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Breeding records of Dunlin *Calidris alpina* in China

by David S. Melville, Qing Chang, Wei Liu & Nathan H. Rice

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Summary.—Dunlin *Calidris alpina* has been recorded as breeding in China based on a pullus collected on 7 May 1927 at Tsingtao, Shandong province; a remarkably early date for a nearly fledged young. The record appears highly unlikely to be an example of deliberate fraud, and there is no obvious evidence of mislabelling. We have been unable to determine the validity of the claimed breeding record, however, based on a review of available information, it appears certain that the species does not currently breed in China.

Dunlin *Calidris alpina* was reported as breeding in China by Greenwood (1980), based on the skin of a pullus in the collection of the Academy of Natural Sciences, Philadelphia, USA (ANSP; now the Academy of Natural Sciences of Drexel University). The specimen (ANSP 108004) was collected by R. H. LeFevre at Tsingtao [Qingdao], Shan-tung [Shandong], China on 7 May 1927. Greenwood (1980) stated that: 'R. M. de Schauensee (Academy of Natural Sciences) assures me that the specimen label is reliable, so there can be no doubt as to the authenticity of the specimen'. Subsequently, Meyer de Shauensee (1984) stated: 'Breeds in Shantung Pen. (*pullus*)'. The specimen is a pullus, and bears a LeFevre label similar to those of other Dunlins in the collection (Fig. 1).



Figure 1. Specimen of pullus (centre) Dunlin *Calidris alpina* reg. no. ANSP 108004, at the Academy of Natural Sciences of Drexel University, with two adult specimens reg. nos. ANSP 108007 (above) and ANSP 107997 (below) (Nathan H. Rice, Academy of Natural Sciences of Drexel University)

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Greenwood (1980) considered the bird to be 'about 2½–3 weeks old and incapable of flight'. The bird has extensive waxy sheaths to the primaries (Fig. 2), indicating that the feathers were still growing, and that it would have been incapable of sustained flight. Dunlins typically fledge when 16–24 days old (Heldt 1966, Meltofte *et al*. 2007, van Gils *et al*. 2020, Warnock & Gill 2020), which suggests that the specimen would have hatched on about 17 April. Incubation usually lasts 20–24 days (Soikelli 1967, Cramp & Simmons 1983, van Gils *et al*. 2020, Warnock & Gill 2020), so laying would have been around 27 March. This is exceptionally early, being nearly a month prior to any other Dunlin breeding record. For the southern race *C. a. schinzii*, Witherby *et al*. (1940) noted 'usually about second or third week May onward in Brit. Is. [British Isles], but exceptionally in first week of May', whilst in southern Finland Soikelli (1967) recorded two clutches being initiated on 24 April, but most in early May. In the Russian Far East, Tomkovich (1998) reported first egg dates between late May and mid June for *C. a. sakhalina*, *C. a. kistchinski* and *C. a. actites*, whilst North American *pacifica* and *arcticola* may start from late May (Warnock & Gill 2020). There do not appear to have been any unusual weather conditions (temperature or rainfall) in 1927 that might have promoted exceptionally early breeding by Dunlin in Shandong; indeed annual minimum temperatures were comparatively low during 1913–38 (Guo *et al*. 2018) which, if anything, might be expected to delay onset of breeding (Soikelli 1967).



Figure 2. Underwing of pullus Dunlin *Calidris alpina* reg. no. ANSP 108004, at the Academy of Natural Sciences of Drexel University, showing extensive waxy sheaths to the bases of the primaries, indicating that these were still growing (Nathan H. Rice, Academy of Natural Sciences of Drexel University)

It appears that Greenwood had not seen the privately published volume by LeFevre (1962). In it, LeFevre summarises his own observations and records, including 2,658 bird specimens he collected in Shandong between 1923 and 1927. LeFevre (1962) stated: 'All of my collection, except a few skins to Lebanon Valley College, Annville, Pennsylvania, and a few skins to Cornell University, Ithaca, New York, are deposited in the Academy of Natural Science (*sic*), Philadelphia, Pennsylvania'. The entry for Dunlin includes the following:

> 'EROLIA ALPINA SAKHALINA – (Vieillot)
>
> Pacific Dunlin
>
> Migrant – recorded March 10 up to May 26 and August 25 to November 29.
>
> Eastern Shantung: I secured 14 birds at Tsingtao from May 7 to May 19 and also one on August 31, 1925.
>
> Central Shantung: On the Wei River, I secured four birds from March 10 to March 19, 1925.'

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It thus appears that in total LeFevre collected 18 Dunlins in Shandong. Of these, 12 from 'Tsingdao' and two from the 'Wei River' are at ANSP. The Cornell collection only has one specimen from China, but collected by H. W. Hubbard, not LeFevre (CUMV 2375, taken 1 August 1931 at 'Peitaiho, Hopei' [Beidaihe, Hebei], https://webportal.cumv.cornell.edu/cumvbirds/). The Lebanon Valley College formerly had some bird specimens but these no longer exist (D. Erskine & S. Goodman *in litt*. 2020), so it is unknown if any of LeFevre's Dunlins went there. There is, however, one LeFevre specimen in the Field Museum of Natural History, Chicago (FMNH 406566) collected on 10 March 1926 at the Wei River (https://collections-zoology.fieldmuseum.org/catalogue/1681412).

LeFevre (1962) recorded the following for north-east Shandong: 'Jones [1911] found them [Dunlin] near Wei Hai Wei [Weihai] from the middle of August until October. At the latter time they were quite numerous. There is a possibility of a few breeding here'. It is thus remarkable that LeFevre made no mention of obtaining a pre-fledging juvenile in May.

Greenwood (1980) also noted that: 'Jones (1911) … suggested that Dunlin may breed in the locality of Wei Hai Wei (Shantung peninsula), although proof of this has been lacking'. Jones (1911) reported: '…on the 9th of June, to the west of Wei Hai Wei, a Dunlin was obtained in full breeding-plumage, its foot being in a snare attached to a small withy, which it had pulled up when it escaped. As the Chinese set these snares near the nests of birds, there is every likelihood that this Dunlin was breeding in the neighbourhood'. Snares are widely used to catch various birds in China (Cheng 1964) and for shorebirds in Asia and the Pacific, not only at breeding sites (Kannan & Pandiyan 2012, Naves *et al*. 2019), thus any inference regarding the status of the Dunlin reported by Jones is extremely speculative. Moreover, the appearance of first-summer Dunlin varies, with many attaining plumage similar to adult breeding (Cramp & Simmons 1983), although it appears that most do not breed until their second year (Cramp & Simmons 1983, Warnock & Gill 2020). Small numbers of non-breeding (probably immature) Dunlins oversummer in the northern Yellow Sea / Bohai (Q. Q. Bai pers. comm.) making the presence of one in breeding plumage in early June at Wei Hai Wei not unexpected.

Swinhoe (1875) recorded several species of shorebird at Chefoo (Yantai, Shandong), but did not mention Dunlin. Hemmingsen & Guildal (1968) noted Wilder & Hubbard (1924) as recording Dunlin to be 'found all summer [in north-east China] but breeds in arctic region', but Wilder & Hubbard (1924) actually stated: 'Seacoast only. Recorded in eight years April 10th to Oct'. LaTouche (1931–34) recorded Dunlin as a migrant in Shantung. Shaw (1938) collected 99 specimens from Tsingdao and reported: 'As a migrant, the Pacific or Eastern Dunlin is very common along the coast. Large flocks of one hundred or more birds were frequently met from the middle of March to the first half of May, and again from the end of September to October'. Caldwell & Caldwell (1931) stated: 'Recorded from Chihli [Hebei], April to October' and, rather mysteriously, also noted 'This bird has never been definitely reported as breeding in south China', but they provided no information regarding any 'unconfirmed' reports, or reports from elsewhere in China. Sowerby (1923) collected four specimens at Pei-tai Ho [Beidaihe], Hebei on 14, 16 and 18 July, and noted 'There can be little doubt that the specimens that I secured at Pei-tai Ho had been breeding in the vicinity, as the possibilities of their being either belated stragglers from the south, or early returning birds that accomplished their breeding in the far north, are remote'. However, Hemmingsen & Guidal (1968) recorded Dunlin at Beidaihe on seven dates in July noting 'More or less dark spotting on underparts, of which some may be remnants of the black patch of adults, some the spotting of young in autumn, was seen in July…'.

Subsequent Chinese publications have made no mention of Dunlin breeding in Shantung, or elsewhere in China (Cheng 1987, Sai 2013, 2017, Xiang-Yu *et al*. 2009, Zhang &

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Zhang 2018), however Zheng (2017) noted the species as 'occasional breeders (?)', apparently based on Jones (1911) and mention of LeFevre's specimen in Meyer de Schauensee (1984).

The only other record of Dunlin breeding far south of the normal range is that of Chapman & Buck (1893: 73), who reported 'discovering the Dunlin (*Tringa alpina*) nesting at a point over a thousand miles south of any previous record of its breeding range' in southern Spain, but proffered no further details. This record is referred to by Greenwood (1980); a clutch of four eggs collected on 24 April 1872 at Jerez de la Frontera, Spain, which he noted 'is in the Seebohm collection at the British Museum (Natural History) … and was recorded by Seebohm (1888)'. However, Seebohm (1887) referred to '*an* [emphasis added] egg in my collection out of a clutch of four from which the bird was shot by Mr. Abel Chapman in the marshes of the Guadalquivir [Spain]'. Dresser (1871–81) also mentioned '*an* [emphasis added] egg from a clutch of four' in the collection of H. Saunders. It is unclear why there is a discrepancy in the number of eggs. Of the four eggs, currently in the Natural History Museum, Tring (NHMUK 1901.1.1.5002–05) collection, one is labelled: 'Tring (sic) variabilis nr Jerez, Spain 24 April 72 4 eggs. bird shot'.

Tsingtao is at *c*.36°06'N, whereas the Guadaquavil marshes, Spain, are at *c*.37°86'N. The southernmost breeding population of Dunlin in Europe is at *c*.50°N (Holloway 1996, Clark & Gromadzka 1997, Balmer *et al*. 2013, Calladine 2020), with occasional nesting attempts at about 47°N (Cramp & Simmons 1983, Clark & Gromadzka 1997). In the Russian Far East, the southernmost breeding populations are of *actites* in northern Sakhalin (*c*.53°N) and *kistchinckii* in southern Kamchatka (*c*.51°N) (Lappo *et al*. 2012).

LeFevre (1895–1974) was a missionary of the United Brethren Church in China (1923–27). En route to the USA in June 1927 LeFevre visited Hong Kong where he collected a few bird specimens, but no shorebirds (LeFevre 1930); it is not known where these specimens were deposited; they are not at ANSP. In addition to birds, he also collected ants (Formicidae) in both Shandong and Hong Kong (Wheeler 1929, 1930).

Upon his return to the USA he transferred to Geneva Presbytery, New York state, and published a short account of birds in China (LeFevre 1929). He returned to China where he was Dean of Agriculture at Huping Agricultural School, Yuangling, Hunan, in 1941–43 (Anon. 1941, 1974), but there is no evidence that he collected birds during this period. Back in the USA he was professor of biology at Sampson College, Sampson, New York state, in 1946, then at Hopewell Presbyterian Church, York county, Pennsylvania (Anon. 2020).

It is notable that LeFevre did not draw attention to this record (see above) and there are no other particularly unusual or extreme records or specimens in his collection. As such, it seems very unlikely that the record is fraudulent. A labelling error is possible (Rasmussen & Prŷs-Jones 2003), but the label is similar to other LeFevre bird specimens in ANSP (Fig. 1).

It may not be possible to determine the validity of the claimed 1927 Tsingtao breeding record definitively, but what does appear certain is that Dunlin does not currently breed in China.

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