceased *c.*1929. These same dates tragically bookend the extinction of snipe on Jacky Lee I.

Scarcity of snipe on Jacky Lee and Big South Cape Islands

Snipe were apparently uncommon on both Jacky Lee and Big South Cape Is. On Jacky Lee this is evident both from the multiple visits (at least 8) needed to collect 15 specimens between 1897 and 1905, and McLean & Guthrie-Smith seeing 1 bird only during 3 visits in 1911, despite looking for them specifically on their final visit. A similarly low encounter rate was apparent on Big South Cape I, most notably with Bell & Merton seeing 1 bird only during a month's stay in Apr 1961 (Miskelly 1987). The obvious explanation for low encounter rates on Big South Cape I was the presence of weka from 1923 onwards (Guthrie-Smith 1936; Richdale 1945; Miskelly 1987; this paper). Weka densities on islands visited by muttonbirders are kept in check by regular harvest for consumption, meaning that weka on Big South Cape were never likely to reach the densities considered responsible for eradicating snipe on Jacky Lee I (Wilson 1959). The low encounter rate for snipe on Jacky Lee I is likely to have been largely due to the notoriously impenetrable vegetation of supplejack (*Ripogonum scandens*) and *Muehlenbeckia* vines and tree nettle (Wilson 1959; McLean and Stead diaries). However, another factor in the apparently low density of snipe on Jacky Lee I may have been the presence of banded rails (McLean diary 1911), as the rails were recognised egg predators on other muttonbird islands (Wilson 1959). As for the snipe, banded rails have not been recorded from Jacky Lee I since weka were introduced.

Collection of specimens of the South Island snipe in 1931

Robert Wilson's diary (in conjunction with Stead's) makes it clear that all 5 clutches of eggs found on Big South Cape I on 2-7 Dec 1931 were collected, although only 4 of these are known to exist (all in Canterbury Museum; Miskelly & de Lange 2006). The clutch not accounted for was the 2nd clutch found on 2 Dec, which was "just hatching" (Stead diary; Miskelly & de Lange 2006) or "just chipping" (Wilson diary). Miskelly & de Lange (2006) presumed (or hoped) that these 2 eggs were left to hatch; their whereabouts is unknown, and it is plausible that they were unable to be blown successfully as they contained full-term chicks.

The frank brutality recorded in Wilson's 1931 diary is abhorrent to modern conservationist sensibilities, yet reflected the attitudes of many of New Zealand's leading ornithologists at the time. Geoffrey Buddle, Charles Fleming, A.C. (Creigh) O'Connor, Wilfred Plowden-Wardlaw and Arthur Pycroft as well as Stead and Wilson were all active private collectors of bird eggs and skins in the 1930s; along with museum staff, they were greatly (and publicly) concerned by increasing restrictions on their activities imposed by the Department of Internal Affairs (Taking of protected birds: *Dominion* newspaper, 27 May & 13 Jun 1938; *The Press*, 14

Jun 1938; *New Zealand Herald*, 15 Jun 1938). It is unlikely that Wilson intended the quoted sections of his diary to be published; his 1959 book (p.49) made no reference to collection of snipe or their eggs, presumably in deference to public attitudes to bird preservation. Stead, in contrast, apparently expected or intended his unedited diary to be read by others; he chose to make no reference to the 7 snipe specimens collected, and his references to collection of their eggs were concealed by the use of a code (superscript letters; Miskelly & de Lange 2006).

Stead and Wilson's bird island expeditions from 1929-47 (Wilson 1959) were undertaken during a period when most native birds were protected by the Animals Protection and Game Act, 1921-22. Stead was issued 40 bird collecting permits by the Department of Internal Affairs under the APG Act, including one to collect "Jacques Island snipe" (author, *unpubl*.). Technically this permit was ultra vires, as by a quirk of legislation, the South Island snipe was not protected. The APG Act listed all species to be protected, including Antipodes Island snipe, Auckland Island snipe, Chatham Island snipe and Snares Island snipe. As the "Jacques Island snipe" was not described until 1921, it was missed by the legislation, and so it was not given legal protection until the all-species-encompassing Wildlife Act, 1953, was passed.

Stead's motivation for collecting was very different from the likes of Travers, Dannefærd, John Bollons, A.W. [William] Bethune and Henry Palmer in the 1890s. All these men were seeking to make a living, or at least supplement their income, in an era when few native bird species were protected. In contrast, Stead did not sell specimens, and his collecting in the 1930s was typically targeted at addressing particular taxonomic questions (author, *unpubl*.). The snipe specimens that he collected on Big South Cape I. in 1931 were evidently intended to be used as the basis for describing a new taxon (Anon. 1942), although the paper was never published.

The real villains in the extinction of the South Island snipe were the introduced weka and rats, or, more precisely, the people who chose or allowed them to be introduced. Were it not for the specimens collected by (or for) Travers, Stead and Wilson, the only physical evidence that would remain of snipe on islands off Stewart I would be a handful of photographs (Guthrie-Smith 1936; Miskelly & de Lange 2006; Ballance 2007; this paper) and 2 sad reminders (NMNZ OR.11206 & OR.11146) of a well-intentioned but ultimately futile rescue attempt.

Consequences of snipe extinction, and restorative actions

Extinction of any species is an ecological and evolutionary tragedy, but some losses are felt more keenly than others. New Zealand lost 50 bird species after human contact (Tennyson & Martinson 2007), although even well-informed members of the public struggle to name more than 3 (author, *pers. obs*.). The ecological role of snipe is poorly known (Miskelly *et al*. 2012), but their alter ego, the hakawai, remains of great significance to the Rakiura muttonbirding community (Miskelly 1987). The extinction of tutukiwi (snipe) and hakawai (nocturnal aerial displaying by snipe) from islands around Stewart I diminished the richness of the muttonbirding culture, but perhaps not irreversibly. Thirty Snares Island snipe were translocated to Putauhinu I, alongside Big South Cape I, in Apr 2005 (Miskelly *et al*. 2012). Two of the birds released had the broken tail feathers characteristic of birds that had been performing hakawai aerial displaying (Miskelly 2005), thereby restoring the potential for hakawai to be again heard over the muttonbird islands south-west of Stewart I.

CONCLUSIONS

The South Island snipe was discovered on Jacky Lee I in 1897, but was not described until 1921. Twenty-three study skins, 1 mounted skin and 1 alcohol specimen (24 birds), and 4 clutches of this species are known to exist. [Note that an intact specimen in MNNZ preserved in alcohol in 1964 was converted into a study skin and a torso in alcohol in 2012.]

It is unlikely that the original 'discoverer' Henry Travers ever visited Stewart I or Jacky Lee I (the type locality for the species). The person who collected at least 15 snipe specimens from Jacky Lee I between 1897 and 1905 (including the type series for what is now known as *Coenocorypha iredalei*) is unknown, although it is now known that he also probably collected birds on Rangatira I in the Chatham Is in 1899 and 1900. The specimens were apparently all sold or provided to Henry Travers, who labelled or relabelled most, and on-sold them to Lord Rothschild (5 specimens), the Dominion Museum (9 specimens), and Dr Benjamin Moorhouse (1 specimen, now in Canterbury Museum). The long time period that elapsed between collection and the specimens being on-sold (mainly 1920-27), and the low likelihood that Travers collected the specimens himself, are the likely explanation for why only a third of these specimens were correctly labelled to locality.

John McLean's detailed notes on a snipe observed on Jacky Lee I on 26 Oct 1911, reproduced here, is the only known account of a South Island snipe being observed at the type locality. They were extirpated there by introduced weka between 1911 and 1929.

Snipe were 1st recorded on Big South Cape I in 1913. Seven specimens were collected there in 1931.

The taxon became extinct in, or soon after, 1964 due to predation by accidentally introduced ship rats on Big South Cape I. The 2 final specimens (now in Museum of New Zealand Te Papa Tongarewa) died during an unsuccessful rescue attempt in Aug-Sep 1964.

ACKNOWLEDGEMENTS

I am indebted to Hilary Haylock for the generous loan of her father's (Major Robert Wilson's) diaries and correspondence, to the Alexander Turnbull Library for access to McLean's diaries, and to Canterbury Museum for access to the Stead/Macmillan archive. I am extremely grateful to curators who checked and photographed labels on snipe and fernbird specimens in their care: Joanne Cooper of the Natural History Museum, UK; Paul Scofield of Canterbury Museum; and Paul Sweet, Tom Trombone and Matt Shanley of the American Museum of Natural History (AMNH). Mary LeCroy (AMNH) provided helpful advice on Gregory Mathews and his handwriting; Jennifer Twist located the Henry Travers - Dominion Museum correspondence in the Te Papa archives; Joanne Cooper and Polly Parry searched the Tring archives for Travers correspondence, and Dianne Dannefaerd provided biographical notes on her grandfather Sigvard Dannefærd. Thanks also to the plant curators and collection managers who provided details of Travers specimens in their care: Pat Brownsey & Leon Perrie (Te Papa), Ewen Cameron (Auckland Museum), Jane Cruikshank (Landcare Research) and Alison Vaughan (National Herbarium of Victoria). Martin Lewis (Te Papa librarian) was of much assistance in tracking down obscure references.

I thank my colleagues Alan Tennyson and Gillian Stone for discussions and suggestions on the history of specimens in the Te Papa collection; Alan also provided significant information on the activities of Travers and Dannefærd. The critically important handwriting analysis on specimen labels was provided by Trish James, Senior Document Examiner, New Zealand Police. Reproduction of Don Merton's colour photograph was sponsored by the Fauna Recovery New Zealand charitable trust. This manuscript was improved by comments received from Joanne Cooper, Mary LeCroy, Paul Scofield and Alan Tennyson.

I acknowledge with respect and sadness the passing of Don Merton on 10 Apr 2011. Don provided much assistance when I started research on snipe in the early 1980s, and remained passionately interested in progress with their conservation. I am grateful to Margaret Merton for permission to reproduce one of Don's rare images of the South Island snipe (then known as Stewart Island snipe) that he and his Wildlife Service colleagues desperately strived to rescue from extinction.

LITERATURE CITED

Anonymous 1919. John Chambers McLean [obituary]. *Ibis (11th series) 1*: 537–538.

Anonymous 1942. [Canterbury Branch of the Royal Society of New Zealand report of the Annual Meeting, 1941, at which Edgar Stead presented a paper entitled "A new race of island snipe"]. *Proceedings of the Royal Society of New Zealand 71*: 25.

Ballance, A. 2007. *Don Merton; the man who saved the black robin*. Auckland: Reed.

Barker, D.; Carroll, J.; Edmonds , H.; Fraser, J.; Miskelly, C.M. 2005. Discovery of a previously unknown *Coenocorypha* snipe in the Campbell Island group, New Zealand subantarctic. *Notornis 52*: 143-149.

Bell, B.D. 1978. The Big South Cape Island rat irruption. Pp 33-40 in Dingwall, P.R.; Atkinson, I.A.E.; & Hay, C. (eds) *The ecology and control of rodents in New Zealand nature reserves*. Wellington: Department of Lands & Survey. xvii + 447 pp.

Boessenkool, S.; Star, B.; Scofield, R.P.; Seddon, P.J.; Waters, J.M. 2010. Lost in translation or deliberate falsification? Genetic analyses reveal erroneous museum data for historic penguin specimens. *Proceedings of the Royal Society B 277*: 1057-1064.

Bowdler Sharpe, R. 1896. *Catalogue of the Limicolae in the collection of the British Museum*. London: Trustees of the British Museum.

Buller, W. 1869. On some new species of New-Zealand birds. *Ibis 5 (new series)*: 37-43.

Chapman, F.R. 1891. The outlying islands south of New Zealand. *Transactions and Proceedings of the New Zealand Institute 23*: 491-522.

Charteris, M.; Miskelly, C. 2005. *Snares Island snipe (tutukiwi) translocation to Putauhinu Island, April 2005*. Wellington: Department of Conservation. 28 pp.

Cockayne, L. 1909. Remarks on the bird-life of Stewart island. Pp 35-39 in Cockayne, L. *Report on a botanical survey of Stewart Island.* Appendix to the journal of the House of Representatives 2(C13): 1-30.

Cumpston, J.S. 1968. Macquarie Island. *Australian National Antarctic Research Expedition Scientific Reports, Series A (1)*. Publication No. 93. Melbourne : Antarctic Division, Department of External Affairs. 380 pp.

Dell, R.K. 1965. *Dominion Museum 1865-1965*. Wellington: Dominion Museum.

Fleming, C.A. (convener) 1953. *Checklist of New Zealand birds*. Wellington: Reed.

Gill, B.J.; Taylor, M.J. 2010. J.C. McLean's collection of New Zealand and foreign birds' eggs. *Records of the Auckland Museum 47*: 75-88

Guthrie-Smith, H. 1914. *Mutton birds and other birds*. Christchurch: Whitcombe & Tombs.

Guthrie-Smith, H. 1925. *Birdlife on island and shore*. Christchurch: Whitcombe & Tombs.

Guthrie-Smith, H. 1936. *Sorrows and joys of a New Zealand naturalist*. Dunedin: Reed.

Hartert, E. 1927. Types of birds in the Tring Museum. *Novitates Zoologicae 34*: 1-38.

Headland, R.K. 2009. *A chronology of Antarctic exploration: a synopsis of events and activities from the earliest times until the International Polar Years, 2007-09*. London: Quaritch.

Higgins, P.J.; Davies, S.J.J.F. (Eds.) 1996. *Handbook of Australian, New Zealand and Antarctic birds. Vol. 3. Snipe to Pigeons*. Oxford University Press: Melbourne.

Mathews, G.M. 1936. *A supplement to the birds of Norfolk and Lord Howe Islands, to which is added those birds of New Zealand not figured by Buller*. London: Witherby.

Mathews, G.M.; Iredale, T. 1913. A reference list of the birds of New Zealand. Part 1. *Ibis (10th series) 2*: 201-263.

Medway, D.G. 2007. A possible live South Island snipe (*Coenocorypha iredalei*) at Dusky Sound in 1773. *Notornis 54*: 237-238.

Meinertzhagen, A.C. 1926. A review of the subfamily *Scolopacinae.* – Part 1. The snipes and semi-woodcocks. *Ibis (12th series) 2*: 477-521.

Miskelly, C.M. 1987. The identity of the hakawai. *Notornis 34*: 95-116.

Miskelly, C.M. 2005. Evidence for 'hakawai' aerial displaying by Snares Island snipe (*Coenocorypha aucklandica huegeli*). *Notornis 52*: 163-165.

Miskelly, C. 2008. People who made a difference. Pp 159-172 in C. Miskelly (ed.) *Chatham Islands: heritage and conservation*. Christchurch: Canterbury University Press.

Miskelly, C.M.; Baker, A.J. 2010. Description of a new subspecies of *Coenocorypha* snipe from subantarctic Campbell Island, New Zealand. *Notornis 56*: 113-123.

Miskelly, C.M.; Charteris, M.R.; Fraser, J.R. 2012. Successful translocation of Snares Island snipe (*Coenocorypha huegeli*) to replace the extinct South Island snipe (*C. iredalei*). *Notornis 59*: 32-38.

Miskelly, C.M.; de Lange, P.J. 2006. Notes on the breeding ecology of the extinct Stewart Island snipe (*Coenocorypha aucklandica iredalei*). *Notornis 53*: 339-352.

Morris, R.; Smith, H. 1988. *Wild south; saving New Zealand's endangered birds*. Auckland: TVNZ & Century Hutchinson.

Natusch, S. 1996. *The natural world of the Traills: an investigation into some of the nineteenth century naturalists of a particular family in Scotland and the colonies*. Wellington: Nestegg.

Natusch, S. 1999. *A naturalist and a gentleman: Charles Traill of Ulva, 1826–1891*. Wellington: Nestegg.

Nelson, E.C. 1989. 'That I may earn a living': Henry Hammersley Travers (1844-1928) and the Royal Botanic Gardens, Glasnevin, Dublin. *Royal New Zealand Institute of Horticulture annual journal 16:* 60-66.

Oliver, W.R.B. 1926. The birds of Stewart Island. *The New Zealand journal of science and technology 8(6)*: 321-341.

Oliver, W. R. B. 1930. *New Zealand birds*. Wellington: Fine Arts.

Oliver, W. R. B. 1955. *New Zealand birds*. 2nd edn. Wellington: Reed.

Richdale, L.E. 1945. *Vanishing New Zealand birds*. No. 5 of his series. Dunedin: Otago Daily Times and Witness Newspapers Co.

Robin, L. 2001. *The flight of the emu; a hundred years of Australian ornithology 1901-2001*. Carlton South: Melbourne University Press.

Rothschild, M. 1983. *Dear Lord Rothschild; birds, butterflies and history*. Philadelphia: Balaban.

Rothschild, W. 1894a. [*Gallinago tristrami*, sp. n.] *Bulletin of the British Ornithologists' Club 3(13)*: 11-12.

Rothschild, W. 1894b. [On snipes from the New Zealand region] *Bulletin of the British Ornithologists' Club 3(14)*: 16-17.

Rothschild, W. 1921. *Coenocorypha aucklandica iredalei*, subsp. nov. *Bulletin of the British Ornithologists' Club 41*: 63.

Tennyson, A.; Martinson, P. 2007. *Extinct birds of New Zealand*. Revised edition. Wellington: Te Papa Press.

Travers, H.H. 1869. On the Chatham Islands. *Transactions and proceedings of the New Zealand Institute 1*: 119-127.

Travers, H.H.; Travers, W.T.L. 1873. On the birds of the Chatham Islands, with introductory remarks on the avi-fauna and flora of the islands in their relation to those of New Zealand. *Transactions and proceedings of the New Zealand Institute 5*: 212-222.

Turbott, E.G.; Galbreath, R. 1990 John Chambers McLean 1871–1918. p. 184. *In:* B.J. Gill and B.D. Heather (eds). *A flying start; commemorating fifty years of the Ornithological Society of New Zealand 1940–1990*. Auckland: Random Century.

Warham, J. 1967. Snares Island birds. *Notornis 14*: 122-139.

Warham, J.; Bell, B.D. 1979. The birds of Antipodes Island, New Zealand. *Notornis 26*: 121-169.

Wilson, R. A. 1959. *Bird islands of New Zealand*. Christchurch: Whitcombe & Tombs.

Young, D. 2004. *Our islands, our selves; a history of conservation in New Zealand*. Dunedin: University of Otago Press.