Raptors MOU Site Network Analysis for threatened and near-threatened migratory raptor species in Africa-Eurasia

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List of Abbreviations:

CMS: Convention on Migratory Species
IBA: Important Bird and Biodiversity Area
IUCN: International Union for Conservation of Nature
KBA: Key Biodiversity Area
MOS: Meeting of Signatories
MOU: Memorandum of Understanding
OECM: Other Effective Area-based Conservation Measures
SPA: Special Protection Area
TAG: Technical Advisory Group
CR: Critically Endangered
EN: Endangered
VU: Vulnerable
NT: Near Threatened
LC: Least Concern

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1. Background

1.2 Overview of approach

This report aims to extend the pilot analysis to all species listed in Category 1 of Annex 3, Table 1 of the Raptors MOU (section 2.1.1) and the analysis was based on the datasets from 2024-2025.

- The approach includes a literature review (section 2.1.2) to determine whether each species displays congregatory behaviour at different stages of its annual cycle. To identify major gaps in the current MOU site network, the sites listed in the List of Sites (Raptors MOU Table 3) were overlaid with BirdLife range maps (section 2.1.3 and information on congregatory behaviour was used to assess whether apparent gaps were genuine or may reflect annual cycle stages during which the species does not congregate and is therefore unlikely to meet global thresholds of international importance (see section 2.1.1). This may indicate that site-based conservation is less appropriate for supporting the species during those stages.
- As with the pilot analysis, identifying genuine gaps for Category 1 species the analysis focused on identifying parts of the range and annual cycle where the species congregated in numbers that would meet thresholds of international importance[1].
- Areas already delineated and documented to support internationally important numbers of a Raptors MOU Annex 1 migratory raptor species within the geographic extent of the MOU, but not currently on the List of Sites were identified as a contribution towards future gap-filling. New qualifying species occurring in internationally important numbers at existing sites already on the Raptors MOU List of Sites were also identified (section 2.2) and UNEP/CMS/RAPTORS/MOS4/Doc.14.4 provides details of the additional qualifying populations alongside the new sites for consideration.
- Towards further future identification of sites that could fill gaps, three approaches were used (section 2.3):
    - *Literature review* -A rapid literature review was conducted to help identify sites that could potentially support internationally important numbers of Category 1 species (section 2.3.1).
    - *eBird count data* -Furthermore, to test what citizen science data might be able to contribute[2], for 12 Category 1 species (Table 1) with relatively few sites listed on the List of Sites eBird count data[3] were used to identify areas with internationally important counts outside known sites already identified for these species in the List of Sites or known IBA/KBAs or (section 2.3.2).

[1] IBA criteria provide a standardised means of assessing international importance, referred to in the header to Raptors MOU Table 3 List of Sites https://raptors.cms.int/agreement-text-0 and KBAs are the approach now used in some countries.

[2] Noting that there are other citizen science platforms that could be explored in future.

- *eBird abundance estimates* -For a subset of the Category 1 species for which this information was available, modelled eBird abundance maps were used to identify areas outside the current List of Sites with the highest estimated abundance where site identification/survey efforts could potentially be prioritised. These data were only available for 17 out of the 31 Category 1 species (section 2.3.3).

1. Methods

2.1 Identifying gaps in the List of Sites for individual Category 1 species

The methods detailed here broadly replicated those trialled in the pilot analysis (UNEP/CMS/Raptors/MOS3/Doc.12.2.) but included some enhancements and are described below.

2.1.1 Species selection

This report covers all species in Table 1 Category 1 in Annex 3 of the Raptor MOU (see Table 1). Data on population sizes and the number of individuals and pairs that meet global criteria of international importance for a species can be found in the Annex, Table S1).

Table 1. List of species in Category 1 of Table 1, Annex 3 of the Raptors MOU. The most recent IUCN Red List status for each species is also provided along with the availability of eBird abundance data.

Common name	Scientific name	Global IUCN Red List Status	eBird count data used	eBird modelled abundance available and used?
Bearded vulture	Gypaetus barbatus	NT	Yes	Yes
Egyptian vulture	Neophron percnopterus	EN	No	Yes
Beaudouin's snake-eagle	Circaetus beaudouini	VU	No	No
Red-headed vulture	Sarcogyps calvus	CR	Yes	No
White-headed vulture	Trigonoceps occipitalis	CR	Yes	Yes
Hooded vulture	Necrosyrtes monachus	CR	Yes	Yes
Himalayan griffon	Gyps himalayensis	NT	No	Yes*
White-rumped vulture	Gyps bengalensis	CR	No	No
White-backed vulture	Gyps africanus	CR	Yes	Yes
Indian vulture	Gyps indicus	CR	No	No
Slender-billed vulture	Gyps tenuirostris	CR	No	No

Cape vulture	Gyps coprotheres	VU	No	Yes
Rüppell's vulture	Gyps rueppelli	CR	Yes	No
Cinereous vulture	Aegypius monachus	NT	No	Yes
Lappet-faced vulture	Torgos tracheliotos	EN	Yes	Yes
Mountain hawk-eagle	Nisaetus nipalensis	NT	No	Yes
Greater spotted eagle	Clanga clanga	VU	No	Yes*
Tawny eagle	Aquila rapax	VU	Yes	Yes
Steppe eagle	Aquila nipalensis	EN	Yes	Yes
Spanish imperial eagle	Aquila adalberti	VU	No	Yes
Eastern imperial eagle	Aquila heliaca	VU	No	Yes*
Black harrier	Circus maurus	EN	No	No
Pallid harrier	Circus macrourus	NT	No	Yes*
Pallas's fish-eagle	Haliaeetus leucoryphus	EN	No	No
Steller's sea-eagle	Haliaeetus pelagicus	VU	No	No
Forest buzzard	Buteo trizonatus	NT	No	No
Red-footed falcon	Falco vespertinus	VU	Yes	Yes*
Scissor-tailed kite	Chelictinia riocourii	VU	Yes	No
Sooty falcon	Falco concolor	VU	No	No
Saker falcon	Falco cherrug	EN	No	No
Snowy owl	Bubo scandiacus	VU	No	No

** Modelled eBird abundance was available only from an earlier 2021 model. All other species were modelled using 2023 data.*

2.1.2 Rapid literature review of congregatory behaviour for Category 1 species

A rapid literature review was conducted to understand and document the congregatory behaviour of each species at different stages of their annual cycles and the numbers typically involved in such congregations. This allowed assessment of whether the species was likely to be able to meet criteria of international importance such as global Criterion A1 for threatened species at Important Bird and Biodiversity Areas (IBAs) or global Criterion A4. The numbers required to meet these criteria depend upon the conservation status of the species, the more highly threatened a species is, the fewer individuals are required to meet thresholds of international importance. For a site to qualify under criterion A1 it must support:

- at least 15 individuals or 5 pairs of a Critically Endangered or Endangered species with a global population of >1,500 individuals, or
- at least 1 individual of a Critically Endangered or Endangered species with a global population of 1,500 individuals or fewer, or
- 30 individuals or 10 pairs of a species classified as Vulnerable, or
- >95% of the global population of any Critically Endangered or Endangered species for at least one life history segment (e.g. breeding, passage or non-breeding).

For a site to trigger criterion A4 it must hold:

- congregations of ≥1% of the global population of one or more species on a regular or predictable basis.

In reality, criterion A1 is usually a lower threshold for threatened species.

Overall, the information on congregatory behaviour was used to assess whether gaps in the current Raptors MOU List of Sites were genuine or could be explained by the species not congregating during that annual cycle stage. In the case of Critically Endangered and Endangered species even small congregations could potentially meet criteria so this review also helped identify priority geographic areas and stages of the annual cycle for potential site identification for these highly threatened species.

A useful future development might be to also identify additional gaps in sites of international importance using regional-level IBA/ KBA criteria as the threshold to assess congregatory behaviour against.

2.1.3 Overlaying Category 1 species' sites from the List of Sites with species ranges

Each site listed in the List of Sites of the Raptors MOU is associated with a list of qualifying migratory birds of prey for which it is considered internationally important. The List of Sites currently comprises a mixture of IBAs, Special Protection Areas (SPAs) designated under the European Union Birds Directive, and a small number of other sites recognized by Signatories as also meeting thresholds of international importance.

Most of the sites on the List of Sites thus have defined boundaries, although a small number are represented only by point locations[4]. Different site types on the List of Sites can sometimes overlap spatially. Therefore in cases where significant overlap between two sites of different types would have led to over-estimation of how comprehensive the site network represented by the List of Sites was for the species, the sites were grouped and only one of the two sites contributed to the analysis[5]. This enabled the analysis to focus on how the site network is delivering functionally for a species.

For each Category 1 species, BirdLife's species distribution maps were plotted, which include all stages of the annual cycle and other categories of distribution: Native Breeding, Native Non-breeding, Passage, Native Resident, Extinct, Possibly Extinct, and Reintroduced[6]. Then the relevant sites from the List of Sites were overlaid onto each species' distribution map and it was recorded whether site polygon boundaries intersected the mapped range or not

[4] Some sites on the List of Sites require update to ensure they match with a current entity with spatial information and this is further discussed in UNEP/CMS/RAPTORS/MOS4/Doc.14.4.
[5] The threshold used for this process was 50% or more geographical overlap.
[6] These terms are further explained here: https://datazone.birdlife.org/about-our-science/terms-and-definitions#presence-origin-and-seasonality

and how many sites fell within each distribution category. This approach has been slightly adapted from the pilot analysis where points for the centre of each site were used instead of the site boundaries, because for larger sites, the furthest extent of the site may lie far from the centre point. Therefore in this analysis site boundaries were used and points were used only for sites without a boundary. Instances where sites fell outside the current distribution maps may reflect differences in the age or sources of data. For example, a species may have recently declined or disappeared from a site, but if the site has not been monitored in recent years, this loss may not yet be reflected in the site's species list.

The information on congregatory behaviour was used to assess whether apparent gaps were genuine or may reflect annual cycle stages during which the species does not congregate and is therefore unlikely to meet global thresholds of international importance This may indicate that site-based conservation is less appropriate for supporting the species during those stages.

A genuine gap was identified where there were few or no sites for the species on the List of Sites in a part of the range used by the species during a life history stage in which the species has been demonstrated to congregate in internationally important numbers.

2.2 Identifying candidates for the List of Sites already documented to meet global thresholds of international importance

Some information is already available on identified, delineated and documented areas within the MOU's geographic extent supporting internationally important numbers of Raptors MOU Annex 1[7] migratory raptors (including those in Category 1) that could be proposed as additions to the List of Sites or where new qualifying populations could be added to existing sites on the List of Sites. UNEP/CMS/RAPTORS/MOS4/Doc.14.4 (in particular Annex A) provides details for consideration country by country. Since the pilot site network analysis some countries have identified Key Biodiversity Areas (KBAs). An evolution from the IBA approach, KBAs are sites of global significance for the persistence of all biodiversity and recognise international importance of areas for multiple taxa including birds. Annex A of Doc 14.4 includes both IBAs and KBAs for migratory raptors.

Doc. 14.4 Annex A also includes those internationally important sites identified for steppe eagle in the recent Global Action Plan[8] which are listed in Table S3 to this current document).

[7] https://raptors.cms.int/agreement-text-0
[8] https://raptors.cms.int/steppe-eagle-global-action-plan

2.2 Identifying areas with partial information in need of further review/ survey

TAG have reviewed some sources that provide information to suggest areas that could meet thresholds of international importance, but further surveys might be required to confirm this. Signatories may have additional sources of information relevant to identifying additional sites.

There remain significant disparities in observer coverage of different regions and further sources could be reviewed by TAG in future including to try and address such biases in information.

Information from the three sources considered could indicate sites Signatories could consider adding to the List of Sites.

The information sources below were compared only with global thresholds of international importance (in particular global IBA Criterion A1) and it could be a useful development in future for TAG to consider which further areas might meet regional thresholds of international importance.

2.3.1 Rapid literature review of internationally important sites for Category 1 species

A rapid literature review for Annex 3, Table 1 Category 1 species was conducted to identify areas where numbers of individuals have been reported in the literature from 2015 onwards that would meet thresholds of international importance under global IBA Criterion A1 (Table 2). This included breeding sites, non-breeding sites, and migration corridors identified based on observation or tracking data. For each study, the species, site name, country, number of individuals recorded, date range of observations, type of data (observations or tracking data), and stage (breeding, passage or non-breeding) were recorded (Annex Table S2).

These areas could potentially be considered by Signatories for adding to the List of Sites or for further survey to confirm their international importance.

2.3.2 Potential sites of international importance for Category 1 species based on eBird count data

The approach used in the pilot site network analysis was extended as a test of what citizen science information might be able to add to understanding of internationally important sites. In this case the repository reviewed was eBird, but it is acknowledged that there are several other sources of such data which could be investigated by TAG in future.

For 11 out of 31 Annex 3, Table 1 Category 1 species (Table 1) with few sites listed for them either on the List of Sites or in the IBA/KBA dataset, maps of internationally important eBird counts were produced.

Raw count data per species were obtained from eBird[9] and compared with the global IBA Criterion A1 threshold for each species (Table 2) so that only records exceeding thresholds of international importance were retained. These retained count locations were then overlaid with sites from the List of Sites and existing IBA/KBA boundaries, and areas with eBird counts indicating potential new qualifying species at existing sites were identified. Records of internationally important numbers of a Category 1 species outside the List of Sites and outside existing IBA/KBAs were also identified. These areas could potentially be considered by Signatories for adding to the List of Sites or for further survey to confirm their international importance.

2.3.3 Overlaying List of Sites and eBird species abundance maps for Category 1 species

For a subset of species where eBird estimated abundance data were available (see Table 1), data from the eBird Status and Trends dataset were overlaid with the List of Sites to allow the visual identification of high abundance areas outside the current site network.

The current eBird Status Data Products estimate the full annual cycle distributions, relative abundances, and habitat associations for 2,980 species for the year 2023. These are freely available online through the eBird website (https://science.ebird.org/en/status-and-trends). For each species, distribution and abundance estimates are available across a regular 3 km by 3 km square grid of cells covering the globe. Variation in detectability associated with the search effort is controlled by standardizing the estimates as the expected occurrence rate and count of the species on a 1 hour, 2 km checklist by an expert eBird observer at the optimal time of day and with optimal weather conditions for detecting the species. Full details of the approach used to produce the eBird abundance maps and other products are described by Fink et al. (2023).

For each species where eBird Status and Trends data were available (see Table 1) 27 km resolution seasonal mean abundance rasters and corresponding eBird range polygons were downloaded. To ensure comparability across different species and stages of the annual cycle, these raster layers were standardized such that the values in each grid cell represented the proportion of the species' total global relative abundance occurring in that cell during a particular season. Following this normalization, the seasonal rasters were combined by selecting, for each grid cell, the highest standardised abundance value observed across all seasons. For several species, eBird classified them as residents, meaning only a single year-

[9] https://ebird.org

round relative abundance layer was available, and thus the step of combining seasonal layers was unnecessary. This approach produced a single composite map that highlights the maximum standardised abundance of the species throughout the year, capturing peak seasonal distributions while maintaining a consistent scale.

To ensure spatial relevance, rasters were cropped using both the eBird species range and the geographical scope of the Raptors MOU. Resolution was increased to 54 km for species whose distributions spanned multiple continents to enhance spatial detail, and rasters were reprojected to a common coordinate reference system. To highlight areas of low density from zero predicted abundance, non-zero abundance values were separated from zero predicted abundance into two separate layers for plotting.

The resulting eBird abundance surfaces were intersected with List of Sites to visualize the overlap between high abundance areas and the existing List of Sites. In areas where genuine gaps in the site network were identified, this analysis highlighted regions of high abundance where identifying new sites could encompass the greatest number of individuals. The eBird abundance surfaces were also intersected with the BirdLife species range to highlight differences between the eBird range and the BirdLife range. Sometimes the differences between the ranges corresponds to low density areas involving a trivial number of individuals, but in other cases it is likely that areas are missing from the eBird range because they could not be modelled due to a lack of eBird checklists; this is a particular problem for West Africa for example. Areas classified by eBird as “Modelled Area (0 abundance)” had sufficient data coverage but were assigned zero relative abundance, indicating that the species was predicted to be absent or present only at levels too low for the model to estimate.

This work identified some high estimated abundance areas (for the subset of Category 1 species for which this information is available) outside the existing List of Sites or IBAs/ KBAs known for the species. These areas could be potential target areas for future surveys to identify new sites of international importance which could be proposed by Signatories to be added to the List of Sites.

All methods outlined above can make a contribution towards ensuring the List of Sites is as comprehensive as possible for Category 1 species.

3. Results

3.1 Identifying gaps in the List of Sites for Category 1 species

3.1.1. Rapid literature review of congregatory behaviour for Category 1 species

The results of the literature review on the congregatory behaviour of Category 1 species can be found in Table 2. This includes the outcome of the review, the maximum observed

congregations, and assessment of whether congregations are regularly above the threshold to trigger a site as being internationally important under global IBA criterion A1.

Overall, 18 species are congregatory for at least one stage of the annual cycle, 8 are rarely congregatory often only congregating under specific environmental conditions without regular patterns and 5 are not typically congregatory.

Although congregatory behaviour was categorised into three discrete classes in Table 2, it is important to note that such behaviour exists on a continuum. Species can exhibit varying degrees of congregatory behaviour depending on the specific activity and stage of their annual cycle as well as ecological and environmental factors. Importantly many of the references that report congregation numbers across species are quite old. For species where the global population has been declining rapidly this may mean that the maximum congregation sizes reported in the literature no longer occur. However, for such species it is still useful to consider the numbers in which they use to congregate as an indication of the behavioural tendency of the species.

Table 2. Results of a literature review on the congregatory behaviour of Category 1 raptors listed on the Raptors MOU. IBA A1 Threshold relates to the number of individuals required to meet thresholds of international importance for a given species under global IBA criterion A1.

Species	Global IBA criterion A1 Threshold (individuals)	Description of congregatory behaviour	Maximum congregation identified in the literature reviewed	Reported occurring in numbers above the Global IBA A1 threshold?
Bearded vulture	42	Rarely congregatory	**20** (Ferguson-Lees & Christie 2001)	No
Egyptian vulture	15	Congregatory (non-breeding only)	**1,171** (Chhangani 2009)	Yes
Beaudouin's snake-eagle	30	Not Congregatory	NA	No
Red-headed vulture	15	Rarely congregatory	**20** (Naoroji 2006)	Occasionally*
White-headed vulture	15	Rarely congregatory	**8** (Ferguson-Lees & Christie 2001)	No
Hooded vulture	15	Congregatory year round	**200** (Ferguson-Lees & Christie 2001)	Yes
Himalayan griffon	2,000	Congregatory year round	**100** (Lu et al. 2009)	No
White-rumped vulture	15	Congregatory year round	**100** (Ferguson-Lees & Christie 2001)	Yes
White-backed vulture	15	Congregatory year round	**40** (Ferguson-Lees & Christie 2001)	Yes

Indian vulture	15	Congregatory year round	**30** (Ferguson-Lees & Christie 2001)	Yes
Slender-billed vulture	1	Congregatory (non-breeding only)	**35** (Hille et al. 2016)	Yes
Cape vulture	30	Congregatory year round	**900** (Ferguson-Lees & Christie 2001)	Yes
Rüppell's vulture	15	Congregatory year round	**2,000** (Ferguson-Lees & Christie 2001)	Yes
Cinereous vulture	198	Congregatory (breeding only)	**672** (Moreno-Opo et al. 2010)	Occasionally*
Lappet-faced vulture	15	Rarely congregatory	**50** (Ferguson-Lees & Christie 2001)	Occasionally*
Mountain hawk-eagle	40	Not Congregatory	NA	No
Greater spotted eagle	30	Rarely Congregatory	**10** (Ferguson-Lees & Christie 2001)	No
Tawny eagle	30	Rarely congregatory	NA	No
Steppe eagle	15	Congregatory (non-breeding & passage only)	**310** (Decandido et al. 2013); 1,000 (Boland & Alsuhaibany 2020); 4,900 https://osme.org/2019/11/globally-important-number-of-steppe-eagles-discovered-in-saudi-arabia/	Yes
Spanish imperial eagle	30	Rarely congregatory	NA	No
Eastern imperial eagle	30	Congregatory (passage only)	**200** (Snow & Perrins 1998)	Yes
Black harrier	1	Congregatory (non-breeding only)	**30** (Walton 2013)	Yes
Pallid harrier	240	Congregatory (non-breeding and passage only)	**600** (Clarke et al. 1998)	Occasionally*
Pallas's fish-eagle	15	Not congregatory	NA	No
Steller's sea-eagle	30	Congregatory (non-breeding only)	**2,000** (Ferguson-Lees & Christie 2001)	Yes
Forest buzzard	37	Not Congregatory	NA	No
Scissor-tailed kite	30	Congregatory year round	**36,000** (Pilard et al. 2011)	Yes
Red-footed falcon	30	Congregatory year round	**100,000** (Palatitz 2019)	Yes

Sooty falcon	30	Congregatory (breeding only)	**200** (Ferguson-Lees & Christie 2001)	Yes
Saker falcon	15	Not congregatory	NA	No
Snowy owl	30	Rarely Congregatory	**35** (Holt and Zetterberg 2008)	Occasionally*

* Although the species is congregatory, it only meets the threshold when larger congregations form and these are infrequent.

3.1.2 Overview by species

Table 3 below summarizes the recommendations for each Category 1 species in the species accounts that follow. Within its range, a species' site coverage is classified as sufficient, a genuine gap, or absent due to non-congregatory behaviour. Potential gaps in the network are highlighted where limited information on seasonal congregatory behaviour makes assessment difficult.

Table 3. The number of sites listed on the List of Sites of the Raptors MOU for each species retained after the overlap analysis (2.1.3), broken down into how many fall within each part of the range. Recommendations as to whether the sites listed in the List of Sites provide sufficient coverage for a species across the different parts of the annual cycle where the species is extant, are colour coded. These recommendations are based on the number of sites, congregatory behaviour and global conservation status.

	Range category on distribution map								
Common name	**Native resident**	**Native breeding**	**Native passage**	**Native non-breeding**	**Reintroduced**	**Possibly extant**	**Possibly extinct**	**Extinct**	**Outside range**
Bearded vulture	109	NA	NA	0	33	0	1	46	23
Egyptian vulture	41	264	271	0	NA	NA	0	5	23
Beaudouin's snake-eagle	0	NA	NA	NA	NA	NA	NA	NA	NA
Red-headed vulture	14	NA	NA	NA	NA	NA	0	NA	NA
White-headed vulture	1	NA	NA	0	NA	0	0	0	NA
Hooded vulture	1	NA	NA	0	NA	NA	0	0	NA
Himalayan griffon	29	NA	NA	0	NA	NA	NA	NA	2
White-rumped vulture	166	NA	NA	0	NA	NA	35	NA	NA
White-backed vulture	3	NA	NA	2	NA	0	0	0	NA
Indian vulture	51	NA	NA	NA	NA	NA	38	NA	6
Slender-billed vulture	52	NA	NA	NA	NA	NA	10	NA	7
Cape vulture	27	NA	NA	7	NA	NA	0	0	NA
Rüppell's vulture	4	NA	NA	3	NA	NA	0	0	NA
Cinereous vulture	126	4	2	98	13	NA	NA	19	23

Lappet-faced vulture	10	NA	NA	2	NA	0	0	1	5
Mountain hawk-eagle	0	NA	NA	NA	NA	NA	NA	NA	NA
Greater spotted eagle	NA	124	126	164	NA	NA	NA	NA	69
Tawny eagle	0	NA	NA	NA	NA	NA	NA	NA	NA
Steppe eagle	NA	11	5	1	NA	NA	NA	NA	9
Spanish imperial eagle	80	NA	9	NA	NA	NA	NA	NA	3
Eastern imperial eagle	11	195	121	80	NA	NA	NA	NA	29
Black harrier	12	NA	NA	10	NA	NA	NA	NA	NA
Pallid harrier	NA	64	142	45	NA	NA	NA	NA	19
Pallas's fish-eagle	NA	41	42	59	NA	NA	22	NA	8
Steller's sea-eagle	0	0	NA	0	NA	NA	NA	NA	NA
Forest buzzard	6	NA	NA	7	NA	NA	NA	NA	NA
Scissor-tailed kite	0	0	NA	0	NA	NA	NA	NA	NA
Red-footed falcon	NA	127	281	2	NA	NA	NA	NA	24
Sooty falcon	NA	26	10	0	NA	NA	NA	NA	8
Saker falcon	101	83	102	21	NA	NA	NA	NA	13
Snowy owl	NA	4	NA	1	NA	NA	NA	NA	NA

Colour Key

Genuine gap

Lack of sites justified by species ecology in this season

“Sufficient Sites”

Potential Gap

Below are presented species-by-species results of the gap analysis. These include an overlay for each Category 1 species of sites from the List of Sites[10] and BirdLife International species ranges, a rapid literature review of internationally important sites, potential sites of international importance based on eBird data (for some species with a poor network on the List of Sites) and e-bird modelled abundance maps (where available).

The distribution maps show the species' mapped range together with Raptors MOU sites, represented by points at the centroid of each retained site. Overlap between sites and different parts of the species' range was calculated using the full site polygons rather than the plotted centroids. As a result, a single site may overlap more than one range category, for example both breeding and non-breeding areas, and can therefore be counted in more than one bar in the accompanying bar plot while appearing only once on the map.

Maps of potential sites of international importance identified from eBird count data show the number of internationally important counts occurring outside existing IBA/KBA boundaries. They also identify IBA/KBAs where eBird counts exceed the internationally important threshold, distinguishing between sites where the focal species is or is not an IBA/KBA trigger species. Sites are additionally marked according to whether they are included on the Raptors MOU List of Sites.

The abundance maps (where available) show eBird relative abundance across the modelled range, together with the BirdLife distribution and retained Raptors MOU sites, shown by points at the centroid of each site. Areas labelled "Modelled Area (0 abundance)" had sufficient data coverage for modelling but were assigned zero relative abundance, indicating that the species was predicted to be absent or present only at levels too low for the model to estimate reliably.

Where the term 'sufficient' is used to describe the site network for a Category 1 species, this means relative to other Category 1 species being assessed. All Category 1 species for which a site-based approach is appropriate would benefit from increasing the comprehensiveness of their site networks on the List of Sites.

Disclaimer for maps: The boundaries and names shown and the designations used on the maps in this document do not imply official endorsement or acceptance by the Raptors MOU, its Signatories, or the organisations contributing to this report.

[10] After removal of one of any pair of significantly overlapping sites, as described in section 2.1.3.

Bearded vulture *(Gypaetus barbatus)* – NT

BirdLife International Species Factsheet

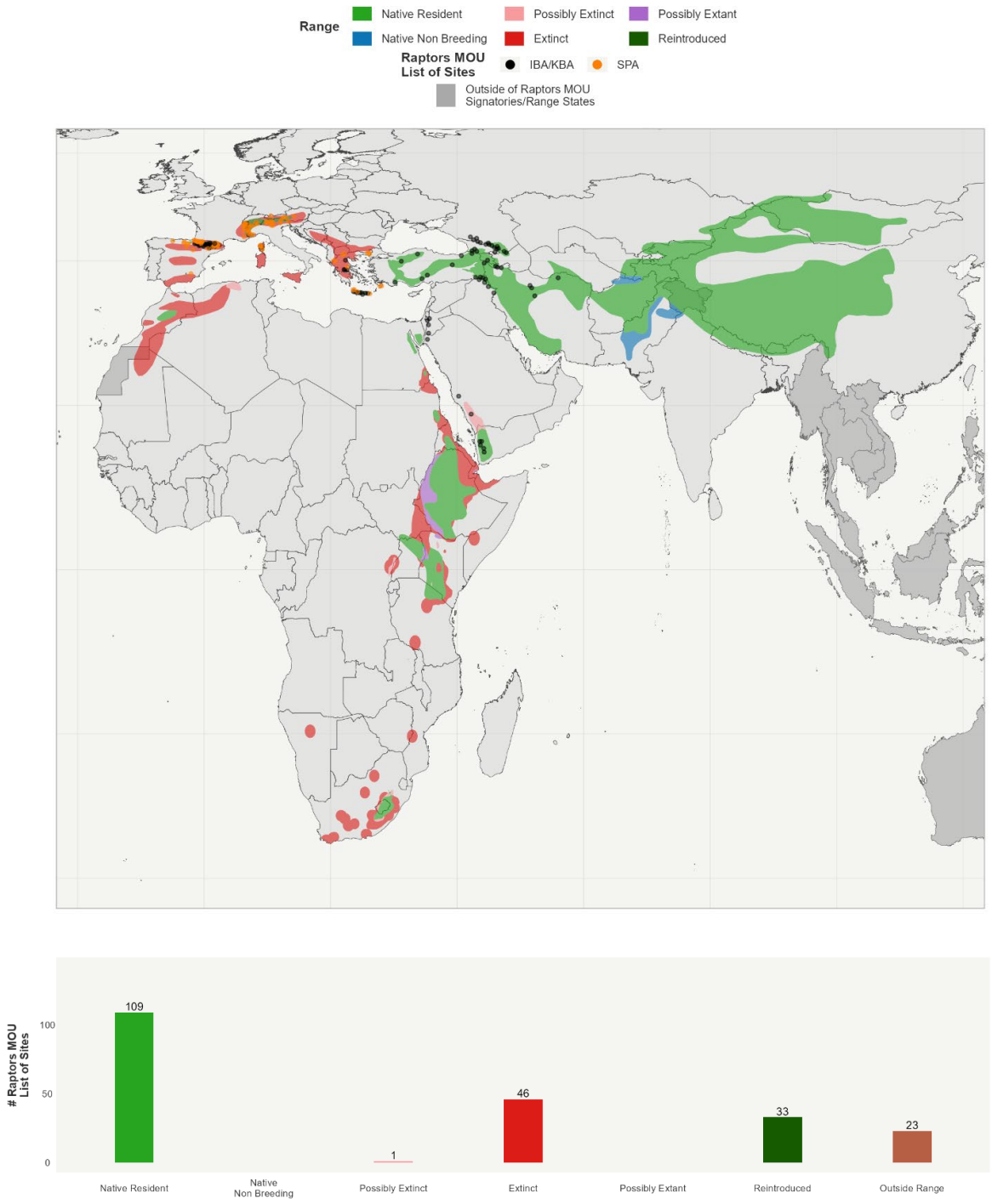


Fig 1. Bearded vulture range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

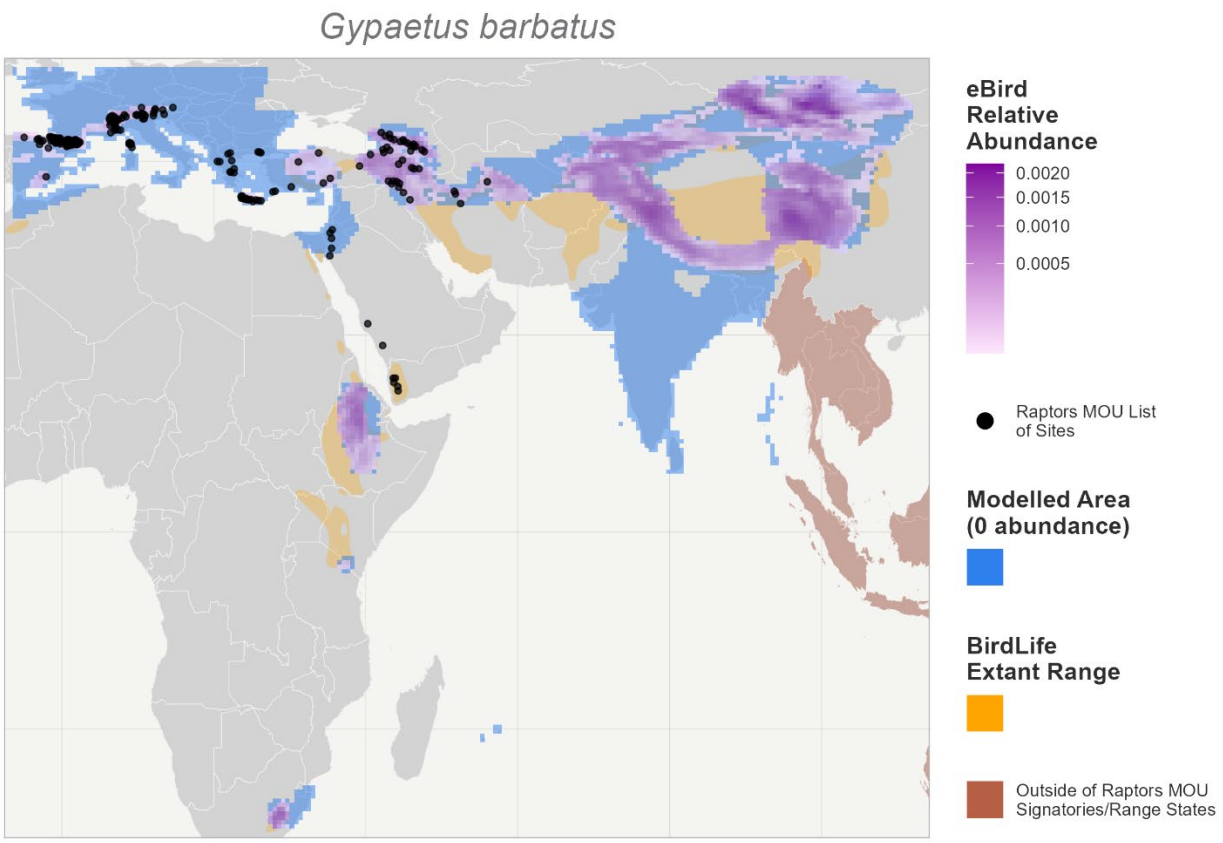


Fig 2. Bearded vulture eBird modelled abundance and Raptors MOU List of Sites.

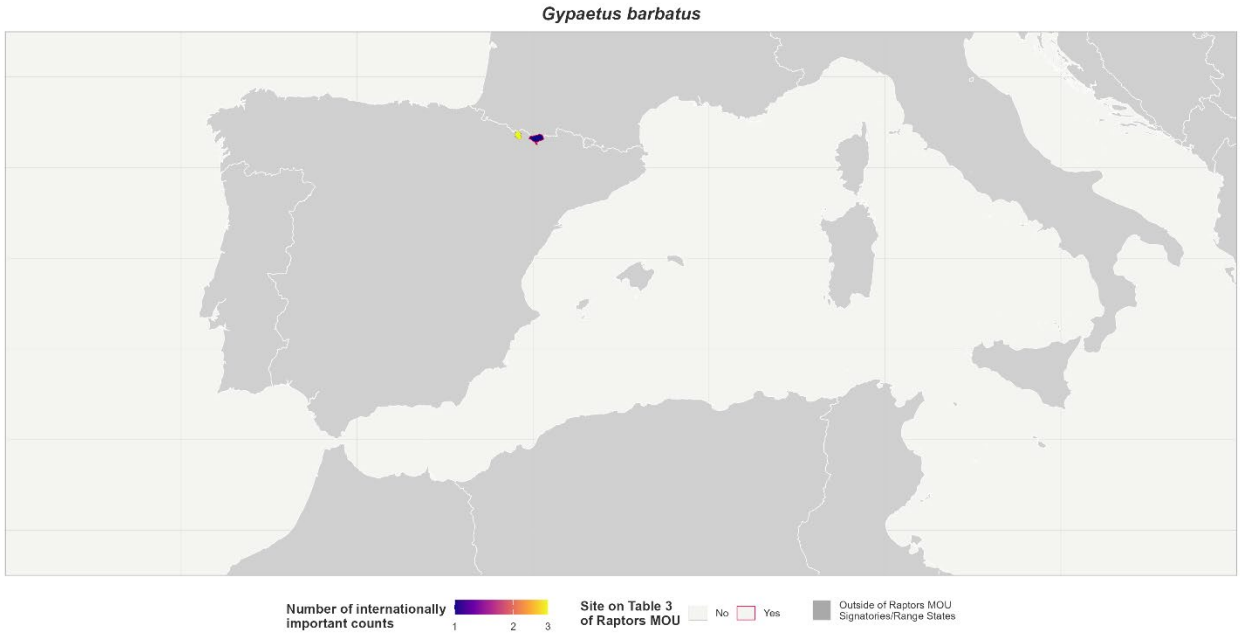


Fig 3. Internationally important eBird counts of bearded vulture in relation to IBA/KBAs and Raptors MOU List of Sites.

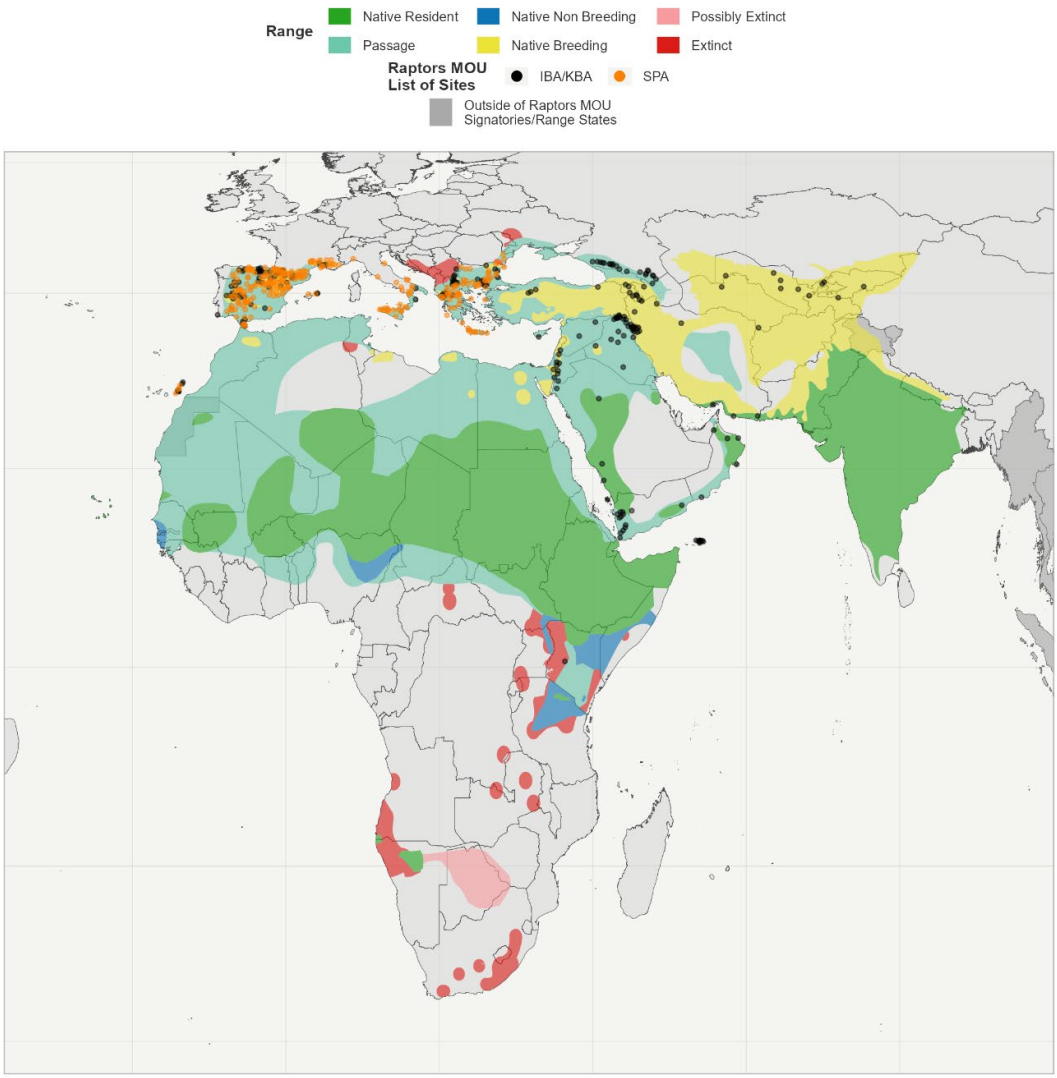
- After removing significantly overlapping sites for the analysis, there are 190 sites remaining for bearded vulture. Most of these sites lie within the species' native resident range, though many also fall within reintroduced areas and regions currently classified as extinct (Fig 1). The existing site network provides strong coverage across much of the species' extant range in Europe, Türkiye, the Caucasus, and the Arabian Peninsula. However, there are significant gaps, most notably the absence of listed sites in Africa and only a handful in Central Asia. This is despite Central Asia supporting the largest area of high-density bearded vulture populations globally, as shown in the species' abundance map (Fig 2). The bearded vulture is usually found singly or in pairs, and occasionally in polyandrous trios. In some areas, such as Ethiopia, groups of over 20 individuals have been recorded at dumps or other abundant food sources (Ferguson-Lees & Christie, 2001). As the species is currently listed as Near Threatened, the threshold for a site to qualify as internationally important under IBA Criterion A1 is 42 mature individuals (equivalent to 1% of the estimated global population). Given its largely solitary behaviour, sites meeting this threshold are likely to be large and relatively few in number. Although the European site network is well developed, there is a strong likelihood that internationally important sites also exist in Central Asia and Africa where no sites are currently listed in the IBA/KBA databases. A further 46 sites are located within areas classified as part of the species' extinct range, all of which are in Europe: 16 in France, 10 in Spain, 9 in Greece, 6 in Italy, and 5 in Austria. At least 16 of these sites partially overlap with the species' current native resident or reintroduced range and likely support bearded vultures. Others, which fall solely within the extinct range, could reflect inaccuracies in the range map, particularly as populations expand from core reintroduction areas, such as in the Alps. However, some sites may no longer support the species. For instance, in mainland Greece, recent records are lacking, with the last eBird observations dating back to the early 1990s. This highlights the need to reassess historical sites to determine their current relevance.
- The bearded vulture comprises several geographically separated populations across Europe, Asia, North and East Africa, and southern Africa, which vary considerably in size and conservation status. The southern African population (*Gypaetus barbatus meridionalis*), estimated at approximately 100 breeding pairs, has been listed on CMS Appendix I since 2024. Although some other populations are larger, several are small or poorly known, including those in North Africa, the Arabian Peninsula and parts of East Africa. It would therefore be valuable for the network of the List of Sites to provide appropriate coverage across the species' different populations and regions, rather than

concentrating only on areas supporting the largest numbers, to help maintain its full geographic range and conserve smaller and more isolated populations.

- **Recommendation:** The current site network provides good coverage across Europe, Türkiye, the Caucasus, and the Arabian Peninsula. However, substantial gaps remain in Central Asia and Africa, particularly in areas known to host high-density populations. These regions should be prioritised for further investigation and site identification. In addition, extinct-range sites in Europe should be reviewed to confirm current species presence, particularly in areas with limited recent data. See also Fig 3 for recommended sites based on eBird data.

Egyptian Vulture *(Neophron percnopterus)* – EN

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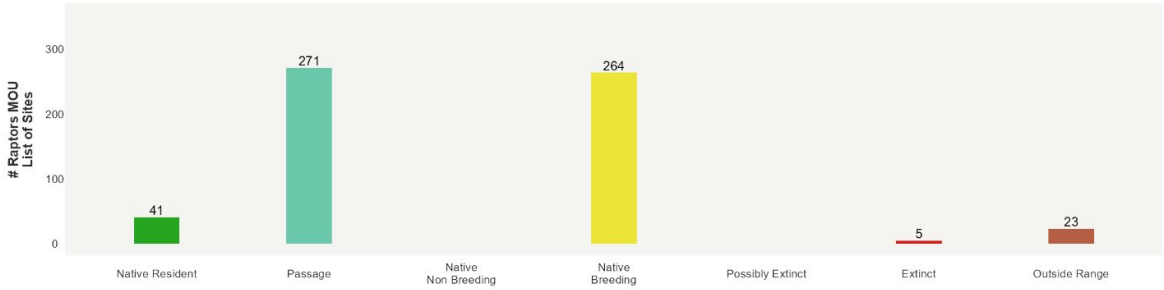


Fig 4. Egyptian vulture range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

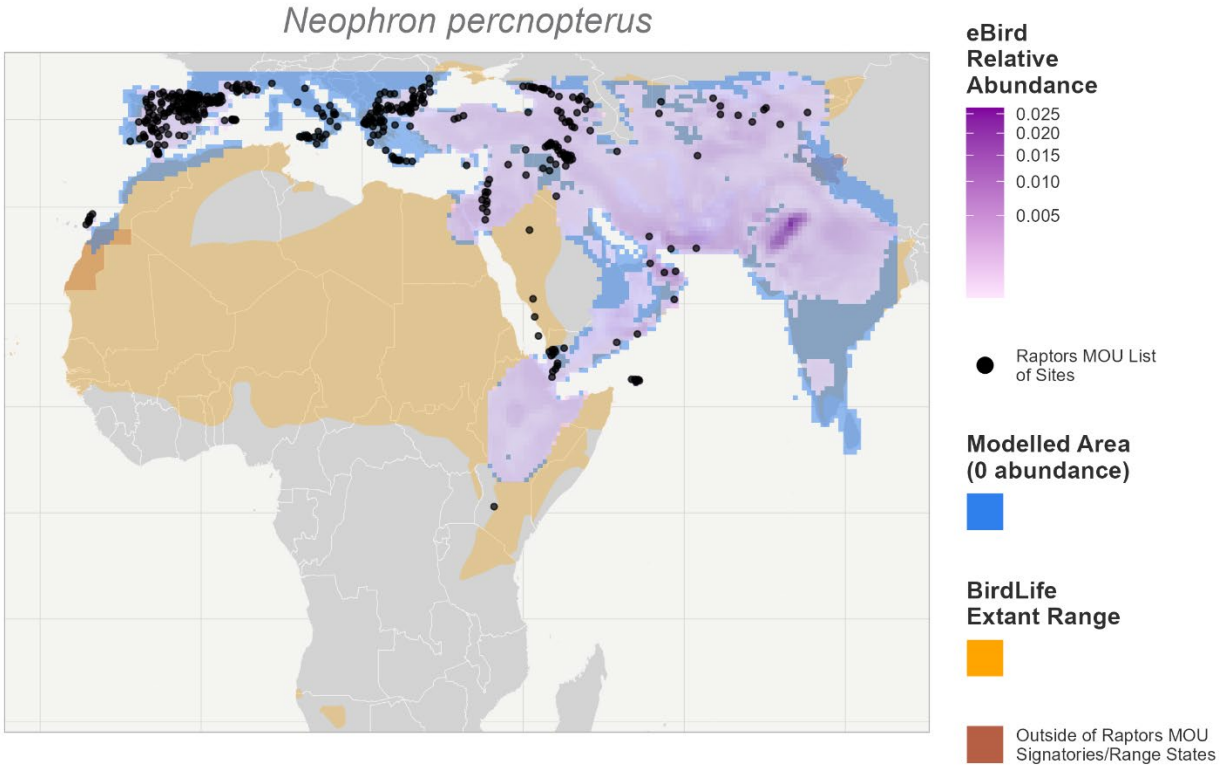


Fig 5. Egyptian Vulture eBird modelled abundance and Raptors MOU List of Sites

- The Egyptian vulture has more sites listed on the Raptors MOU List of Sites than most Annex 1 species. After removing significantly overlapping sites for the analysis, there are 490 sites remaining. The majority of these sites are located within the species' native breeding and passage ranges in the northern parts of its distribution, including Spain, Greece, Armenia, Iraq, Israel, and Jordan (Fig 4). Twenty-three sites fall outside the current distribution range, with most of these situated in Europe where site coverage is already high, for example, eight in Italy, five in France, and two each in Greece and Spain. Additionally, there is extensive site representation across the species' native breeding range outside Europe, including Central Asia, the Caucasus, and the Middle East. While these regions appear well covered, there may still be unrecognised internationally important sites, particularly in Central Asia.
- Conversely, coverage is poor in the southern part of the range. Only one site in Kenya is listed for continental Africa, and none are listed for the native resident range in the Indian subcontinent. There is a pressing need to protect non-breeding congregations, communal roosts, and breeding sites in these two major regions. In Africa, a few

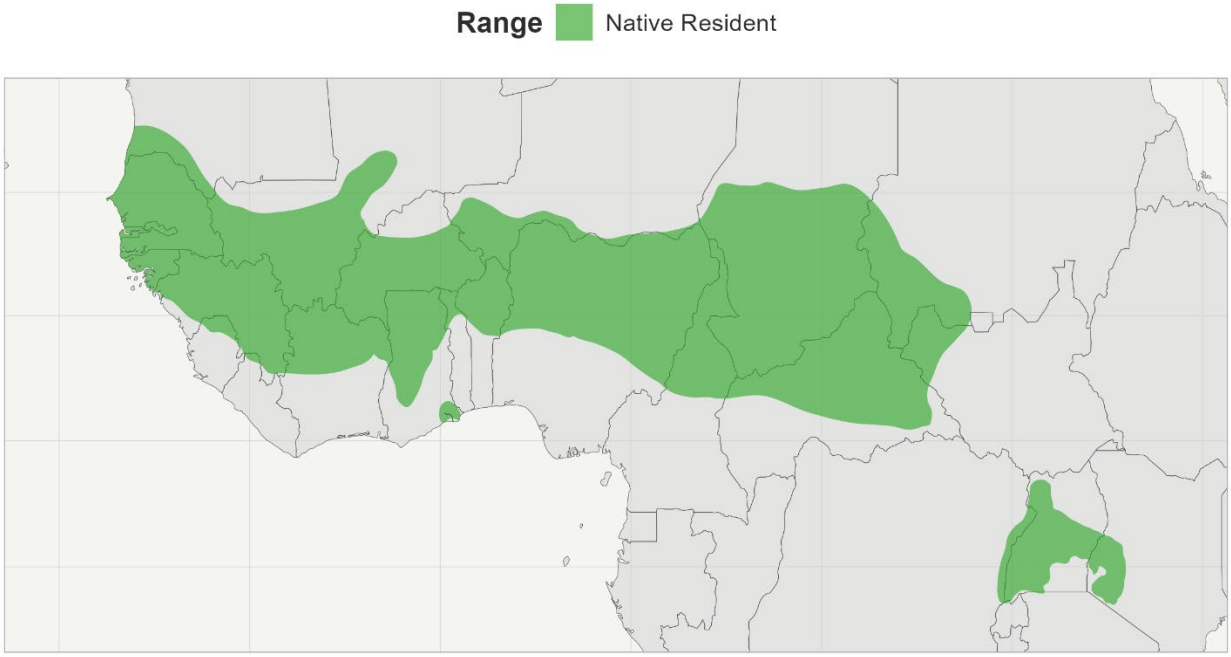
additional important sites have already been identified as IBA/KBA, including Ankober–Debre Sina Escarpment and Lake Awassa in Ethiopia, and the Termit Mountains in Niger. However, additional internationally important sites are likely to exist and should be identified and added to the List of Sites. In India, 33 IBAs/KBAs are already identified for the species, where it is of high abundance in the northwest of the country (Fig 5). In this case, strengthening the site network may simply require formally including these sites and/or qualifying species to the List of Sites. In countries such as Oman, List of Sites remain valuable, particularly as the regional population is stable (Angelov et al. 2025).

- Additionally, the West African Vulture Conservation Action Plan 2023–2043 identifies the Chad Basin as an area supporting significant populations of Egyptian vultures (Chandra et al. 2024).
- **Recommendation:** The site network is likely 'sufficient' across the northern parts of the species' range, including Spain, Greece, Armenia, Iraq, Israel, and Jordan. However, further efforts are needed to expand site especially in continental Africa and the Indian sub-continent, to ensure the protection of the species throughout its full global distribution. For the recommendation of sites, see also Annex table S2.

Beaudouin's snake-eagle *(Circaetus beaudouini)* – VU

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Fig 6. Beaudouin's snake-eagle range and the List of Sites (top). The number of sites overlapping each



part of the range (below).

- No sites are currently listed for this species on the List of Sites (Fig 6), and only one site is included in the IBA/KBA databases. The species has been classified as Vulnerable since 2007, when it was first assessed for the IUCN Red List. It is typically found at low densities, usually singly or in pairs (Ferguson-Lees & Christie, 2001), although small numbers may sometimes hunt in the same area (Clark & Davies, 2018). As the species is not congregatory, it is likely that relatively large areas are required to support the threshold of 30 mature individuals needed for a site to qualify as internationally important under IBA criterion A1. The only identified IBA for this species, Diffa-Kinzindi Grassland and Wetlands in Niger, covers 8,600 km², which is slightly less than half the size of Kruger National Park. This suggests that large, protected areas, particularly national parks, are the most likely candidates to support internationally important numbers of this species.
- **Recommendation:** There is a need to assess whether any sites across the species' range meet the threshold for international importance, with a particular focus on larger national parks.

Red-headed vulture *(Sarcogyps calvus)* - CR

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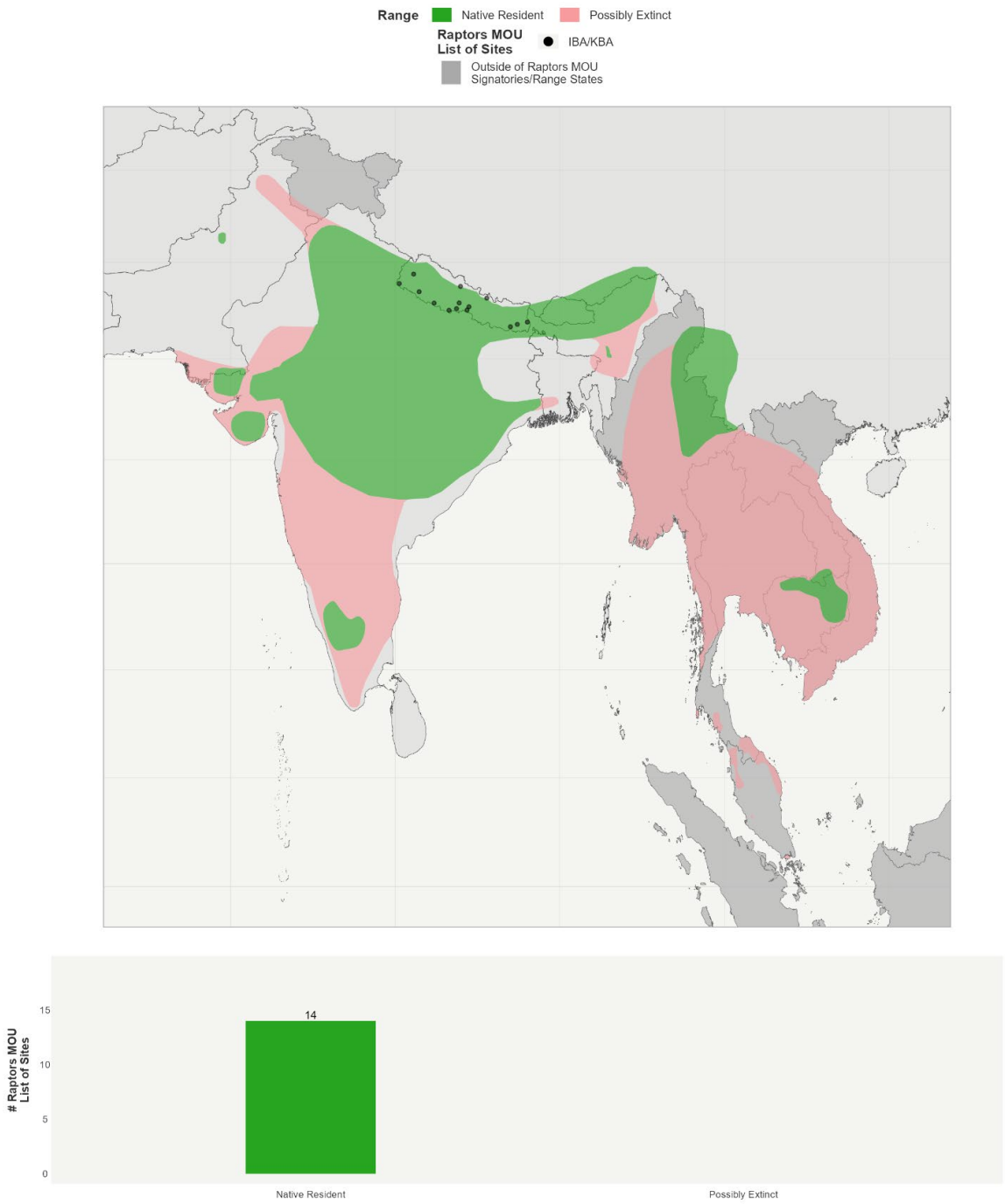


Fig 7. Red-headed vulture range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

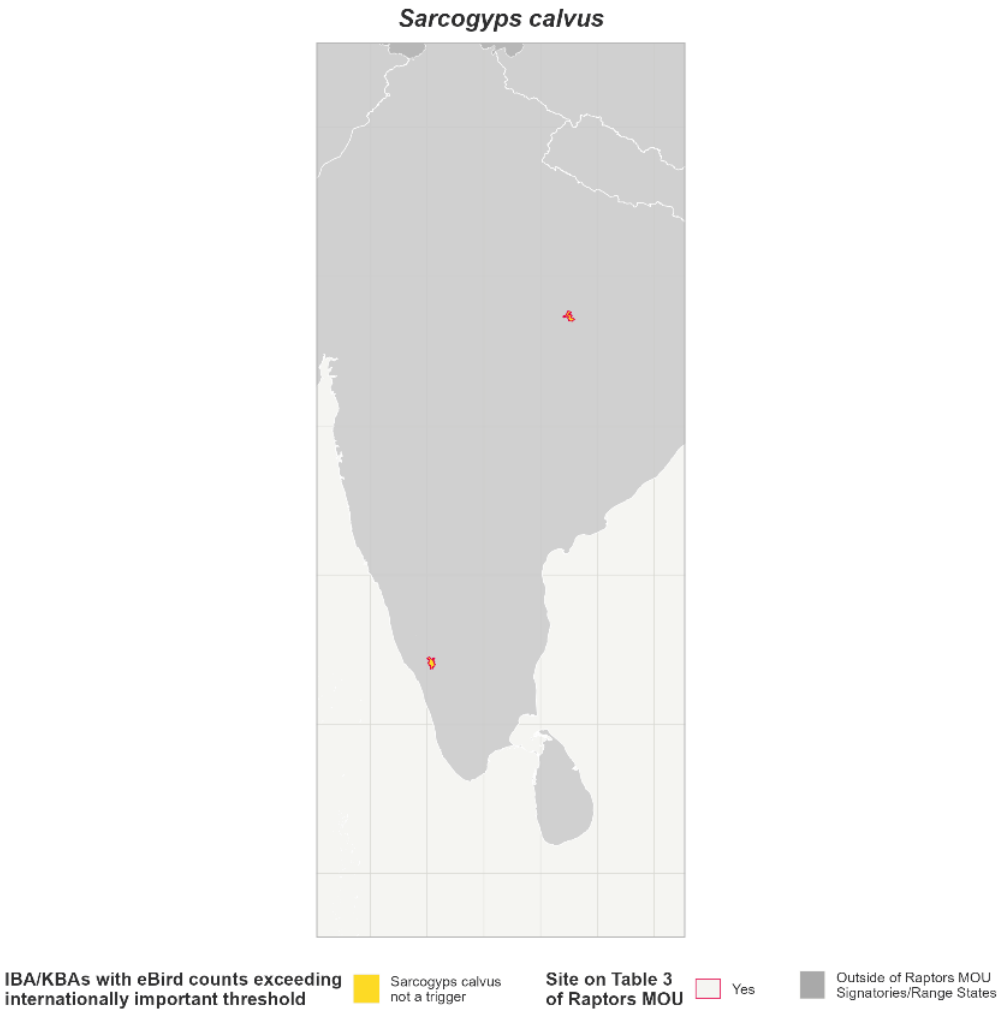


Fig 8. Internationally important eBird counts of red-headed vulture in relation to IBA/KBAs and Raptors MOU List of Sites. Note that map is focused on Southern Asia.

- There are 14 sites currently listed on the List of Sites within the native resident range of the red-headed vulture, all of which are located in Nepal. Compared to other vulture species with similar ranges, this is a notably low number, for example, the Indian vulture has 51 sites listed, and the white-rumped vulture has 166 sites. This lower number may be partly due to the more solitary nature of the red-headed vulture, which typically breeds alone and only congregates in small numbers at concentrated food sources. Such gatherings rarely exceed 6 to 20 individuals (Ferguson-Lees & Christie, 2001; Naoroji, 2006). Despite its solitary tendencies, the species has qualifying sites in Nepal, indicating that similar sites likely exist in India. In fact, 20 IBAs in India have already listed the red-headed vulture as a trigger species, based on assessments from 2016. Of these, three sites (Pench Tiger Reserve, Naina Devi Himalayan Bird Conservation Reserve, and Manas Reserve Forest) are currently included in the List of Sites without having red-headed

vulture listed as a qualifying species. The remaining 17 sites are not listed at all. These 20 IBAs primarily represent the northern Indian population, particularly in Rajasthan and Madhya Pradesh. However, no internationally important sites are currently recognized for remnant populations in Gujarat and southern Karnataka. The loss of these populations would represent a significant contraction of the species' range. Thus, even if population in Southeast Asia appears to be small with numbers bellow the threshold, conserving this population remains important for maintaining the species' range in the region.

- **Recommendation:** While site coverage in Nepal appears adequate (Fig 7), additional recognition of existing IBAs in India supporting the species, along with identification of any new internationally important sites in Gujarat and southern Karnataka, is urgently needed. Fig 8 highlights existing IBA/KBAs that are not currently included in the List of Sites and could be considered for inclusion, while recommendations based on the literature review are presented in Annex table S2.

White-headed vulture *(Trigonoceps occipitalis)* – CR

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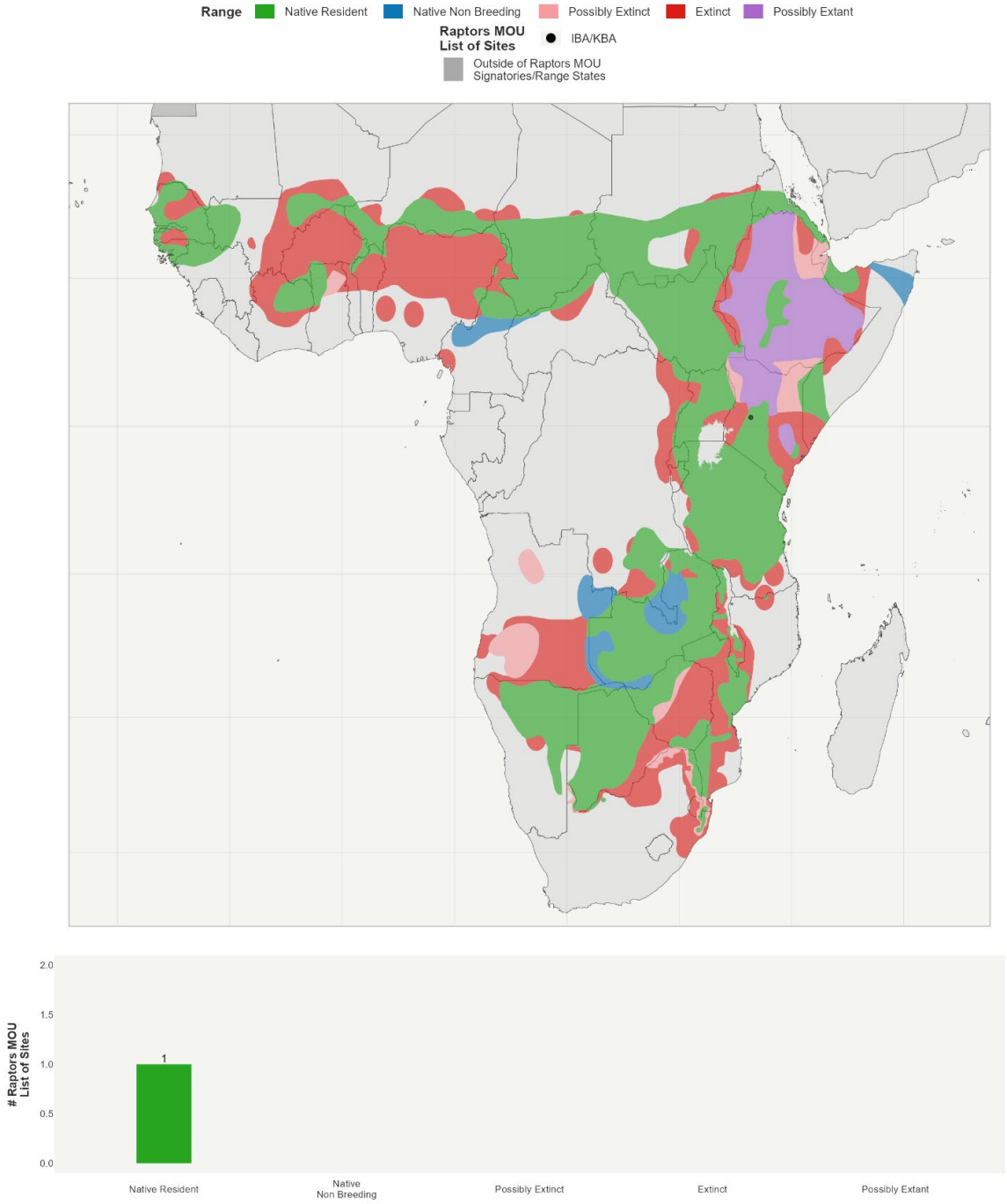


Fig 9. White-headed vulture range and the List of Sites (top). The number of sites overlapping each part of the range (below).

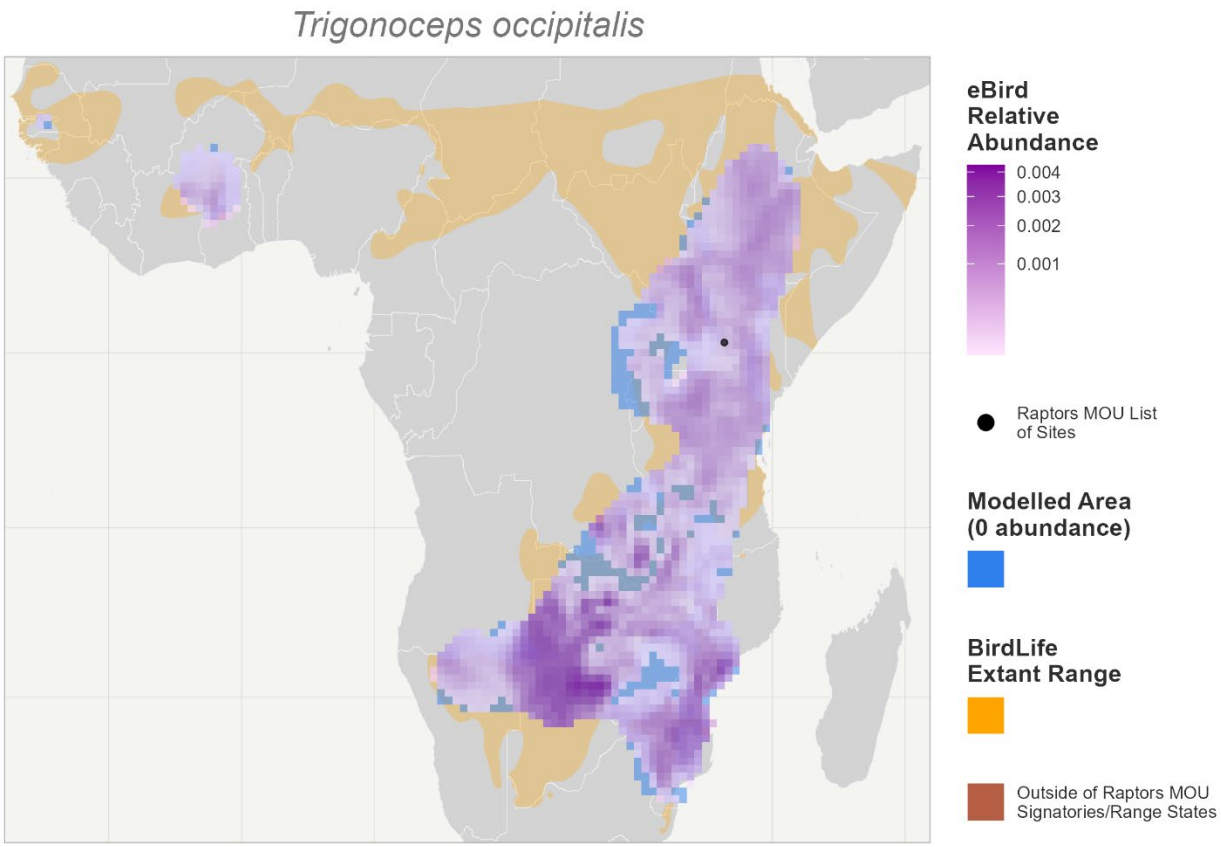


Fig 10. White-headed vulture eBird modelled abundance and Raptors MOU List of Sites.

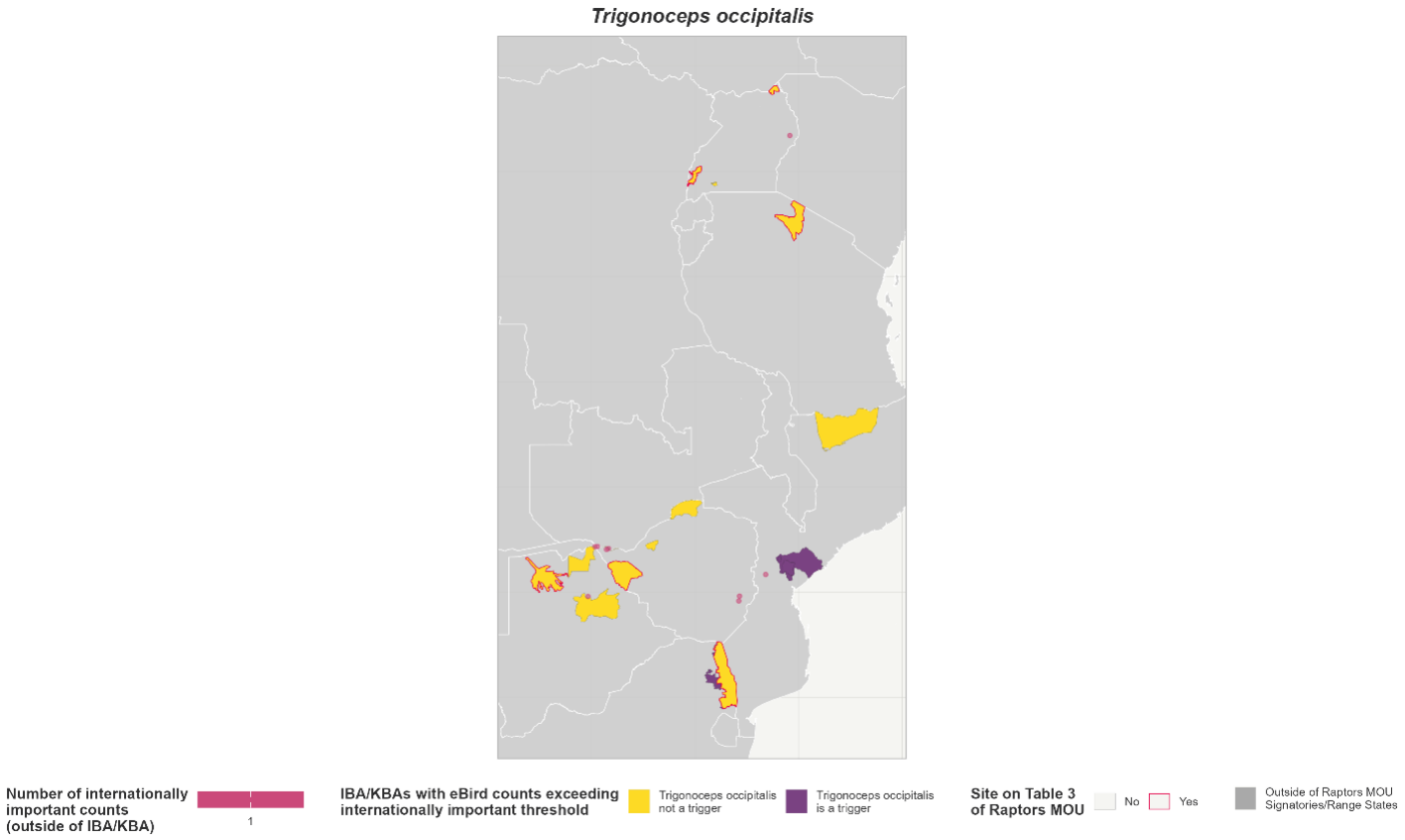


Fig 11. Internationally important eBird counts of white-headed vulture in relation to IBA/KBAs and Raptors MOU List of Sites.

- Despite being listed as Critically Endangered, only a single site is currently recognized for this species in Kenya (Fig 9). The species is known to be largely solitary, typically breeding as isolated pairs. Individuals generally forage alone or in pairs, and it is rare for more than two pairs to gather even at large carcasses (Ferguson-Lees & Christie 2001, Botha et al. 2017). However, despite this solitary behaviour, many sites across the species' range likely qualify as internationally important, given the relatively low threshold of 15 individuals or 5 breeding pairs. The limited number of designated sites likely reflects the species' relatively recent uplisting, from Least Concern in 2004 to Critically Endangered in 2015, rather than a true absence of qualifying sites. Currently, three larger sites are included in the IBA/KBA databases where white-headed vulture is a trigger species but the combination of site and trigger species is not included in the List of Sites: Kruger National Park (South Africa), Gorongosa National Park and the Marromeu Complex (Mozambique), and Murchison Falls National Park (Uganda). This highlights the urgent need to identify and designate additional internationally important

sites across the species' range. Areas of higher abundance are in Southern Africa, particularly around Botswana and Zambia (Fig 10).

- The West African Vulture Conservation Action Plan 2023–2043 identifies the Chad Basin as supporting significant numbers of white-headed vultures. Gadabeji Biosphere Reserve and Koutous Massif in Niger are also identified as monitoring areas where reproductive information has been collected for the species (Chandra et al. 2024).
- **Recommendation:** Expand the network of recognized sites across the species' range, including the addition of the three already-identified sites, and pursue the identification of further sites that meet criteria of international importance. Site recommendations based on the literature review are presented in Annex table S2, while Fig. 11 highlights existing IBA/KBAs that are not currently included in the List of Sites and could be considered for inclusion.

Hooded vulture *(Necrosyrtes monachus)* – CR

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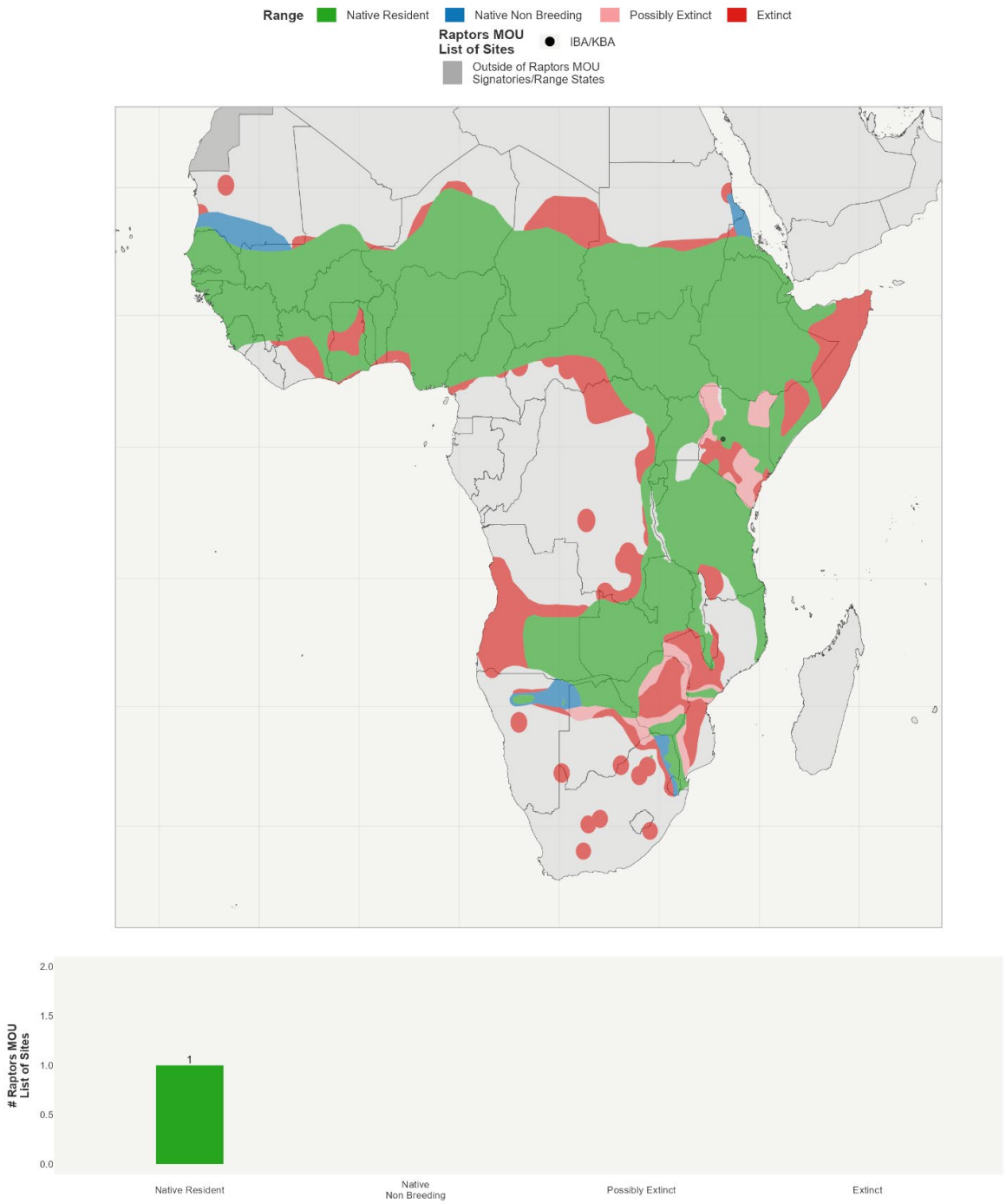


Fig 12. Hooded vulture range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

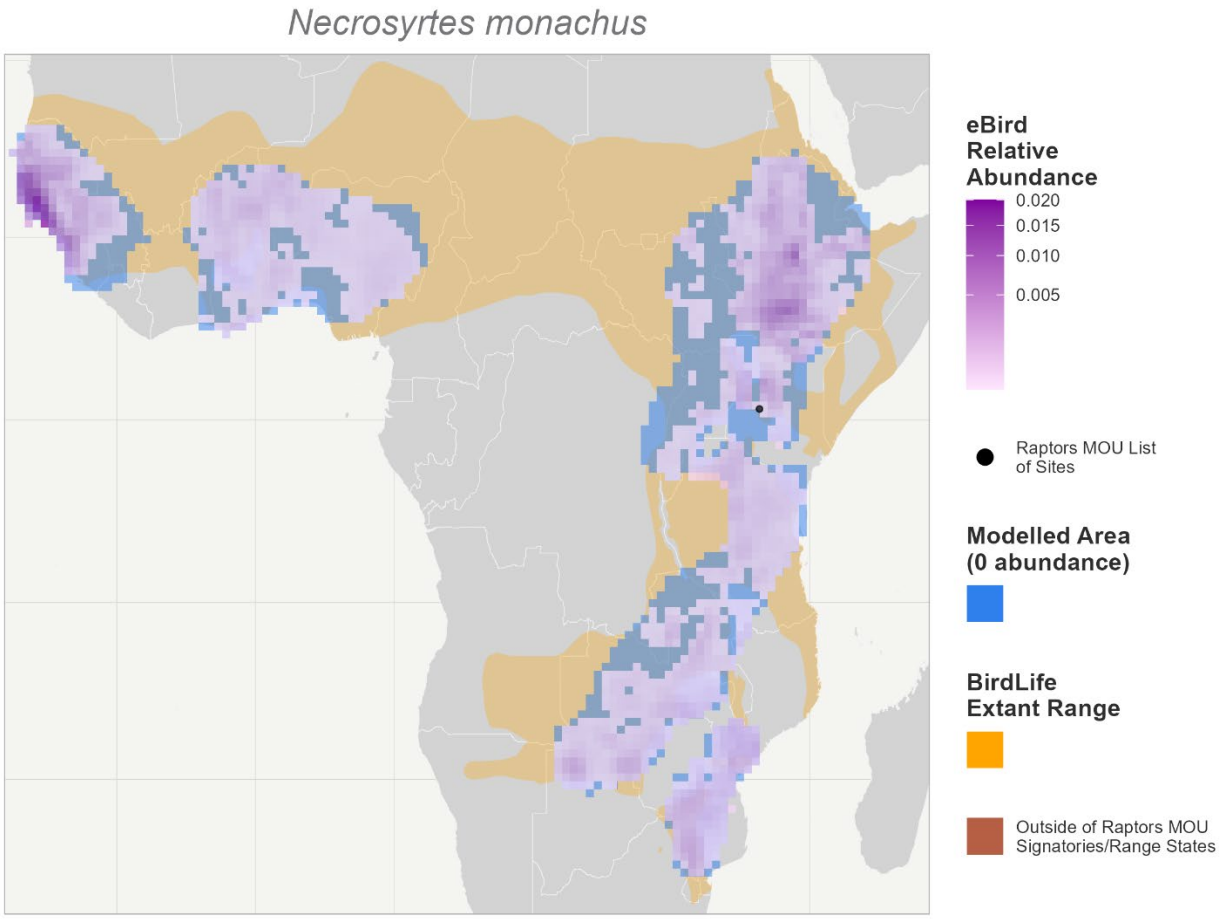


Fig 13. Hooded vulture eBird modelled abundance and Annex 3, Table 3 the Raptors MOU List of Sites.

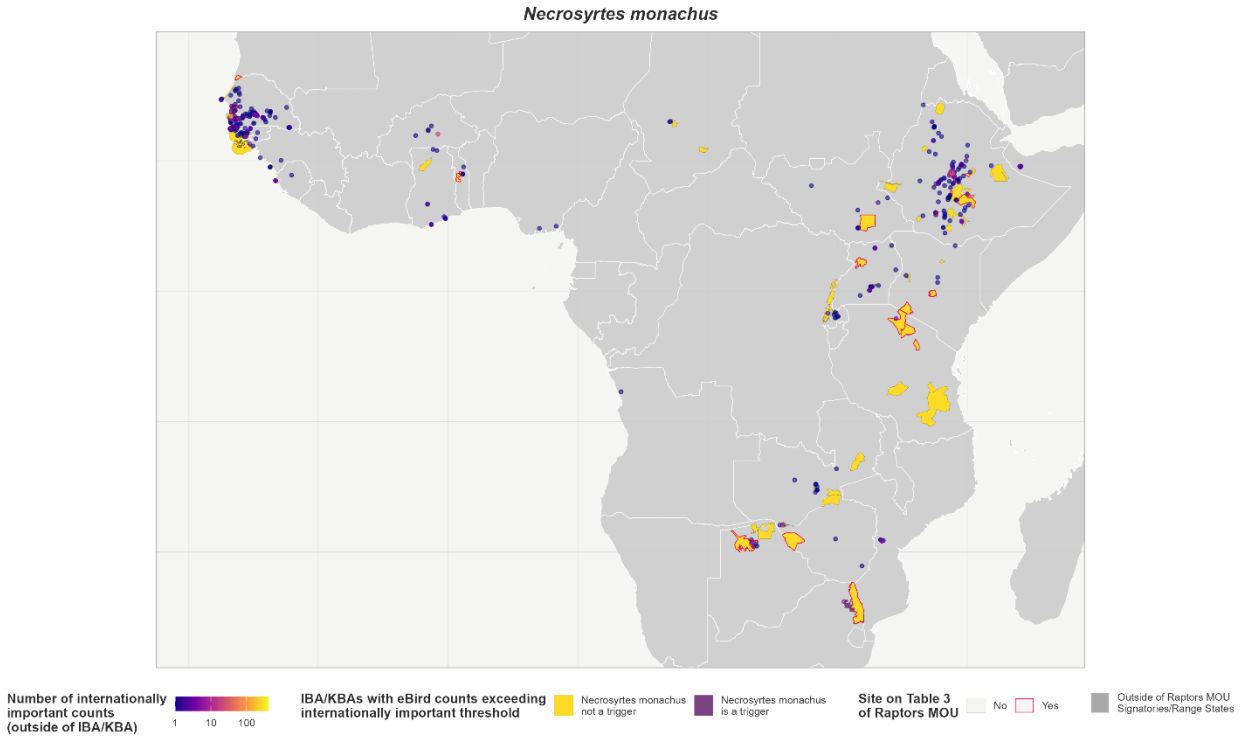


Fig 14. Internationally important eBird counts of hooded vultures in relation to IBA/KBAs and Annex Raptors MOU List of Sites.

- Only a single site is listed for this species in southern Kenya, despite its current status as Critically Endangered. The species exhibits varying degrees of congregatory behaviour across Africa: populations south of the equator are mostly solitary or found in small groups, while those in West and northeastern tropical Africa (extending south to Uganda) are highly gregarious, gathering in large numbers at abattoirs and other abundant food sources, roosting communally in trees, and even nesting semi-socially (Ferguson-Lees & Christie, 2001). The limited number of listed sites, similar to patterns seen with other vulture species, likely reflects its relatively recent uplisting on the global IUCN Red List from Least Concern in 2009 to Critically Endangered in 2015. Despite behavioural differences across its range, numerous sites likely meet the criteria for international importance, as the threshold is only 15 individuals or 5 breeding pairs. Only one further site for the species is listed in the IBA/KBA databases, Kruger National Park, so there is a need to identify new internationally important sites for the species. Parts of West Africa still appear to hold substantial number of hooded vultures with particularly high abundance in Senegal, The Gambia and Guinea-Bissau (Fig 13). A recent study estimated that the population of hooded vultures in Guinea-Bissau numbered around 43,000 in 2018, potentially 22% of the global population (Henriques et al. 2018).

- The West African Vulture Conservation Action Plan 2023–2043 (https://raptors.cms.int/page/west-african-vulture-conservation-action-plan-2023-2043) identifies the Chad Basin as supporting large populations of hooded vultures. It also records a census of 3,637 hooded vultures at Diaobé in the Kolda region of Senegal, indicating that this is a particularly important concentration site for the species (Chandra et al. 2024).
- **Recommendation:** increase the site network across entire range with identification of internationally important sites needed (Fig 12,13). For suggestion of sites, see Fig 14, especially IBA/KBAs not already in the List of Sites and areas with high concentration of points outside of IBA/KBAs. High concentrations seem to be especially in Ethiopia and Western Africa (particularly Senegal, The Gambia and Guinea-Bissau). For the recommendation of sites based on the literature review, see Annex table S2.

Himalayan griffon *(Gyps himalayensis)* – NT

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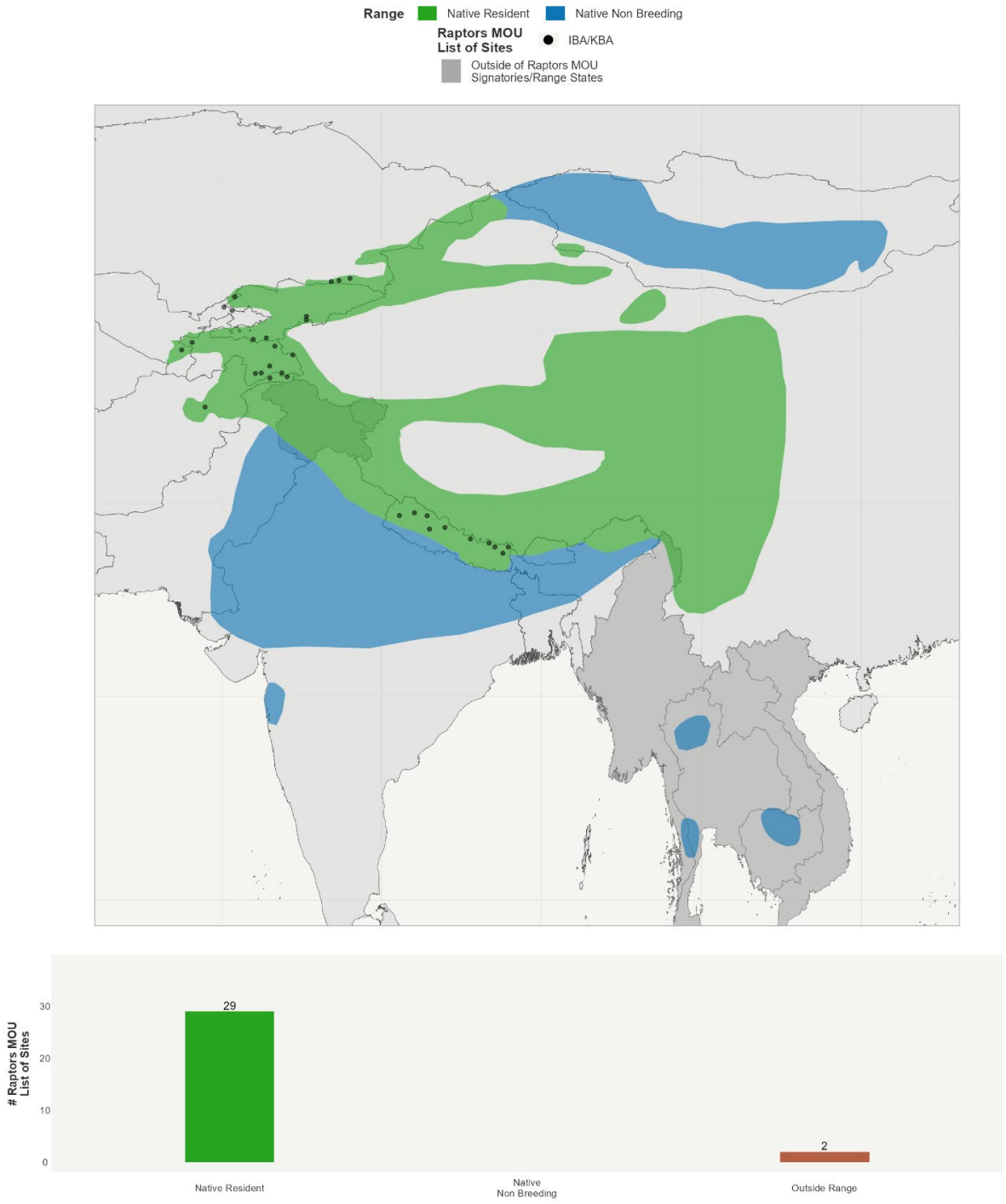


Fig 15. Himalayan griffon range and the List of Sites (top). The number of sites overlapping each part of the range (below).

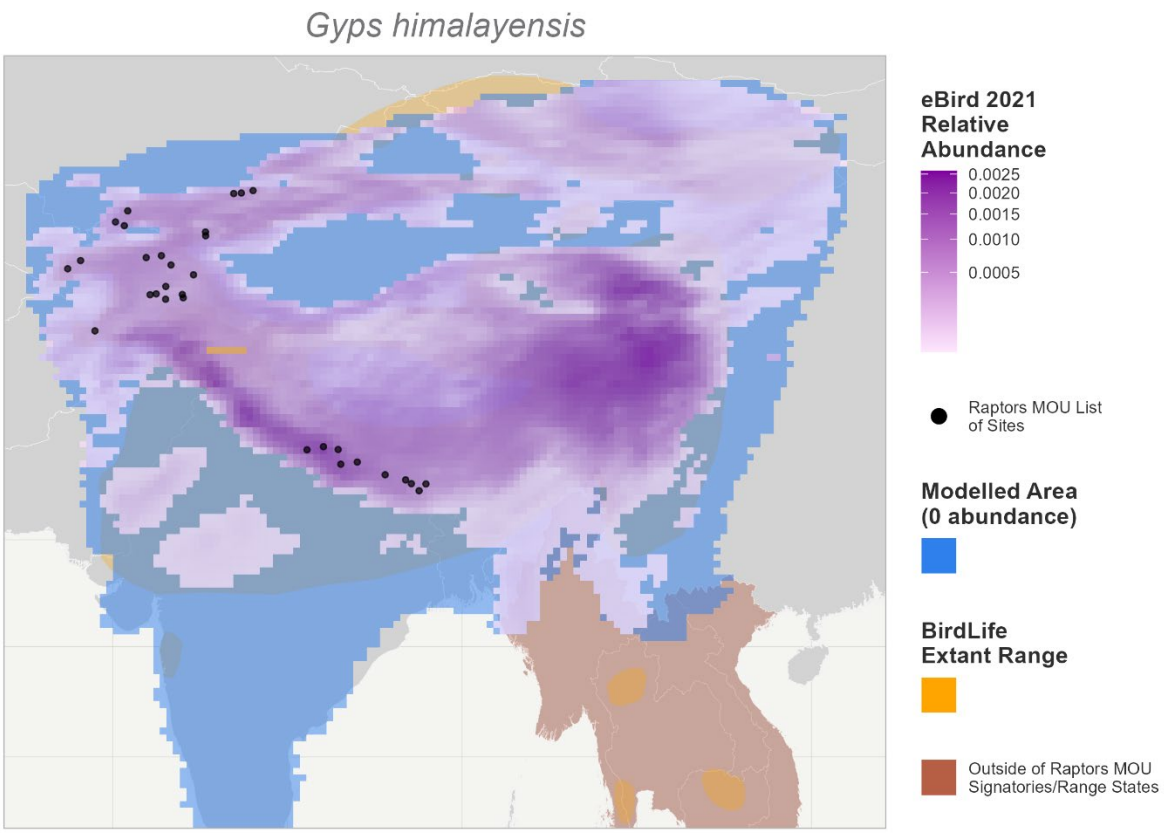


Fig 16. Himalayan griffon eBird modelled abundance and Raptors MOU List of Sites.

- A total of 29 sites are listed for the Himalayan griffon vulture on the List of Sites, all of which fall within the species' native resident range (Fig 15). These sites are primarily located in Nepal, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. The species is generally solitary to loosely gregarious and may feed in groups of 10–20 individuals at carcasses or form communal roosts (Ferguson-Lees & Christie, 2001). Nesting typically occurs singly or in small, loose colonies of up to 6–10 pairs. In China, a study in Hejing County documented around 100 nests in 10 colonies, all situated within the same valley complex and spaced 1–5 km apart (Ma et al. 2013). Despite its relatively widespread distribution, little is known about the species' ecology and behaviour during foraging in non-breeding season on the plains and grasslands of South and Southeast Asia (Botha et al. 2017). As the Himalayan griffon vulture is currently listed as Near Threatened and has a relatively large global population estimated at 66,000–334,000 individuals, the IBA threshold for international importance is set at 2,000 mature individuals. Nonetheless, a number of sites have already been identified. Given existing knowledge and species abundance data, there is clear potential to identify additional internationally important

sites, particularly in the Himalayan region of India and Pakistan, as well as in central China, especially across the Tibetan Plateau (Fig 16).

- **Recommendation:** The species appears to be well covered in countries already represented in the List of Sites. However, additional internationally important sites are likely to exist in areas of high abundance, particularly in central China and the Himalayas in India and Pakistan.

White-rumped vulture *(Gyps bengalensis)* – CR

BirdLife International Species Factsheet

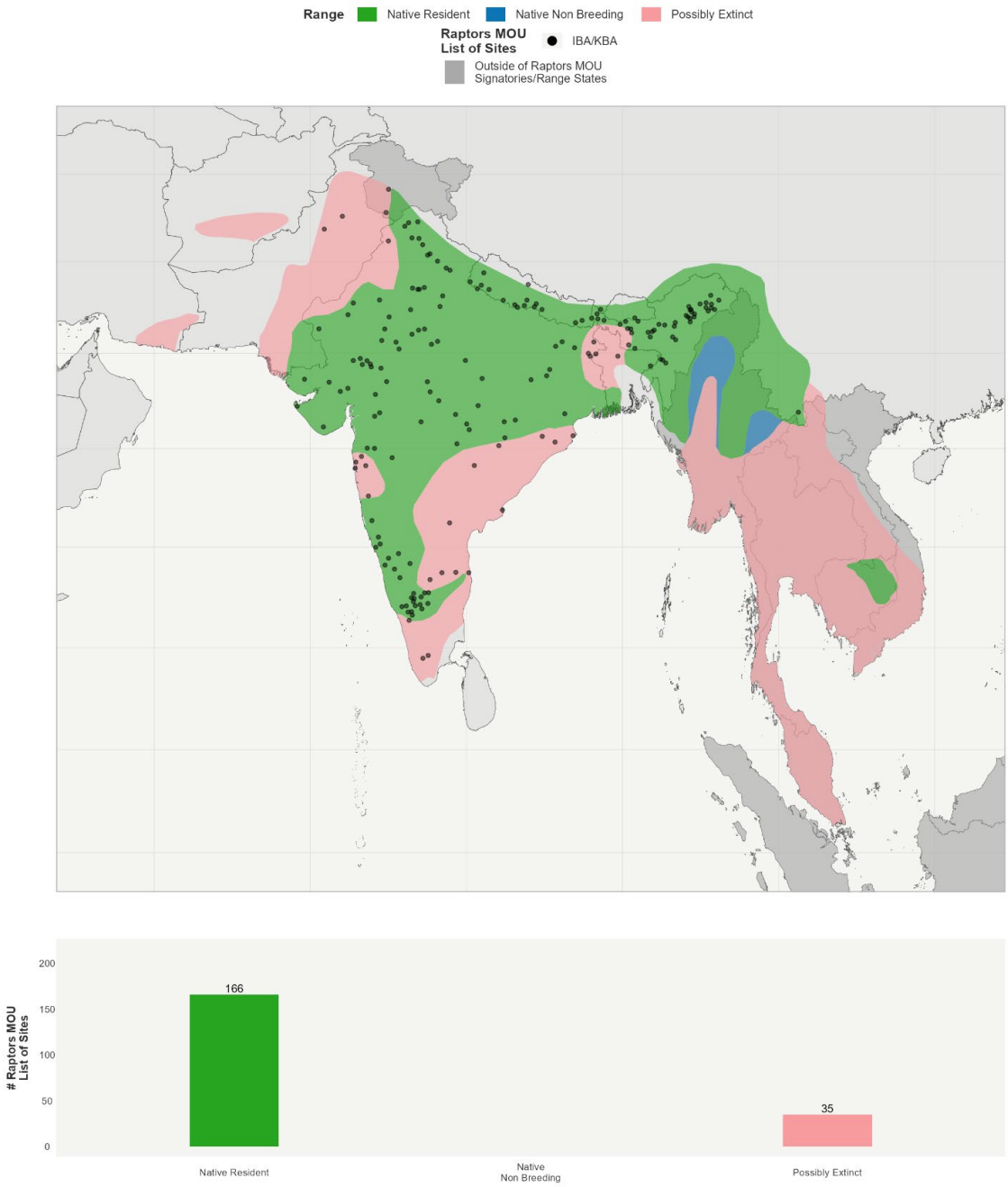


Fig 17. White-rumped vulture range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

- There are 166 sites evenly spread across the native resident range, the majority of which are located in India and Nepal. These sites are dispersed across the species' extant range with resident and non-breeding populations in Cambodia and Myanmar being outside of the geographic scope of the Raptors MOU. This is a congregatory species with considerable congregations forming during feeding, breeding and roosting (Ferguson-Lees & Christie 2001), therefore it is logical that there should be internationally important sites across the range. 35 sites overlap with parts of the range where the species is now possibly extinct, highlighting the range contraction that has accompanied recent population declines. Although outside of the Raptors MOU extent, the populations in Cambodia and Myanmar are important to protect because they add significantly to the current extant range and could also support important genetic diversity.
- **Recommendation:** sufficient coverage across entire range with the geographic scope of the Raptors MOU (Fig 17). For the recommendation of sites based on the literature review, see Annex table S2.

White-backed vulture *(Gyps africanus)* – CR

BirdLife International Species Factsheet

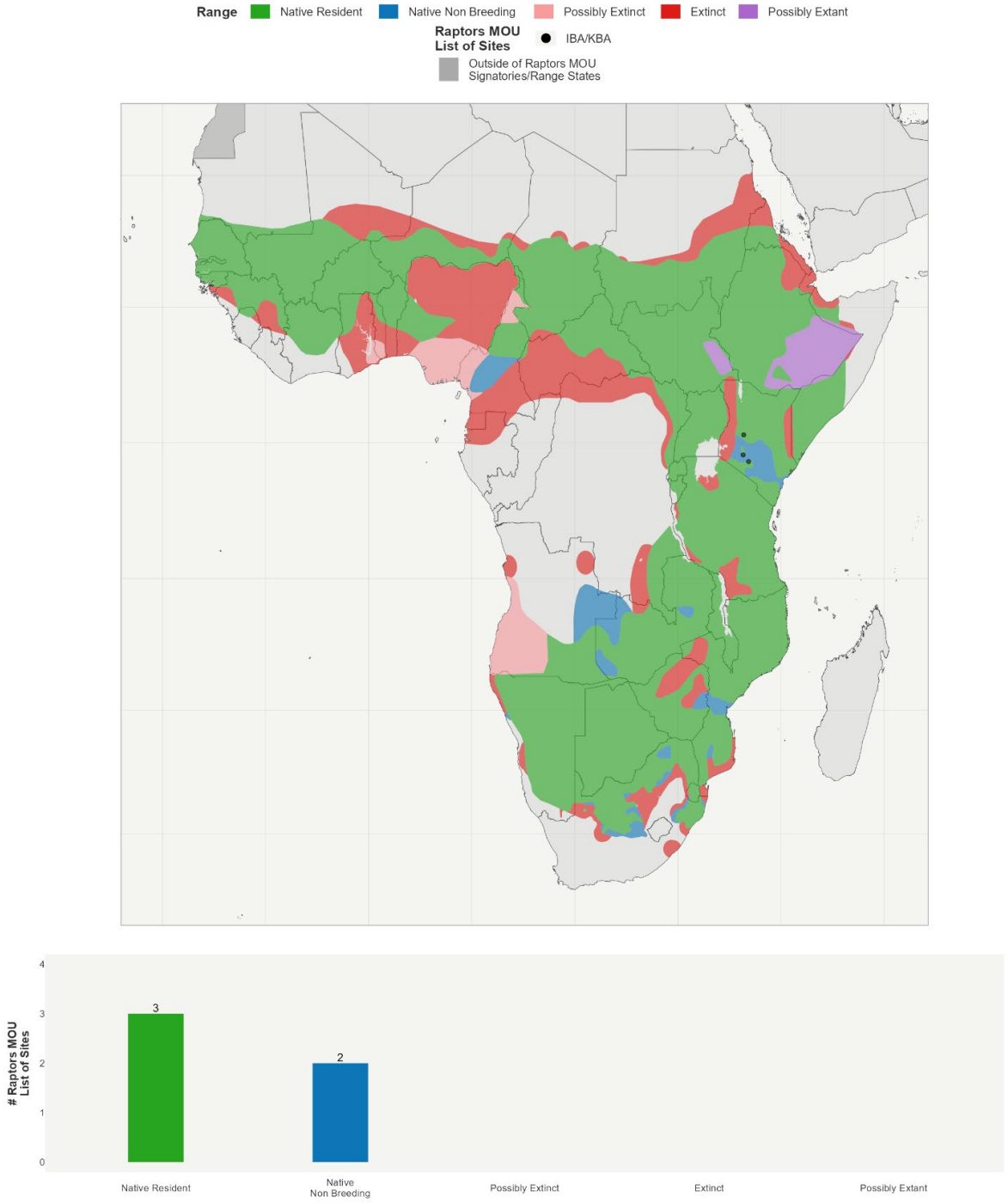


Fig 18. White-backed vulture range and the List of Sites (top). The number of sites overlapping each part of the range (below).

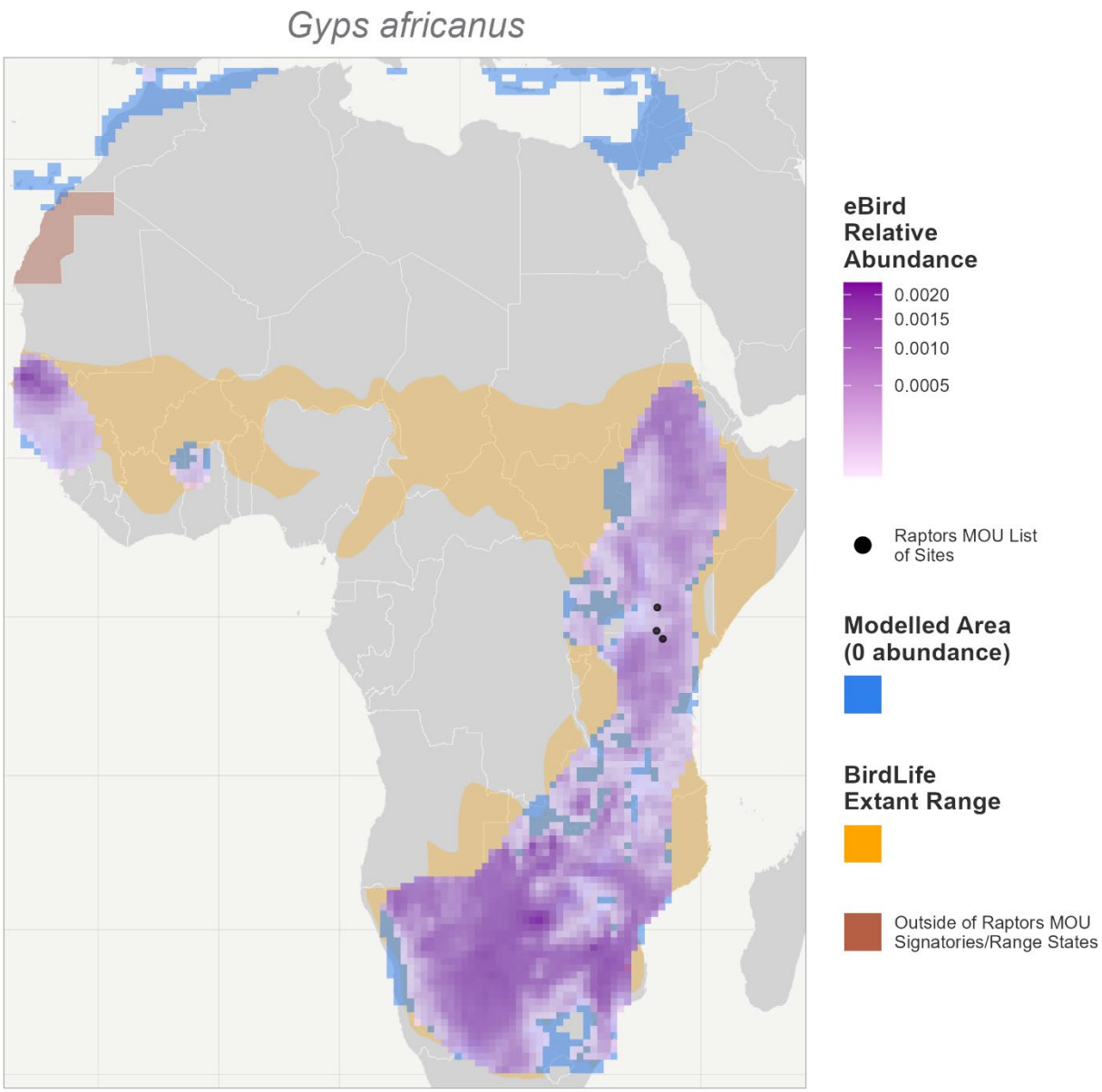


Fig 19. White-backed vulture eBird modelled abundance and Raptors MOU List of Sites.

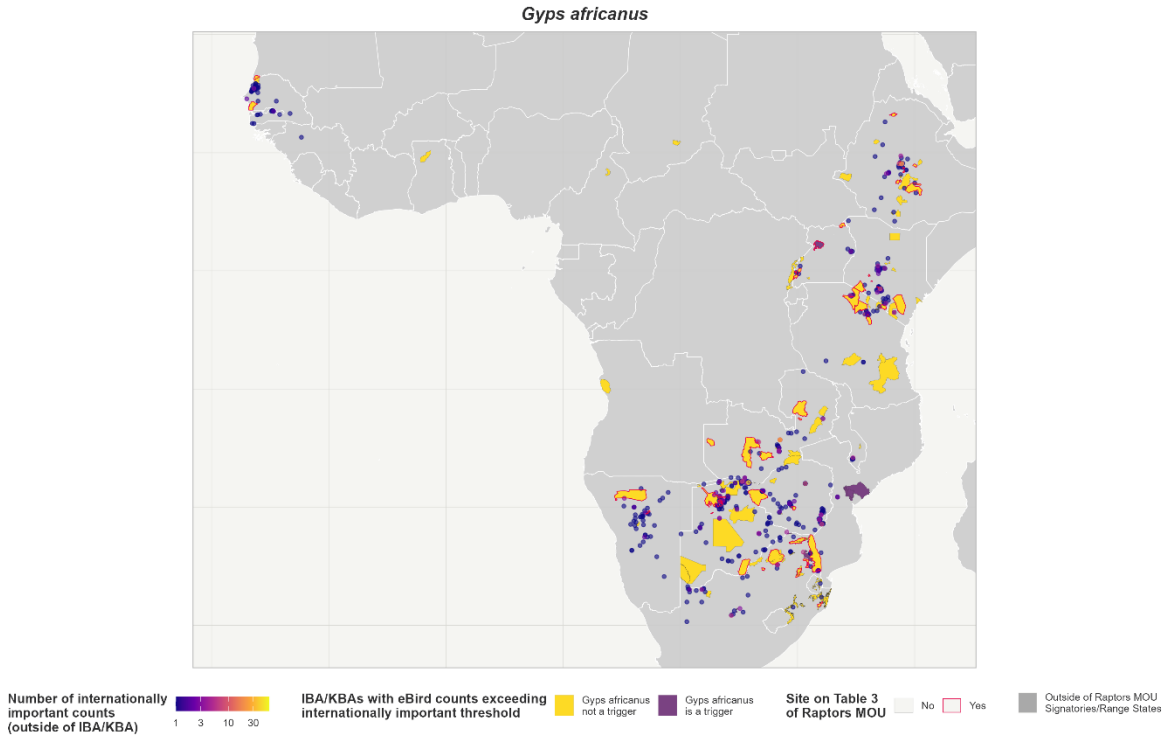


Fig 20. Internationally important eBird counts of white-backed vultures in relation to IBA/KBAs and Raptors MOU List of Sites.

- Only three sites in southern Kenya are currently listed for the white-backed vulture, with two overlapping both the native resident and native non-breeding ranges (Fig 18). This species is known to be solitary to highly gregarious. While some pairs breed individually, it more commonly nests in loose colonies of 5–20 pairs in nearby trees, and occasionally, up to six nests can be found in a single tree. White-backed vultures typically roost communally, and large groups may gather at food and water sources (Ferguson-Lees & Christie, 2001). These behaviours suggest that numerous breeding and roosting sites likely exist across the species' range, that exceed the threshold for international importance (i.e., more than 15 individuals or 5 breeding pairs). Many large IBAs in Africa that fall within the species' range likely already support internationally significant populations, with eBird reports of over 20 individuals in parks in South Africa, Uganda and Ghana. There are 4 existing IBAs/KBAs not listed on the List of Sites that already have white-backed vulture listed as a trigger species, Kruger National Park (South Africa), Mapungubwe (South Africa), Gorongosa National Park and Marromeu Complex (Mozambique) and Murchison Falls National Park (Uganda).
- **Recommendation:** increase site network coverage across the entire range, including the 4 IBAs/KBAs already identified for the species. Efforts could focus in relatively high-density areas in Southern Africa and West Africa (see Fig 19). Recommendations for

additional sites can be informed by Fig 20, which shows existing IBA/KBAs not currently included in the List of Sites, as well as areas with high concentrations of records outside the existing IBA/KBA network, particularly in southern and West Africa. Annex table S2 provides additional site recommendations identified through the literature review.

Indian vulture *(Gyps indicus)* – CR

BirdLife International Species Factsheet

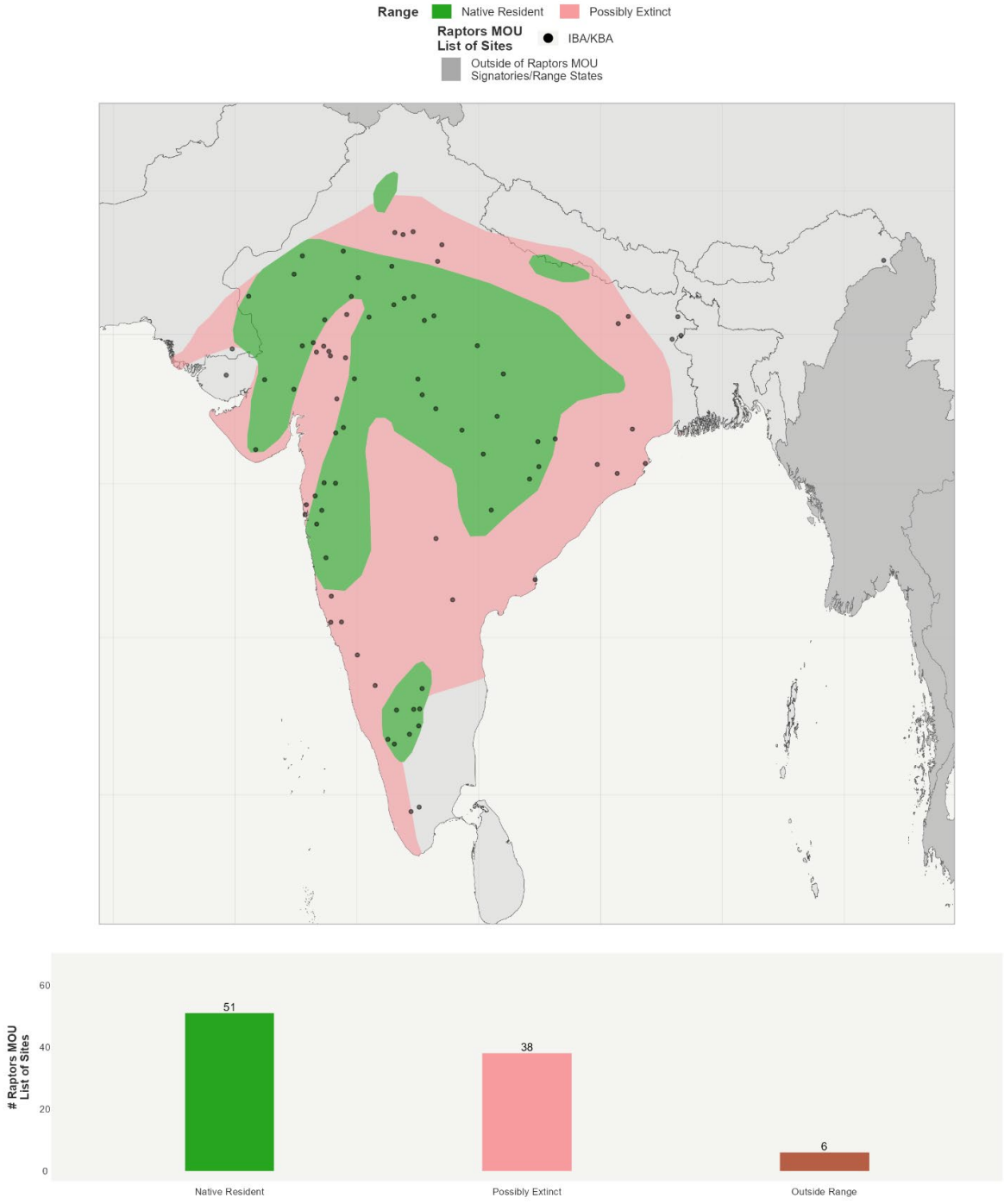


Fig 21. Indian vulture range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

- There are 51 sites in India that overlap the native resident portion of the range. There are a substantial number of sites (38) that overlap the possibly extinct areas of the range. There is a spread of sites throughout the species range but only 51 of the 85 sites listed for Indian vulture overlap some portion of the extant range so just looking at the total number of sites for the species in the List of Sites could be somewhat misleading. This species is highly gregarious during breeding, roosting and feeding (Ferguson-Lees & Christie 2001) so there may be more sites with international importance within the native resident range.
- **Recommendation:** sufficient coverage across range but explore if any sites in the two isolated northern populations contain internationally significant numbers (Fig 21). For the recommendation of sites based on the literature review, see Annex table S2.

Slender-billed vulture *(Gyps tenuirostris)* – CR

BirdLife International Species Factsheet

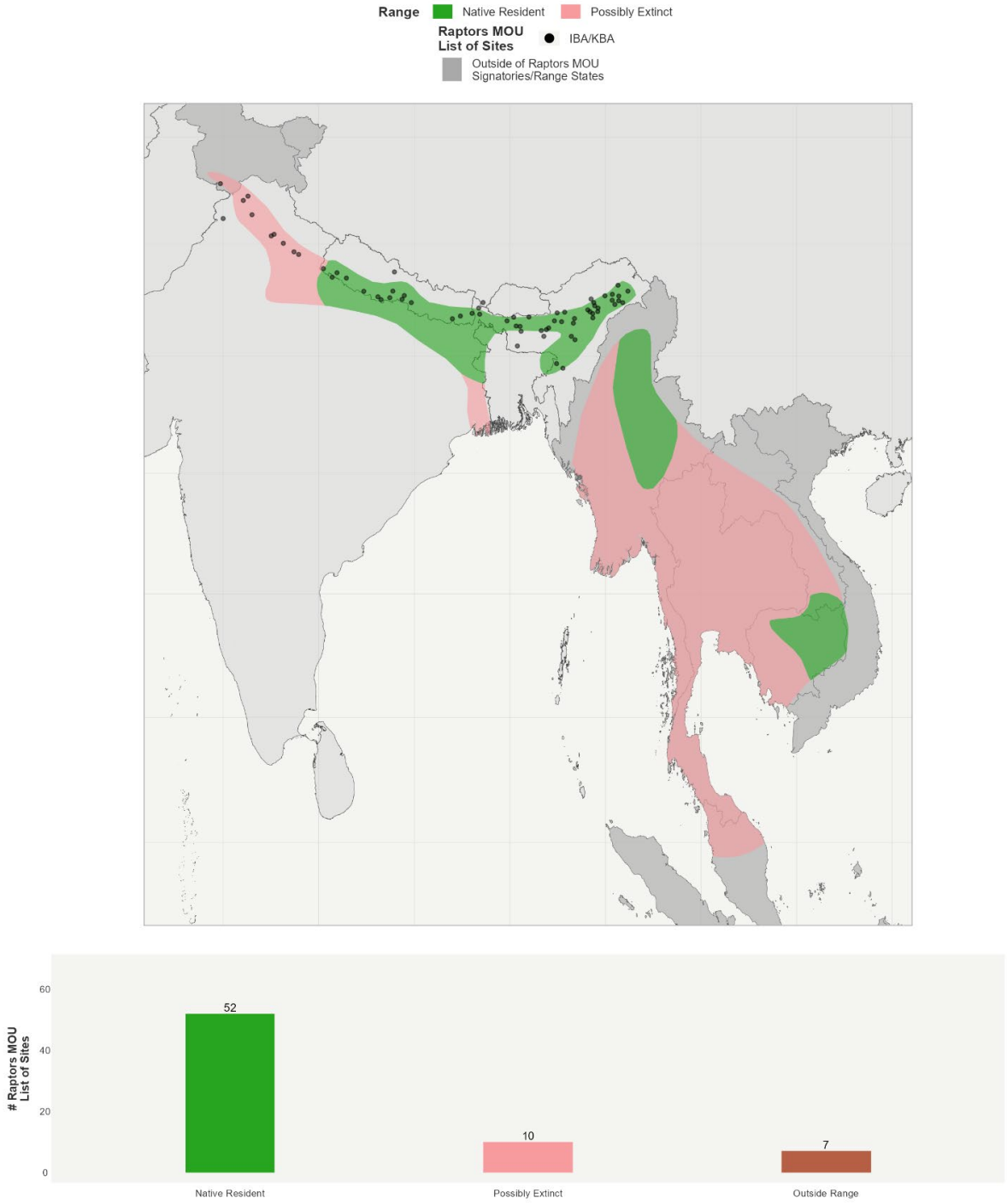


Fig 22. Slender-billed vulture range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

- There are 52 sites that overlap with native resident range across India and Nepal. 10 sites overlap with areas where the species is possibly extinct, and 7 Indian sites lie outside the currently recognized range. Many of the sites in the extinct part of the range are located in northernmost India, where sightings of the species are very rare, only five records of single individuals have been reported in eBird from this region since 2020. The Slender-billed vulture typically nests solitarily but is gregarious when feeding and roosting (Ferguson-Lees & Christie, 2001). Given its small global population (fewer than 1,000 individuals) and its Critically Endangered status, a site can qualify as internationally important if it regularly supports just one individual or breeding pair. Therefore, even sites used by a single breeding pair may meet the criteria for international importance. It could be beneficial to identify sites for the species in Cambodia, Laos and Myanmar as these populations are important for maintaining the range of the species and could support genetic diversity.
  Recommendation: There is broad site coverage across the species' range (Fig 22) but given the very low population size and Critically Endangered status, additional sites should be considered for inclusion. For the recommendation of sites based on the literature review, see Annex table S2.

Cape vulture *(Gyps coprotheres)* – VU

BirdLife International Species Factsheet

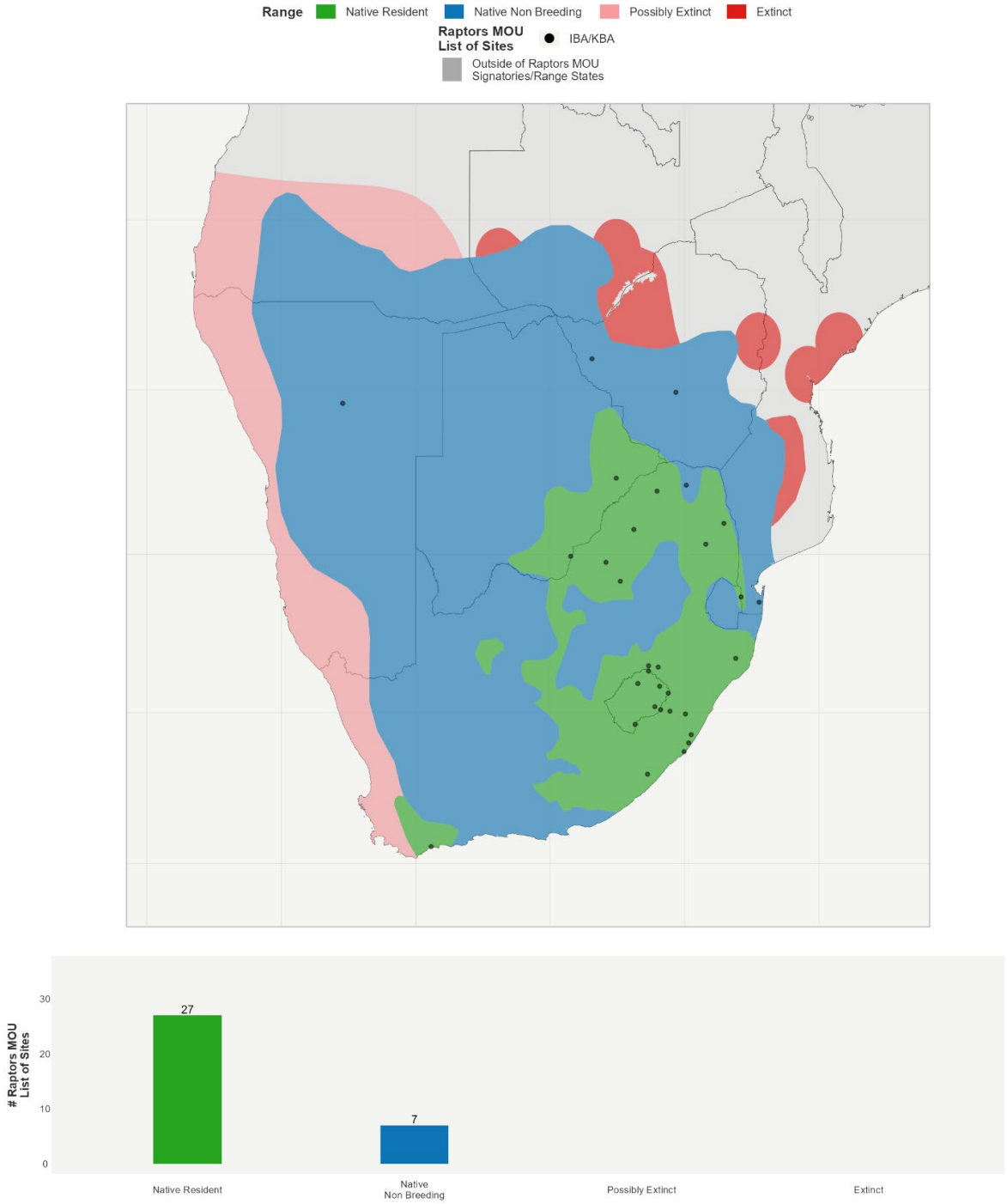


Fig 23. Cape vulture range and the List of Sites (top). The number of sites overlapping each part of the range (below).

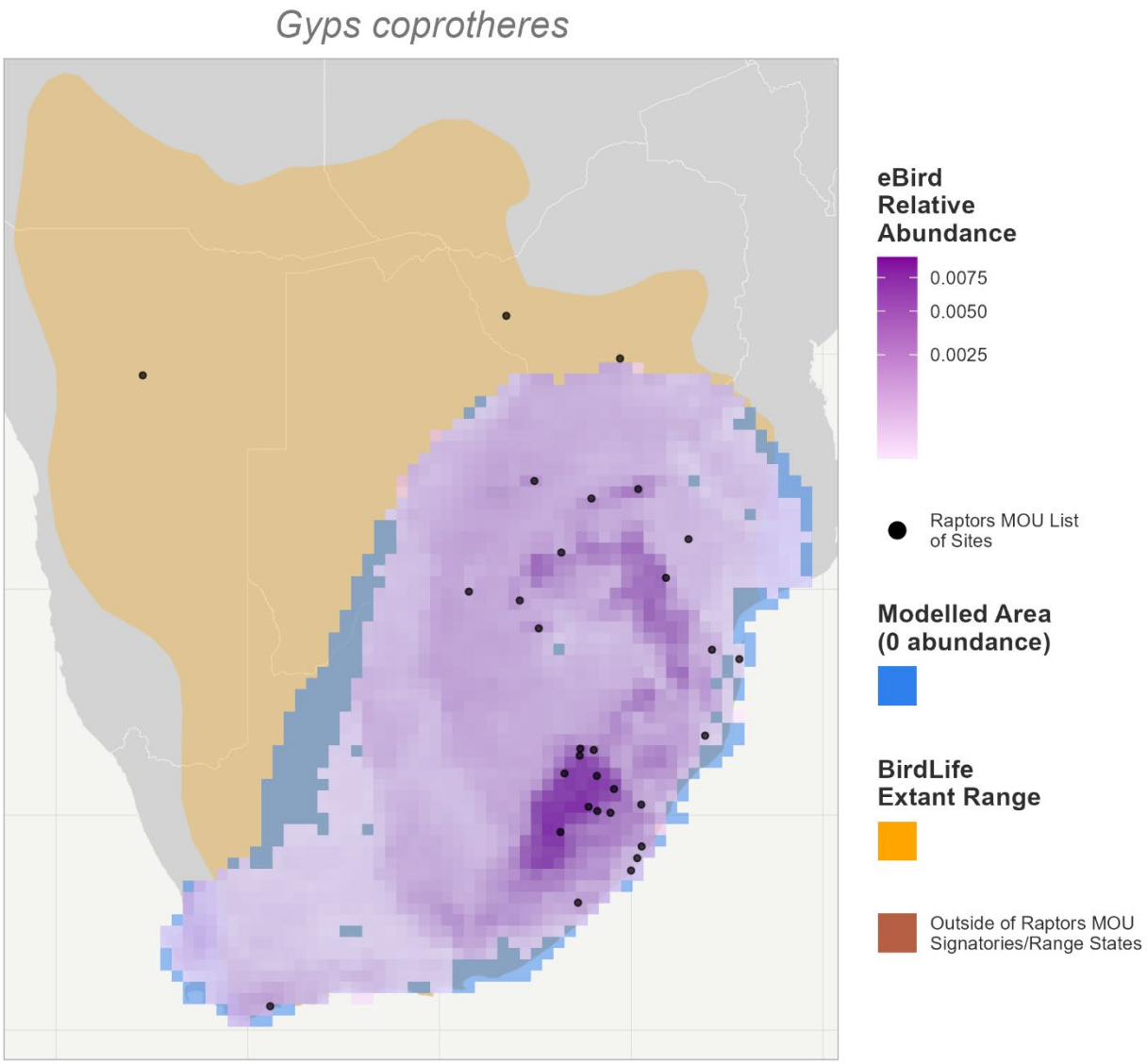


Fig 24. Cape vulture eBird modelled abundance and Raptors MOU List of Sites.

- Thirty-one sites are listed for this species on the List of Sites, with coverage extending across the native resident range. (Fig 23). An additional seven sites overlap with the native non-breeding range, which is more widely dispersed. Most sites are located in South Africa and Lesotho, with further representation in Zimbabwe, Mozambique, Namibia, and Botswana. Only 20 sites are currently recognised for this species in the IBA/KBA databases. This is a highly gregarious species that frequently breeds in large colonies, often numbering in the hundreds. When comparing the distribution of the List of Sites with recent occurrence data from the South African Red List assessment (Shaw et al. 2025) and Fig 24 below, the current site network appears to provide good coverage of the population in South Africa and Lesotho. Given the species' global conservation

status as Vulnerable, any additional breeding colonies that meet the threshold of 30 mature individuals under IBA criterion A1 should be considered for inclusion in the List of Sites. Shaw et al. (2025) also report that breeding colonies in Namibia and Zimbabwe have collapsed, with active colonies now persisting only in Botswana and Mozambique outside of South Africa, Lesotho, and Eswatini. The northern parts of the species' extant range, classified as native non-breeding, appear to function primarily as dispersal zones for wandering individuals, with records being more scattered and less predictable (Shaw et al. 2025). This is likely why abundance was not modelled in this region (Fig 24).

- **Recommendation**: Current site coverage appears sufficient across the native resident range. However, any additional breeding colonies that meet the criteria for international importance should be assessed and added to the site network. For the recommendation of sites based on literature review, see also Annex table S2.

Rüppell's vulture *(Gyps rueppelli)* – CR

BirdLife International Species Factsheet

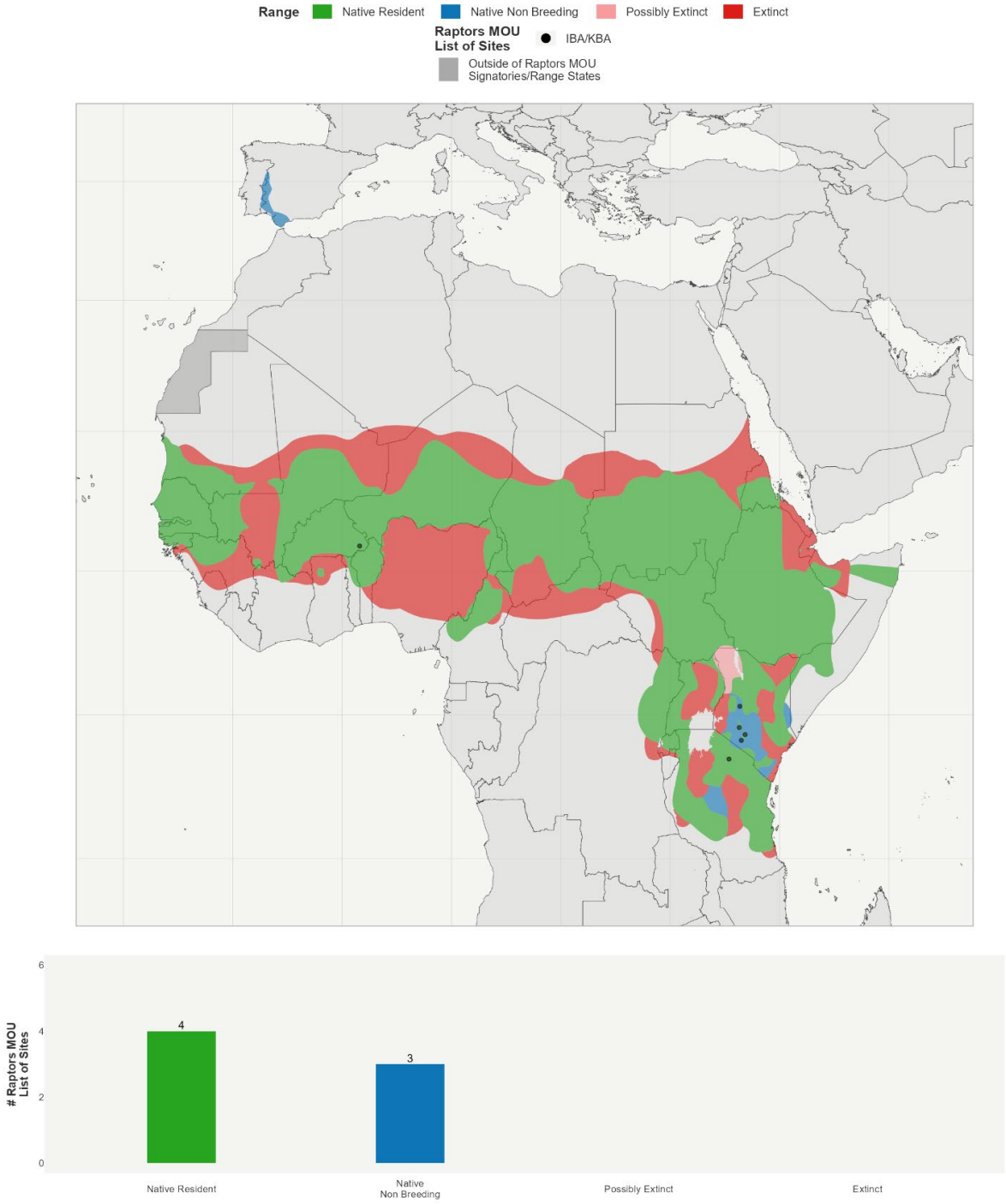


Fig 25. Rüppell's vulture range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

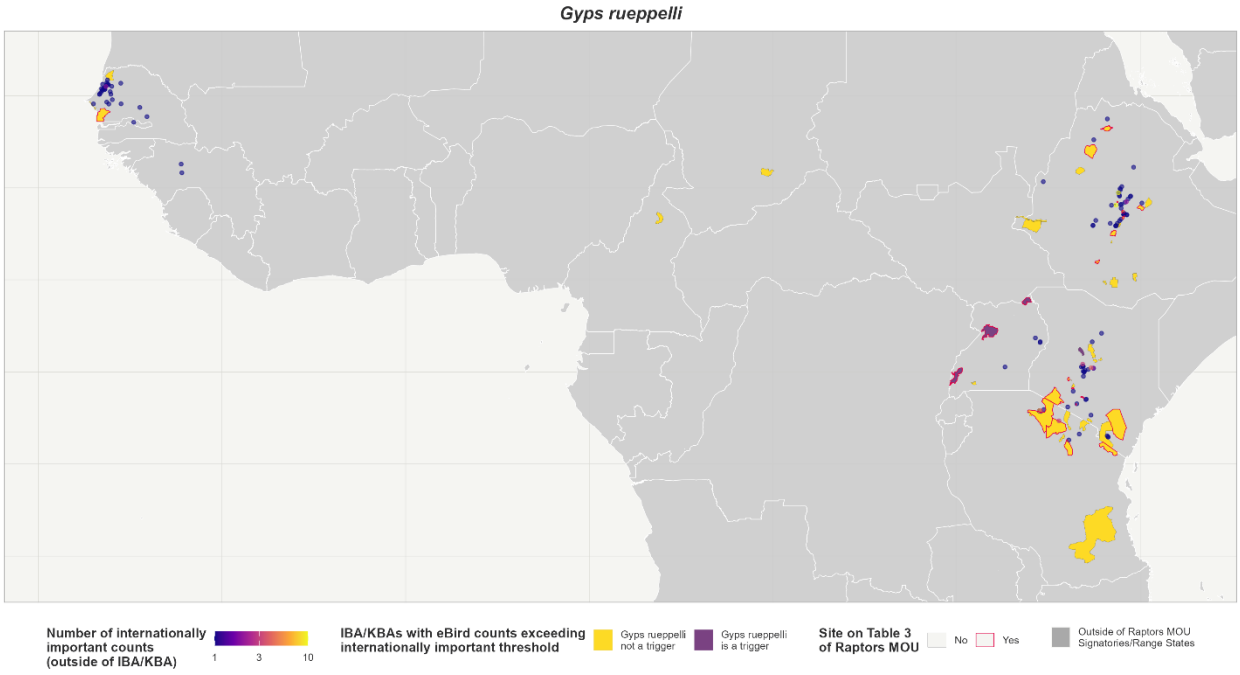


Fig 26. Internationally important eBird counts of Rüppell's vulture in relation to IBA/KBAs and Raptors MOU List of Sites.

- Only six sites are listed for this species and these overlap with its native resident and native non-breeding range (Fig 25). The species is described as being highly gregarious, with breeding colonies of 10-100, and up to 1000 pairs mentioned in Ferguson-Lees & Christie (2001). The List of Sites network has five sites around colonies in East Africa and one site in Burkina Faso. However, to achieve adequate site protection across the species' native resident range, especially in the Sahel, additional sites of regular species presence should be identified for assessment under IBA Criterion A1. The reassessment of sites for this species is especially critical as the current sites were all designated when the species was formerly listed as Near Threatened until 2008. Its recent decline and uplisting to Critically Endangered in 2015 means that lower thresholds of international importance now apply (15 individuals are 5 pairs) and could likely be met at many more sites. Eleven IBAs/KBAs have Rüppell's vulture as a qualifying species and only five of them are covered by the Raptors MOU, this leaves 3 sites in Uganda, 2 in Niger and 1 in the Democratic Republic of Congo.
- The West African Vulture Conservation Action Plan 2023–2043 identifies Gadabeji Biosphere Reserve and Koutous Massif in Niger as important breeding-monitoring areas for Rüppell's vultures that might reveal internationally important numbers. The Chad

Basin is also recognised as supporting a significant population of the species (Chandra et al. 2024)

- **Recommendation:** Increase site network coverage across entire range but especially across the Sahel region. Could include 6 IBAs/KBAs that are already recognised as internationally important for the species but new sites for the species need to be identified. Fig 26 highlights sites identified from internationally important eBird counts that could be considered for inclusion, while recommendations based on the literature review are presented in Annex table S2.

Cinereous vulture *(Aegypius monachus)* – NT

BirdLife International Species Factsheet

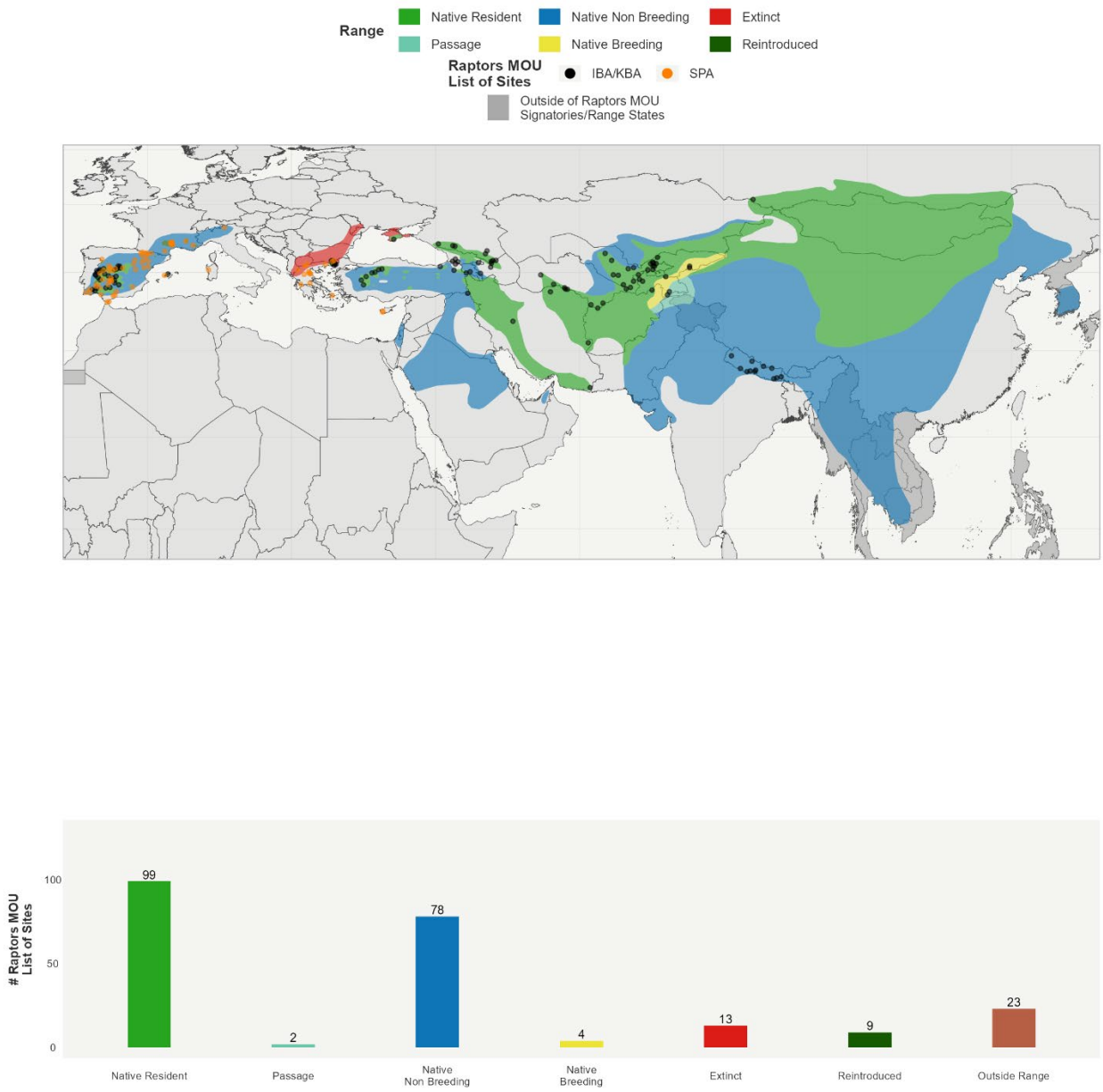


Fig 27. Cinereous vulture range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

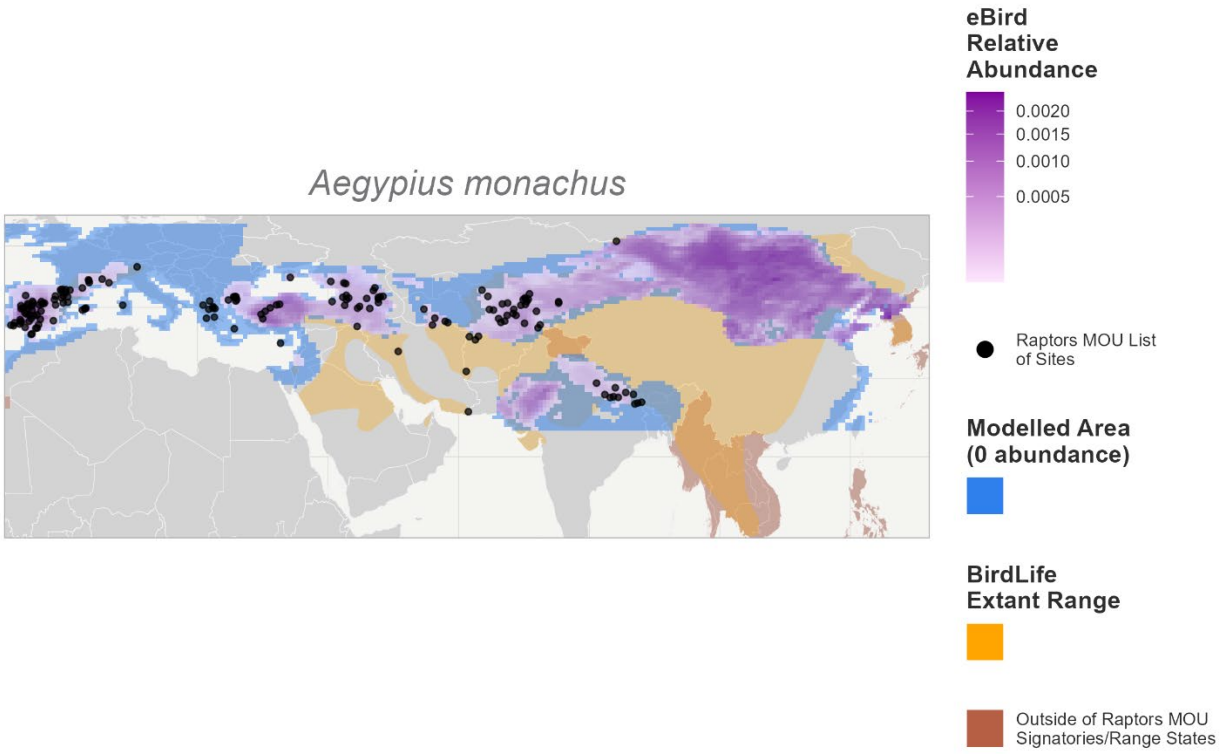


Fig 28. Cinereous vulture eBird modelled abundance and Raptors MOU List of Sites.

- After removing significantly overlapping sites for the analysis, there are 187 sites remaining for cinereous vulture. Most sites overlap with the species' native resident range (99 sites) and native non-breeding range (78 sites). There is reasonable site coverage for the cinereous vulture across its European range, as well as areas in Türkiye and the Caucasus (Fig 27). Thirteen of the listed sites fall within regions now classified as part of the species' extinct range, mainly in the Balkans. However, reintroduction efforts are underway in the region. Notably, over 60 individuals have been recorded in northeast Greece over the past five years, suggesting some recovery or movement into formerly occupied areas. Beyond Europe, there are sites listed in the List of Sites in Central Asia and Nepal, but none in Mongolia, India, or China. This is despite an estimate of 1,760 breeding pairs in these countries as recently as 1991 (Ye Xiao-Ti, 1991). As indicated in Fig 28, Mongolia and China likely support some of the highest concentrations of cinereous vultures globally. Therefore, updated monitoring data from Mongolia, China, and India is urgently needed to assess the current state of vulture populations and to identify gaps in the existing site network. Congregations reaching or exceeding the threshold for international importance (198 mature individuals) may well

occur in these regions and could qualify additional sites for inclusion in the List of Sites under IBA criterion A1. Currently, 23 sites on the List of Sites fall outside the species' mapped range. The majority of these are in Europe, with others in Georgia, Russia, and Azerbaijan. Most are located along the edge of the mapped range and may reflect minor range map inaccuracies, such as in southern Spain, or historic locations where the species no longer occurs. For instance, two sites in Cyprus and one in Sardinia (Italy) are listed, although there have been no eBird records of the species from these locations in the past 10 years.

- **Recommendation:** The current network of sites provides good coverage across much of Europe and parts of Central Asia. However, there are significant gaps in the eastern portion of the species' range, particularly in China, Mongolia, and north-western India. These regions should be prioritised for monitoring and site identification efforts to ensure key populations are adequately protected. For the recommendation of sites based on the literature review, see Annex table S2. While European site coverage reasonable, two additional sites in Portugal are suggested that meet internationally importance criteria (IBA A1): Serra do Mendro (Vidiguira/Portel) and Monfortinho.

Lappet-faced vulture *(Torgos tracheliotos)* – EN

BirdLife International Species Factsheet

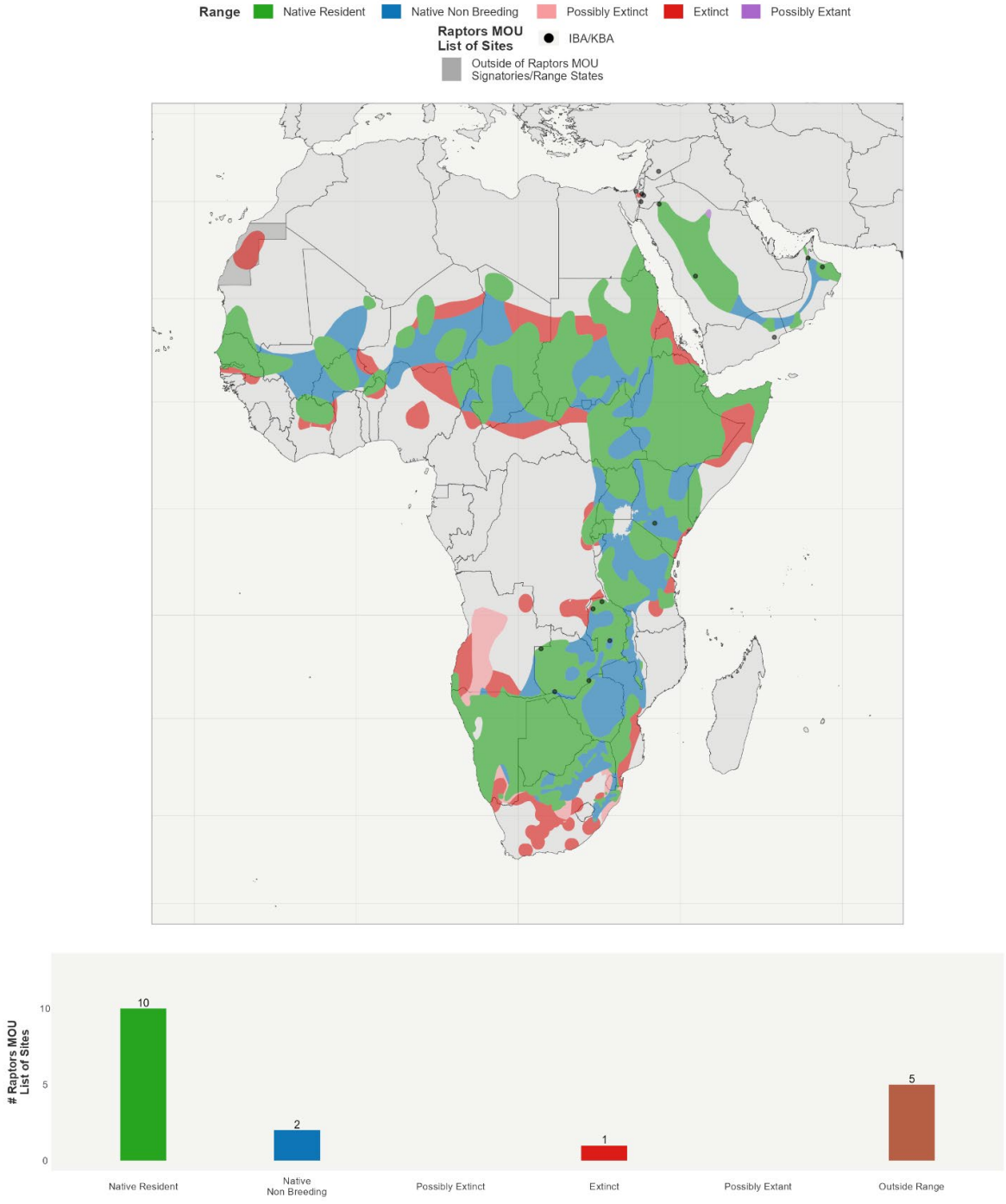


Fig 29. Lappet-faced vulture range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

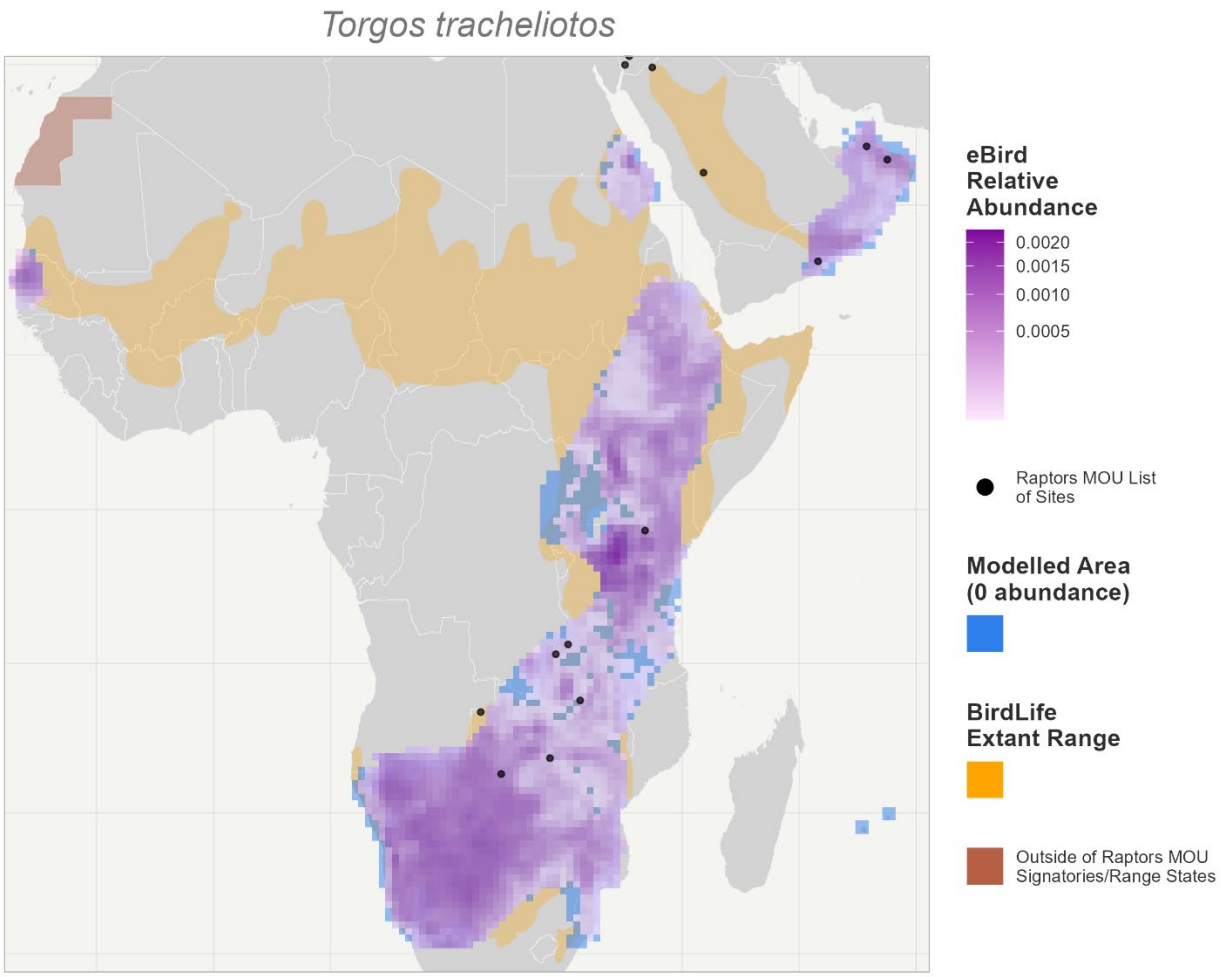


Fig 30. Lappet-faced vulture eBird modelled abundance and Raptors MOU List of Sites.

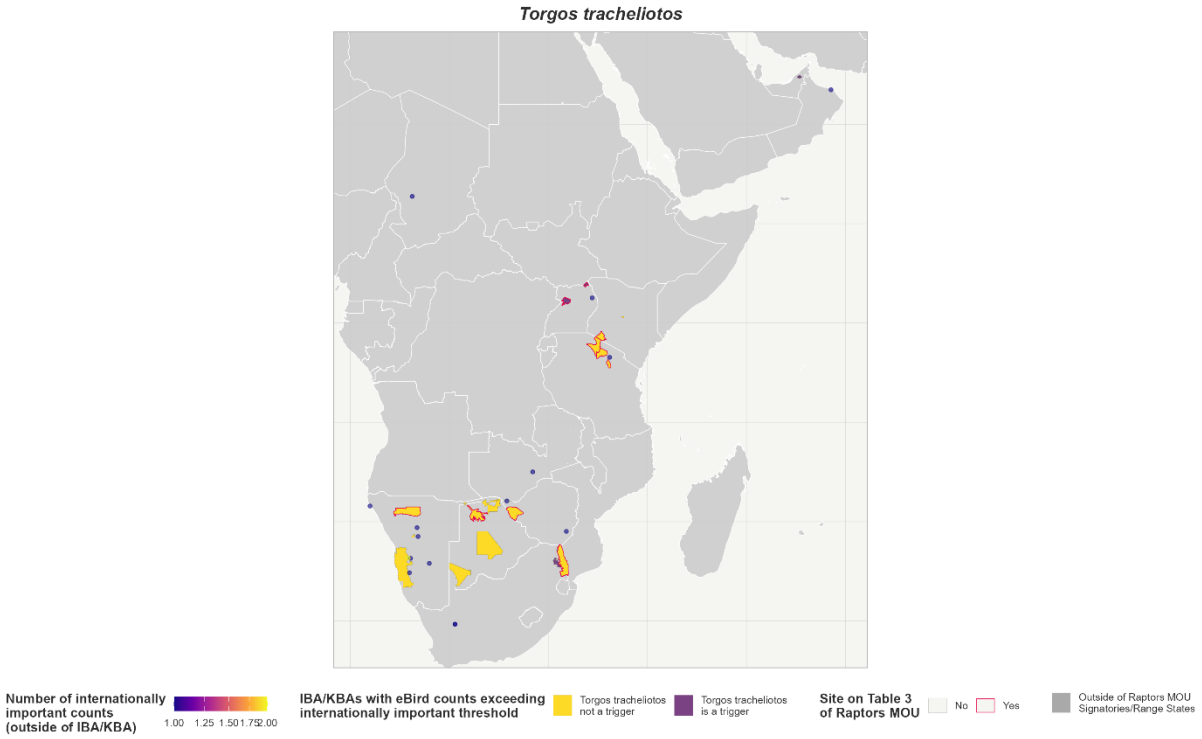


Fig 31. Internationally important eBird counts of lappet-faced vulture in relation to IBA/KBAs and Raptors MOU List of Sites.

- Seventeen sites on the List of Sites are listed for the lappet-faced vulture. Of these, ten overlap with its native resident range and two with its native non-breeding range. Given the dramatic decline in population numbers, estimated at around 90% over the last three generations in Africa (Shaw et al. 2024), many additional sites are likely to qualify as IBAs if reassessed, particularly as the species is now listed as Endangered on the IUCN Red List. A small number of additional sites have already been identified in Africa in the IBA/KBA databases, including three in Uganda and one each in South Africa, Mozambique, and Niger. However, there are likely to be many more internationally important sites that remain undocumented. Priority countries for further identification include Ethiopia, Namibia, Botswana, Tanzania, South Africa, Mozambique, Kenya and Senegal, where the species still occurs and may concentrate in key areas (Fig 29, 30). Five of the listed sites fall outside the species' current known distribution. These are in historical breeding areas around Israel and Jordan, where the species is possibly extinct. Nevertheless, it is important to retain these sites in the Middle East to highlight areas where future conservation and restoration efforts might focus.
- The West African Vulture Conservation Action Plan 2023–2043 identifies the Chad Basin as supporting significant numbers of lappet-faced vultures. The ongoing nest monitoring

in Gadabeji Biosphere Reserve and Koutous Massif in Niger might reveal additional information on international important numbers in these areas (Chandra et al. 2024).

- **Recommendation**: There are significant gaps in the site network across the species' entire range. While a few additional internationally important sites have already been identified in Africa, further work is urgently needed to locate and designate more sites, particularly in key range countries. For recommendation of sites based on eBird counts, see Fig 31 and for the recommendation of sites based on the literature review, see Annex table S2.

Mountain hawk-eagle *(Nisaetus nipalensis)* – NT

BirdLife International Species Factsheet

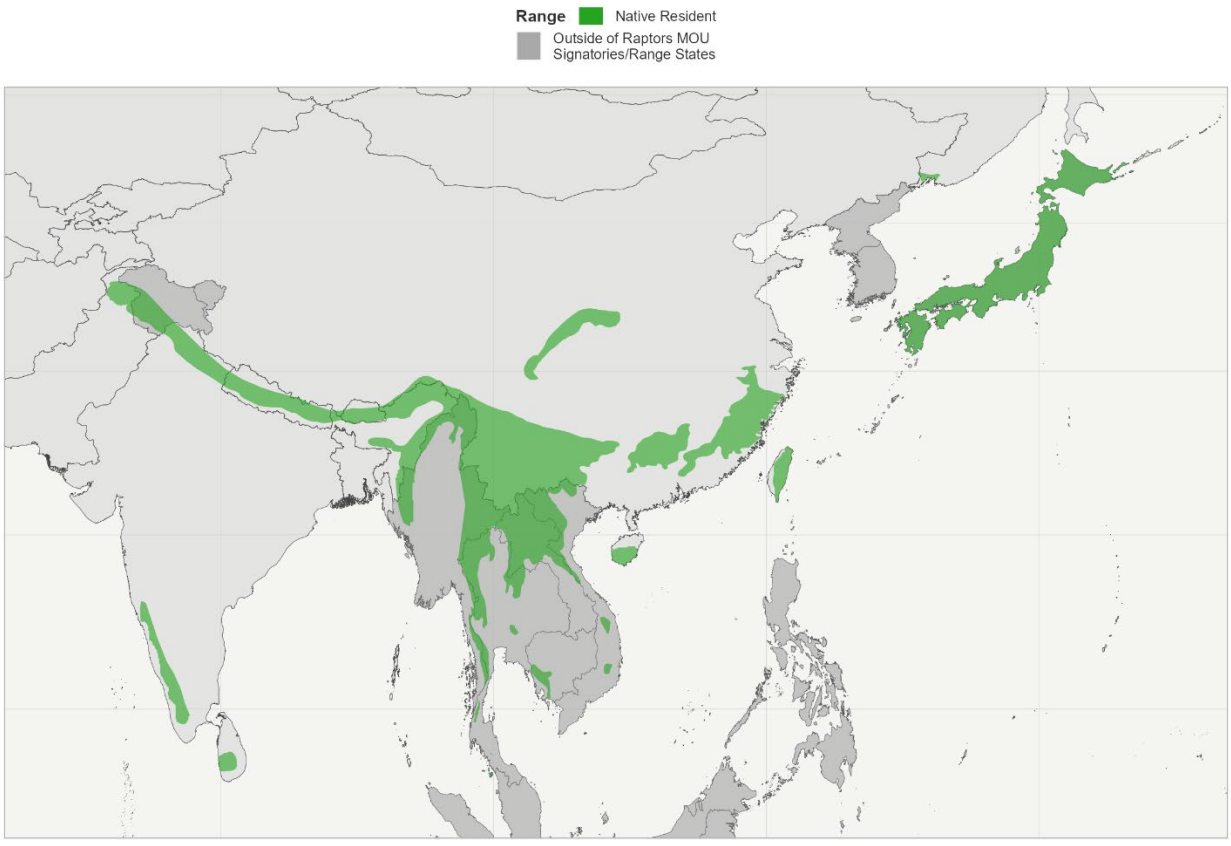


Fig 32. Mountain hawk-eagle range. Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

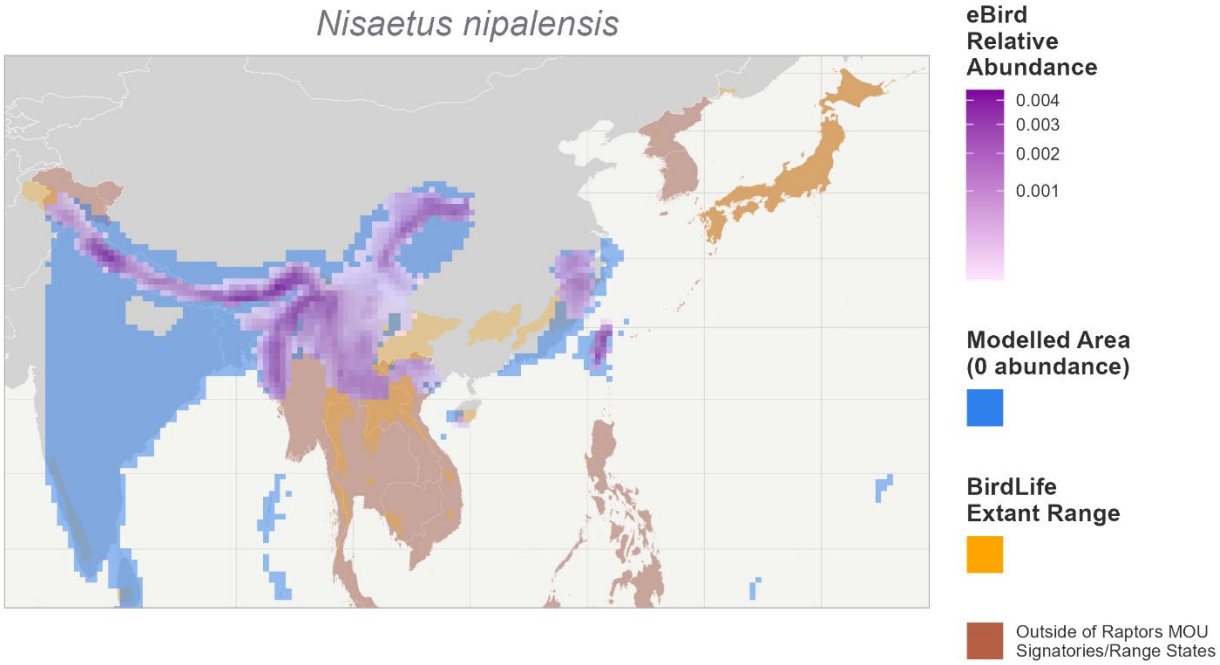


Fig 33. Mountain hawk-eagle eBird modelled abundance and Raptors MOU List of Sites.

- No sites for this species are listed in the List of Sites (Fig 32), and there are currently no internationally important sites identified in the IBA/KBA databases. This may partly reflect the species' behaviour: it typically occurs solitarily or in pairs and is non-congregatory throughout its annual cycle (Ferguson-Lees & Christie, 2001). Additionally, the species was only uplisted from Least Concern to Near Threatened in 2021, after the establishment of the List of Sites, which may have limited site identification for it in earlier assessments. The threshold for a site to qualify as internationally important for this species is currently 40 mature individuals. A study in Japan suggests that nest sites of neighbouring pairs are spaced approximately 3 km apart (Yamazaki, 2010). If this spatial arrangement is extrapolated across a hypothetical evenly distributed population, an area of about 180 km² would be needed to support 20 breeding pairs (i.e., 40 mature individuals). It remains unclear whether any sites support populations of this size, but such sites could occur in high abundance areas, such as the Himalayas or central China (see Fig 33).
- **Recommendations**: unlikely that many sites meet the threshold for international importance due to solitary nature.

Greater spotted eagle *(Clanga clanga)* – VU

BirdLife International Species Factsheet

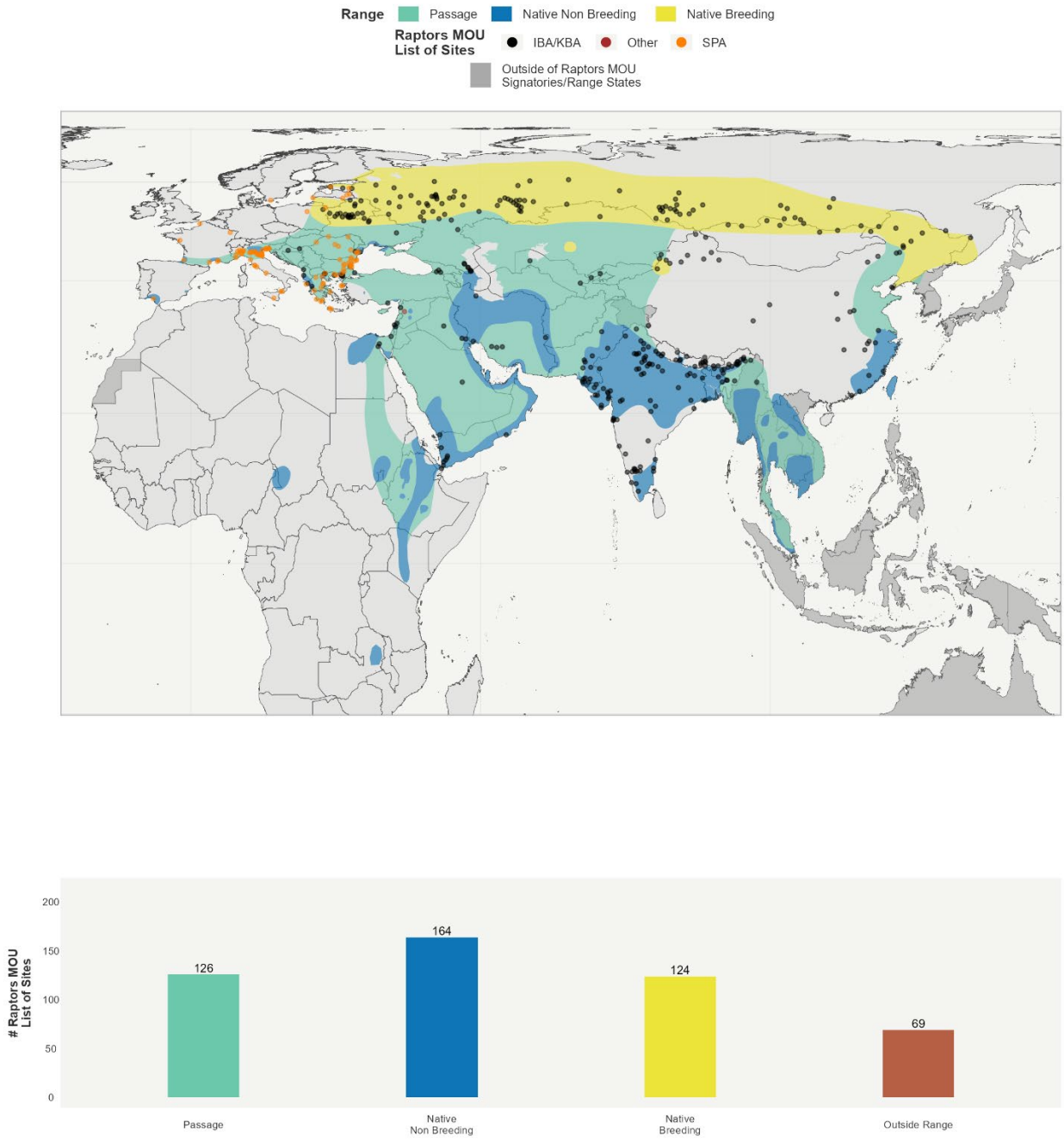


Fig 34. Greater spotted eagle range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

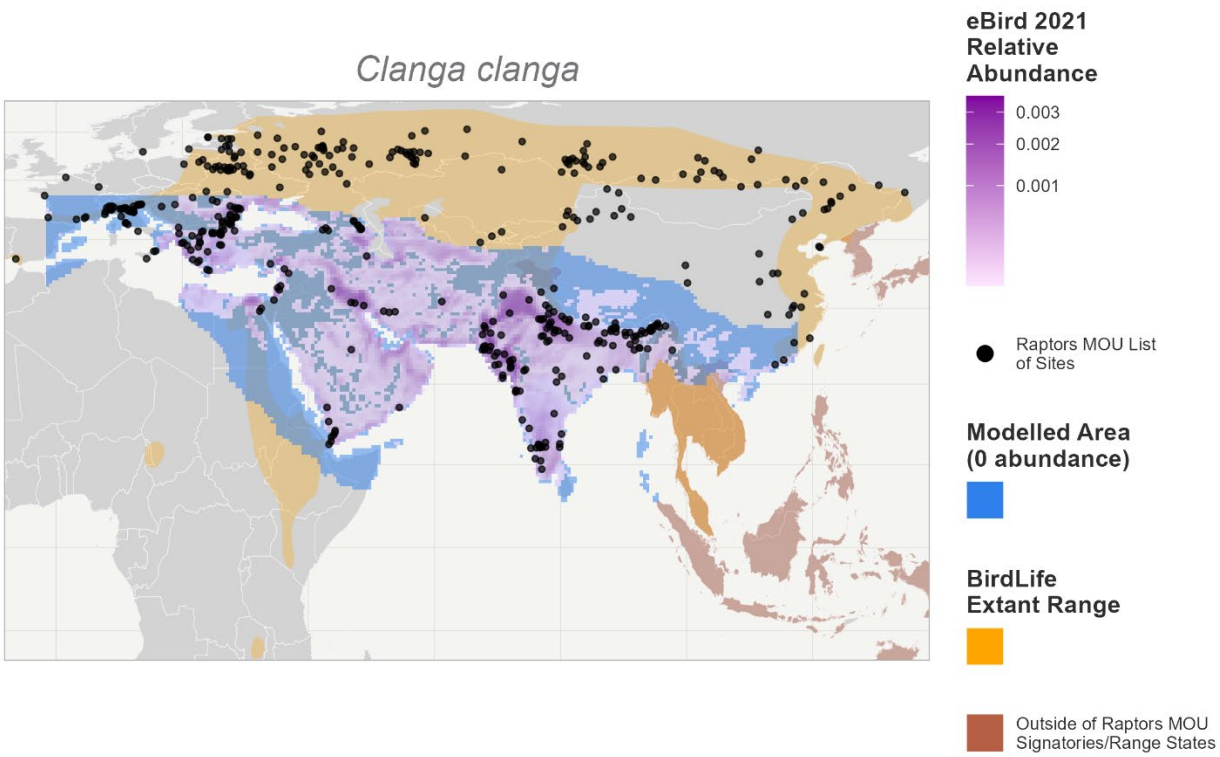


Fig 35. Greater spotted eagle eBird modelled abundance and Raptors MOU List of Sites. *Note*: this map only shows modelled abundance during the non-breeding period.

- After removing significantly overlapping sites for the analysis, there are 447 sites remaining for greater spotted eagle. These sites span most of the species' range and cover all stages of its annual cycle (Fig 34). There is a wide distribution of sites across the breeding range, from Eastern Europe through to Eastern Russia and Mongolia, as well as a substantial number of passage sites. The greatest concentration of sites occurs in the non-breeding range, particularly in India, with additional representation in China and the Arabian Peninsula. However, there are some gaps in the species' site network. Notably, there are no listed sites in Africa apart from a small cluster in northeastern Egypt and one in Djibouti. Records from well-surveyed areas such as Nairobi National Park in Kenya suggest only occasional presence, with a few records of single individuals on eBird. Fig. 35 also suggests the abundance of the species in Africa is practically zero south of Egypt suggesting there are unlikely to be more internationally important sites in Kenya, Ethiopia, Sudan, or Chad. Additional smaller gaps also exist in regions where the species regularly occurs, such as Iran, Iraq and the Arabian Peninsula. The extent to which these areas might support internationally important numbers remains uncertain. Although breeding pairs are typically solitary, individuals can congregate on non-breeding grounds, particularly where food is abundant (Ferguson-Lees & Christie, 2001). There are

69 listed sites that currently fall outside the species' mapped range, including 24 in India and 17 in China. These discrepancies may indicate areas where the species occurs but where the range map requires revision. Many of the Indian sites, as well as sites in central China, have recent eBird records that support their continued relevance (Fig. 35). Although the population in Southeast Asia appears to be small, and sites supporting numbers above the relevant threshold may therefore be difficult to identify, conserving this population remains important for maintaining the species' range in the region.

- **Recommendation:** Site coverage is largely 'sufficient' across the breeding range and passage areas. However, non-breeding site coverage is more concentrated in the Indian subcontinent. Further work is needed to assess potential internationally important sites in the Gulf region, and to consider updating the species' range map where necessary.

Tawny eagle *(Aquila rapax)* – VU

BirdLife International Species Factsheet

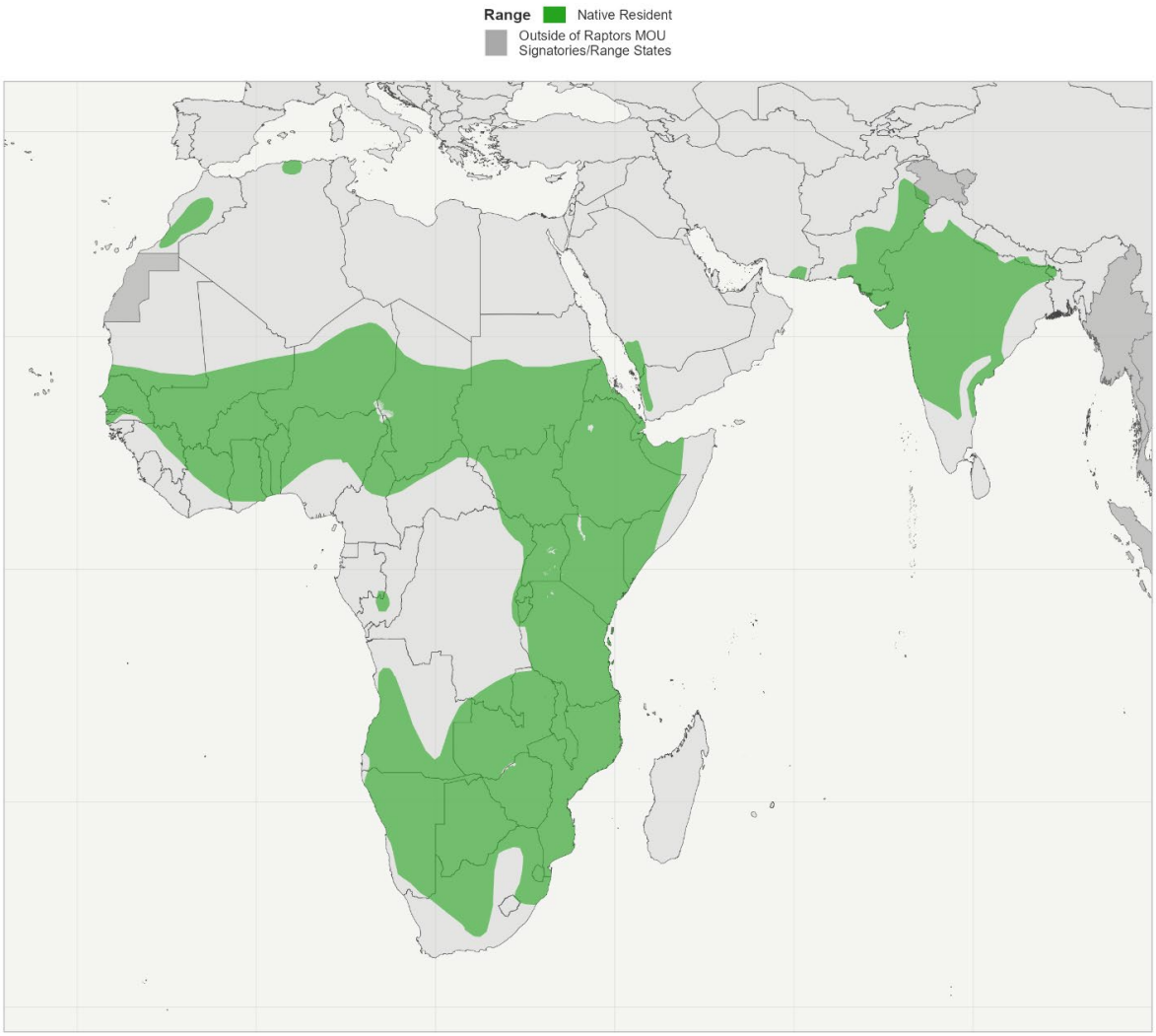


Fig 36. Tawny eagle range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

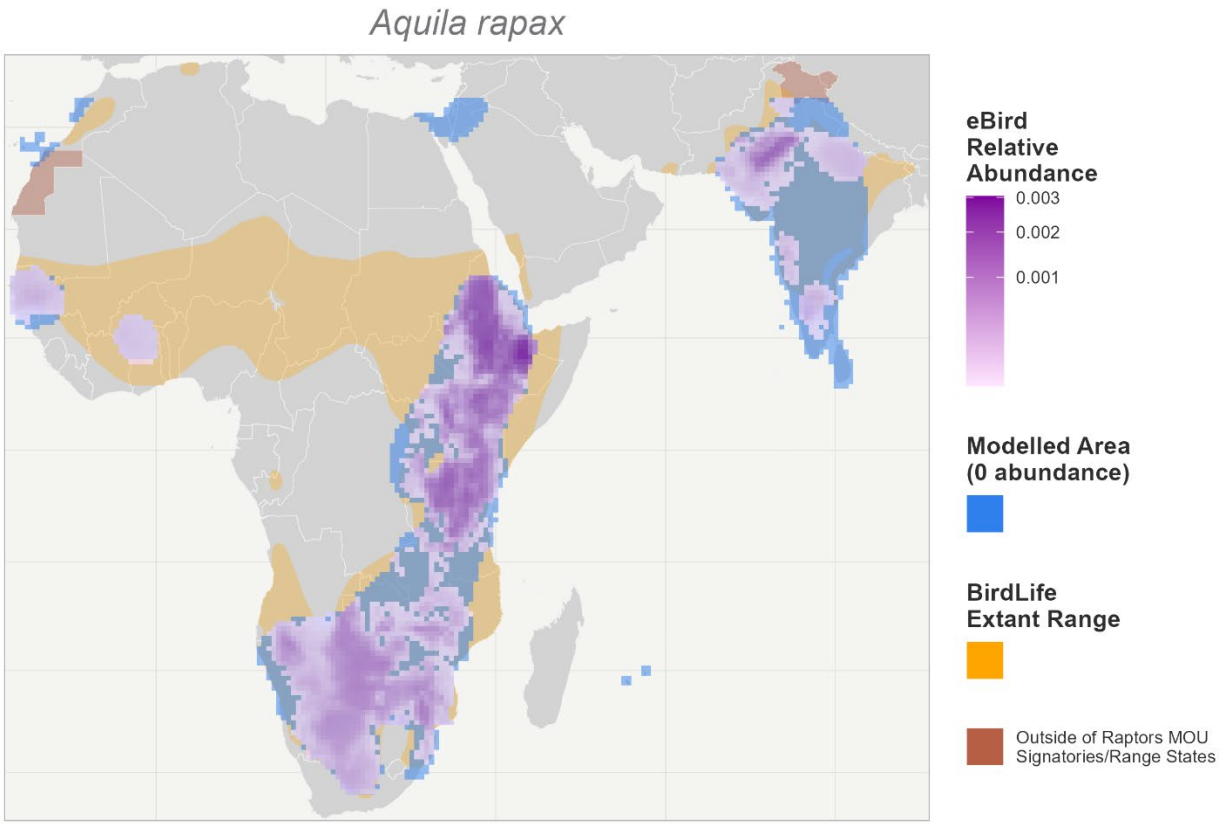


Fig 37. Tawny eagle eBird modelled abundance and Raptors MOU List of Sites.

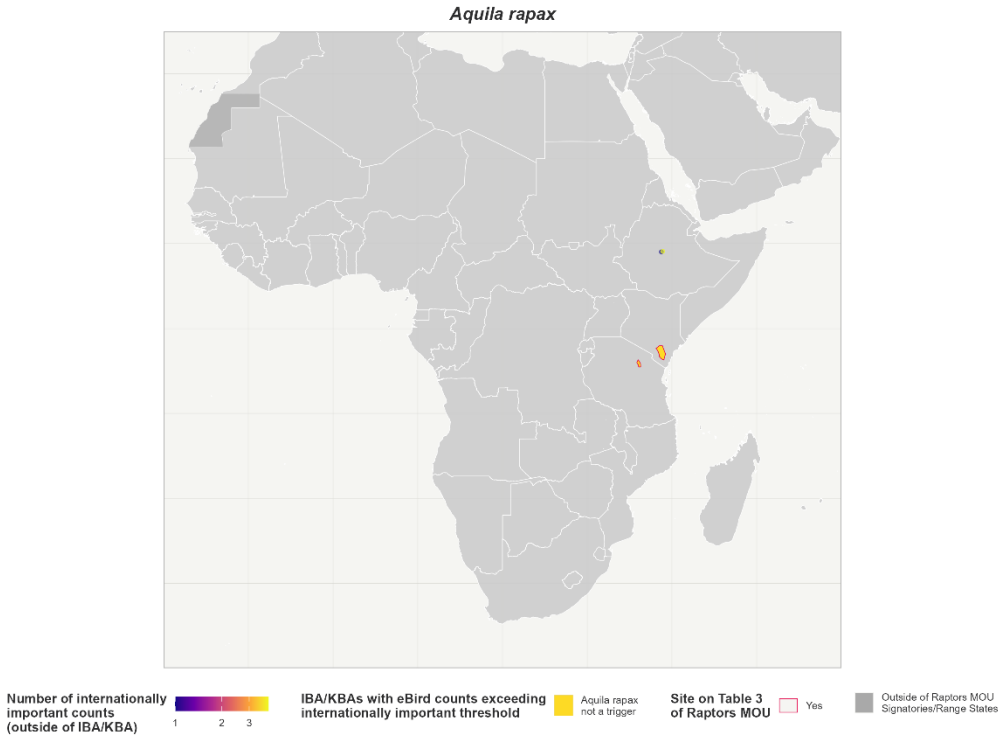


Fig 38. Internationally important eBird counts of tawny eagle in relation to IBA/KBAs and Raptors MOU List of Sites.

- No sites are currently listed for this species on the List of Sites (Fig 36), and none are included in the IBA/KBA databases. Until 2018, the species was listed as Least Concern but was uplisted to Vulnerable following evidence of rapid population declines. Notably, Shaw et al. (2024) estimated a 66.3% population decline over three generations across several survey sites in parts of Africa. This change in conservation status significantly reduced the threshold for site qualification under IBA criterion A1, from several thousand individuals when the species was Least Concern to just 30 mature individuals now that it is Vulnerable. The species is not generally considered social, although non-adults can gather at abundant food sources (Ferguson-Lees & Christie, 2001). Communal roosting has also been observed in trees, on power pylons, and on the ground (Clark & Davies, 2018). These behaviours suggest that although the species was unlikely to meet thresholds of international importance previously it may now do so under the criterion A1 threshold applicable for Vulnerable species. Several existing IBAs/KBAs, particularly within African national parks where raptor strongholds remain, are likely to qualify as internationally important for the species. Additional sites of significance may also exist outside the current IBA/KBA network and warrant investigation, particularly in East Africa (see Fig 37).

- **Recommendation:** It is likely that internationally important sites for this species exist across its entire range. These should be identified and assessed to ensure adequate protection, particularly in light of the species' recent uplisting to Vulnerable. Only a small number of sites were identified using eBird data (Fig. 38).

Steppe eagle *(Aquila nipalensis)* – EN

BirdLife International Species Factsheet

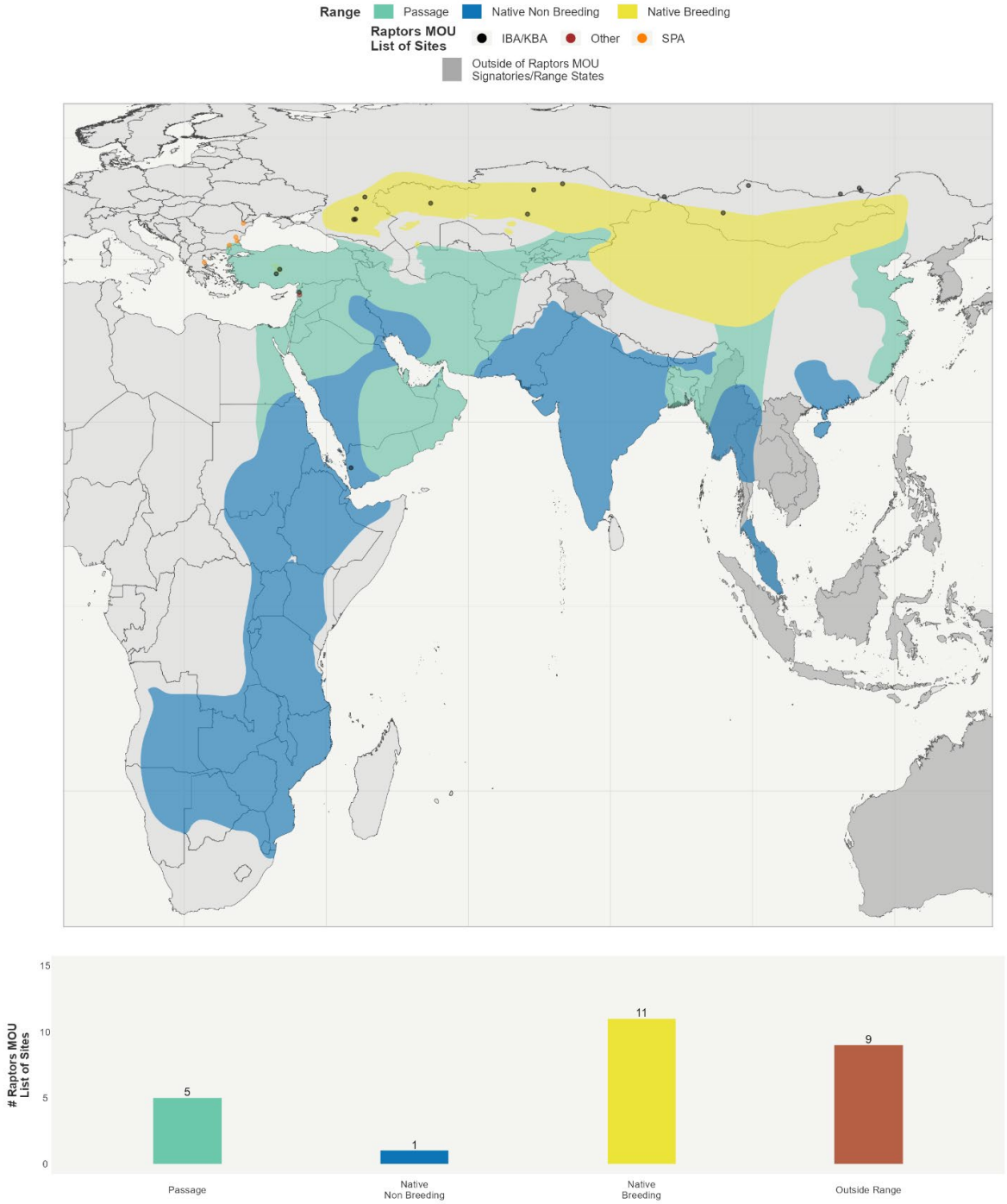


Fig 39. Steppe eagle range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

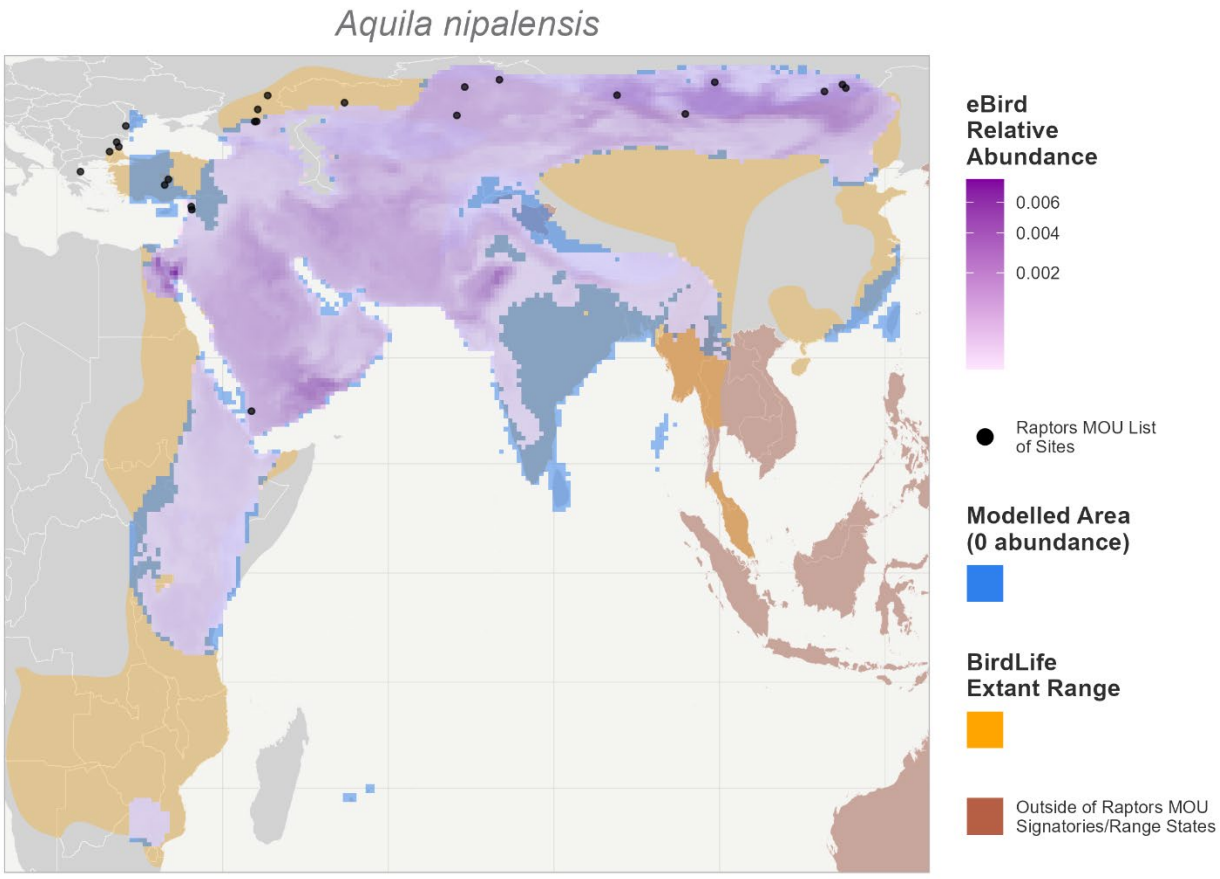


Fig 40. Steppe eagle eBird modelled abundance and Raptors MOU List of Sites.

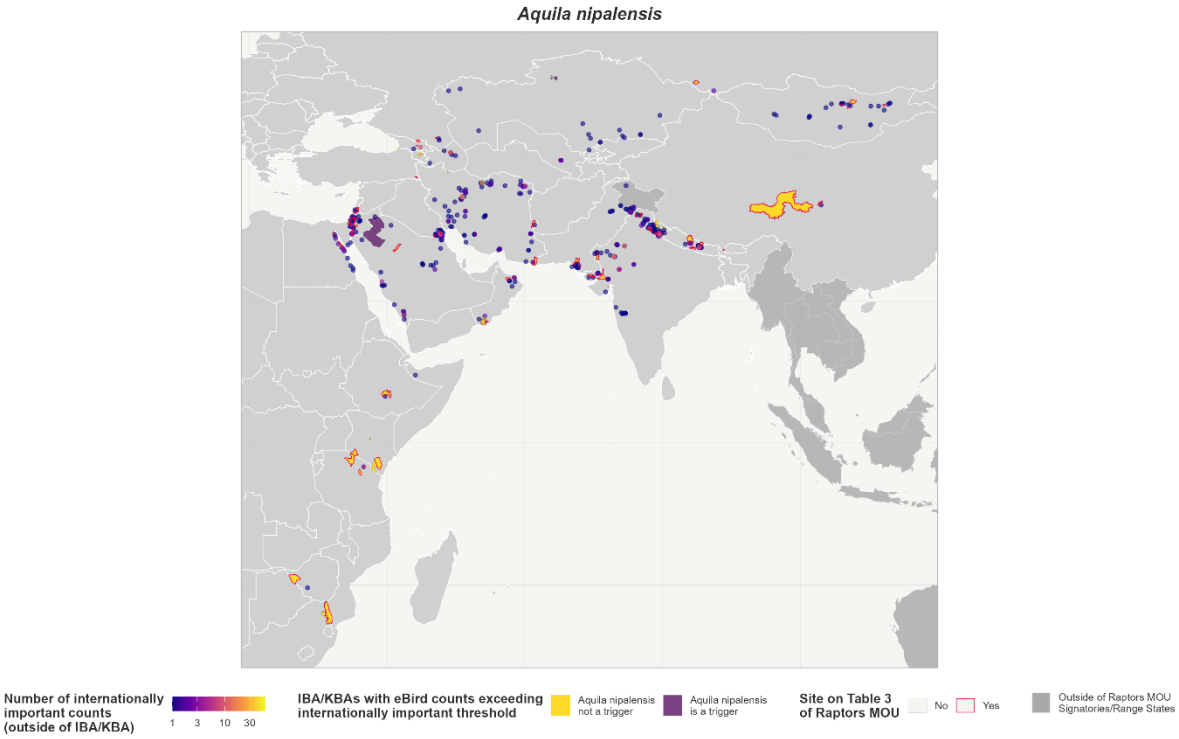


Fig 41. Internationally important eBird counts of steppe eagle in relation to IBA/KBAs and Annex 3, Table 3 List of sites of Raptors MOU.

- This species' global distribution marginally borders Europe and as a result it only has 5 SPA sites (two are within passage range and three are outside current range maps) (Fig 39). Currently, 11 sites covering native breeding range are included on the List of Sites in and only 1 site covering native non-breeding range. Another 9 sites, mainly in northern Mongolia, Russia and Eastern Europe, lie outside the range map and may no longer host the species due to population declines and range retraction. These clusters of former breeding sites located outside the native breeding range will be important to maintain and recognise as suitable areas for future conservation interventions to aim to restore the species and increase its range.
- Since its recent up-listing to Endangered, steppe eagle would benefit from further data on population numbers on non-breeding grounds, which might meet IBA criterion A1. At the time of this study, only one site in Yemen was designated as an IBA in the non-breeding range. Steppe eagle may meet thresholds of international importance at dump sites in central Saudi Arabia, where the world's largest wintering congregation of steppe eagles was discovered in 2019 (Shobrak et al. 2021). Since the steppe eagle was uplisted to Endangered in 2015, many sites across its native breeding and native non-breeding range are likely to qualify as of international importance. The most obvious gap in the

network is across eastern and southern Africa and Asia where there are no sites in the network represented by the List of Sites, but it is likely this species could benefit from additional sites being identified from across its range. Sites in this region are most likely easy to identify as the species is known to congregate on the non-breeding grounds, with up to 136 individuals recorded together in Rajistan (DeCandido et al. 2013). Fig 40 also suggests that Egypt, Israel, Yemen, Oman (passage), northwest India (non-breeding) and the Russian Far East (breeding) may be areas of particularly high abundance.

- **Recommendation:** more sites are required for this species since its uplisting to Endangered in 2015, particularly non-breeding sites. For recommendation of new sites based on internationally important eBird counts, see Fig. 41 and for the recommendation of sites based on the literature review, see Annex table S2. Additionally, see Annex table S3 for key sites for the conservation of steppe eagle included in the current Global Action Plan for the Conservation of the steppe eagle (*Aquila nipalensis*) 2026-2035 (Weston et al. 2025).

Spanish imperial eagle *(Aquila adalberti)* – VU

BirdLife International Species Factsheet

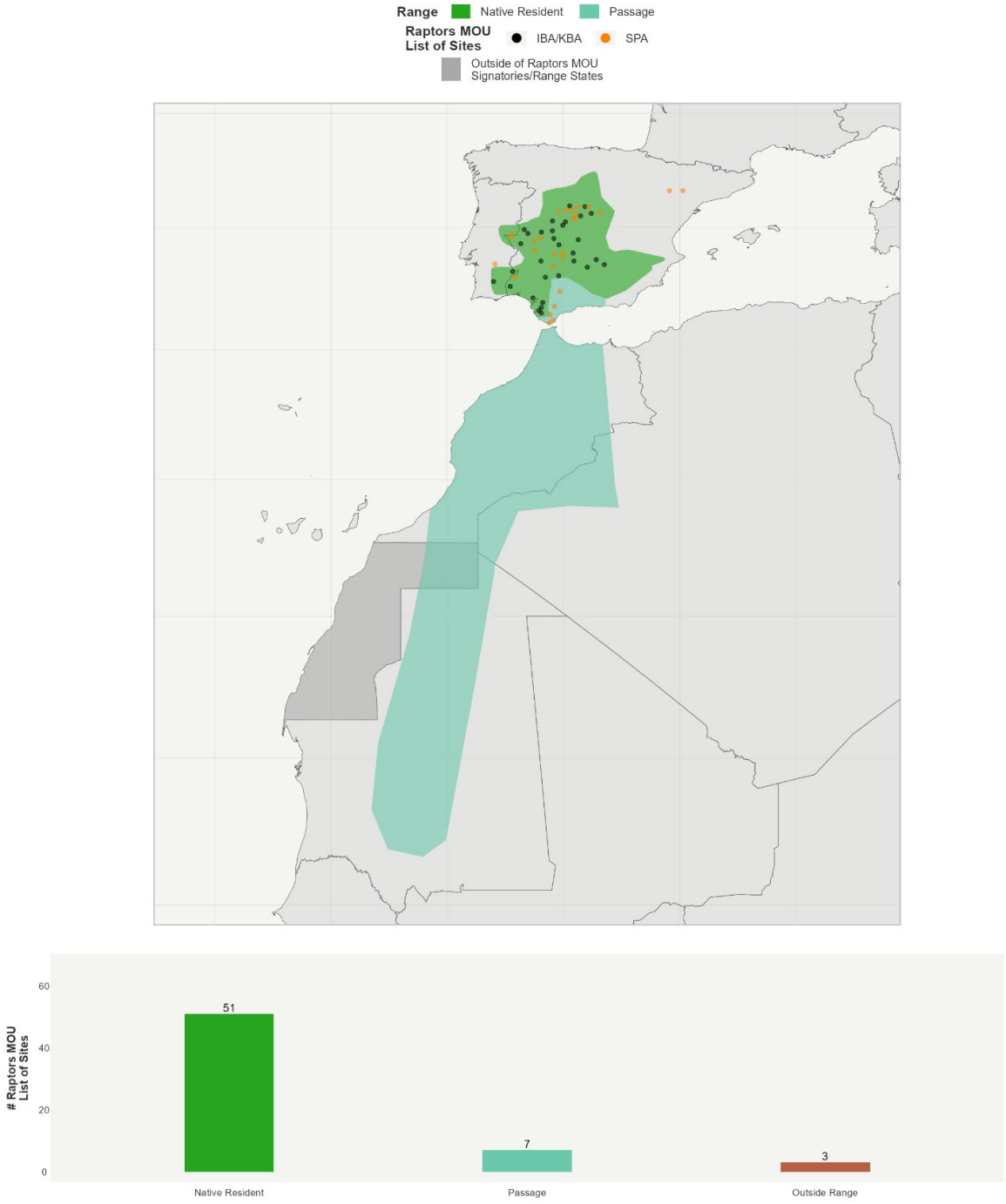


Fig 42. Spanish imperial eagle range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

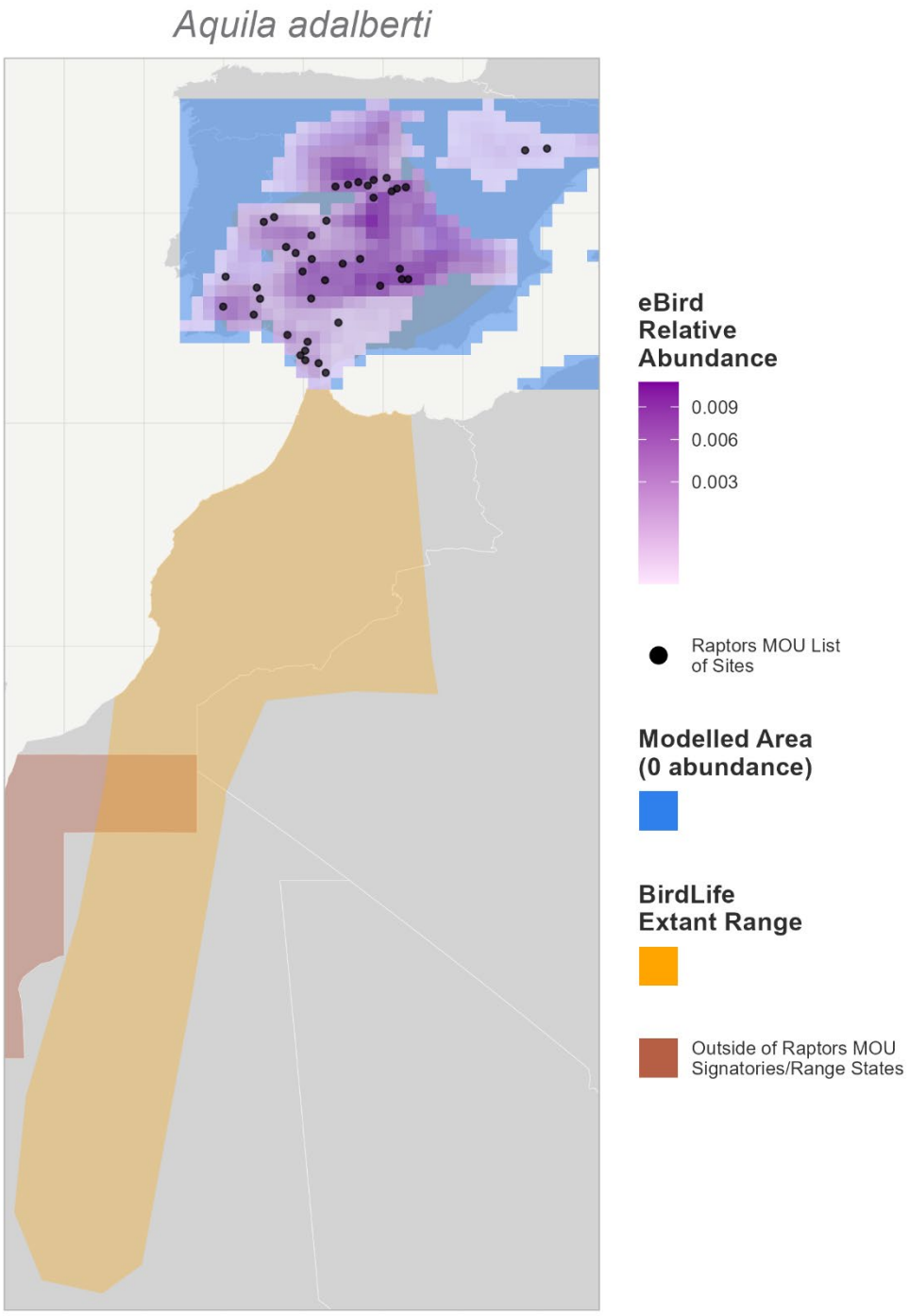


Fig 43. Spanish imperial eagle eBird modelled abundance and Raptors MOU List of Sites.

- There are 87 IBAs and SPAs in Spain and Portugal listed on the List of Sites for Spanish imperial eagle. This network of sites provides good coverage across the entire resident range. In the passage portion of the range there are 7 Spanish SPAs close to the straights

of Gibraltar. As the population has grown in Iberia, an increasing number of dispersing immature birds are being recorded in Morocco and occasionally in Algeria, Mauritania and Western Sahara (Morandini et al. 2016, Morandini et al. 2020). Immature birds mainly cross into North Africa around the Strait of Gibraltar to minimise the sea crossing. There is no evidence that this species is congregatory at any time of year (Ferguson-Lees & Christie 2001) and no evidence of records greater than three individuals (source: eBird) could be found at the same site in North Africa. This is well below the threshold of 30 individuals to trigger the criteria for international importance.

- **Recommendation:** no major gaps in the site network as resident range reasonably well covered (Fig 42,43) and unlikely to be internationally important sites in the North African portion of the range.

Eastern imperial eagle *(Aquila heliaca)* – VU

BirdLife International Species Factsheet

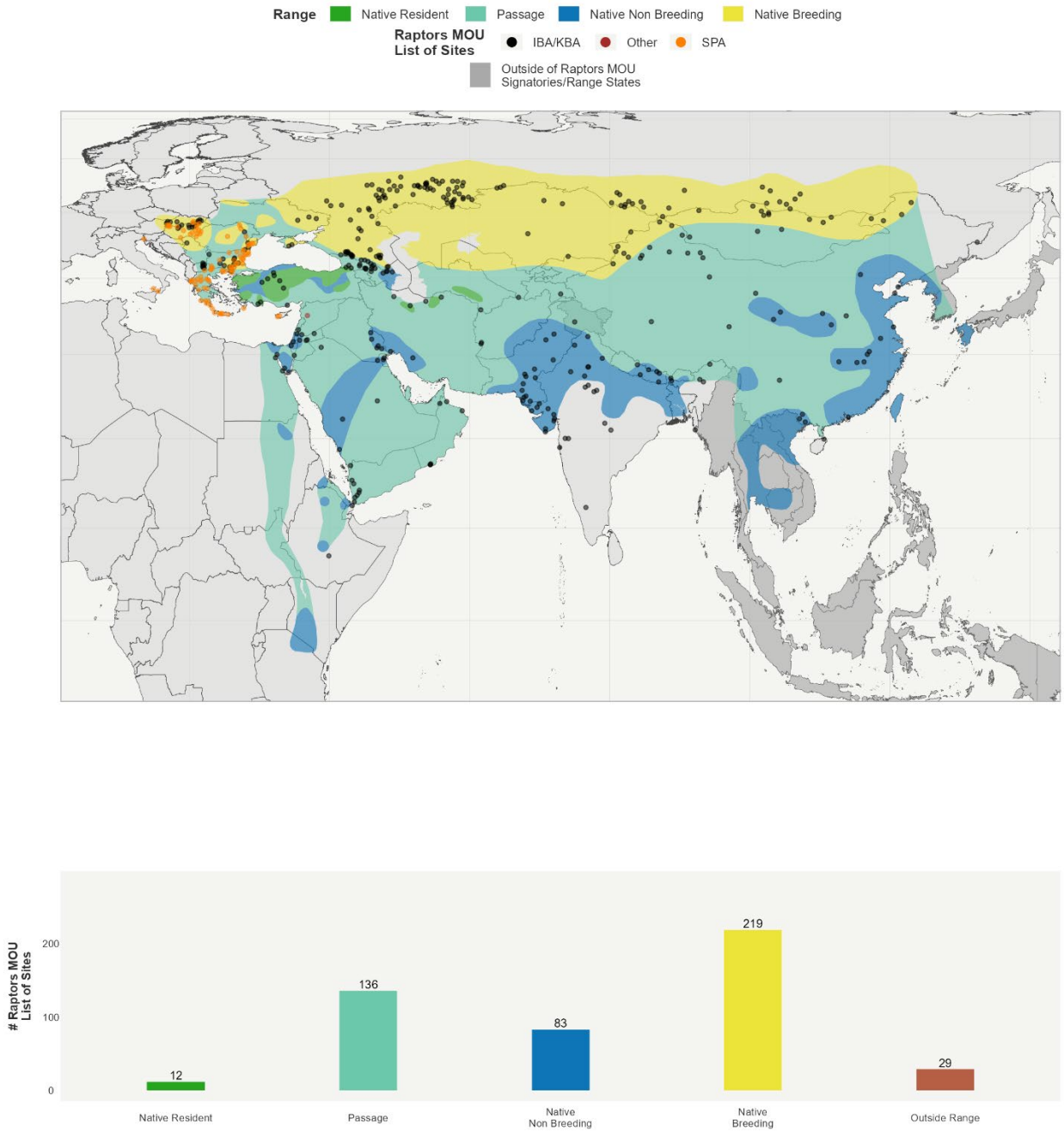


Fig 44. Eastern imperial eagle range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

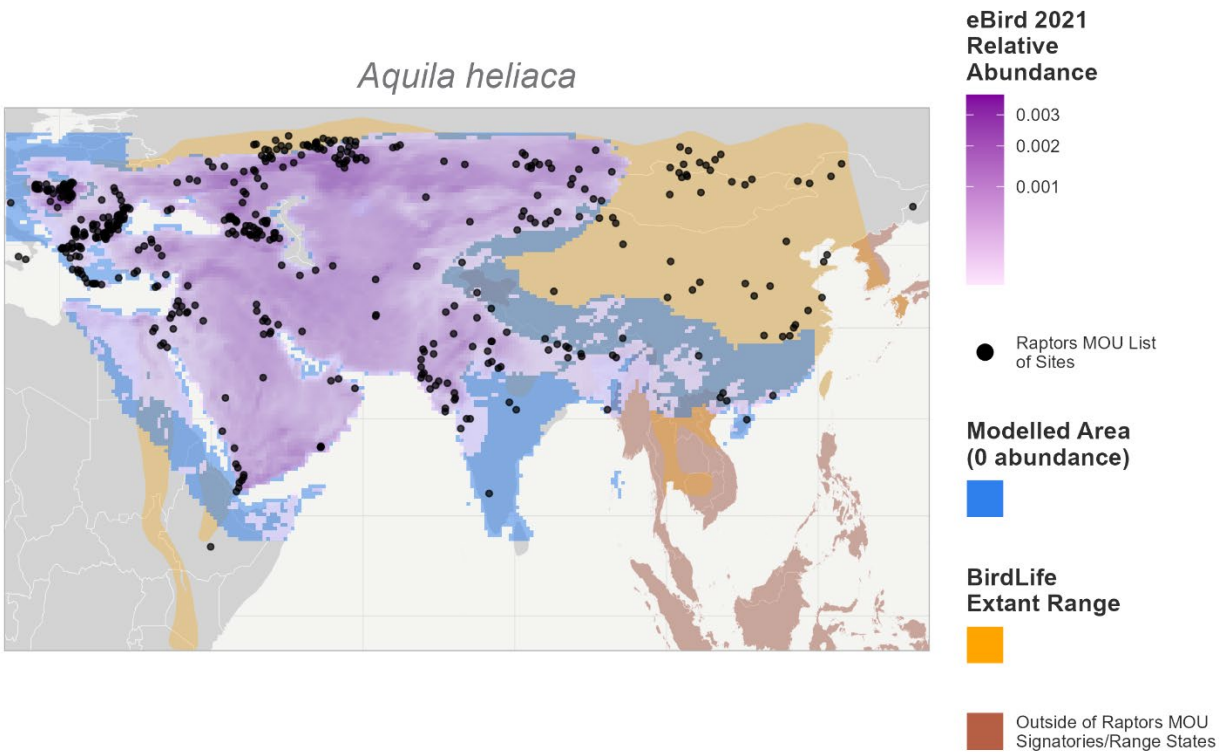


Fig 45. Eastern imperial eagle eBird modelled abundance and Raptors MOU List of Sites.

- After removing significantly overlapping sites for the analysis, there are 415 sites remaining for eastern imperial eagle. These sites are well distributed across the species' range and represent all stages of its annual cycle (Fig 44). There are 392 sites for this species listed in the IBA/KBA databases, indicating that the List of Sites encompasses the vast majority of internationally important sites already identified for the species. Twenty-nine sites on the List of Sites fall outside the current BirdLife range map, including 10 in India and 9 in Greece. A review of eBird data reveals that many of the Indian sites still have records of eastern imperial eagles within the past decade. However, it is unclear whether the numbers observed continue to meet the thresholds for international importance. In Greece, the nine out-of-range sites are mostly located on islands not currently designated within the species' passage range, although records confirm that the species does occur there during migration. In Africa, there are notably few sites listed for the species, aside from a cluster in northeast Egypt. This may reflect a genuine absence of internationally important populations across the continent, especially since Fig 45 suggests that the species occurs at low abundances in Africa, but

further investigation is warranted to confirm whether key sites may be missing, particularly in under-surveyed regions.

- **Recommendation**: The current site network appears broadly ‘sufficient’ across the species’ range and throughout its annual cycle. However, further assessment is needed to determine whether the species occurs in internationally important numbers in parts of Africa, especially in Sudan, Ethiopia, Kenya, and Tanzania.

Black harrier *(Circus maurus)* – EN

BirdLife International Species Factsheet

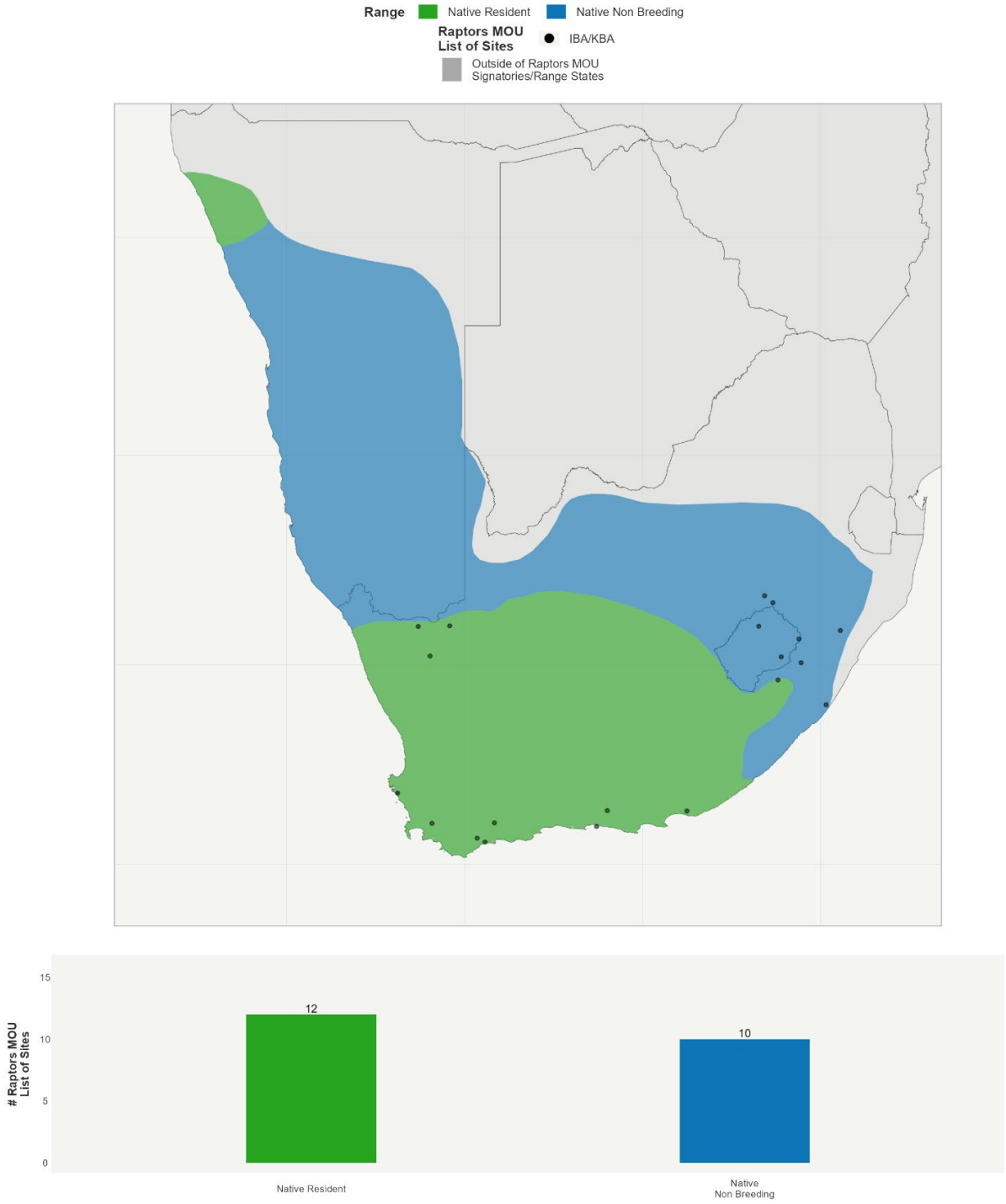


Fig 46. Black harrier range and List of Sites (top). The number of sites overlapping each part of the range (below).

- Twenty sites in South Africa and Lesotho are listed for this species in the List of Sites, covering both its native resident range (12 sites) and native non-breeding range (10 sites) (Fig 46). The black harrier is typically solitary or found in pairs and breeding may occur in loose groups of three to four pairs, with nests no more than 50 meters apart (Ferguson-Lees & Christie, 2001). During the non-breeding season, birds usually roost alone but larger roosts of up to 30 individuals have been observed in South Africa (Walton, 2013). The global population is estimated at fewer than 1,000 mature individuals and it is classified as Endangered. Therefore, the presence of even a single individual is sufficient for a site to qualify as internationally important. At the time of this study, 44 IBAs/KBAs list the black harrier as a qualifying species, 42 in South Africa and Lesotho. This indicates strong potential to expand the site network beyond the 20 sites already recognized in the List of Sites. In contrast, no sites in Namibia are listed in the List of Sites or the IBA/KBA database. Only four records of the species have been submitted to eBird from Namibia in the past 10 years. While observer coverage in parts of Namibia is limited, this low number of observations suggests that few, if any, sites in the country are likely to qualify as internationally important.
- The Black Harrier Conservation Action Plan (Black Harrier Task Force, 2025) identifies the west coast of South Africa and the Overberg as the species' core breeding areas.
- **Recommendations:** Although 20 key sites are already listed for the black harrier, the existence of 44 IBAs/KBAs where the species qualifies suggests that site coverage in South Africa could be expanded. For the recommendation of sites based on the literature, see Annex table S2 and for the important west-coast locations in South Africa, see Black Harrier Task Force (2025).

Pallid harrier *(Circus macrourus)* – NT

BirdLife International Species Factsheet

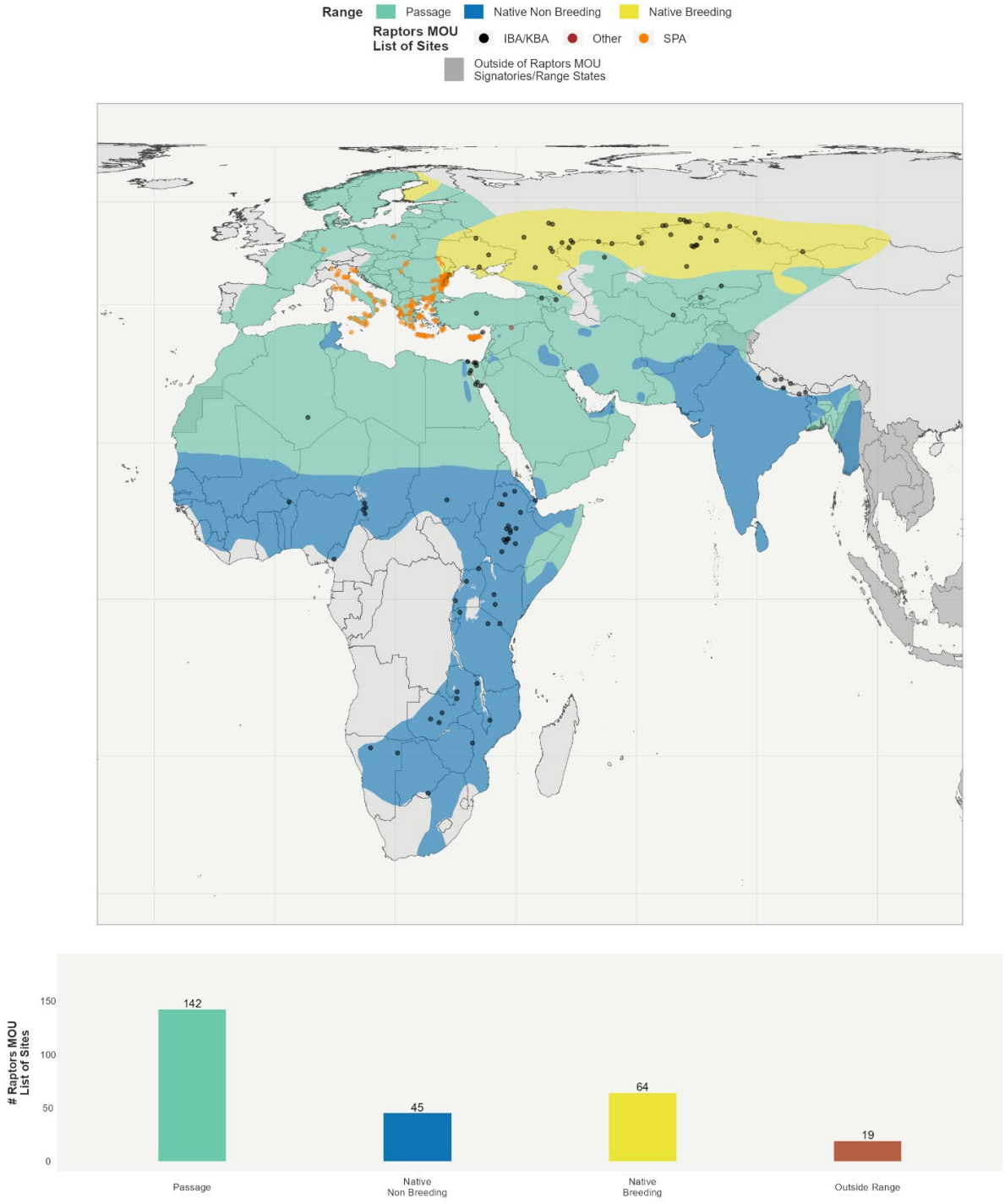


Fig 47. Pallid harrier range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

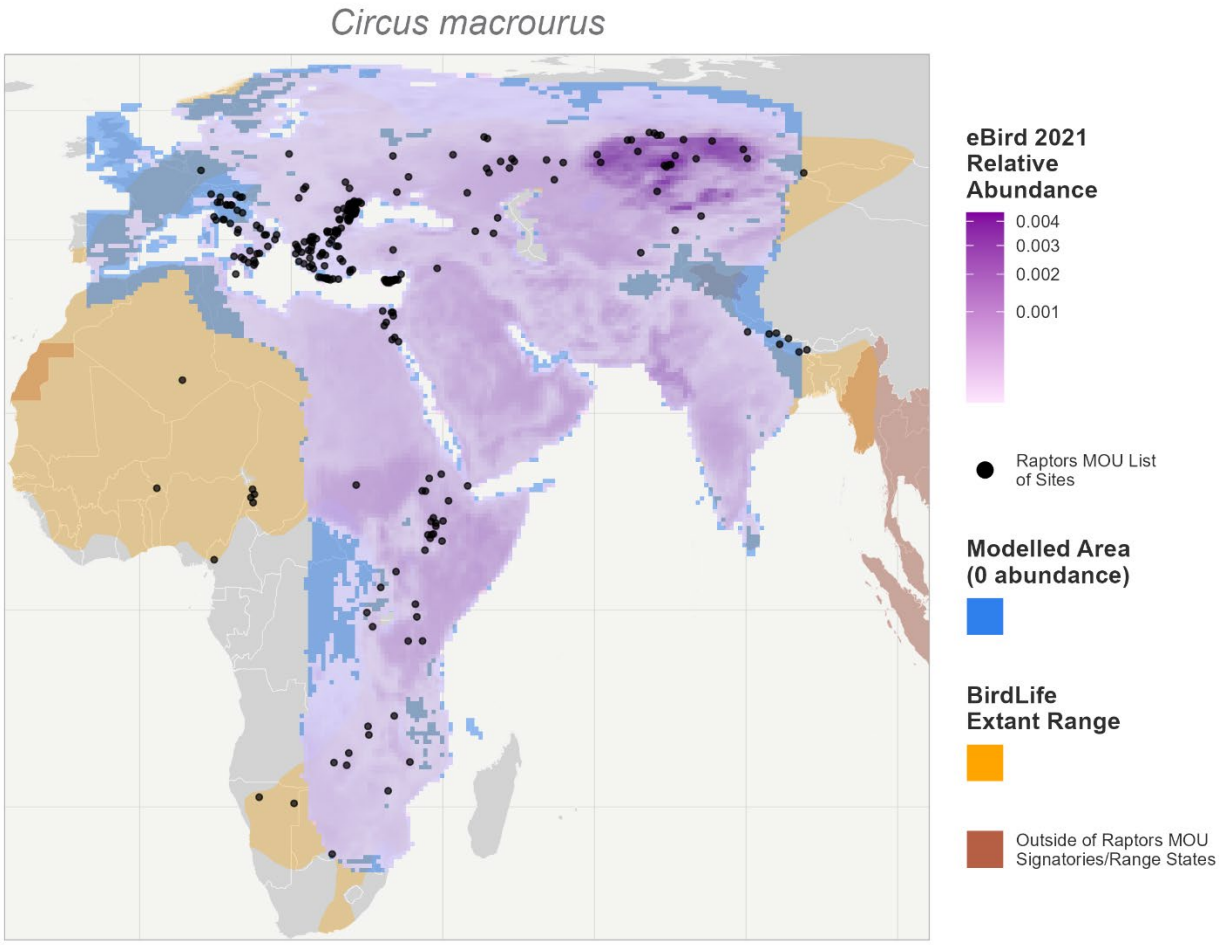


Fig 48. Pallid harrier eBird modelled abundance and Raptors MOU List of Sites.

- After removing significantly overlapping sites for the analysis, there are 263 sites remaining for pallid harrier. These sites are fairly well distributed across the species' geographic range and annual cycle (Fig 47). There is a particularly high concentration of sites in the passage portion of the range, especially in Southern Europe. However, the total number of sites may give a somewhat misleading impression of comprehensive coverage, as there are relatively fewer sites across the species' native breeding and non-breeding ranges. Notably, there are significant gaps in the non-breeding range, with no sites recorded from India or Pakistan. During non-breeding, the pallid harrier is loosely gregarious, often roosting communally in groups of 20–30 individuals, and occasionally in much larger numbers, sometimes with other harrier species. In contrast, during the

breeding season the species is typically a solitary nester, although it can be loosely social when prey densities are high (Ferguson-Lees & Christie, 2001; Clark & Davies, 2018). Given this behaviour, the most obvious gaps in the current site network appear to be in the non-breeding areas. However, the threshold for international importance is relatively high (240 mature individuals) so not all communal non-breeding roosts are likely to qualify. Still, there is strong potential for identifying additional sites in key non-breeding areas, particularly in India, Pakistan, the Arabian Peninsula, and East Africa. Fig 48 does not indicate any obvious high-density populations during the non-breeding period in these regions.

- **Recommendation**: Current site coverage is generally good, particularly at passage sites. However, more sites are likely to qualify during the non-breeding period, especially given the species' communal roosting behaviour. Priority areas for further investigation include India, Pakistan, the Arabian Peninsula, and East Africa. For the recommendation of sites based on the literature review, see Annex table S2.

Pallas's fish-eagle *(Haliaeetus leucoryphus)* – EN

BirdLife International Species Factsheet

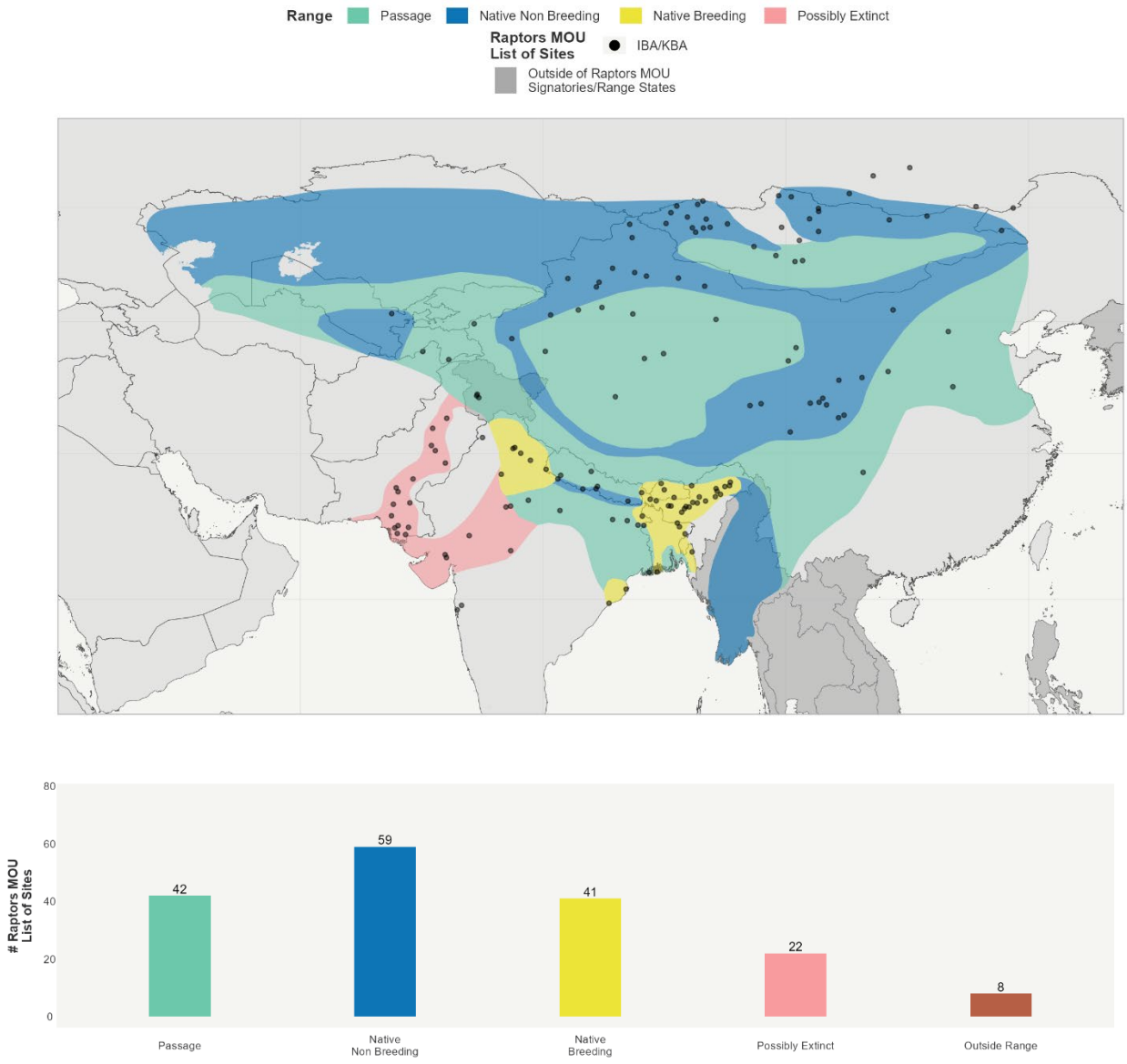


Fig 49. Pallas's fish-eagle range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

- There is good coverage of sites on the Raptors MOU List of Sites for this species, with 59 sites in the native non-breeding range, 41 in the native breeding range, 42 in passage areas, and 30 sites located either in regions where the species is possibly extinct or outside its current distribution (Fig 49). This pattern suggests that range contraction may

have caused the species to disappear from several previously occupied areas, indicating the need for a reassessment of site relevance. Eight sites now fall outside the species' current known range. These could serve as important targets for future conservation interventions aimed at facilitating range expansion for this Endangered species, especially in regions like Northeast India and Pakistan, where recent eBird records have documented individuals near Hyderabad and Karachi within the past five years. Gaps remain in the northeast portion of the species' range, particularly in Kazakhstan and Uzbekistan. eBird records from these countries are sparse in recent years, and it remains unclear whether any sites in these regions support populations large enough to qualify as internationally important (15 mature individuals).

- **Recommendation**: sufficient coverage across most of the species' range, including many sites in the species breeding and non-breeding sites. Perhaps a need to investigate under-surveyed areas in Kazakhstan and Uzbekistan to evaluate their potential significance for the species.

Steller's sea-eagle *(Haliaeetus pelagicus)* – VU

BirdLife International Species Factsheet

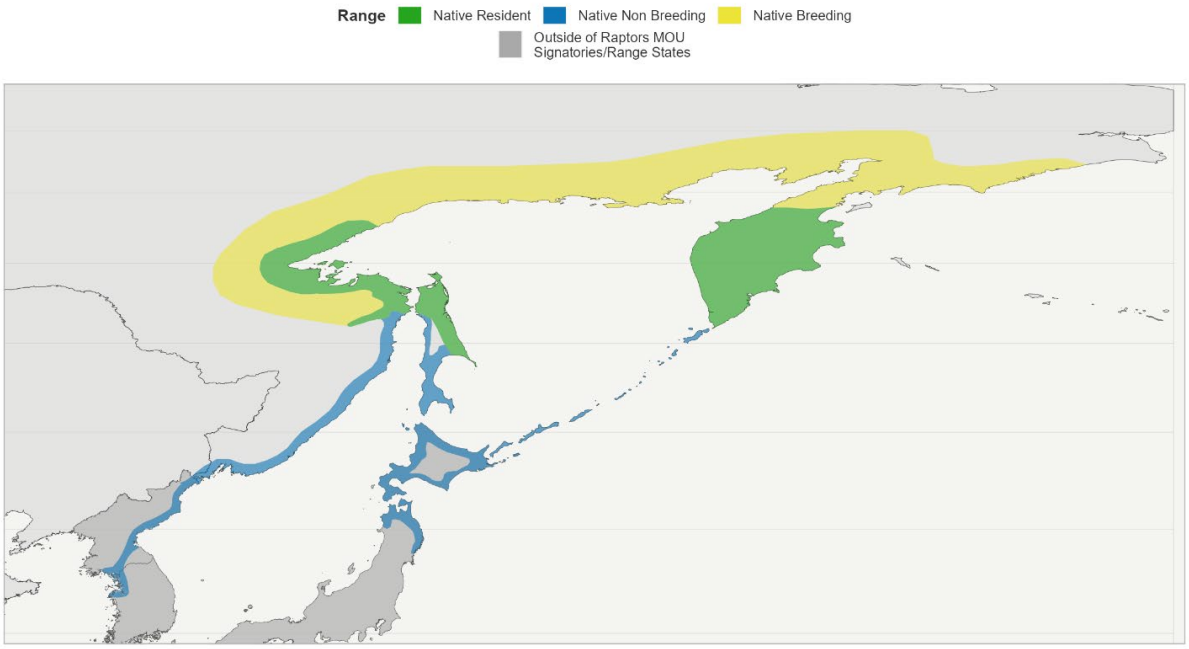


Fig 50. Steller's sea-eagle range and Raptors MOU List of Sites.

- No sites for this species are currently listed on the List of Sites (Fig 50), although 54 sites have been identified in the IBA/KBA databases. Part of the species' non-breeding range, specifically in Japan, North Korea, and South Korea, falls outside the geographical scope of the Raptors MOU. Steller's sea-eagle is typically a solitary breeder but becomes more social during the non-breeding period, particularly at communal roosts. In some areas, such as the Shiretoko Peninsula in Hokkaido, Japan, roosting concentrations can exceed 2,000 individuals at peak times, and communal roosts numbering in the hundreds are not uncommon (Ferguson-Lees & Christie, 2001). 54 IBAs/KBAs are identified for the species, covering parts of breeding, non-breeding and resident areas, many of which are within the MOU geographic extent and could be included in the List of Sites.
- **Recommendation:** A substantial number of sites have already been identified for this species through the IBA/KBA network. These should be reviewed and considered for inclusion in the List of Sites to better reflect the species' known distribution and areas of international importance.

Forest buzzard *(Buteo trizonatus)* - NT

BirdLife International Species Factsheet

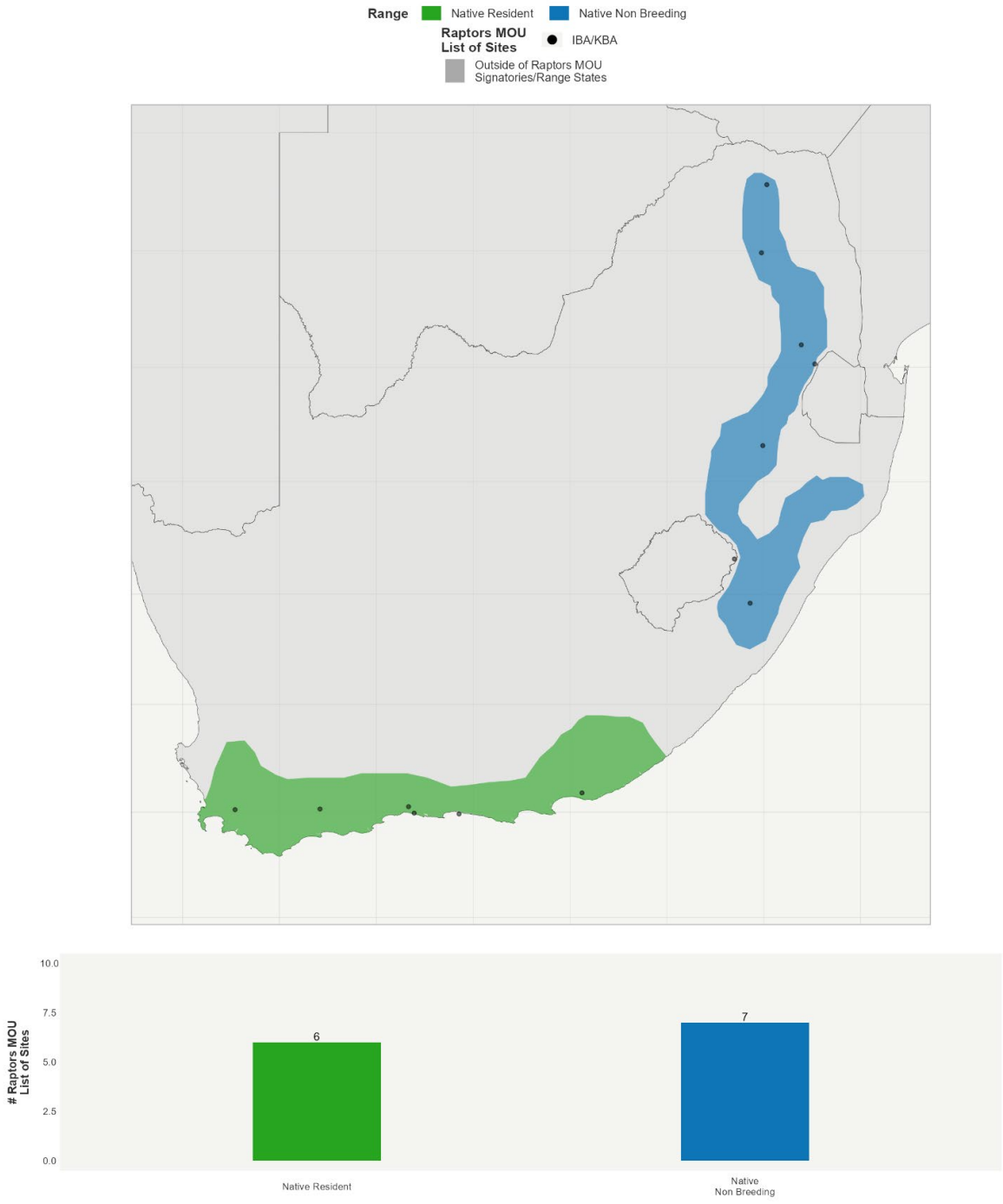


Fig 51. Forest buzzard range and the List of Sites (top). The number of sites overlapping each part of the range (below).

- Thirteen sites are listed in the List of Sites for the forest buzzard, covering both its breeding and non-breeding range (Fig 51), and no sites for this species are included in the IBA/KBA database. Given the species' Near Threatened status and a global population estimated at 670–6,700 individuals, approximately 37 mature individuals are required for a site to qualify as internationally important under IBA criterion A4 (i.e. a site regularly holding more than 1% of the global population). According to Ferguson-Lees and Christie (2001), the forest buzzard, originally considered conspecific with the mountain buzzard, is typically solitary or found in pairs, and probably never occurs in larger groups. This behavioural trait suggests that only very large or ecologically significant sites are likely to support enough individuals to meet the A4 threshold. Given this, the low number of qualifying sites is likely a reflection of the species' solitary nature, and it is unlikely that many additional sites will meet the criteria for international importance.
- **Recommendation:** The limited number of sites is likely explained by the forest buzzard's solitary behaviour. While some large or key sites may still qualify, the potential for identifying many more internationally important sites is low.

Scissor-tailed kite *(Chelictinia riocourii)* – VU

BirdLife International Species Factsheet

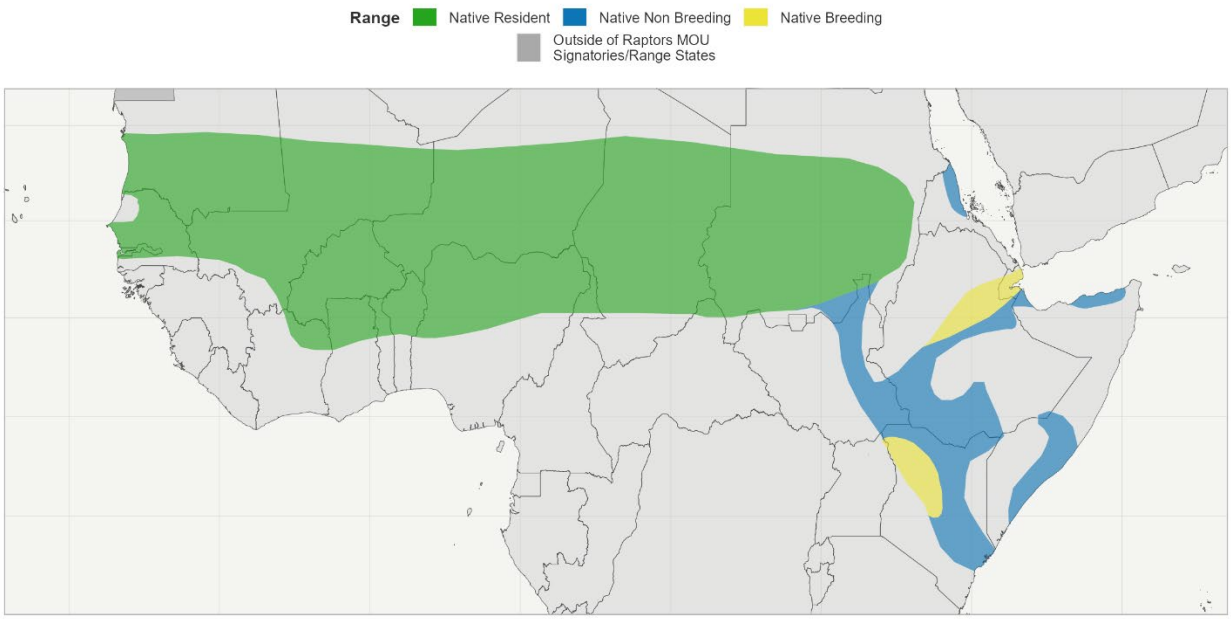


Fig 52. Scissor-tailed kite range.

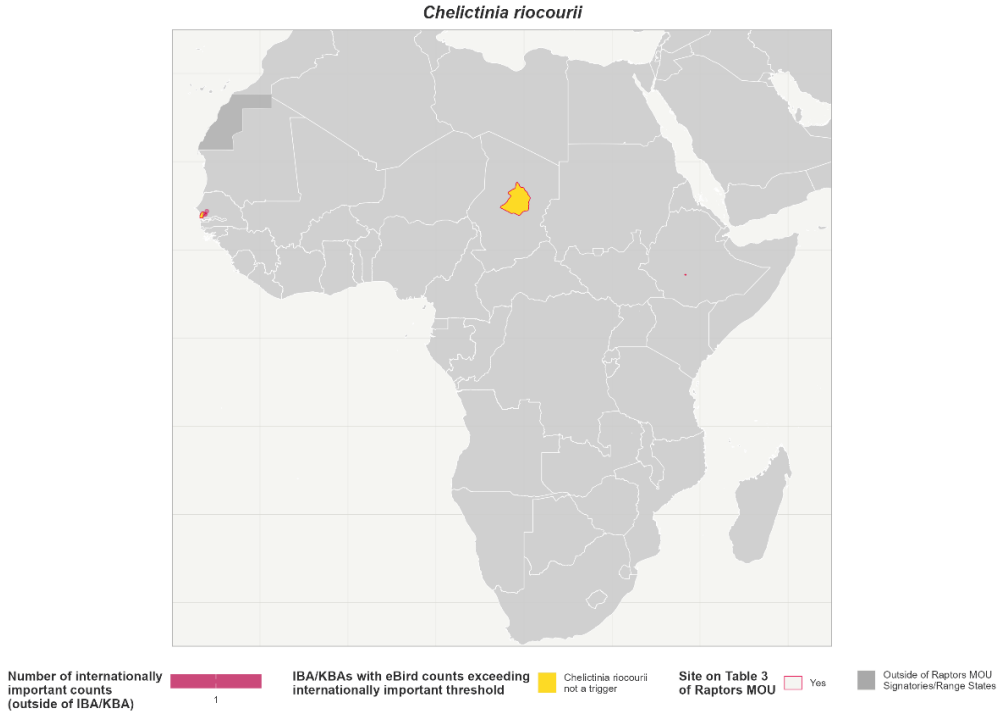


Fig 53. Internationally important eBird counts of scissor-tailed kite in relation to IBA/KBAs and Raptors MOU List of Sites.

- No sites are currently listed for this species on the List of Sites (Fig 52), and none are included in the IBA/KBA database. Until 2021, the species was classified as Least Concern, but it was uplisted to Vulnerable due to evidence of rapid population declines and habitat loss. This change in conservation status significantly lowered the threshold for site qualification under IBA criterion A1, from several hundred individuals when the species was Least Concern to just 30 mature individuals now that it is listed as Vulnerable. The species is known to be highly social, particularly outside the breeding season. Large night roosts commonly form during the non-breeding period, often including other species such as the lesser kestrel. Breeding may occur in loose colonies as well as in isolated pairs (Clark & Davies, 2018). Some of these communal roosts are exceptionally large; for example, a single roost in Senegal hosted 36,000 birds in 2008 (Pilard et al. 2011), and another in Mali held 10,000 individuals in 2012 (Buij et al. 2013). These figures indicate that the species already qualified for international importance at certain sites before its IUCN Red List uplisting, and now likely qualifies at many more locations across its range.
- **Recommendation**: Sites supporting internationally important numbers of this species need to be identified across its entire range. This should include as a high priority formal recognition of the two major roosts already recorded in Senegal and Mali, as well as efforts to identify additional sites across Africa where at least 30 mature individuals regularly occur. Based on eBird data, two sites were identified, one in Chad and another in Senegal (Fig 53).

Red-footed falcon *(Falco vespertinus)* – VU

BirdLife International Species Factsheet

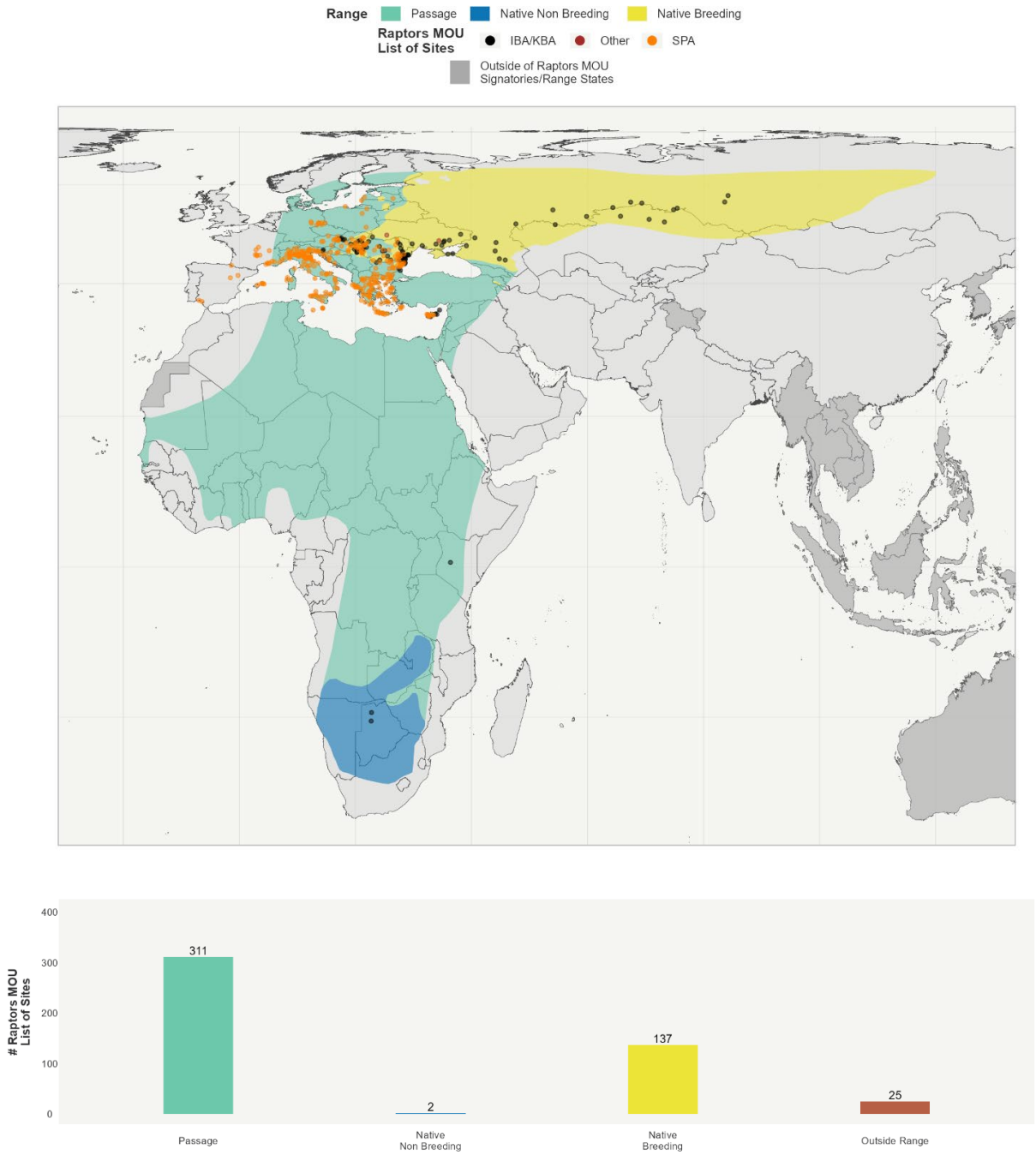


Fig 54. Red-footed falcon range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

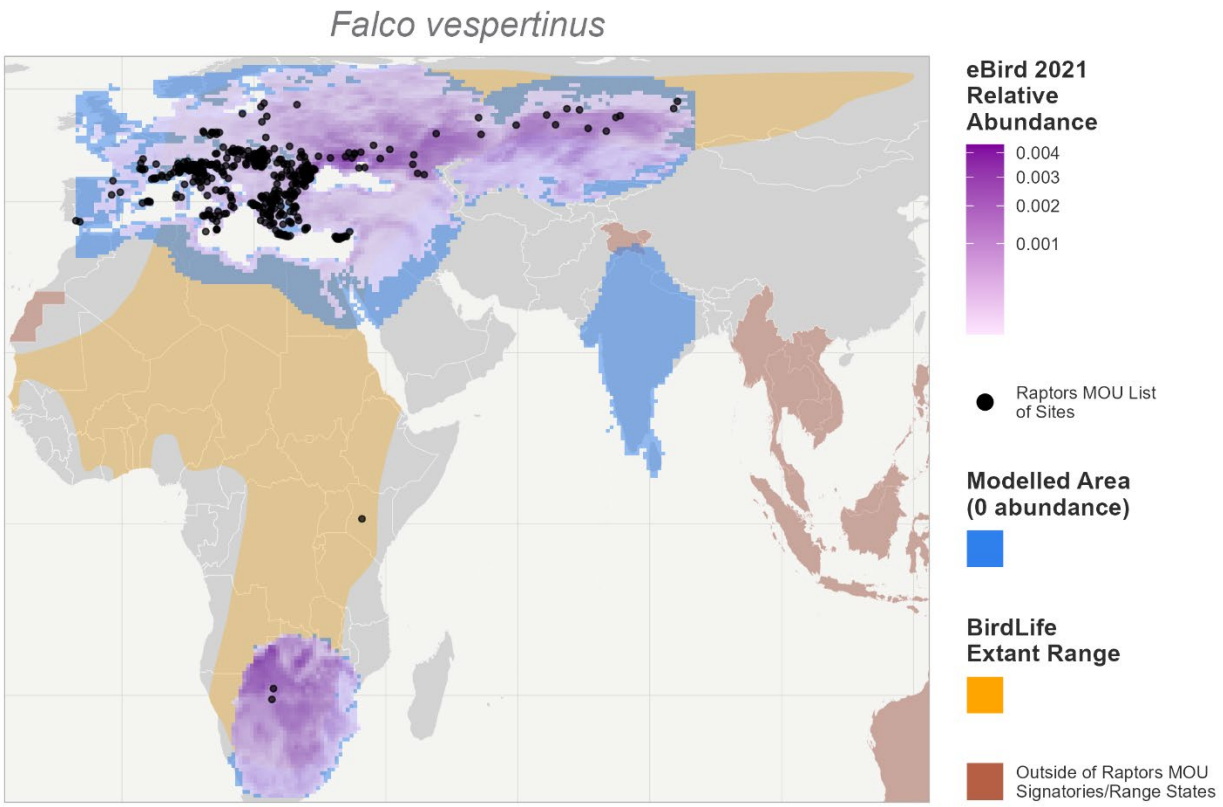


Fig 55. Red-footed falcon eBird modelled abundance and Raptors MOU List of Sites. *Note:* this map only shows modelled abundance during the non-breeding period, pre-breeding and post-breeding period but not the breeding period.

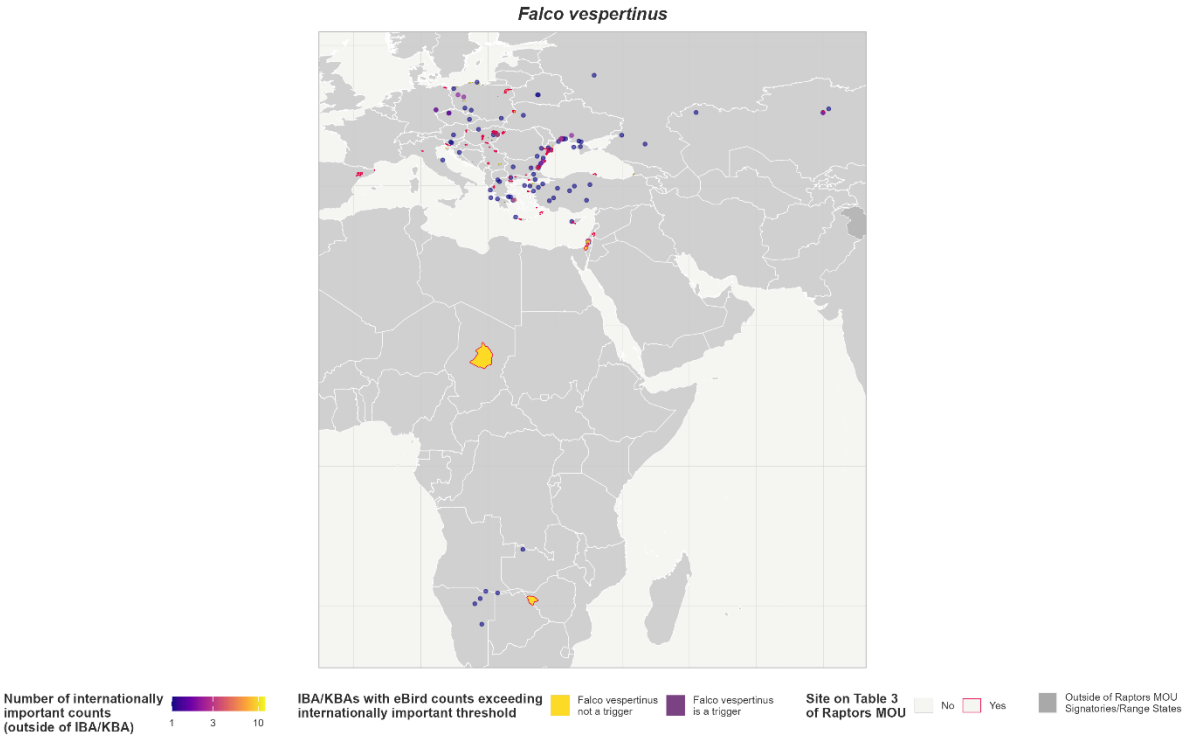


Fig 56. Internationally important eBird counts of red-footed falcon in relation to IBA/KBAs and Raptors MOU List of Sites.

- After removing significantly overlapping sites for the analysis, there are 414 sites remaining for red-footed falcon. The majority of these sites are located within the species' native breeding and passage range in Europe (Fig 54). Additional sites are also present in Russia and Kazakhstan, covering the Central Asian breeding range. Site coverage in Russia and Kazakhstan is considerably lower than in Europe, despite evidence that the species is more abundant across the Central Asian breeding grounds than in much of Europe (see Fig 55 below). Currently, only two sites in Botswana are included in the List of Sites to represent the species' non-breeding range in Africa. Red-footed falcons are known to be highly social, especially during the non-breeding season, when they form large communal roosts, sometimes in single trees, groves, or even on pylons (Clark & Davies, 2018). These roosts can contain hundreds to thousands of individuals, and a roost site in Angola is estimated to host up to one million individuals (Palatitz et al. 2019). There is a clear need to identify additional internationally important sites, particularly those that regularly support at least 30 mature individuals. There are 24 sites in the List of Sites that fall outside the species' current mapped range. These are all located in France, Spain, and Greece. In Greece, the sites likely correspond to islands used during migration that are not yet reflected in the mapped range. In

France and Spain, the sites fall to the west of the known breeding range (Keller et al. 2020). However, as shown in the abundance data, red-footed falcons do occur in these countries, albeit at low densities.

- **Recommendation:** Site coverage is broadly sufficient across Europe, although additional breeding sites could likely be identified in Central Asia, where abundance is high, but site representation remains limited. In Africa, many more sites likely meet the criteria for international importance, given the species' highly congregatory behaviour during the non-breeding season. Identifying and designating these sites should be a priority. The very significant site in Angola is a high priority to secure. Site recommendations based on the literature review are presented in Annex table S2, while Fig. 56 highlights IBA/KBAs not currently included in the List of Sites, together with clusters of records outside the existing IBA/KBA network.

Sooty falcon *(Falco concolor)* – VU

BirdLife International Species Factsheet

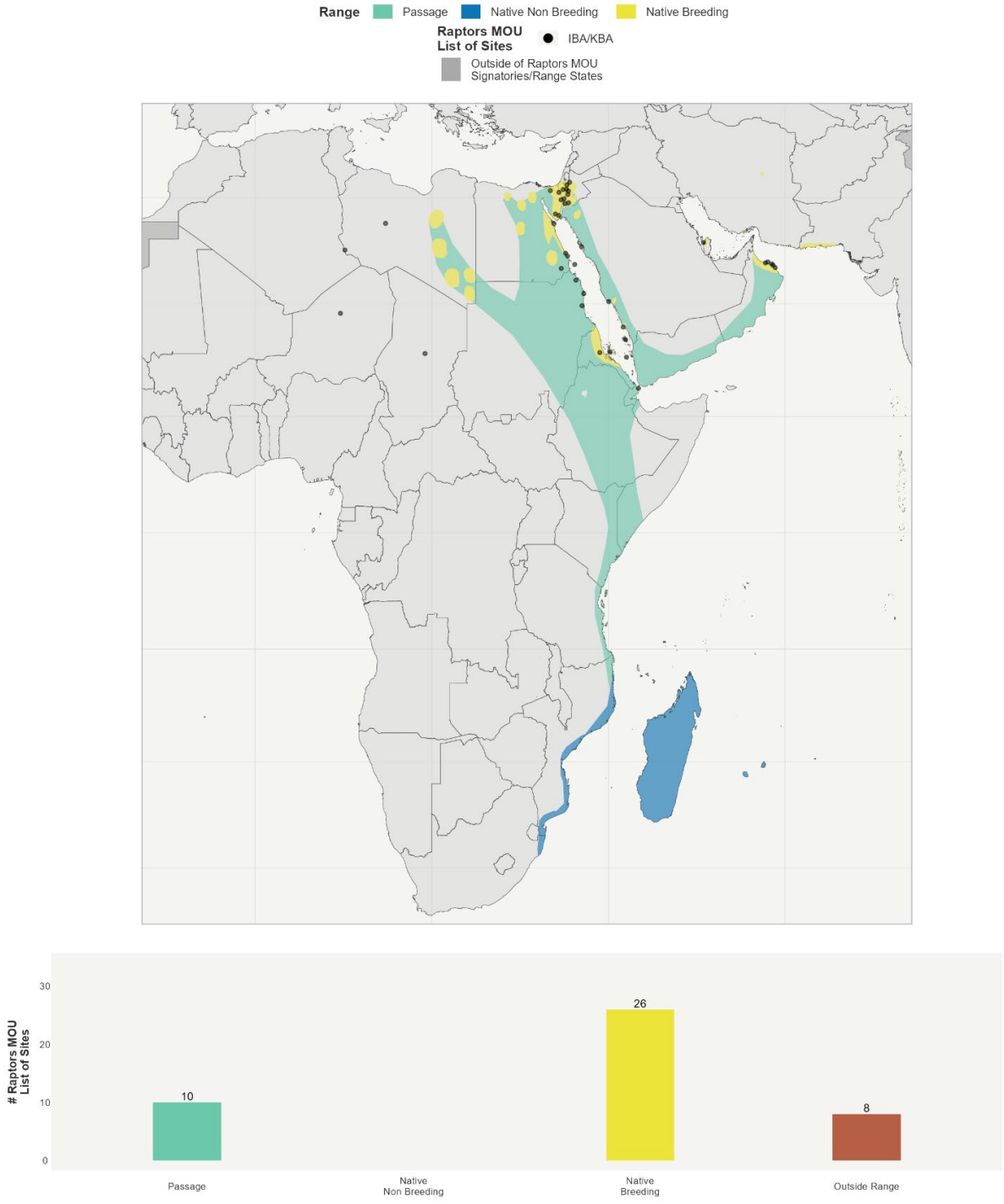


Fig 57. Sooty falcon range and the List of Sites (top). The number of sites overlapping each part of the range (below).

- A total of 40 sites are listed in the List of Sites for the sooty falcon, primarily located around key breeding areas in the Red Sea and the Gulf of Oman (Fig 57). As this species frequently breeds on small offshore islets, some breeding locations may not be clearly visible on the global range map. Four listed sites outside the mapped species range are located in the Red Sea and may correspond to such small islets.
  Additionally, four more sites listed outside the current range map, two in Libya, one in Chad, and another in Niger are designated IBAs, although they were last assessed before 2001. It is therefore uncertain whether the species still occurs at these sites in numbers that meet the threshold for international importance. Maintaining sites in Libya, Chad, and Niger, if the species still persists in these areas, is important for safeguarding the full extent of its breeding range. The sooty falcon often nests colonially on islands, with colonies of up to 100 pairs and nest spacing of 40–200 metres reported in the Red Sea and Gulf of Oman. However, it may also breed singly or in loose colonies in inland deserts, with nest spacing ranging from 2 to 10 kilometres, such as in parts of Israel (Ferguson-Lees & Christie, 2001; Clark & Davies, 2018; Goren et al. 2023). This breeding behaviour helps explain the high number of internationally important sites identified in the Red Sea and Gulf of Oman regions. During the non-breeding season, sooty falcons are somewhat gregarious, occasionally forming small flocks of 15 or more individuals (Ferguson-Lees & Christie, 2001; Clark & Davies, 2018). However, no non-breeding season sites are currently listed the List of Sites or included in the IBA/KBA databases. It is possible that some sites within the non-breeding range support internationally important numbers, but further field research and monitoring are required to confirm this. The species typically migrates alone or in pairs (Ferguson-Lees & Christie, 2001), which makes it unlikely that many additional passage sites would exceed the threshold for international importance.
- The Sooty Falcon International Single Species Action Plan recognises the Red Sea as the core of the species' breeding distribution and gives high priority to protecting and effectively managing known breeding sites, particularly core and island sites. It also lists IBAs where the species triggers IBA Criteria (see Annex 3 of the Action Plan), providing a basis for identifying sites that could be considered for inclusion in the List of Sites (Leonardi et al. 2024).
- **Recommendation:** Site coverage for the sooty falcon appears largely 'sufficient' across its breeding and passage ranges. However, further work is needed to identify potential sites within the non-breeding range that may regularly support 30 or more mature individuals, particularly given the species' occasional gregarious behaviour in that

season. For the recommendation of sites based on the literature review, see also Annex table S2.

Saker falcon *(Falco cherrug)* – EN

BirdLife International Species Factsheet

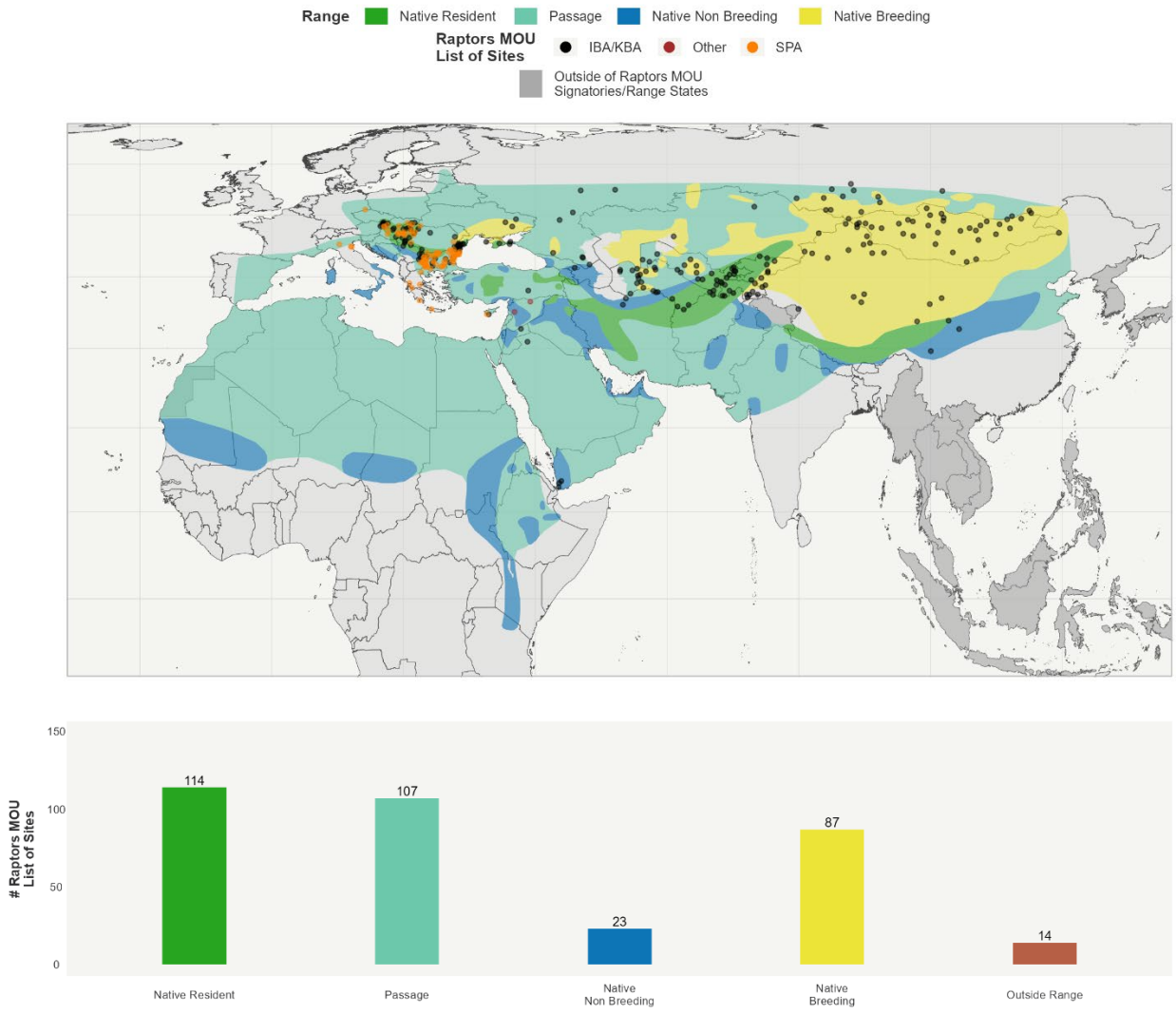


Fig 58. Saker falcon range and List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

- After removing significantly overlapping sites for the analysis, there are 284 sites remaining for saker falcon. These sites span various parts of the species' range, including its passage (102 sites), native resident (101 sites), and native breeding (83 sites) zones.

Coverage is relatively strong across much of the species' breeding range, particularly in eastern Europe, Mongolia, and the Central Asia. However, there is limited site representation further south in the range. Specifically, there are few sites in the Arabian Peninsula and none in Africa. This gap may partly be explained by the species' largely solitary behaviour. While resident pairs may maintain loose contact during the non-breeding period within their home range, individuals are typically not congregatory (Ferguson-Lees & Christie, 2001). In southern parts of the range, such as Africa, the Arabian Peninsula, and India, where the species may occur at lower densities during passage or non-breeding periods, this solitary nature may make identification of qualifying sites more challenging and probably less meaningful.

- **Recommendations:** Site coverage appears broadly sufficient across the species' breeding range (Fig 58). Non-breeding range lacks coverage, however, site conservation during the non-breeding season for such a dispersed species might be less suitable.

Snowy owl *(Bubo scandiacus)* – VU

BirdLife International Species Factsheet

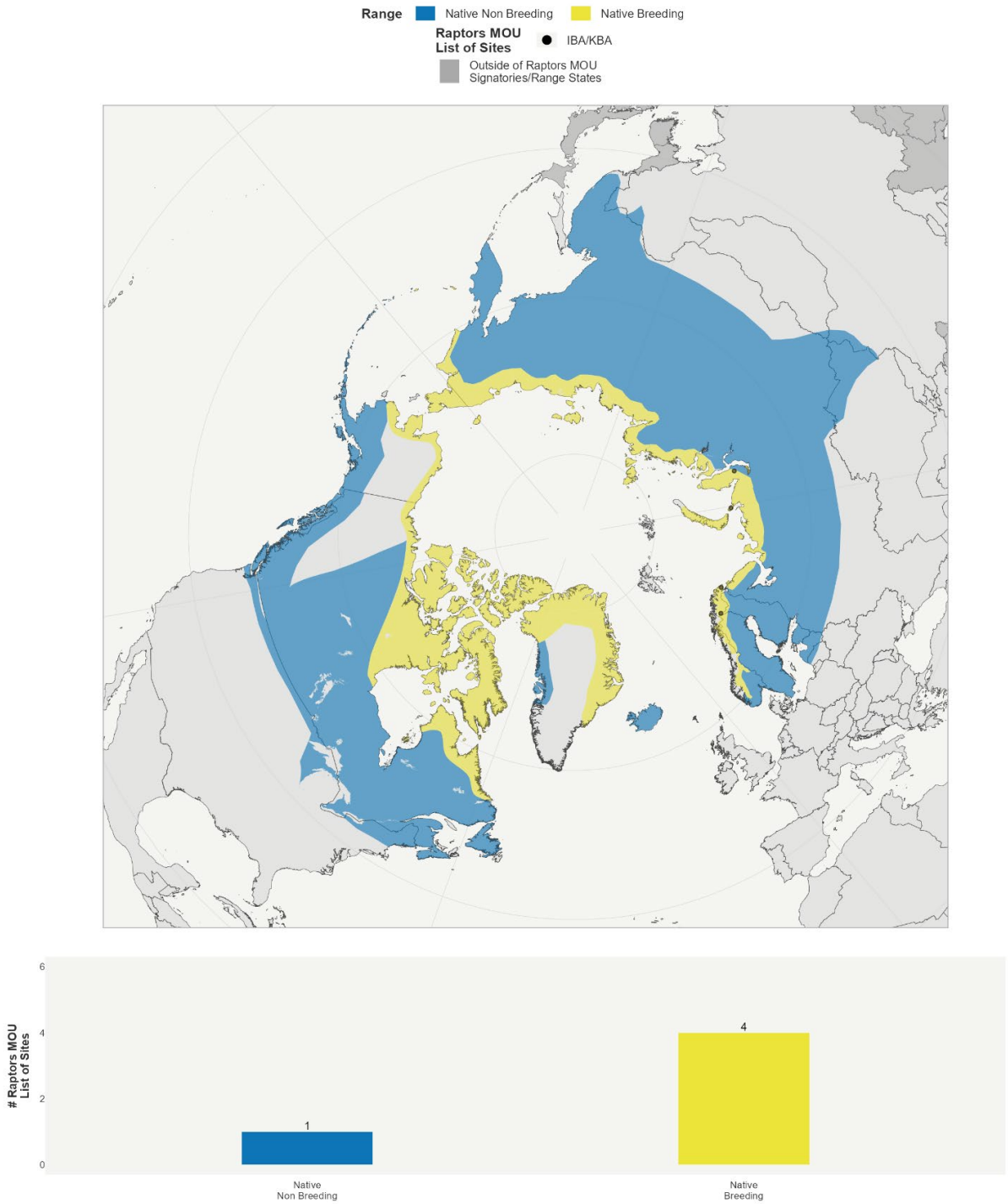


Fig 59. Snowy owl range and the List of Sites (top). The number of sites overlapping each part of the range (below). Countries marked with dark gray fall outside of Raptors MOU Signatories/range states.

- Four sites are listed for the snowy owl in the List of Sites, all of which overlap with parts of the species' native breeding range within the area covered by the Raptors MOU (Fig 59). On the breeding grounds, snowy owl pairs establish and defend territories (Holt et al. 2020). Nesting density varies considerably with prey abundance: in Canada, densities have ranged from one owl per 2.6 km² in high lemming years to one owl per 26 km² during periods of low prey availability (Manning et al. 1956). Non-breeding younger adults, especially males, are sometimes found in loose groups away from territorial pairs (Pitelka, 1955), although these aggregations appear to be irregular and likely linked to rodent population booms. As such, they may not occur consistently enough to meet IBA criterion A1 (which requires a regular presence of at least 30 mature individuals). This likely explains the small number of sites listed for the breeding range. During the non-breeding period, most adult snowy owls are solitary and maintain individual territories. However, in some non-breeding areas, groups of owls have been observed roosting communally, sometimes within a few metres of one another. These gatherings are typically dominated by first-year males and females, although some older females have also been identified (Holt & Zetterberg, 2008). In Montana, both solitary and communal behaviour during the non-breeding season has been recorded, including one instance where 31–35 snowy owls wintered within a 2.6 km² area, most of them concentrated within just 500 m². Whether similar non-breeding aggregations occur within the Raptors MOU geographical scope remains uncertain, as most documented communal roosts are from North America. If such sites do exist within the MOU region, they could potentially qualify as internationally important under IBA Criteria. However, given that even the largest North American roosts only marginally exceed the threshold of 30 mature individuals, any such qualifying sites within the MOU area are likely to be very limited in number.
- **Recommendation**: The snowy owl's largely solitary behaviour, particularly during breeding, likely accounts for the low number of listed sites in the List of Sites. Further investigation is needed to determine whether communal roosts occur within the Raptors MOU geographical scope that could meet the criteria for international importance. For the recommendation of sites based on the literature review, see Annex table S2.

4. Discussion

This analysis of the Raptors MOU List of Sites for Category 1 species of Annex 1 has revealed key gaps in the site network. It also demonstrates the usefulness of this method for determining which species are best suited to site-based approaches and where additional effort is needed to strengthen the List of Sites.

Some species nearly entirely lack sites in the current List of Sites and these gaps are not justified by their behaviour or the fact that a large number of individuals is required to meet global thresholds of international importance. This is particularly the case for African vultures, including hooded vulture, lappet-faced vulture, white-headed vulture, white-backed vulture and Rüppell's vulture, but also extends to other species such as scissor-tailed kite, tawny eagle and Steller's sea-eagle. For the African vultures this likely reflects their recent uplisting from Least Concern to Critically Endangered, which significantly lowered the global threshold required for a site to qualify as internationally important. This is likely also the case for scissor-tailed kite and tawny eagle which were recently uplisted from Least Concern to Vulnerable. Vultures often range widely over large, arid landscapes, and their seasonal ranges are less well defined than those of other raptors. This makes protection through traditional, fixed-site designations more difficult. For such wide-ranging species, a more effective approach is likely to involve a network of strategically located sites across the full distribution, especially at known breeding colonies and communal roosts. Even so, site-based protection alone will not be sufficient. It must be complemented by broader landscape-level measures to effectively safeguard these species throughout their annual cycle. Approaches such as Vulture Safe Zones are complementary to site-based protection and can help to significantly reduce threats over much wider areas.

Other species are well covered in parts of their range, particularly in Europe and during the breeding period, but show significant gaps elsewhere. This was particularly the case for cinereous vulture, pallid harrier, Himalayan griffon, red-footed falcon and Egyptian vulture. For instance, for cinereous vulture sites are currently listed on the List of Sites in the species' breeding range in Mongolia, despite it being a global stronghold. In these cases, identifying geographic priorities for gap-filling surveys would greatly improve the comprehensiveness and representativeness of the site network. Monitoring at both existing and potential new sites is urgently needed to ensure that important areas are not overlooked due to outdated or incomplete data and can be adequately safeguarded.

By contrast, some species benefit from relatively comprehensive coverage. For example, Pallas's fish-eagle, greater spotted eagle, cape vulture, bearded vulture, eastern imperial eagle and Spanish imperial eagle are represented by numerous sites across different stages of the annual cycle and geographic areas of the range. It is therefore recommended that the focus of

Signatories for site identification should lie on the less comprehensively covered species discussed earlier.

There were also a number of sites listed on the List of Sites that fall outside current species' range maps. This may reflect either outdated range information, outdated site data or recent range contractions. In some cases, these sites may still host the species, while in others they represent areas of historical presence where recolonisation or reintroduction could be possible. For example, sites in the Balkans for bearded vulture, although no longer occupied, may be crucial for long-term recovery efforts. These sites should not be dismissed but retained as part of a forward-looking restoration focused conservation strategy.

To address some of the identified gaps in the List of Sites network, targeted monitoring and surveys will be necessary to identify sites of international importance across species' full ranges and throughout their annual cycles. This study found that citizen science databases may also provide valuable insights by revealing locations where internationally important numbers have been recorded. However, these data are spatially biased towards more developed and densely populated regions, limiting their representativeness in under-surveyed areas, e.g. West Africa and other types of data sources should also be reviewed.

For several species, additional internationally important sites for Annex 1 species have already been identified (as IBAs/KBAs) since the Raptors MOU List of Sites was first expanded ahead of MOS2, but are not yet included in the List of Sites. Additional qualifying species reaching thresholds of international importance have also been identified at existing sites already on the List of Sites. In addition, further potential sites have been documented in the scientific literature or by experts, for example, two known roosts of scissor-tailed kite in Senegal and Mali meet criteria for international importance, regularly supporting thousands of individuals. UNEP/CMS/RAPTORS/MOS4/Doc.14.4 provides details of the additional qualifying populations alongside the new sites for consideration of Signatories. The number of qualifying sites is also likely to increase as more countries update their national IBA and KBA inventories, especially for species like the African vultures that have only recently been uplisted to globally threatened categories on the IUCN Red List. Incorporating these sites which are already identified and delineated into the List of Sites would enhance the site network and support species conservation efforts and this would be particularly important for the Category 1 species covered in this report, the Annex 1 species at highest risk of extinction.

Beyond these concrete recommendations, this report can help Raptors MOU Signatories and other stakeholders to take a step forward in terms of targeting further survey and monitoring to help identify other sites of international importance in clear gap areas, further enhancing each country's component of the List of Sites and thereby the Raptors MOU List of Sites network as a whole.

Of course a more comprehensive List of Sites is only beneficial if areas listed are delivering for the species which rely upon them. An analysis of the degree to which the List of Sites is protected is included in the Conservation Status Assessment Report (UNEP/CMS/RAPTORS/MOS4/Doc. 12.4). An improved network of the List of Sites could contribute to implementation of the Kunming–Montreal Global Biodiversity Framework, including the target to conserve at least 30% of terrestrial, inland water, coastal and marine areas by 2030, by identifying internationally important areas for migratory raptors that may warrant formal protection, recognition through other effective area-based conservation measures, or improved management. The framework could also help ensure that progress towards area-based targets reflects the ecological importance of the sites included, rather than the total area protected alone.

Designation does not necessarily result in positive conservation outcomes, and effective site conservation therefore requires appropriate management, monitoring and action to reduce threats and maintain or restore the habitats on which raptors depend (Hollitzer et al. 2023, Li et al. 2024, Wauchope et al. 2022). This distinction is also reflected in the concept of Other Effective Area-based Conservation Measures (OECMs), which recognises that effective long-term biodiversity conservation can also occur outside formally designated protected areas. For some species, particularly those that are wide-ranging or do not regularly congregate, site-based measures will need to be embedded within broader landscape-scale conservation strategies. For others, especially species that form large breeding colonies or communal roosts, targeted protection and management of key sites can make a substantial contribution. Continued monitoring and targeted surveys, combined with citizen-science data such as eBird, will be important for addressing geographic and temporal information gaps, identifying additional priority areas and ensuring that the List of Sites network provides effective support for Annex 1 species across all stages of their annual cycles in which site-based conservation can be effective.

For some migratory raptor species throughout their range and for others in parts of their annual cycle a site-based approach to conservation is simply not appropriate because they are solitary or too dispersed for a site-based approach to be effective. For these species wider landscape restoration and policy measures that address key threats will be required.

In conclusion this analysis highlights the value of the List of Sites framework for identifying conservation priorities, while also emphasising the need for a nuanced, species-specific approach to understanding how site networks deliver functionally for a species. Filling gaps in the List of Sites network will be an ongoing process. In this analysis as the highest priority, the focus was only on Category 1 species and identifying where species congregations could meet global thresholds of international importance. However further work would be valuable in

assessing this for Category 2 species as well. For both Category 1 and Category 2 species it could be valuable to identify additional areas where species congregations could meet regional thresholds of international importance. It was also recognised that although the focus here was on the site network at species level, when work to identify raptor population delineations is further advanced it could also be valuable to assess how well the List of Sites is covering each population.

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6. Annex

Table S1. Population information for each Category 1 species listed in Annex 3, Table 1 of the Raptors MOU. The minimum, maximum and total numbers of mature individuals are provided where available from the most recent IUCN Red List assessment at the time of the study. Where only minimum and maximum estimates were available, the total was calculated as their mid-point. The table also presents the numbers of mature individuals (Individual Threshold) and breeding pairs (Pair Threshold) required for a site to qualify as internationally important under global IBA Criterion A1. These values accompany Table 2 of this document and were calculated from the population estimates and the requirements of IBA Criterion A1.

Common name	Scientific name	Red List Status	Min number of mature individuals	Max number of mature individuals	Total number of mature individuals	Individual Threshold for global IBA criterion A1	Pair Threshold for global IBA criterion A1
Bearded vulture	Gypaetus barbatus	NT	1,675	6,700	4,188	42	NA
Egyptian vulture	Neophron percnopterus	EN	12,400	3,600	8,000	15	5
Beaudouin's snake-eagle	Circaetus beaudouini	VU	2,500	9,999	6,250	30	10
Red-headed vulture	Sarcogyps calvus	CR	2,500	9,999	6,250	15	5
White-headed Vulture	Trigonoceps occipitalis	CR	2,500	9,999	6,250	15	5
Hooded vulture	Necrosyrtes monachus	CR	NA	NA	131,000	15	5
Himalayan griffon	Gyps himalayensis	NT	66,000	334,000	200,000	2,000	NA
White-rumped vulture	Gyps bengalensis	CR	4,000	6,000	5,000	15	5

White-backed vulture	Gyps africanus	CR	NA	NA	NA	15	5
Indian vulture	Gyps indicus	CR	5,000	15,000	8,000	15	5
Slender-billed vulture	Gyps tenuirostris	CR	730	870	800	1	1
Cape vulture	Gyps coprotheres	VU	9,600	12,800	11,200	30	10
Rüppell's vulture	Gyps rueppelli	CR	NA	NA	22,000	15	5
Cinereous vulture	Aegypius monachus	NT	16,800	22,800	19,800	198	NA
Lappet-faced vulture	Torgos tracheliotos	EN	NA	NA	6,500	15	5
Mountain hawk-eagle	Nisaetus nipalensis	NT	1,200	6,700	3,950	40	NA
Greater spotted eagle	Clanga clanga	VU	3,900	10,000	6,950	30	10
Tawny eagle	Aquila rapax	VU	100,000	499,999	300,000	30	10
Steppe eagle	Aquila nipalensis	EN	50,000	75,000	62,500	15	5
Spanish imperial eagle	Aquila adalberti	VU	1,060	1,080	1,070	30	10
Eastern imperial eagle	Aquila heliaca	VU	2,500	9,999	6,250	30	10
Black harrier	Circus maurus	EN	251	999	670	1	1
Pallid harrier	Circus macrourus	NT	18,000	30,000	24,000	240	NA
Pallas's fish-eagle	Haliaeetus leucoryphus	EN	1,000	2,499	1,750	15	5
Steller's sea-eagle	Haliaeetus pelagicus	VU	3,600	4,670	4,135	30	10

Forest buzzard	Buteo trizonatus	NT	670	6,700	3,685	37	NA
Scissor-tailed kite	Chelictinia riocourii	VU	30,000	67,000	48,500	30	10
Red-footed falcon	Falco vespertinus	VU	287,500	400,000	343,750	30	10
Sooty falcon	Falco concolor	VU	2,800	4,000	3,400	30	10
Saker falcon	Falco cherrug	EN	12,200	29,800	21,000	15	5
Snowy owl	Bubo scandiacus	VU	14,000	28,000	21,000	30	10

Table S2. Sites of potential international importance for Category 1 species based on literature review for further consideration by Signatories.

Category 1 species	Global IBA Criterion A1 Threshold	Name of site	Country/region	No. individuals recorded	Publication	Date range of observation	Type of observation (tracking/count data etc)	Stage (breeding/passage/non-breeding)
Egyptian vulture	15	several sites in the Middle East and NE and E Africa	tagged in Türkiye, Armenia, Ethiopia and Djibouti	16	Buechley et al. (2018)	2012-2015	tracking	all stages
		several sites across Ethiopia	Ethiopia	15	Buechley at al. (2022)	2012-2018	tracking and observations	all stages
		two regular feeding sites in Ramanagaram Hills Reserve, Karnataka, southern India	India	between 2 and 19 at the time (123 in total)	Samson & Ramakarishnan (2016)	2013-2014	observations at feeding sites	all stages
		GIZ Devaliya Safari Park, Guyarat (location of tagging)	Guyarat, India	2	Ram et al. (2022)	2020-2021	tracking	non-breeding, all stages
Red-headed vulture	15	GIZ Devaliya Safari Park, Guyarat (location of tagging)	India	1	Ram et al. (2022)	2020-2021	tracking	all stages (resident within the study area)
		southern Karnataka	India	-	Gopal & Kumara (2023)	2000-2022	observations	all stages
		several sites in Cambodia	Cambodia	26	Loveridge et al. (2019)	2016	observations	all stages
Hooded vulture	15	several sites across Ethiopia	Ethiopia	6	Buechley at al. (2022)	2012-2018	tracking and observations	all stages
White-rumped vulture	15	Champasak Province of Laos, the Phou Kiou hills (14°05'08.0"N, 106°07'25.7"E)	Laos	3 nests in 2020, 4 nests in 2022, 12 nests in 2023, one individual tagged in 2020	Legrand et al. (2024)	2000-2023	tracking and observations of nests	breeding

		Shan State	Myanmar	6 nests	Win et al. (2023)	2023	observations	breeding
		Dun Bang village	Myanmar	9 nests with chicks and 15 adults sitting on the nest were observed	Win & Zaw (2024)	2024	observations	breeding
		several sites in Cambodia	Cambodia	109	Loveridge et al. (2019)	2016	observations	all stages
White-backed vulture	15	several sites	Southern and Eastern Africa	102	Kane et al. (2022)	2004-2019	tracking	all stages
		Hwange conservation area, Kavango–Zambezi conservation area (KAZA)	Botswana, Zambia, Zimbabwe, Namibia, Angola	6	Zvidzai et al. (2022)	2016-2018	tracking	all stages
		several sites including Etosha National Park, Okavango delta	Namibia, Botswana, Angola, South Africa	27	Curk et al. (2025)	2022-2023	tracking	all stages
		several sites across Ethiopia	Ethiopia	8	Buechley at al. (2022)	2012-2018	tracking and observations	all stages
Indian vulture	15	GIZ Devaliya Safari Park, Guyarat (location of tagging)	India	3	Ram et al. (2022)	2020-2021	tracking	all stages (resident within the study area)
Slender-billed vulture	1	several sites in Cambodia	Cambodia	37	Loveridge et al. (2019)	2016	observations	all stages
Cape vulture	30	several sites in Southern Africa	Southern Africa	42	Kane et al. (2022)	2004-2019	tracking	all stages
		several sites in Southern Africa	Southern Africa	27	Curk et al. (2021)	2015-2019	tracking	all stages
Ruppell's vulture	15	several sites across Ethiopia	Ethiopia	3	Buechley at al. (2022)	2012-2018	tracking and observations	all stages
		Several sites in Eastern Africa	Eastern Africa	19	Kane et al. (2022)	2004-2019	tracking	all stages
Cinereous vulture	198	sites in Mongolia (Ikh Nart (N 45.72°,	Mongolia, China, North	280 wing tags, 59	Reading et al. (2020)	2012-2016	observations and tracking	all year round

		E 108.65°) and Kherlen Toono (N 47.03°, E 109.30°) Nature Reserves), S. Korea	Korea, South Korea	telemetry units				
Lappet-faced vulture	15	several sites across Ethiopia	Ethiopia	2	Buechley at al. (2022)	2012-2018	tracking and observations	all stages
		several sites in Botswana	Botswana	14	Garbett (2018)	2012-2017	tracking	all stages
		several sites in Botswana, Namibia	Botswana, Namibia	19	Curk et al. (2025b)	2012-2022	tracking	all stages
Steppe eagle	15	Khurkh River Valley; Nainital, Uttarakhand State	tagged in Mongolia, wintered in India	1	Batbayar & Lee (2017)	2015	tracking	all stages
		Eilat	Israel	17	Efrat et al. (2025)	2017-2021	tracking	passage (spring migration)
Black harrier	1	tagged in Western Cape Province and Northern Cape Province, migrated to south-western South Africa	South Africa	13	Garcia-Heras et al. (2019)	2008-2015	tracking	all stages
		several sites across South Africa	South Africa	-	García-Heras (2017)	1987-1991 and 2007-2016	observations (South African Bird Atlas Project)	all stages
		several sites in the west coast of South Africa and the Overberg	South Africa	>443	Black Harrier Task Force (2025)	2007-2023	observations and tracking	all stages
Pallid harrier	240	several sites in India	India	roosts between 4 and 3000 individuals	Ganesh & Prashanth (2018)	1985-2015	observations	non-breeding
Red-footed falcon	30	"Falcopolis", huge roost site in Huambo province	Angola	up to 1 million	https://www.falcopolis.org/angola2024-en/science-en/	tracking data from 2023, observations earlier	observations and tracking	non-breeding
Sooty falcon	30	wintering in Madagascar	Madagascar	11	AlJahdhami et al. (2020)	2013-2015	tracking	all year round

		Madagascar	Madagascar	1-315	Razafimanjato et al. (2025)	2013-2014	observations	non-breeding
Snowy owl	30	Several sites across the Arctic and North America and Eurasia	Several countries in North America and Eurasia		Curk et al. 2020	2001-2018	tracking	all stages
		Tagged in eastern Canadian Arctic (Bylot Island, Nunavut (73°08'N, 80°00'W; High Arctic) in 2007 (n = 12) and 2014 (n = 10), Mary River, Nunavut (71°10'N, 79°21'W; High Arctic) in 2011 (n = 1) and Deception Bay, Nunavik, QC (62°02'N, 74°49'W; Low Arctic) in 2013 (n = 8)	Canada	31	Robillard et al. (2018)	2007-2014	tracking	all stages

Table S3. Key sites for the conservation of steppe eagle (comprising sites that potentially contain internationally important numbers only) that are not yet included on the Raptors MOU List of Sites. The List of Sites is adapted from the Global Action Plan for the Conservation of the Steppe Eagle (*Aquila nipalensis*) 2026-2035 (Weston et al. 2025).

Country/Territory	Site Name	Already recognised as IBA/KBA?	Additional trigger at existing site or whole new site?*	Site Code (SitRecID)	Latitude	Longitude	Season*	Supporting Count Data	Data quality*	Year	Source
Armenia	Shirak Plateau		N		40.63116	43.89992	M	400-500 individuals	GE	2022-2024	Questionnaire
	Lori Plateau		N		40.98364	44.52365	M	300-400 individuals	GE	2022-2024	Questionnaire
	Lake Sevan and environs	IBA; KBA	A	3618	40.3513	45.3378	M	600-700 individuals	GE	2022-2024	Questionnaire
	Sisian Plateau		N		39.44191	45.94349	M	250-350 individuals	GE	2022-2024	Questionnaire
	Ararat Plain		N		39.93658	44.71841	M	200-300 individuals	GE	2022-2024	Questionnaire
	Akhuryan-Araks River valley		N		40.28364	43.65028	M	100-200 individuals	GE	2022-2024	Questionnaire
Azerbaijan	Shahdidi spit	IBA; KBA	A	179	40.28312	50.39269	M				eBird
Bhutan	Trashigang		N		27.33256	91.55201	M	16 individuals		2020	Questionnaire
China	Nagpag Co (Napa Hai) Nature Reserve	IBA; KBA	A	15559	27.8686	99.64208	B				eBird
Egypt	Sharm El Sheikh		N		27.94436	34.30344	M	40-50 (spring-autumn)	GE	2018-2024	Questionnaire
	RAS GHARIB		N		28.07145	33.19146	M	15,919-15,968 (spring-autumn)		2020-2021	Questionnaire
Ethiopia	Mille-Sardo Wildlife Reserve North	IBA	E	28601	11.8	41.06	W	<17 individuals		2019	IBA for Steppe Eagle

Georgia	Batumi	IBA; KBA	A	18588	41.63378	41.71022	M				eBird
India	Nargu Wildlife Sanctuary	IBA; KBA	A	18161	31.91863	76.96175	W				eBird
	Dehra Gali (DKG) forest	IBA; KBA	A	18182	33.73857	74.10437	W				eBird
	Askot Wildlife Sanctuary and Goriganga Basin	IBA; KBA	A	18442	30.16877	80.26329	W				eBird
	Binog Sanctuary - Bhadraj - Jharipani	IBA; KBA	A	18443	30.46582	78.05702	W				eBird
	Kedarnath Musk Deer Sanctuary and surrounding Reserve Forests	IBA; KBA	A	18447	30.58071	79.19196	W				eBird
	Chamba Valley	KBA	A	29854	32.41409	76.31998	W				eBird
	Jor Beer	IBA; KBA	A	46934	27.96666	73.38143	W				eBird
Iraq	Garmian area		N		35.10141	44.47171	W	>100 individuals		2007-2025	Questionnaire
	Steppes near Erbil		N		35.91936	43.98532	W	>50 individuals		2007-2025	Questionnaire
	West Hammar	IBA; KBA	A	32102	30.8333	46.7167	W	>30 individuals		2007-2025	Questionnaire
	East Hammar	IBA; KBA	A	32099	30.7797	47.3947	W	>20 individuals		2007-2025	Questionnaire
	Sharazur Steppe	IBA & KBA (Part)	A, N		35.30971	45.79816	W	>50 individuals		2007-2025	Questionnaire
	Bitwen Steppe/ NW of Dukan Lake	IBA & KBA (Part)	A, N	Dukan Lake (32136)	36.22064	44.71119	W	>20 individuals		2007-2025	Questionnaire
	Najaf Desert		N		31.85605	43.945813	W	>70 individuals		2007-2025	Questionnaire
Israel	Eilat Mountains		N		29.5666	34.8833	M	16,000 individuals	GO	2015-18, 2024-2025	Questionnaire

Jordan	Al Karak waste disposal site		N		31.237	35.9321	W	>1,000 individuals	GE	2021-2024	Questionnaire
Kazakhstan	Bokeyorda Reserve, Aschiozek Sanctuary	IBA & KBA (Part)	A, E				B	>100 breeding pairs	GO	2022-2025	Questionnaire; IBA & KBA for Steppe Eagle
	Mugodzhary IBA, KZ022	IBA; KBA	E	20713	48.75	58.8	B	Est. 150 breeding pairs	GO	2024	Questionnaire; IBA & KBA for Steppe Eagle
	Chokpak Pass	IBA; KBA	A	19956	42.5167	70.6333	M				eBird
	Sorbulak Lake System	IBA; KBA	A	19950	43.6667	76.6	B				eBird
Kenya	Tsavo West National Park	IBA; KBA	A	6415	-3.350044	38.12604	W				eBird
Kyrgyzstan	Water reservation of the northern Chu valley	IBA; KBA	A	27421	43.006	74.3131	M	<20 individuals observed in one day at the peak of migration	P	2020-2024	Questionnaire
	Tolok valley	IBA	A		43.0710	74.0456	M	<20 individuals observed in one day at the peak of migration	P	2020-2024	Questionnaire
Kuwait	Dawhat Kazima	IBA; KBA	A	8204	29.37928	47.72952	W				eBird
	Al-Abraq Al-Khabari	IBA; KBA	A	8206	29.36905	46.95585	W				eBird
Mongolia	Undurkhaan Mt., nearby Chinggis city		N		47.36452	110.6722	B	250-500 individuals	GO	2016-2025	Questionnaire
	Erdenesant Mt.	IBA; KBA	A	28295	47.25735	104.5246	B, M	2-4 breeding pairs, 10-20 individuals as passage	GE	2015-2025	Questionnaire
	Altai City		N		46.39718	96.19215	M	30-60 individuals (pre-	GO	2015-2020	Questionnaire

								migratory congregation)			
	Kherlen River valley		N		47.78096	112.5047	M	30-50 individuals (pre-migratory congregation)	GO	2020	Questionnaire
Nepal	Gandaki Province, Thoolakharka watch site		N		28.3	83.81667	M	Max. 8,686 individuals (2013)	GO	2012-2024	Questionnaire
	Kathmandu valley		N		27.66838	85.35017	W	200-400 individuals	GO	2021-2024	Questionnaire
	Shivapuri-Nagarjun National Park	IBA; KBA	E	14344	27.79883	85.37398	W	>16 individuals		2023	IBA for Steppe Eagle; eBird
	Api Nampa Conservation Area	IBA	E	49560	29.5	80.37	W	>15 individuals		2016-	IBA for Steppe Eagle
	Argha	IBA	E	49558	28.02	83.12	W	>15 individuals		2020-2026	IBA for Steppe Eagle
	Gadhi-Siraichuli	IBA	E	49564	27.77	84.58	M	>7 individuals		2023	IBA for Steppe Eagle
	Reshunga Forest Conservation Area	IBA	E	49597	28.27	83.37	M	>15 individuals		2020	IBA for Steppe Eagle
Oman	Raysut		N		16.982	53.953	W	>2,500 individuals	GE	2018-19	Questionnaire
	Thumrait		N		17.407	54.079	W	Approx. 100 individuals	GE	2019-2025	Questionnaire
	A'Safa		N		17.89	54.167	W	Estimated 150 individuals	P	2018-2025	Questionnaire
	Al Multaqa		N		23.34	58.542	W	Approx 20 individuals	ME	2013-2025	Questionnaire

Palestine	Ein Al-Fashkha	KBA/IBA	A	10502	31.6519	35.4201	M				eBird
	Wadi Al-Qelt	KBA/IBA	A	20515	31.8333	35.4	M				eBird
	Ein Al-Oja	KBA/IBA	A	20518	31.95	35.4333	M				eBird
	Ein el ‘Auja and Wadi el Qilt region	KBA	A	46605	31.8997	35.3693	M				eBird
	Wadi Qana and Wadi Al Shaer region	KBA	A	46610	32.1145	35.1436	M				eBird
Saudi Arabia	Tabarjal	IBA	E	49350	30.07	38.52	W	860-2,900 individuals	GO	2022-2024	Questionnaire; IBA for Steppe Eagle; eBird
	Ushaiqer		N		25.32062	45.15601	W	500-6,000 individuals	GO	20,202,024	Questionnaire
	Shaqra		N		25.15951	45.19455	W	1,200 individuals	GO	2020	Questionnaire
	Al-Hada		N		21.37186	40.25655	W	300 - 1,960 individuals	GO	2024, 1991	Questionnaire
	SW Riyadh		N		24.56857	46.56046	W	4,000 individuals	GO	Jan-24	Questionnaire
	King Salman Royal Nature Reserve (northern section)	KBA	E	200735	29.7727	38.2678	W				KBA for Steppe Eagle; eBird
	Turaif-Qurayyat	IBA	E	49349	29.7727	38.2678	M	97-277 individuals		22	IBA for Steppe Eagle
Türkiye	Seyfe Lake	IBA; KBA	A	754	39.27	34.43	B	5-10 breeding pairs	ME	2015-2025	Questionnaire

Uzbekistan	Golodnaya Steppe		N		40.2	67.8	M	30–40 individuals	ME	2022–2024	Questionnaire
	Aydar-Arnasay Lakes	IBA & KBA (Part)	A, N	Arnasay Lake System (20653)	41.2	65.9	W	50-55 individuals	ME	2023	Questionnaire

* Additional trigger at existing site or whole new site? N – new, A – additional trigger at existing IBA/KBA site, E – existing IBA/KBA where steppe eagle is a trigger species

*Season: B- Breeding; NB- Non-breeding but in breeding range; V- Non-breeding visitor; M-Migration; W-Wintering; A- All seasons

*Data quality: GO- Good Observed (the figure is based on reliable or representative quantitative data derived from complete counts or comprehensive surveys); GE- Good Estimated (the figure is based on reliable or representative quantitative data derived from sampling or interpolation); ME- Medium Estimated (the figure is based on incomplete quantitative data derived from sampling or interpolation); MI- Medium Inferred (the figure is based on incomplete or poor quantitative data derived from indirect evidence); P- Poor (the figure is not based on quantitative data, but instead on estimates derived from circumstantial evidence); U - Unknown (information on quality not available)

*Source: Questionnaire - Sites proposed by Steppe Eagle Action Plan questionnaire compilers (mostly governments but some were from NGOs or NGOs supported by governments) that have internationally significant counts identified using data after 2015; eBird - A site of an Internationally Significant Count according to IBA Criteria A1 (at least 15 individuals (the equivalent of 5 Pairs/Reproductive Units) of a CR or EN species with a global population of >1,500 individuals) as recorded by eBird checklist. Refers specifically to sites with more than one count at the site including counts of fewer than fifty individuals, or a site with only one count which exceeds 50 individuals; IBA/KBA for steppe eagle- IBA/KBAs where steppe eagle is a trigger species and data showing internationally important numbers (> 15 individuals) after 2015.