Museum specimens, photographs, and sightings of White-eyed River Martin Pseudochelidon sirintarae

Authors: Bond, Alexander L., and Berryman, Alex J.

Source: Bulletin of the British Ornithologists' Club, 144(2) : 162-182

Published By: British Ornithologists' Club

URL: https://doi.org/10.25226/bboc.v144i2.2024.a9

Museum specimens, photographs, and sightings of White-eyed River Martin *Pseudochelidon sirintarae*

by Alexander L. Bond & Alex J. Berryman

Received 20 December 2023; revised 2 April 2024; published 3 June 2024

http://zoobank.org/urn:lsid:zoobank.org:pub:F9039C64-705A-4D60-AF6B-881154427C27

Summary.—White-eyed River Martin *Pseudochelidon sirintarae* was described in 1968 and there have been no confirmed sightings since the 1970s. It is known only from Bueng Boraphet in central Thailand. Here, we compile the most comprehensive summary of museum specimens, photographic records (including two previously unpublished images) and sightings for this poorly known species. Specimens are held mainly in the Thailand Natural History Museum near Bangkok, with others at the Natural History Museum (Tring), American Museum of Natural History (New York) and National Museum of Natural History, Smithsonian Institution (Washington, DC). At least three other mounts exist, all in Thailand, some of which may be composites from captive birds collected in the early 1970s. Photographs unearthed at Tring, and in unpublished reports, show birds that differ from the four previously known images and may represent individuals that are now museum specimens. With no confirmed sightings for more than 40 years, despite reasonable search effort (especially increasing citizen science data), it is very likely that White-eyed River Martin is now extinct.

Among the most enigmatic of the world's birds is White-eyed River Martin *Pseudochelidon sirintarae* (Nok Chao Fa Ying Sirindhorn or 'swollen-eye bird' [McClure 1969], Nok Chao Fa Sirindhom [Anon. 1971, Round 1990] or Nok Chao Faa Ying Sirindhorn [Anon. 1990]), a species represented by only a handful of specimens and a few observations of live birds. It was first observed in 1968, the result of ringing operations for other swallows in central Thailand (Thonglongya 1968a). To date, the only specimens known are the nine specimens reported in the original description (Thonglongya 1969) and an additional bird collected in November 1968 (Thonglongya 1969; note: some sources incorrectly give this as December 1968). Subsequent searches for its breeding grounds were unsuccessful (Thonglongya 1969) and it has not been observed since a reputable claim in 1977 (King & Kanwanich 1978, Sophasan & Dobias 1984, Ogle 1986). It was named by Kitti Thonglongya (occasionally referred to as 'Mr Kitti') for Princess Maha Chakri Sirindhorn, the Princess Debaratana Rajasuda, the Princess Royal of Thailand (b. 1955) because of her interest in wildlife (Thonglongya 1968a).

The species is known only from the type locality—Bueng Boraphet, an artificial lake in central Thailand (15°41'N, 100°15'E) that was created by damming in the 1930s (Round 1990, Collar *et al*. 2001) and which is fed by the four main rivers of northern Thailand (Ping, Wang, Yom and Nan). Speculation of its range extending into China (Dickinson 1986), the Lao People's Democratic Republic (Collar *et al*. 2001), Cambodia (Pilgrim 2008) and Myanmar lack any evidence (Parkes 1987, Round 1990, Treesucon & Limparungpatthanakij 2018). The holotype was at the Applied Scientific Research Corporation of Thailand and its successor, the Thailand Institute of Scientific and Technological Research, but cannot be presently located at the Thailand Natural History Museum (THNHM) near Bangkok; paratypes are at the Natural History Museum (Tring), American Museum of Natural History (New York)

ISSN-2513-9894 (Online)

and National Museum of Natural History, Smithsonian Institution (Washington, DC; see below) (Dickinson *et al*. 2001).

It is classified as Critically Endangered on the IUCN Red List (BirdLife International 2022) and is protected by the 'Wild Animal Conservation and Protection Act B.E. 2562' in Thailand (Government of Thailand 2019), making it illegal to hunt or trap. Bueng Boraphet is also a non-hunting area (Sophasan & Dobias 1984), a Wetland of International Importance, and an Important Bird and Biodiversity Area (Round 1990, Collar *et al*. 2001, BirdLife International 2023).

The mysterious circumstances of its appearance, and near-immediate disappearance have earned it a reputation as 'one of the most puzzling mysteries of Asian ornithology' (Tobias 2000). Despite this, almost nothing has been written of the species since an attempt to predict its circumstances (to aid its rediscovery) more than 20 years ago (Tobias 2000, Collar *et al*. 2001). While these compendia drew on sources available to their authors, in the published record there exists no attempt to collate the details of known specimens and photographs, and more than 20 years has passed since survey effort in its possible range has been considered. We do so here and include among our findings photographs not widely published of a White-eyed River Martin from February 1968, including one which, we contend, is the best known of this species.

Preserved specimens

Ten preserved specimens of White-eyed River Martin are known, all ostensibly collected at Bueng Boraphet, central Thailand, in January–February 1968 (nine specimens) or November 1968 (one specimen). There is considerable uncertainty regarding how these specimens were procured and, by extension, the exact collection locality (see Tobias 2000 and Collar *et al*. 2001 for a summary). Nevertheless, we agree with the verdict of Collar *et al*. (2001) and, in referring to the locality as 'Bueng Boraphet', ultimately concede that 'Bueng Boraphet and/or its immediate vicinity' is a more accurate description of the information available.

A summary of all specimens is discussed chronologically below (and presented in Tables 1–3). Specimens formerly at the Thailand Institute of Scientific and Technological Research (TISTR), the successor to the Applied Scientific Research Corporation of Thailand (ASRCT), have been housed at the Thailand Natural History Museum (THNHM) in Pathum Thani, just north-east of Bangkok, since approximately 2012. In several cases, the label data do not necessarily match the original description (Thonglongya 1968a); we take the latter to be definitive but discuss discrepancies where they exist.

28 January 1968.—The earliest-known specimen is a skin in the Thailand Natural History Museum, Bangkok (THNHM B-07478; formerly ASRCT 53-1218, collector's number KT 657). It is a male and presumed to be immature by virtue of the extensive grey neck and lack of tail-streamers (Fig. 1). The original report gives a collection date of 28 January 1968 (Thonglongya 1968a), however the label indicates 27 January 1968. It is a paratype, and the location of the trunk is unknown.

29 January 1968.—Another immature male, from the following day, is now at the National Museum of Natural History, Smithsonian Institution (USNM 533542; formerly ASRCT 53-1219, collector's number KT 658; Fig. 2), and is also a paratype. The label date of 1 April 1968 on the ARSCT label is the date of determination, and the trunk may not be extant in collections.

10 February 1968.—Seven specimens are known from collecting efforts on this date. These included the holotype (formerly ASRCT 53-1217, collector's number KT 666), an adult female from the THNHM collection. Unfortunately, its current registration number

ISSN-2513-9894 (Online)

TABLE 1
Specimens of White-eyed River Martin *Pseudochelidon sirintarae* represented in museum and university collections.

Date	Record type	Age	Sex	Field no.	TISTR[1]	Type series	Collection[2]	Reg. no.	Notes	Fig. no.
28 Jan 1968	study skin	Immature	Male	KT657	53-1218	Paratype	THNHM	B-07478		1
29 Jan 1968	study skin	Immature	Male	KT658	53-1219	Paratype	USNM	533542		2
10 Feb 1968	study skin	Adult	Unknown	KT665	53-1221	Paratype	THNHM	B-07479	Trunk in spirit at THNHM	3
10 Feb 1968	mount	Immature?	Unknown	KT667	53-1222	Paratype	THNHM	B-02379	Trunk in spirit at THNHM	4
10 Feb 1968	mount	Immature	Unknown	KT669	53-1225	Paratype	THNHM	B-07480	Former spirit specimen, mounted in mid-2010s	5
10 Feb 1968	study skin	Immature	Female	KT670	53-1223	Paratype	AMNH	708673	Trunk in spirit at THNHM	6
10 Feb 1968	in spirit	Adult	Unknown	KT668	53-1224	Paratype	USNM	510428		7
10 Feb 1968	study skin	Adult	Unknown	KT664	53-1220	Paratype	NHMUK	1968.68.1	Trunk, syrinx and trachea in spirit as USNM 510427	8
Nov 1968	mount	Unknown	Unknown	NA	NA	No	THNHM	B-07481	Date occasionally given as Dec 1968	9
Unknown	mount	Unknown	Unknown	NA	NA	No	Chulalongkorn University Museum of Natural History	?	Possibly a model or composite from other hirundines	10
Unknown	mount	Unknown	Unknown	NA	NA	No	Chulalongkorn University Museum of Natural History	?	Possibly a model or composite from other hirundines	11
Unknown	mount	Unknown	Unknown	NA	NA	No	ZPO	?	A composite mount from birds held at Dusit Zoo.	12
10 February 1968	study skin	Adult	Female	KT666	53-1217	Holotype	THNHM?	?	Not located in Dec 2023	NA

[1]TISTR = Thailand Institute of Scientific and Technological Research.

[2]THNHM: Thailand Natural History Museum, Pathum Thani; USNM: National Museum of Natural History, Smithsonian Institution, Washington, DC; AMNH: American Museum of Natural History, New York; NHMUK: Natural History Museum, Tring; ZPO: Zoological Parks Organization, Bangkok, Thailand.

ISSN-2513-9894 (Online)

TABLE 2
Photographs of White-eyed River Martin *Pseudochelidon sirintarae*. Individual refers to the identity of the bird photographed in relation to other photographs.

Date	Age	Sex	Individual	Collection[1]	Reg. no.	Photographer (if known)	Notes	Fig. no.
Nov 1968	Adult	Unknown	A	ML	363839501	H. E. McClure		13
Nov 1968	Adult	Unknown	A	ML	363839511	H. E. McClure		13
Nov 1968	Adult	Unknown	A	ML	363839491	H. E. McClure		13
Nov 1968	Adult	Unknown	A	ML	363839481	H. E. McClure		13
Nov 1968	Adult	Unknown	A or B				McClure (1969)	14
Nov 1968	Adult	Unknown	A or B				McClure (1969)	15
Jan or Feb 1968	Unknown	Unknown	C				Sent to NHMUK 21 Feb 1968, forwarded to AMNH	NA
Jan or Feb 1968	Unknown	Unknown	C or D				Sent to NHMUK, 3 Apr 1968	NA
Jan or Feb 1968	Immature	Unknown	C, D, or E	NHMUK			Sent to NHMUK, 5 Jun 1968	16
Feb 1968	Adult	Female	C, D, or F	NHMUK			Sent to NHMUK, 5 Jun 1968; may refer to NHMUK 1968.68.1	17

[1]ML = Macaulay Laboratory, Cornell University, Ithaca, NY; NHMUK = Natural History Museum, Tring.

TABLE 3
Verified and unverified sightings of White-eyed River Martin *Pseudochelidon sirintarae*.

Date	Location	No. of individuals	Notes	Source
7 Feb 1971	Dusit Zoo, Bangkok	>1	Died soon after arrival; made into a composite mount(s)	Anon. (1971)
2 Feb 1977	Bueng Boraphet	2		King & Kanwanich (1978)
3 Feb 1977	Bueng Boraphet	4		King & Kanwanich 1978)
1977	Bangkok	10	Allegedly sold at market; unverified	IUCN (1979)
Jan 1978	Bueng Boraphet	1	Unverified	IUCN (1979), Lekagul *et al*. (1980)
Jan 1980	Temple Island, Bueng Boraphet	4	Immatures; unverified	Sophasan & Dobias (1984), Ogle (1986)
before Jan 1986	Bueng Boraphet	1	Allegedly kept captive; unverified	Ogle (1986)
Mar 2004	Sre Ambel River, Cambodia	'a group'	Unverified	Pilgrim (2008)

ISSN-2513-9894 (Online)

Figure 1 (left). Immature male White-eyed River Martin *Pseudochelidon sirintarae*, paratype THNHM B-07478, collected on 28 January 1968 (© W. Sanguansombat)

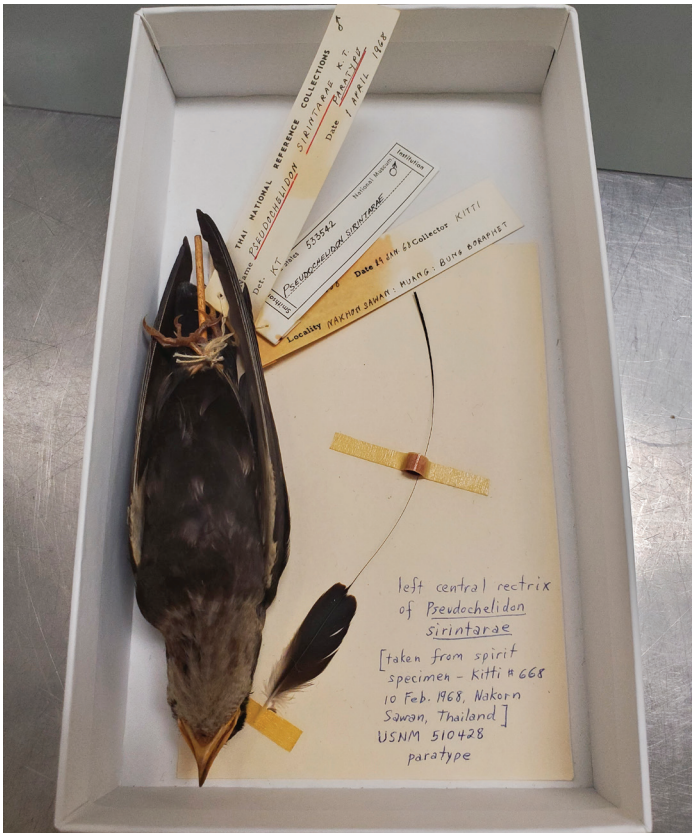


Figure 2 (left). Immature male White-eyed River Martin *Pseudochelidon sirintarae*, paratype USNM 533542, collected on 28 January 1968, alongside the removed left central rectrix from USNM 510428 (adult, unknown sex; see Fig. 7) (© C. Milensky)

ISSN-2513-9894 (Online)

Figure 3. Adult White-eyed River Martin *Pseudochelidon sirintarae* of unknown sex, paratype THNHM B-07479, collected 10 February 1968 (© W. Sanguansombat)

is unknown, and it cannot be located. Two additional skins from this date are in THNHM: B-07479 (formerly ASRCT 53-1221, collector's number KT 665), an adult of unknown sex with moderate tail-streamers (Fig. 3; trunk in spirit at THNHM); and THNHM B-02379 (formerly ASRCT 53-1222, collector's number KT 667), which is said to be an immature (Thonglongya 1968a), presumably because of the greyish throat, but also has broken tail-streamers of which only 2/3 remain (P. D. Round *in litt*. 2022; Fig. 4; trunk in spirit at THNHM). Both are paratypes.

THNHM had one spirit specimen (formerly ASRCT 53-1225, collector's number KT 669), an immature of unknown sex, and a paratype. This was mounted in the mid-2010s and is registered as THNHM B-07480 (Fig. 5); the trunk is in spirit at THNHM.

There is one skin at the American Museum of Natural History in New York (AMNH SKIN 708673; formerly ASRCT 53-1223, collector's number KT670), an immature female paratype (Fig. 6), and the trunk is retained in spirit at THNHM.

ISSN-2513-9894 (Online)

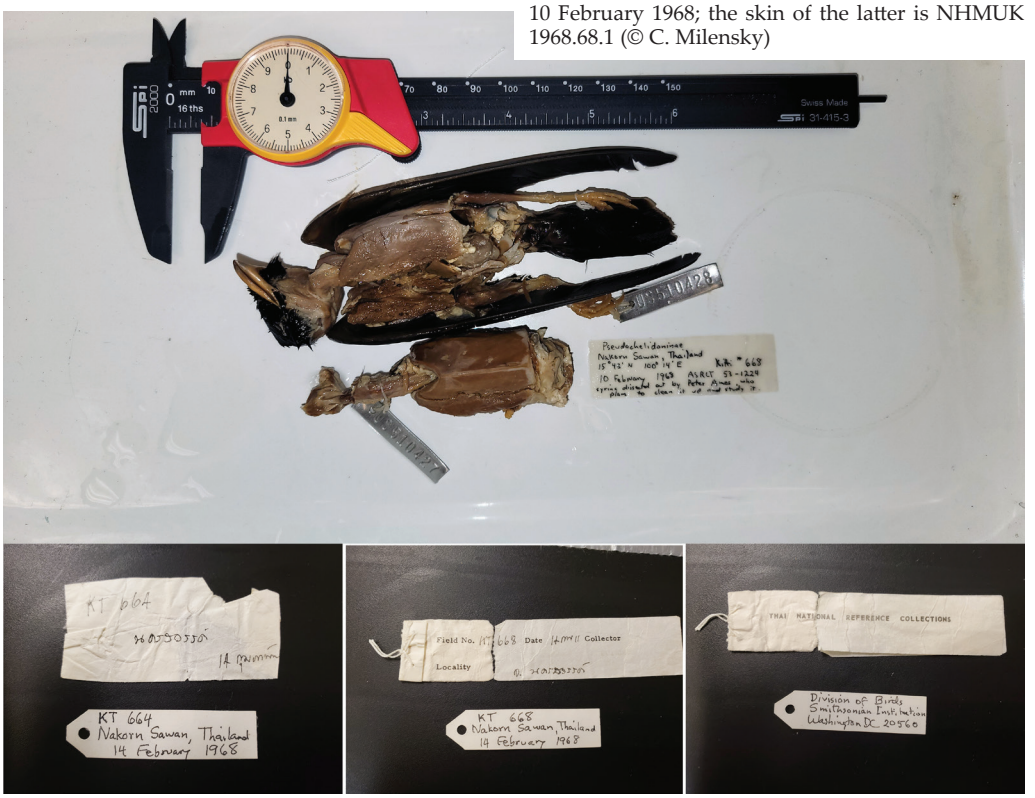
Figure 4 (left). Immature White-eyed River Martin *Pseudochelidon sirintarae* of unknown sex, paratype THNHM B-02379, collected 10 February 1968 (© W. Sanguansombat)

Figure 5 (below). Former spirit specimen of an immature White-eyed River Martin *Pseudochelidon sirintarae* of unknown sex, paratype THNHM B-07480, collected on 10 February 1968; it was mounted in the mid-2010s (© W. Sanguansombat)

ISSN-2513-9894 (Online)

Figure 6 (above and left). Immature female White-eyed River Martin *Pseudochelidon sirintarae*, paratype AMNH SKIN 708673, collected on 10 February 1968 (© P. Sweet)

Figure 7 (below). USNM 510428 (top), the featherless body of an adult White-eyed River Martin *Pseudochelidon sirintarae* paratype preserved in spirit (see also Fig. 2), and USNM 510427 (bottom), the trunk from an adult of unknown sex collected on 10 February 1968; the skin of the latter is NHMUK 1968.68.1 (© C. Milensky)



ISSN-2513-9894 (Online)

Figure 8. Adult White-eyed River Martin *Pseudochelidon sirintarae* of unknown sex, paratype NHMUK 1968.68.1, collected on 10 February 1968; the trunk is in spirit (USNM 510427; see Fig. 8) (J. Jackson, © Trustees of the Natural History Museum, London)

One featherless body from an adult (with the syrinx preserved and trunk dissected) is in spirit at the National Museum of Natural History, Smithsonian Institution (USNM 510428; formerly ASRCT 53-1224, collector's number KT 668; Fig. 7) and is a paratype. The date on the label, 14 February 1968, we believe to be incorrect.

There is one skin at the Natural History Museum, Tring (NHMUK 1968.68.1; formerly ASRCT 53-1220, collector's number KT 664): an adult of unknown sex and a paratype (Fig. 8). The trunk, syrinx, syrinx and trachea of this specimen were removed in the field and sent as a spirit specimen to the National Museum of Natural History, Smithsonian Institution (USNM 510427). The date on the label, 14 February 1968, we believe to be incorrect (Fig. 7).

Other specimens

There is one other mount (THNHM B-07481; Fig. 9), apparently without locality or collection date. This is almost certainly the bird captured in November 1968 and photographed by H. E. McClure (see 'Photographs' below), and the bird was photographed again in 1992 for a newspaper article about the species' discovery, where it is being held by Preecha Luecha , who assisted Thonglongya in the species' discovery (Lueawattanawan & Sukhonthaman 1992; P. D. Round *in litt*. 2024).

Two mounts are or were present at the Chulalongkorn University Museum of Natural History (Figs. 10–11). Both are likely composites or models, perhaps incorporating material from other hirundines and do not represent one of the known definitive specimens (P. D. Round *in litt*. 2024). Such composites may have been made in the early 1970s, often by

ISSN-2513-9894 (Online)

Figure 9 (left). A mounted specimen (THNHM B-07481) of White-eyed River Martin *Pseudochelidon sirintarae* believed to be the bird collected in November 1968 (© W. Sanguansombat)

Figure 10 (below). Mounted specimen of White-eyed River Martin *Pseudochelidon sirintarae* at the Chulalongkorn University Museum of Natural History, with no data, photographed in 2013; like the other mounted specimen (Fig. 11), it may be a composite or mock-up incorporating parts from other hirundines (photo by Wikimedia user Paul_012; CC BY-SA 3.0)

ISSN-2513-9894 (Online)

Figure 11 (left). Mounted specimen of White-eyed River Martin *Pseudochelidon sirintarae* at the Chulalongkorn University Museum of Natural History, with no data; it may be a composite or made from other hirundines, and further investigation is needed (© P.D. Round 2024)

Figure 12 (below). Mounted specimen of White-eyed River Martin *Pseudochelidon sirintarae* in the Director's office of the Zoological Parks Organization in Bangkok; probably a composite of the former live birds kept at Dusit Zoo in 1971 (© Kaset Sutasha)

ISSN-2513-9894 (Online)

members of the original team involved in the species' discovery, including from the two birds at Dusit Zoo (see below).

A mount is also present at the Zoological Parks Organization Director's office in Bangkok (Fig. 12). This specimen is probably the composite mentioned in relation to the two live specimens kept at Dusit Zoo in 1971 (Sutasha 2016).

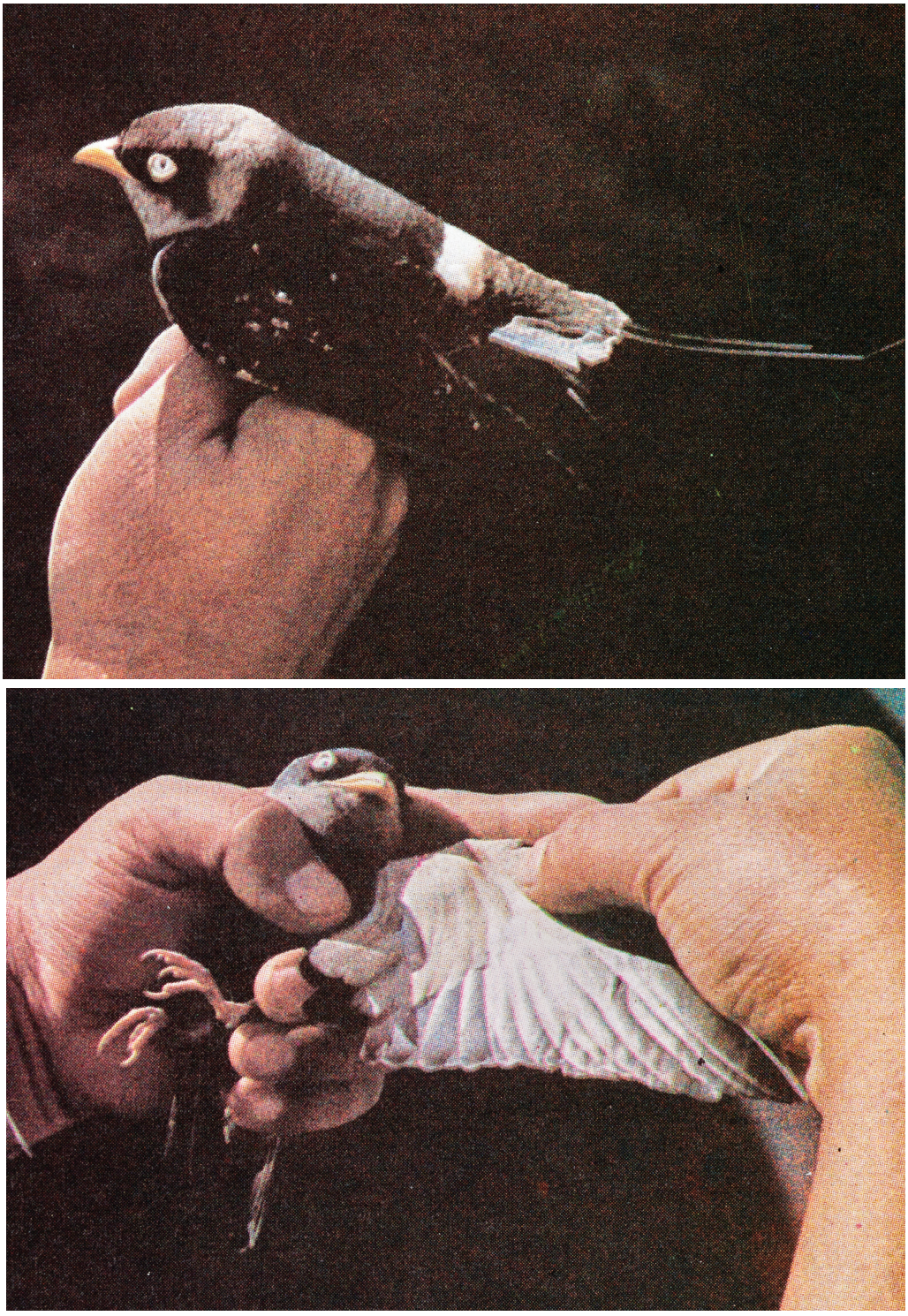
Photographs

Four photographs of White-eyed River Martin are well recognised and widely published. They are all of a single adult caught in either November (Thonglongya 1969) or December (McClure 1969) 1968, later transferred to, and photographed in, Bangkok on 12 December 1968. These photographs (Fig. 13) by H. E. McClure were donated to BirdLife International on his death and some have been published on several occasions (e.g. Tobias 2000) and are now also available on the Macaulay Library (ML 363839501, ML 363839511, ML 363839491 and ML 363839481), albeit misattributed thereon as being taken on 10 February 1968.

Two other photographs, clearly of the same individual, appear to have gone unnoticed, despite appearing in McClure (1969) alongside a photograph of 'Princesses Sirindhorn and Chulaporn (*sic* =Chulabhorn) watching Mr. Kitti removing a bird [not *Pseudochelidon*] from a mist-net' (Figs. 14–15) The bird was reportedly not released, although whether it

Figure 13. Photographs of the White-eyed River Martin *Pseudochelidon sirintarae* caught in November 1968 published by Tobias (2000) and deposited in the Macaulay Library, Cornell University; the bird is presumably an adult given the presence of tail-streamers and is believed to be THNHM B-07481 (H. E. McClure, © BirdLife International)

ISSN-2513-9894 (Online)



Figures 14–15. Photographs of the White-eyed River Martin *Pseudochelidon sirintarae* caught in November 1969; presumably an adult given the presence of tail-streamers. (H. E. McClure; originally published in McClure 1969).

ISSN-2513-9894 (Online)

Figures 16–17. Photographs of White-eyed River Martin *Pseudochelidon sirintarae* taken in the field in February 1968; it is now NHMUK 1968.68.1; the prints were sent by K. Thonglongya to NHMUK in April 1968 and Fig. 17 was also reproduced for an article in the newspaper *Khaosod* on 27 May 1992 about the species' discovery (Photographer unknown)

was preserved (and if it was, where it is now) is unknown (McClure 1969). Based on the circumstances of all known specimens' collection, if these six photographs *do* refer to a bird that was preserved, it is most likely THNHM B-07481 (which also shares the extensive grey throat of the birds in the photograph).

In the process of our searches, we found two photographs we believe to have never been published previously outside of Thailand, each referring to a different individual from that above.

ISSN-2513-9894 (Online)

The first is undoubtedly of an adult (Fig. 16) and is probably the best photograph taken of White-eyed River Martin. It was photographed in the field in February 1968 and differs from the bird in the previously published photographs (taken several months later) in having an all-black throat. A second photograph (Fig. 17), also taken in the field in February 1968, is annotated as being an 'immature male', although it evidently has some tail-streamers (but an extensively pale [presumably grey] throat). This photograph (Fig. 17) appeared in the Thai newspaper *Khaosod* on 27 May 1992 (Lueawattanawan & Sukhonthaman 1992), and both of these photographs with limited circulation (Figs. 16–17) were published in a 1971 internal report by ASRCT (P. D. Round *in litt*. 2024).

Linking either of these photographs to preserved specimens is challenging. Thonglongya sent a photograph to the NHMUK, with a letter dated 21 February 1968, to enquire about the unknown species' identity. These were subsequently forwarded to AMNH for their consideration. The photograph is not in the archives at AMNH (P. Sweet *in litt*. 2023). On 21 March 1968, NHMUK curator I. C. J. Galbraith wrote to Thonglongya, having received a response from W. Lanyon at AMNH. The photograph was not apparently returned to the NHMUK with Lanyon's letter. Its whereabouts is unknown, but it is clearly different from the published images (taken in November/December 1968) and may have therefore been the image in either Fig. 16 or 17.

On 3 April 1968, Thonglongya forwarded another photograph to NHMUK to 'replace the one sent to [AMNH]'; whether his is identical to the image sent to NHMUK and forwarded to AMNH is unknown.

On 5 June 1968, Thonglongya again sent 'two pictures of the new species' to B. P. Hall at NHMUK. On 2 July 1968, two photographs, one of an adult and one of an immature, were sent to AMNH; we assume these to be identical sets. On the AMNH photographs are annotations in a hand that is not Thonglongya's. The photograph of the adult is annotated 'Adult female of Pseudochelidon sirintarae sp. nov. White-eyed River Martin. Thailand: February 1968' (Fig. 16), and the immature is annotated 'Immature male. Pseudochelidon sirintarae sp. nov. White-eyed River Martin. Thailand: January 1968' (Fig. 17). In NHMUK, there are three copies of the photograph of the immature and two of the adult; one copy of each is annotated in a hand that is not Thonglongya's: 'Pseudochelidon sp. nov. Thailand discovered 1968 by Mr Kitti' with 'immature' or 'adult' as appropriate. The other copies are unmarked.

The specimen at NHMUK was sent on 9 August, and arrived on 20 August 1968 (Natural History Museum Archives 1968). By that time, only four adults were represented among the known extant specimens: the holotype, and three paratypes now in THNHM (B-07479), NHMUK (1968.68.1) and USNM (510428). That the bird in the photographs is the THNHM paratype can be ruled out, as its tail-streamers are much shorter than those of the bird in the images. The USNM paratype has been dissected and the tail feathers removed, although one is retained separately, and the NHMUK skin has the tail-streamers intact. In the field, the length of the tail-streamers of the holotype was measured as 84 mm, 49 mm on the USNM spirit specimen, and 71 mm on the NHMUK skin; they are nearly identical in all other measurements (Thonglongya 1968a). Using ImageJ 1.54d (Schneider *et al*. 2012) we used the wing chord length (115–116 mm of all three birds) to measure the tail-streamers in the photograph where they are completely visible (Fig. 8), and estimate them to be *c*.70 mm long. We therefore conclude that if the adult in Fig. 16 is a preserved specimen, then it must be that at NHMUK. The identity of the bird in Fig. 17 is unknown.

ISSN-2513-9894 (Online)

Other sightings and dedicated searches

Following the initial discovery, searches of unknown intensity/duration at Bueng Boraphet in March 1968 yielded no sightings (Sophasan & Dobias 1984). Between 22 May and 27 June 1969, Thonglongya searched rivers in northern Thailand (Thonglongya 1969), suspecting that like African River Martin *Pseudochelidon eurystomina* the species nested in sandbars (Turner & Sharpe 2020), but this was at a time of year (May/June) when river levels would likely be too high for nesting (King & Kanwanich 1978, Sophasan & Dobias 1984, Pilgrim 2008).

For a few years following the species' discovery, several river martins were apparently sold locally (Sophasan & Dobias 1984), usually in December–February (King & Kanwanich 1978), and reportedly fetched a high price (up to 500 baht or about $85 USD today) (Sophasan & Dobias 1984).

In 1971, at least two individuals were acquired by Dusit Zoo (Anon. 1971, Sophasan & Dobias 1984) but these soon died. They were prepared as skins, but according to Preecha, one of the original team in 1968 (Thonglongya 1968b), owing to severe insect damage were made into a single composite (P. D. Round *in litt*. 2023). An announcement in the *Bangkok Post* (on 7 February, not 6 February as often reported) mentioned only one bird (Anon. 1971) but there must have been two (or more) if they were made into a composite (Sophasan & Dobias 1984). The Dusit Zoo moved in 2018. At least one composite was apparently made (P. D. Round *in litt*. 2023) and was apparently still present at the Zoological Park Organization, the state enterprise responsible for zoos in Thailand, in January 2024 (W. Sanguansombat *in litt*. to P. D. Round, 2024).

J. McNeely is said to have 'found' two birds in 1972 (King 1979), but these were plausibly the two at Dusit Zoo, as McNeely apparently never saw live birds (J. McNeely *in litt*. to P. D. Round, 2023). Lekagul *et al*. (1980) incorrectly indicated that only one bird was seen.

The first widely accepted wild observation was made on 2 February 1977, at Bueng Boraphet, by B. F. King who claimed two birds were seen flying overhead in a flock of Barn Swallows *Hirundo rustica*. The next day, 3 February, four were apparently seen skimming low over the lake, possibly drinking water, with another two flying higher (King & Kanwanich 1978), although these sightings are undocumented. Ten birds were apparently captured in 1977 and sold in Bangkok (IUCN 1979) but no details were given. A single bird was 'reported' in January 1978 (IUCN 1979, Lekagul *et al*. 1980) but no further details are available and this record too is unverifiable. In 1979, 11 birding trips (months unknown) to Bueng Boraphet, including by the Bangkok Bird Club, yielded no sightings (Sophasan & Dobias 1984).

There were extensive searches at Bueng Boraphet in 1980–81. Four river martins were apparently seen foraging for insects and perched in a tree on Temple Island in January 1980 (Sophasan & Dobias 1984, Ogle 1986), but these are considered 'probable' and are not generally accepted (Collar *et al*. 2001). Searches on 23–24 November 1980, 13–16 January 1981, 12–15 February 1981 and 5–7 March 1981 that targeted roosting swallows in the areas where river martins were said to have been caught yielded no sightings and none was found in nearby markets, although one merchant offered to procure one (Lekagul *et al*. 1980, Sophasan & Dobias 1984). Sometime prior to January 1986, a single White-eyed River Martin was reportedly kept in a cage by a local resident (Ogle 1986) but this record is also not usually accepted (Collar *et al*. 2001) and cannot be verified.

In the 1990s and 2000s, dedicated searches for this species extended beyond Thailand. In April 1996, a search in northern Lao PDR, near the border with China, yielded no sightings

ISSN-2513-9894 (Online)

and on further investigation and discussion with residents it was determined that the birds that had sparked the search were Eurasian Blackbirds *Turdus merula* (J. W. Duckworth *in litt*. 2024) and that local residents were unfamiliar with the river martin (Tobias 2000, Collar *et al*. 2001, Pilgrim 2008). There was a putative sighting of 'a group' of river martins from the Sre Ambel River in south-east Cambodia in March 2004 (Judell 2006, Anon. 2008, Pilgrim 2008) and a local farmer claimed to see them regularly in March and April. Searches at Sre Ambel, on 14–16 March and 9–11 April 2008 were unsuccessful, however (Anon. 2008), and without photographs or specimens these records must also be considered doubtful. To the best of our knowledge there have been no more claims, even putative, since.

Recent survey effort.—To our knowledge, there have been no dedicated surveys for the species since 2008. However, that White-eyed River Martin is extant appears extremely doubtful. Recent citizen science data have achieved almost comprehensive coverage of the region's major rivers, tributaries and wetlands (Fig. 18), especially in Thailand (including around Bueng Boraphet and the entirety of the Mekong along the Thai-Lao border, from where there are several hundred eBird checklists, covering all months of the year). In Lao

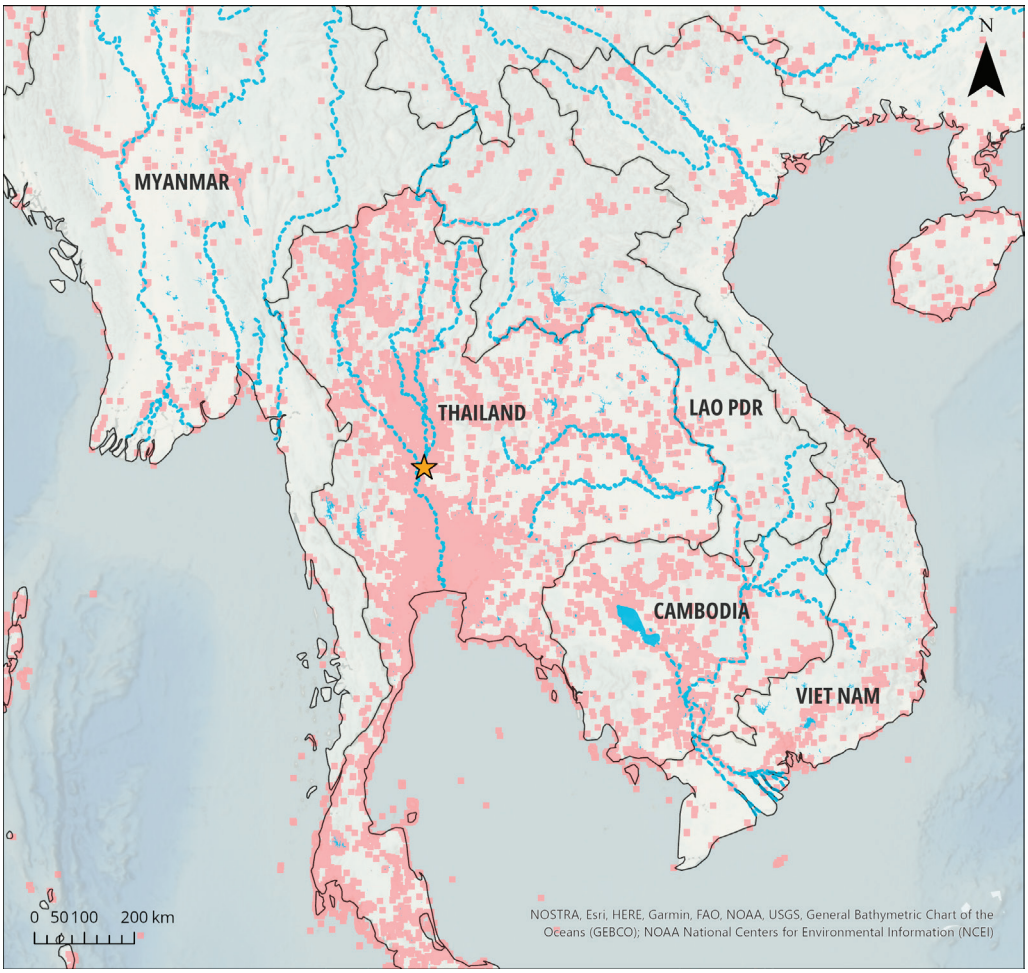


Figure 18. Map of South-East Asia overlaid with citizen science records since 2000 of all hirundine species (pink squares; from GBIF 2023), and all major rivers and lakes; the gold star denotes the type locality (Bueng Boraphet) of White-eyed River Martin *Pseudochelidon sirintarae*.

ISSN-2513-9894 (Online)

PDR (where citizen science coverage is poorest in South-East Asia), an extensive series of surveys to inform the then-nascent protected area network in the 1990s (many of them repeated since) failed to find it or even stir claims of the species (e.g., Thewlis *et al*. 1998, Duckworth *et al*. 1999, Timmins *et al*. 2024), including along the Mekong (Duckworth *et al*. 2002, Duckworth & Timmins 2013). The avifauna of Cambodia is now significantly better known than two decades ago and includes, for example, a detailed summary of its avifauna (Goes 2013) and numerous conservation programmes are now established across the country. In Myanmar, ornithological exploration was widespread during the era of colonial rule (Smythies 2001) and its major rivers, especially the Ayeyarwady, and wetlands have continued to receive frequent survey effort (e.g. Zöckler *et al*. 2020) without claims. That a bird as distinctive as White-eyed River Martin could persist in any of these countries unnoticed is, in our opinion, highly improbable.

Discussion

Of the known specimens of White-eyed River Martin, most were located, however the persistence of the holotype in the Thailand Natural History Museum could not be confirmed. The detailed original description (Thonglongya 1968a) combined with the fact that all known specimens (other than two mounts) involve the holotype and paratypes, and were presented with detailed measurements, means an identifiable trail from collection to museum exists.

Other specimens were clearly collected, or photographed alive, in the late 1960s and early 1970s, however there are poorer data associated with these. The mount at the Zoological Park Organization is almost certainly a composite of the two birds from Dusit Zoo, but the mounts (either one or two) that are or were at the Chulalongkorn University Museum of Zoology should be examined in detail.

The newly discovered photographs at NHMUK, and those in McClure (1969), represent significant findings. They show the tail-streamers in much greater detail than the four previously published photographs (Tobias 2000) and represent the best images of this species.

Since no publication dedicated to White-eyed River Martin has been published for more than 20 years (Tobias 2000, Collar *et al*. 2001), it is only natural that we should comment on the probability of the species' persistence and our own speculation as to the causal factors of two peculiar circumstances in its history: (1) why it took so long to be discovered; and (2) what caused its near-immediate disappearance.

Tobias (2000) mentioned that '[the] feet and claws of *sirintarae* are unusually large and robust for an aerial feeder and…[African and White-eyed River Martins]…have different toe proportions which might suggest dissimilar nesting habits', referencing P. C. Rasmussen (*in litt*). In Collar *et al*. (2001), this became '[however], distinct differences in foot and toe morphology … suggest that the White-eyed River Martin might not burrow'. In contrast, our own comparison of the NHMUK White-eyed River Martin with three African River Martin specimens found their foot and toe morphology to be broadly similar, and in our view certainly does not vary sufficiently to speculate on differences in nesting behaviour given their otherwise obvious similarity and relatedness.

Unlike most hirundines, African River Martin nests on sandbars and gentle slopes, and burrow downwards (i.e. not in/on steep banks). It congregates in sparingly distributed, very dense colonies (Sineux & Boussamba 2023 estimated a colony of 1,600–1,800 adults on only 450 m^2 of beach; see their fig. 1) that are inevitably vulnerable to anthropogenic threats. If White-eyed River Martin had a similar nesting ecology, it is not difficult to imagine how an

ISSN-2513-9894 (Online)

already small population may have been extirpated rapidly from South-East Asia's heavily degraded river systems, which are among the most modified in the world (Dugeon 1992).

Over the past century South-East Asia's rivers have been almost totally transformed, with no stretch escaping significant modification and disturbance. Concomitant has been local and regional extinctions of several bird species, among them sandbar/sandbank nesters including the total loss of Black-bellied Tern *Sterna acuticauda* and Indian Skimmer *Rynchops albicollis* from the Mekong and its tributaries, and significant declines in others such as River Tern *Sterna aurantia*, River Lapwing *Vanellus duvaucelii* and Great Thick-knee *Esacus recurvirostris*. Similarly, the species could conceivably have bred along any of the four rivers that support sandbars in northern Thailand. Two of these (the Ping and Nan) are now modified by major hydroelectric dams, and all four have been anthropogenically transformed via dredging, sedimentation and widespread disturbance and clearance of bank-side forests (P. D. Round *in litt*. 2024). While some of these were surveyed by Thonglongya after the river martin's discovery, his searches were by no means comprehensive, took place after the rains had started (May–June) and he did not cover the Ping at all (which already had a major dam that had inundated a large and biodiverse stretch of river; P. D. Round *in litt*. 2024).

Notwithstanding uncertainty over nesting habitats, by the time of its discovery, White-eyed River Martin must surely have already been scarce and highly localised to evade detection for so long, since most plausible parts of its range were relatively well-explored ornithologically and for such a distinctive species to have been simply overlooked seems unlikely. Any attempt to predict the species' distribution, breeding ecology and probable demise is ultimately entirely speculative and wholly frustrating, with almost every possible hypothesis contestable with information that renders it in some way implausible. Future work should aim to consolidate and quantify citizen science effort, as well as other surveys that could reasonably have detected the species, to apply to the extinction probability framework endorsed by IUCN (Akçakaya *et al*. 2017, Keith *et al*. 2017, Thompson *et al*. 2017) to determine whether White-eyed River Martin is still appropriately listed as Critically Endangered, or if it might—as we suspect—be better considered Critically Endangered (Possibly Extinct) or Extinct.

Acknowledgements

We thank W. Sanguansombat and C. Suwannakunpaisan (THNHM), C. Milensky (USNM) and P. Sweet (AMNH) for photographs and details of specimens in their care. J. Jackson photographed material at NHMUK, where K. Rooke provided access to the archives. We are also indebted to N. Collar (BirdLife International) for providing material used in compiling the species account for *Threatened birds of Asia*, D. Hemprich-Bennett for assistance with references, Vanessa Claire Powell (Macaulay Library) for her assistance obtaining the files used in Fig. 11, and P. D. Round for numerous discussions and details of his conversations with members of the 1968 team. B. Siriaroonrat and K. Sutasha provided valuable details about the former Dusit Zoo specimens. Comments from P. D. Round and J. W. Duckworth improved this manuscript.

References:

Akçakaya, H. R., Keith, D. A., Burgman, M., Butchart, S. H. M., Hoffmann, M., Regan, H. M., Harrison, I. & Boakes, E. 2017. Inferring extinctions III: a cost-benefit framework for listing extinct species. *Biol. Conserv*. 214: 336–342.

Anon. 1971. Black cygnets born at Dusit Zoo. *Bangkok Post* 7 February 1971: 2.

Anon. 1990. White-eye River Matrin [*sic*]. *Wildl. Fund Thailand Bull*. July: 1.

Anon. 2008. Searching for the Critically Endangered White-eyed River-Martin in Cambodia. *Barbet* 28: 41–42.

BirdLife International. 2022. Species factsheet: *Pseudochelidon sirintarae*. http://www.birdlife.org (accessed 30 March 2023).

BirdLife International. 2023. Important Bird Areas factsheet: Bung Boraphet (TH030). http://www.birdlife.org (accessed 30 March 2023).

Collar, N. J., Andreev, A. V., Chan, S., Crosby, M. J., Subramanya, S. & Tobias, J. A. 2001. *Threatened birds of Asia*. BirdLife International, Cambridge, UK.

ISSN-2513-9894 (Online)

Dickinson, E. C. 1986. Does the White-eyed River-Martin *Pseudochelidon sirintarae* breed in China? *Forktail* 2: 95–96.
Dickinson, E. C., Dekker, R. W. R. J., Eck, S. & Somadikarta, S. 2001. Systematic notes on Asian birds. 14. Types of the Hirundinidae. *Zool. Verh. Leiden* 335: 145–166.
Duckworth, J. W. & Timmins, R. J. 2013. Birds and large mammals. Pp. 50–94, 184–207 *in* IUCN (ed.) *Ecological survey of the Mekong River between Louangphabang and Vientiane Cities, Lao PDR, 2011–2012*. IUCN, Vientiane.
Duckworth, J. W., Salter, R. E. & Khounboline, K. (eds.) 1999. *Wildlife in Lao PDR: 1999 status report*. IUCN-The World Conservation Union, Wildlife Conservation Society & Centre for Protected Areas and Watershed Management, Vientiane.
Duckworth, J., Alström, P., Davidson, P., Evans, T., Poole, C., Setha, T. & Timmins, R. 2001. A new species of wagtail from the lower Mekong basin. *Bull. Brit. Orn. Cl*. 121: 112–142.
Duckworth, J. W., Davidson, P., Evans, T. D., Round, P. D. & Timmins, R. J. 2002. Bird records from Laos, principally the upper Lao/Thai Mekong and Xiangkhouang Province, in 1998–2000. *Forktail* 18: 11–44.
Dugeon, D. 1992 Endangered ecosystems: a review of the conservation status of tropical Asian rivers. *Hydrobiologia* 248: 167–191.
Government of Thailand. 2019. *Wild animal conservation and protection act B.E. 2562*. Bangkok.
IUCN. 1979. *Conservation for Thailand: policy guidelines,* vols. 1 & 2. International Union for Conservation of Nature and Natural Resources, Morges.
Judell, D. 2006. Investigating a possible sighting of White-eyed River-Martin. https://www.thaibirding.com/news/news_wermdoug.htm.
Keith, D. A., Butchart, S. H. M., Regan, H. M., Harrison, I., Akçakaya, H. R., Solow, A. R. & Burgman, M. A. 2017. Inferring extinctions I: a structured method using information on threats. *Biol. Conserv*. 214: 320–327.
King, B. & Kanwanich, S. 1978. First wild sighting of the White-eyed River-Martin, *Pseudochelidon sirintarae*. *Biol. Conserv*. 13: 183–185.
King, W. B. 1979. *Endangered birds of the world: the ICBP Bird Red Data book,* vol. 2. International Union for Conservation of Nature and Natural Resources, Moges.
Lekagul, B., Dobias, R. J., Melville, D. S. & Round, P. D. 1980. A search for the White-eyed River-Martin *Pseudochelidon sirintarae* at Bung Borapet, central Thailand. Unpubl. report. Association for the Conservation of Wildlife, Bangkok.
Lueawattanawan, P. & Sukhonthaman, J. 1992. [24 years ago: the day someone 'found' the Princess Bird, the first in the world]. *Khaosod*, Bangkok, 27 May 1992. (In Thai.)
McClure, H. E. 1969. *Migratory animal pathological survey annual progress report 1968*. US Army Research & Development Group, Far East, San Francisco.
Natural History Museum Archives. 1968. *DF ZOO/230/122/130, Department of Zoology, Bird Section Correspondence, Thonglongya, K.* Trustees of the Natural History Museum, London.
Ogle, D. 1986. The status and seasonality of birds in Nakhon Sawan Province, Thailand. *Nat. Hist. Bull. Siam Soc*. 34: 115–143.
Parkes, K. C. 1987. Letter. Was the 'Chinese' White-eyed River-Martin an Oriental Pratincole? *Forktail* 3: 68–69.
Pilgrim, J. 2008. Searching for the Critically Endangered White-eyed River-Martin in Cambodia. *Barbet* 24/25: 37.
Round, P. D. 1990. Bird of the month - White-eyed River-Martin. *Bangkok Bird Cl. Bull*. 7: 10–11.
Schneider, C. A., Rasband, W. S. & Eliceiri, K. W. 2012. NIH Image to ImageJ: 25 years of image analysis. *Nature Meth*. 9: 671–675.
Sineux, L. & Boussamba, F. 2023. A colony of African River Martins *Pseudocelidon eurystomina* near Libreville, Gabon, with notes on the species' biology. *Bull. Afr. Bird Cl*. 30: 168–181.
Smythies, B. E. 2001. Birds of Burma. Fourth edn. Natural History Publications, Kota Kinabalu.
Sophasan, S. & Dobias, R. 1984. The fate of the "Princess Bird," or White-eyed River Martin (*Pseudochelidon sirintarae*). *Nat. Hist. Bull. Siam Soc*. 32: 1–10.
Sutasha, K. 2016. Princess Sirindhorn's bird. *Bird Conserv. Soc. Thailand Bull*. 33: 24–25.
Thewlis, R. M., Timmins, R. J., Evans, T. D. & Duckworth, J. W. 1998. The conservation status of birds in Laos: a review of key species. *Bird Conserv. Intern*. 8 (Suppl.): 1–159.
Thompson, C. J., Koshkina, V., Burgman, M. A., Butchart, S. H. M. & Stone, L. 2017. Inferring extinctions II: a practical, iterative model based on records and surveys. *Biol. Conserv*. 214: 328–335.
Thonglongya, K. 1968a. A new martin of the genus *Pseudochelidon* from Thailand. *Thai Natl. Sci. Pap. Fauna Ser*. 1: 1–10.
Thonglongya, K. 1968b. Report on work of MAPS survey team for period 1 September 1967 to 31 July 1968. Report No. 3. Research Project No. 24/1 Migration studies of birds in Thailand. Applied Scientific Research Corporation of Thailand, Bangkok.

ISSN-2513-9894 (Online)

Thonglongya, K. 1969. Report on an expedition in northern Thailand to look for breeding sites of *Pseudochelidon sirintarae* (21 May to 27 June 1969). Report No. 4. Research Project No. 24/1 Migration studies of birds in Thailand. Applied Scientific Research Corporation of Thailand, Bangkok.

Timmins, R. J., Duckworth, J. W., Piot, B., Eaton, J. A. & Berryman, A. J. 2024. Birds. *Wildlife in Lao PDR: 2023 status report*. Wildlife Conservation Society, Vientiane.

Tobias, J. A. 2000. Little known Oriental bird: White-eyed River-Martin. *Oriental Bird Cl. Bull*. 31: 44–48.

Treesucon, U. & Limparungpatthanakij, W. 2018. *Birds of Thailand*. Lynx Edicions, Barcelona.

Turner, A. & Sharpe, C. J. 2020. African River Martin (*Pseudochelidon eurystomina*), version 1.0. *In* del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.afrmar2.01 (accessed 30 March 2023).

Zöckler, C., Ngwe Lin, Thant Zin Tun, Pfützke, S., Momberg, F., van der Ven, J. & Delany, S. 2020. Surveys of riverine birds along the Ayeyarwady River in 2017–2019 and conservation implications. *Forktail* 36: 1–15.

Addresses: Alexander L. Bond, Bird Group, Natural History Museum, Akeman Street, Tring, Herts. HP23 6AP, UK, e-mail: a.bond@nhm.ac.uk. Alex J. Berryman, BirdLife International, David Attenborough Building, Pembroke Street, Cambridge, CB2 3QZ, UK.

ISSN-2513-9894 (Online)