Strategic Plan for Migratory Species 2015–2023 - Final Progress Report

CMS
UN environment programme
WCMC

Introduction

This report summarizes progress towards each of the 16 targets of the CMS Strategic Plan for Migratory Species 2015-2023 (SPMS), compiled from information drawn from Parties' National Reports to COP14, the *State of the World's Migratory Species* report, and other available priority indicators[1]. It provides an update on the progress made over the past triennium, building on a mid-term progress report that was produced in 2019 for COP13.

The SPMS was adopted at the 11th Meeting of the Conference of the Parties to CMS (COP11) in November 2014, and updated at COP12 in October 2017. The Plan is structured around five goals, under which 16 targets outline the main tangible shifts required to successfully achieve these goals. To track progress, CMS COP12 agreed a suite of indicators for assessing specific aspects of the targets (Resolution 11.2 (Rev COP12)). These indicators were to be informed by the National Reports submitted by CMS Parties every triennium, existing biodiversity-related indices adapted to CMS by disaggregating a migratory species component, and one-off studies. While some of the targets include quantifiable elements that are more readily measurable, other targets are multifaceted and far-reaching, and consequently it is challenging to measure all aspects of every target.

Although 2023 marks the end of the Strategic Plan period, a number of indicators for the SPMS remain inoperable or were not undertaken due to lack of resources, as recognized by the assessment of implementation of the SPMS prepared for the 53rd meeting of the Standing Committee (UNEP/CMS/StC53/Doc.11, Annex 1). In addition, robust comparison between different national reporting cycles to measure *progress* in implementation between different COPs, as anticipated by the close alignment of the National Report template to the SPMS, was hampered by the relatively low national reporting rates[2] and the fact that different Parties submitted national reports in the different cycles. Any comparison with reporting to COP13 should consequently be approached with caution. Furthermore, the subset of Parties having reported may not necessarily be representative of implementation across CMS Parties overall.

As such, information from the National Reports provides a snapshot of implementation against each target rather than a comprehensive overview. For some targets, this information has been supplemented by subsets of global biodiversity indicators[3] and other available information to give a more complete indication of progress. Due to sometimes considerable time delays between collecting and publishing data, some of the information may not fully cover the period up to 2023; additionally, the need for long-term data to detect trends may mean that such trends have to be set in a broader historical context to be meaningful (i.e. prior to the implementation of the SPMS). Time-lags between implementation actions and the measurable biological and ecological outcomes expected by certain targets of the SPMS, which assume theories of change involving long timeframes, also mean that progress towards many of the targets may not be fully revealed until after the end of the SPMS period.

The sections that follow provide an overview of the results, followed by details of progress made over the past triennium towards each of the 16 targets of the SPMS, to provide CMS Parties with insights into the overall implementation of the strategic plan.

[1] Analyses of the Red List Index, including subsets showing trends driven by utilization and trends driven by fisheries, the Living Planet Index, and the proportion of Key Biodiversity Areas for migratory species that are covered by protected areas.

[2] National Reports to COP14 were provided by 55 Parties by the submission deadline, representing 41% of CMS Parties; in the previous reporting cycle, 61% of CMS Parties (79 Parties) submitted National Reports to COP13 by the deadline.

[3] It should be noted that the species included within 'all migratory species' disaggregates of larger biodiversity datasets may differ between analyses and data sources, due to varying definitions of 'migratory' and/or levels of data availability and taxonomic coverage.

Summary of findings

Overall, positive progress has been made on actions aiming to mainstream migratory species priorities across government and society (**Goal 1**), in particular through awareness raising (**Target 1**) and improved governance arrangements (**T3**), although tackling harmful incentives (**T4**) and mainstreaming migratory species priorities into other sectors such as strategies on development and poverty reduction (**T2**) are not as advanced. However, the population declines highlighted in this report (under **T8**) indicate that these efforts have not sufficiently addressed the underlying causes of these declines - the ultimate aim of Goal 1.

Actions so far are not proving sufficient to reduce direct pressures (**Goal 2**), as migratory species and their habitats continue to be detrimentally affected by multiple threats (**T5, 6 and 7**). Nevertheless, many activities are already underway or under development in the framework of the Convention to address resulting impacts, including, among other activities, the ongoing work of CMS task forces, the development of guidelines, such as guidance for avoiding and/or mitigating the negative effects of light pollution, and the proposal of new Resolutions to COP14, for example, on reducing the risk of vessel strikes for marine megafauna.

The outcomes of **Goal 3**, the improved conservation status of migratory species and the ecological connectivity and resilience of their habitats, are central to the mission guiding the implementation of the Strategic Plan. However, the evidence shows that overall, many species have an unfavourable conservation status and a substantial proportion are undergoing population declines, and that on average, the extinction risk for migratory and CMS-listed species is increasing (**T8**). While Parties reported some successes in international cooperation (**T9**) and the identification of critical sites (**T10**), the aspects of ecological connectivity and resilience of habitats and migration systems could not be assessed.

Moderate progress has been made on enhancing the benefits to all from the favourable conservation status of migratory species (**Goal 4**) and enhancing implementation through participatory planning, knowledge management and capacity building (**Goal 5**). The identification of ecosystem services associated with migratory species (**T11**) and measures to enable safeguarding of genetic diversity (**T12**) have advanced, and many Parties indicated that migratory species were referred to in their NBSAPs or equivalent strategies (**T13**). Indications are that the respecting of traditional knowledge of indigenous and local communities and their participation needs to be improved (**T14**). Parties also highlighted the need for a greater mobilization of resources (**T16**), especially to support information and knowledge exchange, research and innovation, and technical assistance (**T15**).

The overall low reporting rate limits what conclusions can be drawn regarding whether the patterns indicated from the National Reports are representative of global implementation. In addition, the limitations outlined in the Introduction, on data availability, indicator gaps and time lags between data collection and publication and between implementation and results, should be borne in mind when interpreting the evidence towards each target. However, overall, the available data indicate that while notable progress is being made, it is clear that more intensive action – by individual Parties and collaboratively – is needed to achieve the aims of the Convention in line with wider global goals of conserving biodiversity and protecting and restoring natural ecosystems.

Progress towards each of the 16 Targets

Goal 1: Address the underlying causes of decline of migratory species by mainstreaming relevant conservation and sustainable use priorities across government and society

Target 1: People are aware of the multiple values of migratory species and their habitats and migration systems, and the steps they can take to conserve them and ensure the sustainability of any use.

National Reports to COP13 and COP14 suggest that awareness-raising activities, such as press and media publicity, community-based events, stakeholder group engagement and campaigns, are among the actions most widely undertaken by Parties, with the majority of Parties reporting positive results: in National Reports to COP14, 39 Parties (71% of reporting Parties) reported positive impacts of activities. Yet raising awareness was also considered by some Parties in both triennia to be a future priority requiring continued resources and support, suggesting therefore that Target 1 is not considered to be fully achieved or that it requires continued investment to ensure that people are aware of the importance of migratory species and the steps needed to conserve them.

To assess the ultimate level of success in achieving this target, comprehensive data on levels and scope of public awareness and engagement, in terms of the values and steps mentioned in the target, would be needed, but currently are challenging to compile and interpret. One example that can give a sense of changes in levels of engagement is the yearly World Migratory Bird Day May campaign. The number of registered events increased from 244 in 2021 to 400 in 2022 and over 443 in 2023. Additionally, data on Google search trends since 2004 showed a growth in global interest in the campaign over time, especially after 2019 and continuing up until 2023. Across social media platforms, the May 2023 campaign resulted in some growth in followers across all platforms, particularly Instagram, although it reached slightly fewer people via Twitter and Facebook than the May 2022 campaign.

Target 2: Multiple values of migratory species and their habitats have been integrated into international, national and local development and poverty reduction strategies and planning processes, including on livelihoods, and are being incorporated into national accounting, as appropriate, and reporting systems.

In their National Reports to COP14, just under half of reporting Parties (24 Parties; 44% of reporting Parties, similar to the 41% in reports to COP13) reported that migratory species considerations featured in national or local strategies, plans and/or processes in sectors other than nature conservation, such as multi-sectoral national sustainable development strategies, environmental impact assessments and/or spatial planning approaches. Only five, however, made specific reference to poverty reduction. Regarding national reporting processes, over three-quarters of Parties reporting to COP14 (43 Parties; 78% of reporting Parties, up from 65% in reports to COP13) reported that migratory species were integrated into such processes, primarily reporting to other biodiversity MEAs.

To fully assess the achievement of this target, the extent to which the values of migratory species and their habitats have been integrated across all relevant strategies and planning processes would need to be reviewed. However, the results above indicate that, while there have been successes, mainstreaming migratory species across all other sectors and processes mentioned in the target has not been fully realized.

Target 3: National, regional and international governance arrangements and agreements affecting migratory species and their migration systems have improved significantly, making relevant policy, legislative and implementation processes more coherent, accountable, transparent, participatory, equitable and inclusive.

In their National Reports to COP14, 17 Parties (31% of reporting Parties) indicated that existing governance arrangements already satisfied all the points in Target 3, and 22 others (40% of reporting Parties) indicated that relevant improvements in the reporting period had made either a major or good contribution towards achieving the target. This was a larger proportion than in reports to COP13, where only 26% reported that improvements during that triennium had made a good or major contribution. This suggests that notable progress has been made towards achieving Target 3, which asks for a significant improvement in governance arrangements and agreements; however, a quarter of Parties considered that there was still scope for more, or more effective, improvements.

Additional responses in the National Reports to COP14 specifically around coherence and participation suggest improvements in these areas during the reporting period. Collaboration between focal points of CMS and other Conventions was reported by almost all Parties (51 Parties; 93% of reporting Parties, up from 78% of reporting Parties to COP13). National or subnational-level mechanisms for liaison between different sectors, groups or government agencies to address CMS implementation issues were reported by 32 Parties (58% of reporting Parties, up from 48% of reporting Parties to COP13), providing a good basis for coherent implementation processes. Thirty-three Parties (60% of reporting Parties) reported adopting legislation, policies, initiatives or action plans that promote community involvement.

Target 4: Incentives, including subsidies, harmful to migratory species, and/or their habitats are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation of migratory species and their habitats are developed and applied, consistent with engagements under the CMS and other relevant international and regional obligations and commitments.

Twenty-eight Parties (51% of reporting Parties), according to their National Reports to COP14, have made some progress with developing or applying positive incentives for the conservation of migratory species. Examples of widely cited positive incentives included direct payments to implement sustainable agriculture or land management, and initiatives to compensate for damage caused by wildlife. Twenty Parties (36% of reporting Parties) reported having eliminated, phased out or reformed some harmful incentives during the reporting period, and a further 19 Parties responded that harmful incentives had never existed in their country. Actions to eliminate, phase out or reform harmful incentives were identified in a range of sectors, including agriculture and energy.

The proportions of Parties reporting work to reduce negative incentives and develop positive incentives in the triennium are similar to those for COP13, which would suggest continuing efforts towards Target 4. However, it is difficult to assess the scale of the work remaining to ensure that all harmful incentives affecting migratory species are identified, and ultimately eliminated or phased out.

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Goal 2: Reduce the direct pressures on migratory species and their habitats

Target 5: Governments, key sectors and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption, keeping the impacts of use of natural resources, including habitats, on migratory species well within safe ecological limits to promote the favourable conservation status of migratory species and maintain the quality, integrity, resilience, and ecological connectivity of their habitats and migration routes.

Over half of the Parties reporting to COP14 (29 Parties; 53% of reporting Parties, compared to 58% reporting to COP13) indicated that, during the reporting period, they had taken steps towards ensuring sustainable production and consumption which are contributing to the results defined in the target, suggesting progress towards the target; the most common steps were measures to promote sustainable practices in the wider economy and management strategies or regulations designed to ensure sustainability of harvest.

The Red List Index, which shows trends in extinction risk and can be disaggregated to show trends associated with utilization, can provide a useful proxy for understanding the impacts of use on the conservation status of migratory species. A subset of the RLI (for migratory and CMS-listed mammal and bird species) showing trends driven by utilization, is declining; this indicates that, overall, use of these species or their habitats remains unsustainable (Box 1). CMS-listed bird and mammal species affected by utilization are overall more threatened than affected migratory species of birds and mammals in general, having lower RLI values and thus a higher combined extinction risk.

The extent to which migratory species and their critical sites are impacted by the use of natural resources, including of habitats, are considered under Targets 6 and 7 below.

Box 1: The Red List Index showing trends in extinction risk driven by utilization (see Box 5 for further details of the RLI). A subset of the RLI has been analyzed to show trends driven by utilization or its management, including both direct and indirect impacts on the species or their habitats from hunting/trapping, fisheries and harvesting of aquatic resources, logging and plant harvesting. The disaggregate considers all migratory and CMS-listed bird and mammal species (the only groups for which this data was available) whose primary driver of Red List status change is utilization.

The Indices are declining, indicating that these species are at increasing risk of extinction overall as a result of utilization, with more species of birds and mammals moving to higher Red List categories owing to worsening threats than the number moving to lower Red List categories following successful management of threats (Figure 1). Overall, CMS-listed species affected by utilization are more threatened than the full subset of all migratory species affected by utilization (i.e. lower RLI values) (Figure 1). The trend driven by utilization is similar to the trend of the general RLI showing extinction risk for all migratory and CMS-listed species (see Box 5).

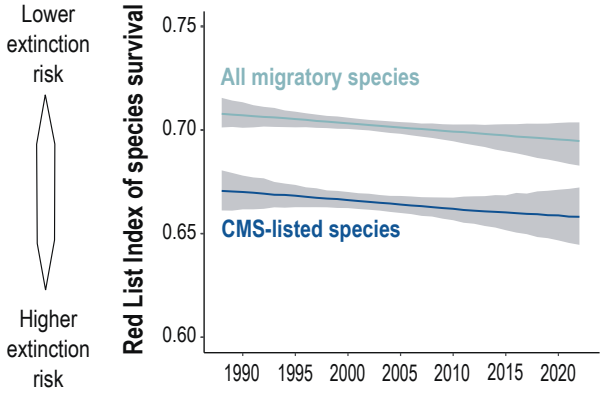

Figure 1. Red List Index of species survival for migratory (n=68) and CMS-listed (n=51) bird and mammal species, whose primary driver of Red List status change is utilization*, including hunting/trapping, fisheries and harvesting of aquatic resources, logging and plant harvesting. Grey shading shows confidence intervals. An index value of 1 equates to all species being categorized as 'Least Concern'; an index value of 0 equates to all species being categorized as 'Extinct'.*

(Source: BirdLife International, 2023)

Target 6: Fisheries and hunting have no significant direct or indirect adverse impacts on migratory species, their habitats or their migration routes, and impacts of fisheries and hunting are within safe ecological limits.

Based on an analysis of threats reported in species assessments for the IUCN Red List, the *State of the World's Migratory Species* report produced for COP14, found that 'overexploitation' (intentional and unintentional taking, including unsustainable and/or illegal hunting, overfishing and incidental catch, and excluding indirect impacts of biological resource use) was one of the top two most pervasive threats facing CMS-listed species and migratory species as a whole, affecting 70% of CMS-listed species and 65% of all migratory species for which data were available (see Box 3, under Target 7 below). It is the top threat affecting CMS Appendix I-listed species, with 89% affected.

As seen in Box 1 above, a subset of the Red List Index showing trends associated with utilization indicates that, overall, use of these species or their habitats remains unsustainable. A subset of the Red List Index restricted to trends driven by the effects of fisheries and harvesting of aquatic resources, is currently only available for mammal and bird species and does not include reptiles or fish[4]. Neither the Index for migratory species nor CMS-listed species shows significant trends, suggesting that there is no clear evidence of the picture for mammals and birds impacted by fisheries either worsening or improving, based on the data available (see Box 2). However, it should be remembered that as the Red List Index is an aggregate across species, the overall trend will mask any changes in individual species or within groups, and the addition of fish and marine reptile groups in future is likely to have a negative impact on the overall picture.

According to their National Reports to COP14, many Parties considered that at least one of the pressures relating to fisheries and hunting that they were invited to report on was having an adverse impact on migratory species (see Box 4, under Target 7 below). Illegal hunting was the most frequently reported pressure on migratory species out of all 34 suggested threats, being identified by 47 Parties (85% of reporting Parties) and with 28 Parties (51% of reporting Parties) considering this pressure to be having a severe or moderately severe adverse impact (Box 4). Significant negative trends in intentional taking (11 Parties) and in bycatch (10 Parties) were reported by Parties for the last triennium.

These data indicate that more measures are needed to minimize or mitigate the impacts of fisheries and hunting, and other forms of harvest and take, on migratory species and their habitats.

Box 2: The Red List Index showing trends in extinction risk driven by fisheries (see Box 5 for further details of the RLI). A subset of the RLI has been analyzed to show trends driven by fisheries and harvest of aquatic resources, including unintentional impacts, for all migratory and CMS-listed bird and mammal species, the only groups for which the data were available.

Neither Index shows a significant trend, indicating that deteriorations in status for some species driven by unsustainable fisheries have been balanced by improvements in status for others driven by successful fisheries management (Figure 2). Overall, CMS-listed species affected are more threatened than affected migratory species in general (i.e. lower RLI values) (Figure 2).

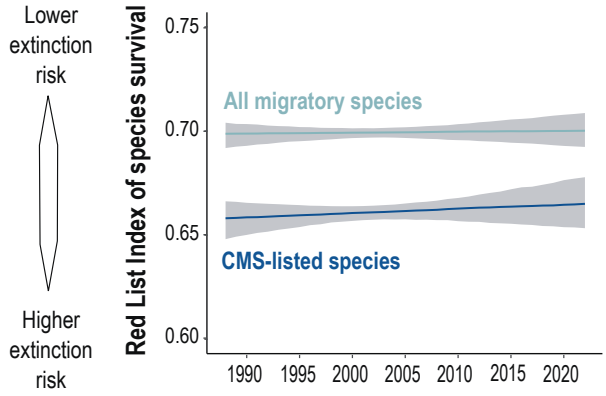

Figure 2. ***Red List Index of species survival for migratory (n=16) and CMS-listed (n=11) bird and mammal species, whose primary driver of Red List status change is fisheries and harvest of aquatic resources.*** *Grey shading shows confidence intervals. An index value of 1 equates to all species being categorized as 'Least Concern'; an index value of 0 equates to all species being categorized as 'Extinct'.*

(Source: BirdLife International, 2023)

[4] The data required to calculate the Indices for fish groups other than sturgeons, such as sharks and rays, were not available, which precluded the calculation of the Index for fish overall.

Target 7: Multiple anthropogenic pressures have been reduced to levels that are not detrimental to the conservation of migratory species or to the functioning, integrity, ecological connectivity and resilience of their habitats.

The *State of the World's Migratory Species* report produced for COP14 found that, of the 641 CMS-listed species for which threat data were available in IUCN Red List assessments, 75% (481) are affected by habitat loss, degradation and fragmentation, 70% (446) are affected by overexploitation and 46% (298) are affected by climate change (see Box 3). Pollution and invasive species/genes and diseases are considered to pose a threat to over 35% of CMS-listed species (Box 3). For all migratory species with threats assessed, overexploitation, habitat loss, degradation and fragmentation, and pollution emerge as the most common threats (Box 3).

In their National Reports to COP14, measures to tackle a range of threats and pressures were considered by many Parties to be among the most successful aspects of implementation in the triennium, but addressing specific pressures impacting migratory species, such as climate change and habitat loss, were also considered to be among the greatest challenges in implementation. When Parties were asked to rate the *prevalence and severity* of 34 pressures adversely impacting migratory species, almost all of the pressures were considered to be having a severe impact in at least one country, and the majority were identified as occurring in at least half of the Parties (see Box 4). Illegal hunting and climate change were the most commonly reported pressures and also those most often ranked as having a severe impact, alongside habitat degradation (Box 4). Parties reporting *significant negative trends* in any of the pressures during the reporting period (31 Parties, 56% of reporting Parties) most commonly highlighted trends driven by climate change (17 Parties) and habitat destruction/degradation (16 Parties), as well as intentional taking of species (11 Parties).

How specific pressures are impacting migratory species can be reviewed in several detailed assessments undertaken in the context of the Convention. Examples include studies on climate change[5], the taking, trade and consumption of terrestrial species[6] and aquatic species[7] for wild meat, marine pollution[8], the effects of plastic pollution on migratory species in the Asia and Pacific Region[9], and the risk of ship strikes on whale sharks[10].

In order for Target 7 to be fully met, migratory species' habitats, as well as the species themselves, need to be safeguarded from detrimental levels of anthropogenic pressures. Threat data were available for a third of Key Biodiversity Areas (KBAs) triggered by CMS-listed species and were analysed in the *State of the World's Migratory Species* report. The analysis found that over half (58%) of these monitored sites important for CMS species for which threat data were available were experiencing 'unfavourable' or 'very unfavourable' levels of pressure.

The sources above present an assessment of pressures both directly through presence information in the case of National Reports, and indirectly through species/sites status outcomes in the case of the other metrics. Nevertheless, all of the results indicate that intensified action is needed to reduce the multiple anthropogenic pressures on migratory species and their habitats to non-detrimental levels.

[5] Martay, B. et al. (2023). Climate change and migratory species: a review of impacts, conservation actions, ecosystem services, and indicators. CMS, Bonn, Germany.

[6] Coad, L. et al. (2021) Impacts of taking, trade and consumption of terrestrial migratory species for wild meat. CMS, Bonn, Germany.

[7] Ingram, D.J. et al. (2022). Widespread use of migratory megafauna for aquatic wild meat in the tropics and subtropics. Frontiers in Marine Science, 9: 837447.

[8] Simmonds, M. P. and Nunny, L. (2023) Migratory species and marine pollution: a brief overview of issues. CMS, Bonn, Germany.

[9] Horton, A.A. and Blissett, I. (2023). Impacts of plastic pollution on freshwater aquatic, terrestrial and avian migratory species in the Asia and Pacific region. CMS, Bonn, Germany.

[10] Araujo, G., et al. (2023). Limiting global ship strikes on whale sharks: understanding an increasing threat to the world's largest fish. CMS, Bonn, Germany.

Box 3: Threats and pressures, as recorded in IUCN Red List assessments. The current or future threats documented in IUCN Red List assessments were collated for CMS-listed and migratory species[x]; as there is no single category for 'habitat loss, degradation and fragmentation' in the IUCN threat classification, a number of categories in the classification contributing to this threat were combined for the analysis[y].

Of the 641 CMS-listed species for which threat data were available, 75% (481) are affected by 'habitat loss, degradation and fragmentation', 70% (446) are affected by 'overexploitation' and 46% (298) are affected by 'climate change' (Figure 3). 'Pollution' and 'invasive species, genes and diseases' are considered to pose a threat to over 35% of CMS-listed species (Figure 3). For all migratory species with threats assessed, 'overexploitation', 'habitat loss, degradation and fragmentation', and 'pollution' emerge as the most common threats (Figure 3).

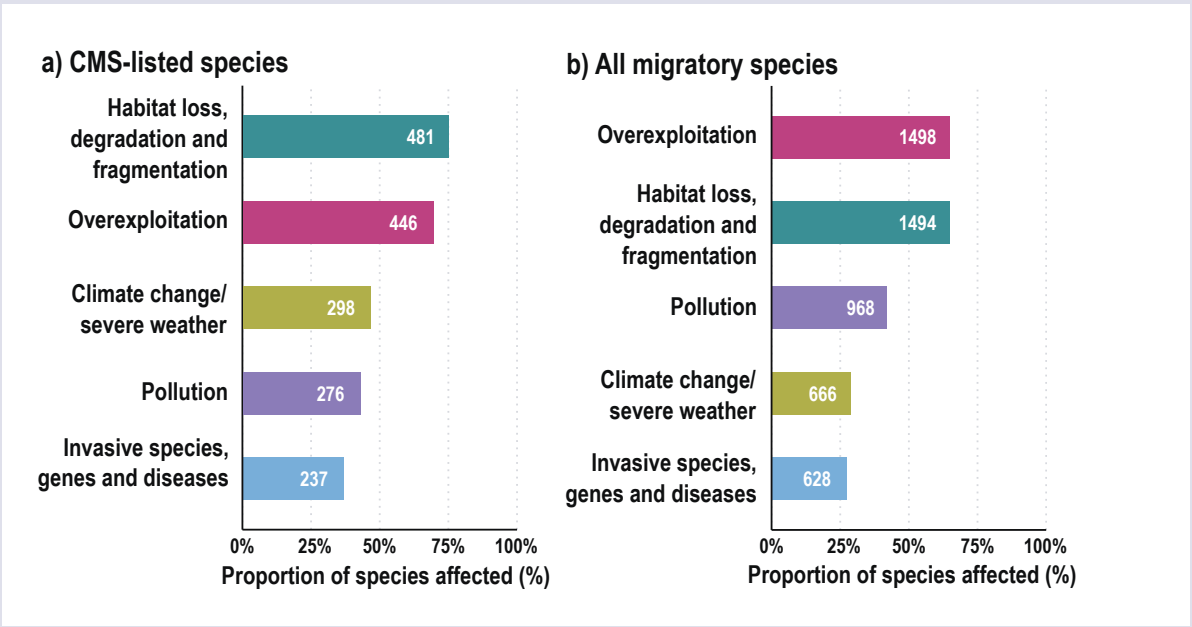

Figure 3. ***Proportion and number of species impacted by each overall threat type affecting (a) CMS-listed species*** *(n=641),* ***and (b) all migratory species*** *(n=2,300),* ***based on the IUCN Red List****. Proportions in a) and b) are relative to the total number of species in each group for which data on threats were available in IUCN Red List assessments.*

[x] 54% of 1,189 CMS-listed species and 49% of the 4,695 migratory species had at least one current or future threat documented in their IUCN assessment. The IUCN Red List does not require major threats to be documented for taxa assessed as Least Concern or Data Deficient, but this does not necessarily indicate that these taxa are unaffected by any threats.

[y] Categories combined into 'habitat loss, degradation and fragmentation': 'agriculture and aquaculture', 'energy production and mining', 'human disturbance and intrusions', 'natural system modifications', 'residential and commercial development' and 'transportation and service corridors', in addition to the following sub-categories within 'biological resource use': 'gathering terrestrial plants' and 'logging & wood harvesting'. 'Overexploitation' was therefore restricted to the remaining two sub-categories within 'biological resource use': 'hunting & collecting terrestrial animals' and 'fishing & harvesting aquatic resources'.

(Source: State of the World's Migratory Species report)

Box 4: Threats and pressures, as reported by Parties in their National Reports to COP14. Parties were asked to identify the **prevalence and severity** of 34 threats and pressures that might be having an adverse impact on migratory species.

Almost all of the pressures were considered to be having severe adverse impacts in at least one country, and for the majority of pressures at least half of the reporting Parties considered it to be having an adverse impact in their country (Figure 4). The most widely reported pressures were illegal hunting and climate change; these were also most frequently ranked as severe (Figure 4).

Figure 4. Number of Parties having submitted National Reports to COP14 that reported each pressure and its severity*. If a Party listed more than one ranking for a given pressure (e.g. 'low to moderate'), only the most severe ranking was counted.*

(Source: Analysis of CMS National Reports to COP14, (UNEP/CMS/COP14/Doc.23)

Goal 3: Improve the conservation status of migratory species and the ecological connectivity and resilience of their habitats

Target 8: The conservation status of all migratory species, especially threatened species, has considerably improved throughout their range.

Standardized assessments and global biodiversity indices provide the most consistently measurable outlook on the conservation status of migratory species. Based on IUCN Red List assessment data, the *State of the World's Migratory Species* report, produced for COP14, identified that over one in five CMS-listed species is currently assessed as threatened with extinction, and 44% of CMS-listed species have a decreasing population trend.

The Red List Index (RLI) shows a decreasing trend in species survival for CMS-listed species and for all migratory species over the period from 1988 to 2020, indicating that an increasing number of species within these groups are at risk of extinction (see Box 5). While the rate of decline of the RLI for CMS-listed species is comparable to that of all migratory species, CMS-listed species are more threatened overall (Box 5). CMS-listed birds are the least threatened group[11], while CMS-listed sturgeons (the only group of fish for which data was available) are the most threatened[12] (Box 5).

The Living Planet Index, which monitors the relative abundance of species' populations over time, shows an overall average decline of 15% for all migratory species and an overall average increase of 1% for CMS-listed species between 1970 and 2017[13] (see Box 6). Globally, the average relative abundance trends of most taxonomic groups of CMS-listed species have been stable or increasing since 1970, with the exception of fish, which have shown large average declines (Box 6). It is important to note that these figures represent an aggregate of average rates of change in the relative abundance of monitored species over time. Overall positive trends may mask deteriorations in individual species, or in particular populations, and some populations may be increasing or declining at higher rates compared to the average.

A snapshot of major conservation status changes for CMS-listed species at a national level, as identified by Parties, was provided in the National Reports to COP14. Seventeen Parties (31% of reporting Parties) reported a change (improvement or deterioration) in the conservation status of a CMS-listed species: overall more improvements than deteriorations were reported for terrestrial mammals, only improvements were reported for aquatic mammal and reptile species, while for fish, only deteriorations were reported. The National Reports to COP13 gave a similar picture for these groups. For birds, almost as many improvements in status were reported as deteriorations in the current reporting period, compared to the previous triennium where overall more deteriorations were reported.

These sources all indicate that the trend must be reversed to improve the conservation status of all migratory species throughout their range.

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[11] This differs from the trends reported in the 2019 mid-term Strategic Plan for Migratory Species progress report due to an increase in the number of bird species included in the underlying dataset based on ongoing work to disaggregate the higher-level Appendix II listings for birds.

[12] While trends can be disaggregated by taxonomic group, certain subsets of the data result in too few species in the group with sufficient data to calculate meaningful Indices; it was therefore only possible to obtain disaggregates by taxonomic group for aquatic mammals, terrestrial mammals, birds and sturgeons. The data required to calculate the Indices for other fish groups, such as sharks and rays, were not available, which also precluded the calculation of the Index for fish overall.

[13] Differences with the results in the 2019 mid-term Strategic Plan for Migratory Species progress report can be attributed to an increase in the number of bird species included in the underlying dataset based on ongoing work to disaggregate the higher-level Appendix II listings for birds, and to improvements in the underlying monitoring data availability/quality.

Box 5: The Red List Index. The Red List Index (RLI) shows trends in overall extinction risk by measuring changes in survival probability in groups of species, based on genuine changes in the number of species in each extinction risk category in the IUCN Red List. The RLI value ranges from 1 (if all species are categorized as 'Least Concern') to 0 (if all species are categorized as 'Extinct'). A lower RLI value therefore indicates greater extinction risk, while a steeper downward RLI slope indicates a faster move towards extinction. It is important to remember, however, that the RLI is calculated as an aggregate of the survival probabilities of species, and therefore that individual species may be doing better, or worse, than the overall resulting trend. While trends can be disaggregated by taxonomic group, certain disaggregates result in too few species with sufficient data to calculate meaningful indices; it was therefore only possible to compile the RLI for CMS-listed aquatic mammals, terrestrial mammals, birds and sturgeons.

The Red List Indices for CMS-listed and all migratory species show an increasing risk of extinction in both groups (Figure 5a). For CMS-listed species, this trend represents 70 species which have moved to higher threat categories over the period, outweighing the 14 species which showed an improvement in status. CMS-listed sturgeons are the most threatened, while CMS-listed birds are the least threatened group (Figure 5b).

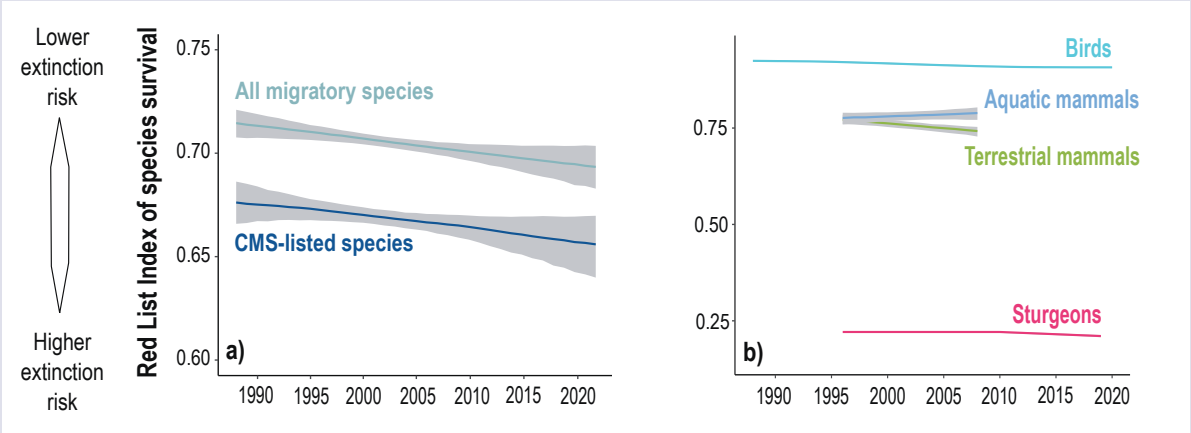

***Figure 5. Red List Index of species survival (a) for CMS-listed** (n=1118) **and all migratory species** (n=2428), **and (b) for CMS-listed groups** (birds n=955, terrestrial mammals n=90, aquatic mammals n=54 and sturgeons n=19), **for which data were available**. Grey shading shows confidence intervals; those for birds and sturgeon are overlaid by the line. An index value of 1 equates to all species being categorized as 'Least Concern' and an index value of 0 equates to all species being categorized as 'Extinct'. Note the difference in scale on the y-axis.*

For more information on the Red List Index, visit http://iucnredlist.org/assessment/red-list-index.

(Source: State of the World's Migratory Species report, from analysis provided by BirdLife International)

Box 6: The Living Planet Index. The Living Planet Index (LPI) tracks the average change in relative abundance of monitored terrestrial, freshwater and marine vertebrate species populations over time. The average change in population is calculated compared with the previous year, starting with an initial value of 1 in 1970.

The Living Planet Index shows an overall average decline of 15% for all migratory species between 1970 and 2017 (Figure 6), and an overall average increase of 1% for CMS-listed species over the same time period (Figure 6). Globally, the average abundance trends of most taxonomic groups of CMS-listed species are stable or increasing since 1970, with fish being the only taxonomic group showing an average decreasing trend in population abundance (Figure 7). It is important to remember, however, that the LPI is calculated as an aggregate, and therefore that an overall positive trend may mask underlying declines in individual species or taxonomic groups.

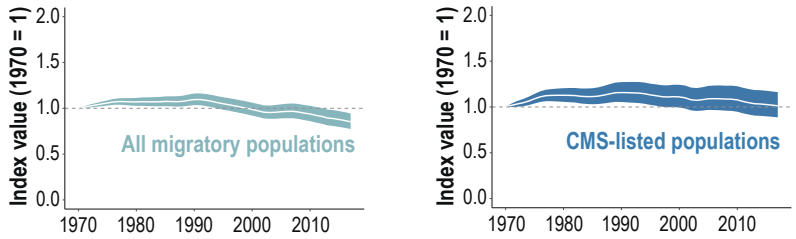

Figure 6. ***Average change in relative abundance, between 1970 and 2017, of all monitored migratory species of mammals, birds, reptiles and fish*** *(based on 15,923 populations of 1,710 species)* ***and of CMS-listed species monitored globally*** *(based on 9,801 populations of 615 mammals, birds, reptiles and fish). Shaded areas represent the statistical uncertainty surrounding the trend.*

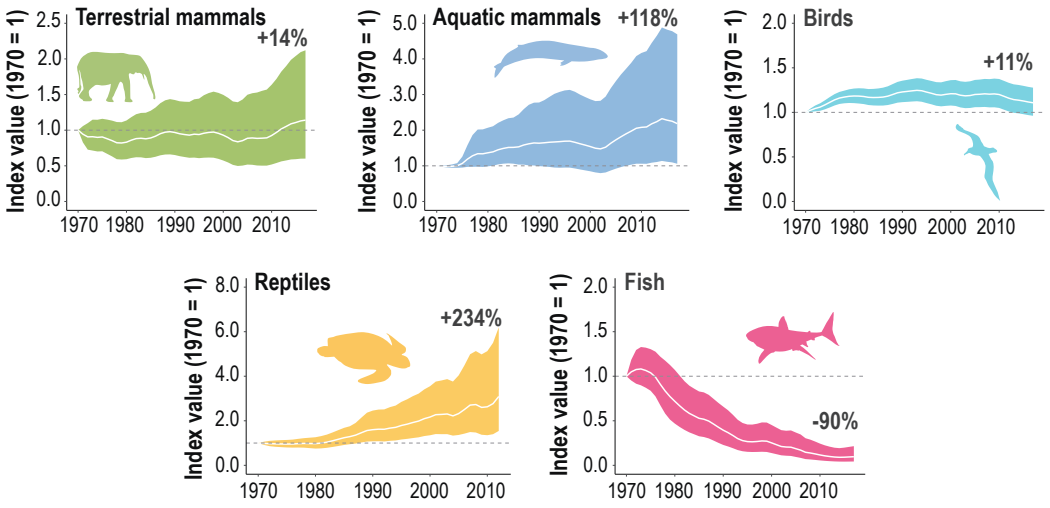

Figure 7. ***Average change in relative abundance, between 1970 and 2017, of CMS-listed species monitored globally, by taxonomic group.*** *Trends are for 8,822 monitored populations of 479 bird species, 176 populations of 37 fish species, 325 populations of 50 terrestrial mammal species, 233 populations of 39 aquatic mammal species, and 245 populations of 10 reptile species. Shaded areas represent the statistical uncertainty surrounding the trend.*

Taxonomic coverage of the LPI dataset is not complete but can be considered good for CMS-listed species, with representation ranging from 50% in birds to 100% in reptiles.

For more information on the Living Planet Index, visit www.livingplanetindex.org/home/index

(Source: State of the World's Migratory Species report, from analysis provided by the Zoological Society of London (ZSL))

Target 9: International and regional action and cooperation between States for the conservation and effective management of migratory species fully reflects a migration systems approach, in which all States sharing responsibility for the species concerned engage in such actions in a concerted way.

According to their National Reports to COP14, 21 Parties (38% of reporting Parties) participated in the implementation of Concerted Actions under CMS during the triennium. Just under half of the taxa currently identified for such actions in Resolution 12.28 (Rev. COP13) were reported to be receiving attention in that context. A range of other cooperative activities contributing to the achievement of the results defined in Target 9 were identified by 24 Parties (44% of reporting Parties).

These results represent a slight increase in the number of Parties participating in cooperative activities compared to COP13, and some Parties listed improved international or regional cooperation as one of the most successful aspects of implementation during the reporting period; however, the figures remain low given the centrality of Target 9 to the purposes of CMS, and enhancing regional cooperation was cited by 15 Parties (27% of reporting Parties) as one of the main priorities for future implementation of the Convention. To assess the work remaining to achieve the results expected in this target, insights into the effectiveness of the activities undertaken, and the extent to which a migration systems approach is reflected, would be needed.

Target 10: All critical habitats and sites for migratory species are identified and included in area-based conservation measures so as to maintain their quality, integrity, resilience and functioning in accordance with the implementation of Aichi Target 11, supported where necessary by environmentally sensitive land-use planning and landscape management on a wider scale.

Most Parties (48 Parties; 87% of reporting Parties), in their National Reports to COP14, reported having identified critical habitats and sites for migratory species to some extent, although only eight of those Parties (14% of reporting Parties) indicated that these sites had been fully identified. Fifteen Parties (27% of reporting Parties) mentioned the use of environmental impact assessments and/or spatial planning approaches as tools to ensure that economic development considers the needs of migratory species. Identifying and managing critical sites and habitats were mentioned by Parties to be among the main priorities for future implementation, and those requiring resources and support during future reporting cycles.

The *State of the World's Migratory Species* report, produced for COP14, presented an exploratory analysis of important sites for migratory species. Close to 10,000 Key Biodiversity Areas (KBAs) have been identified based on having one or more CMS-listed species at qualifying levels for at least one KBA criterion; this represents 58% of all KBAs recognized to date. Almost two-thirds (61%) of CMS-listed species have triggered the identification of at least one KBA, but this varies by taxonomic group: overall, 95% of these KBAs were triggered by bird species, reflecting the fact that the KBA dataset is currently dominated by Important Bird and Biodiversity Areas (IBAs), and that birds represent the majority of CMS-listed species. Sixty-eight percent of CMS-listed bird species have triggered a KBA, while the majority of CMS-listed mammals and fish have not yet triggered a KBA. Seventy CMS-listed species that are globally threatened have not yet triggered a single KBA. A rarity-weighted richness metric for terrestrial CMS-listed species based on their IUCN Red List ranges, refined to the species' area of suitable habitat, revealed terrestrial areas of potential high significance for CMS-listed species that are not yet recognized within the KBA network, most notably in South Asia, a band of areas south of the Sahel, and pockets in Southern Africa and Southern America (*State of the World's Migratory Species* report). These findings highlight clear taxonomic and geographical gaps in the KBA network for CMS-listed species.

Identification of important sites for CMS-listed and other migratory species is also underway through a range of other efforts in addition to KBAs. This includes work to collate data on marine areas (Important Marine Mammal Areas (IMMAs), Important Marine Turtle Areas (IMTAs), Important Shark and Ray Areas (ISRAs), Ecologically or Biologically Significant Areas (EBSAs) and important at-sea sites for seabirds through the BirdLife International Seabird Tracking Database and marine IBA e-atlas), as well as filling in data gaps on corridors (for example through the Global Initiative on Ungulate Migration (GIUM) with a goal of creating a global atlas of migration for ungulate species, and through the Global Swimways Programme for migratory freshwater fish species).

Inclusion of identified critical habitats and sites in area-based conservation measures is an essential second step required by the target. To begin to assess the extent to which critical habitats for migratory species are included in area-based conservation measures, the spatial overlap between Key Biodiversity Areas (KBAs) identified due to their importance for migratory species and protected and conserved areas can be quantified. The *State of the World's Migratory Species* found that the proportion of KBAs triggered by CMS-listed species that are covered by formal protected and conserved areas has grown substantially over recent decades, but that it still remains at less than half with formal protection (in 2022 it averaged 49% globally) (Box 7). It should be noted that CMS-listed species may yet be benefiting from KBAs triggered by non-listed species that are covered by formal protected and conserved areas. Given that over half (58%) of the KBAs triggered by CMS-listed species for which site monitoring data were available were found to be experiencing 'unfavourable' or 'very unfavourable' levels of pressure (see Target 7), enhanced safeguarding of critical sites is needed, both through protected areas and other effective area-based conservation measures.

To fulfil the target, inclusion of critical sites in protected areas and other conservation measures also needs to be effective in maintaining their quality, integrity, resilience and functioning. In their National Reports to COP14, sixteen Parties (29% of reporting Parties) reported having undertaken assessments of management effectiveness for protected areas important for migratory species, with a further 19 Parties (35% of reporting Parties) indicating that this had been partly or locally undertaken. Eight Parties indicated that some form of regular monitoring or assessment is currently in place. The reports in their current format do not provide comprehensive information on whether such assessments reveal good or bad results.

Box 7: Key Biodiversity Areas and protected and conserved area coverage. Key Biodiversity Areas (KBAs) are "sites that contribute to the global persistence of biodiversity" and are identified through a set of established criteria, including whether a site supports a significant proportion of the worldwide population of a globally threatened species. The degree to which KBAs are covered by protected areas is calculated based on overlaps between digital boundaries of protected areas and of KBAs identified for CMS-listed species.

The coverage in protected areas for KBAs identified for CMS-listed species has grown substantially over time (Figure 8), with current coverage highest in Europe (63%) and lowest in Asia (25%) (Figure 8b). Nearly half (49%) of the area of KBAs triggered by CMS-listed migratory species was covered by protected and conserved areas in 2022 (Figure 8a).

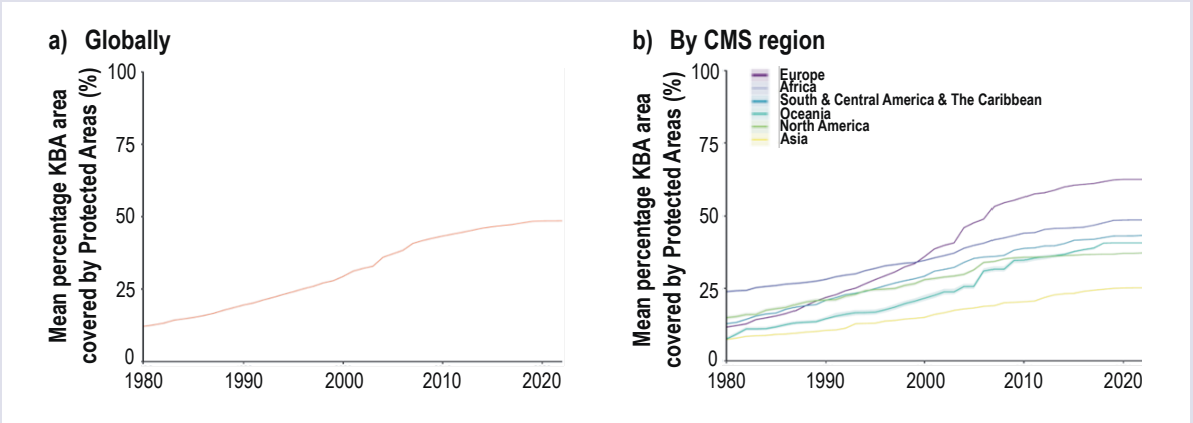

Figure 8. ***Trends in protected area coverage of Key Biodiversity Areas identified for CMS-listed species (a) globally, and (b) in each region.*** *n = 1,106 KBAs in Africa, 2,100 KBAs in Asia, 4,490 KBAs in Europe, 477 KBAs in North America, 369 KBAs in Oceania and 710 KBAs in South & Central America and The Caribbean. Shading shows confidence intervals.*

While this metric illustrates the global protected and conserved area coverage for KBA sites triggered for CMS-listed species, it does not capture important sites for the 49% of CMS-listed species that have yet to trigger KBAs, or non-CMS-listed migratory species. Moreover, migratory species are likely reliant on many more sites beyond those currently identified, and may also benefit from sites triggered by other species.

For more information on Key Biodiversity Areas, Protected Areas or the full methodology, visit https://www.keybiodiversityareas.org/; https://www.protectedplanet.net/

(Source: State of the World's Migratory Species report, from analysis provided by BirdLife International)

Goal 4: Enhance the benefits to all from the favourable conservation status of migratory species

Target 11: Migratory species and their habitats which provide important ecosystem services are maintained at or restored to favourable conservation status, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

The identification of migratory species and their habitats that provide important ecosystem services is the first step towards the outcome expressed by this target. In their National Reports to COP14, 33 Parties (60% of reporting Parties) indicated that they had wholly or partly undertaken assessments of ecosystem services associated with migratory species since the start of the Strategic Plan, up from 38% of reporting Parties to COP13; this suggests progress towards achievement of this target. More recently, a review of climate change and migratory species highlighted how migratory species can provide essential ecosystem services related to climate change mitigation and adaptation, and therefore that migratory species conservation should be considered in tandem with climate change mitigation/adaptation strategies (UNEP/CMS/COP14/Inf.30.4.1).

Target 12: The genetic diversity of wild populations of migratory species is safeguarded, and strategies have been developed and implemented for minimizing genetic erosion.

In their National Reports to COP14, over half of reporting Parties (29 Parties; 53%) indicated that relevant strategies or other measures had been implemented or were being developed to minimize genetic erosion of biodiversity. This is a slight increase on the 43% of Parties reporting to COP13, suggesting some progress. However, it is challenging to assess the extent to which genetic diversity of wild populations is being safeguarded.

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Goal 5: Enhance implementation through participatory planning, knowledge management and capacity building

Target 13: Priorities for effective conservation and management of migratory species, their habitats and migration systems have been included in the development and implementation of national biodiversity strategies and action plans, with reference where relevant to CMS agreements and action plans and their implementation bodies.

The vast majority of Parties reporting to COP14 (45 Parties; 82% of reporting Parties) indicated that migratory species, their habitats, or migration systems are explicitly referred to in their NBSAPs or other relevant strategies. Nineteen Parties (35% of reporting Parties) provided details on the elements included, the most frequently reported examples of which include enhancing ecological connectivity (including steps to address obstacles to migration) and management or action plans for relevant species.

In order to satisfy the target, priorities for effective conservation and management of migratory species must also be included in the *implementation* of the NBSAPs or other relevant plans, and a number of Parties indicated in their additional information that implementation was proceeding, although few gave details of aspects relating specifically to migratory species. The National Reports can only give a snapshot of how well migratory species concerns have been integrated into the development and particularly the implementation of NBSAPs, and therefore of the level of achievement of the target.

Target 14: The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of migratory species, their habitats and migration systems, and their customary sustainable use of biological resources, are respected, subject to national legislation and relevant international obligations, with the full and effective participation of indigenous and local communities, thereby contributing to the favourable conservation status of migratory species and the ecological connectivity and resilience of their habitats.

As with National Reporting to COP13, only a small number of Parties (five Parties; 9% of reporting Parties) indicated in their National Reports to COP14 that traditional knowledge was fully respected and that there was effective participation from indigenous and local communities, fully achieving Target 14, although 25 other Parties noted some progress towards achievement of the target, and some considered that it was not applicable to them. Actions during the reporting period to foster consideration for the traditional knowledge, innovations and practices of indigenous and local communities, and to promote their participation, were reported to have been undertaken by 28 and 35 Parties respectively (51% and 63% of reporting Parties). An analysis of case studies related to community involvement in the conservation and management of CMS-listed species, pursuant to Decision 13.119, identified a set of 10 key guiding principles for the successful inclusion of communities living in the range of migratory species in the conservation of those species (UNEP/CMS/COP14/Inf.30.2.3).

Target 15: The science base, information, training, awareness, understanding and technologies relating to migratory species, their habitats and migration systems, their value, functioning, status and trends, and the consequences of their loss, are improved, widely shared and transferred, and effectively applied.

Almost all reporting Parties to COP14 (53 Parties; 93%) indicated that actions had been taken towards this target during the reporting period, particularly on raising public awareness (as also reflected under Target 1), information exchange, and education campaigns. These aspects were also the actions most frequently reported to COP13 for this target. The exchange of information and knowledge, research and innovation, and technical assistance, were most frequently highlighted as the priorities that require resources and support in order to implement fully Parties' obligations under CMS.

Target 16: The mobilization of adequate resources from all sources to implement the Strategic Plan for Migratory Species effectively has increased substantially.

Approximately one-third of reporting Parties to COP14 (17 Parties; 31%) indicated an overall increase in mobilized resources compared with the previous triennium, while two Parties reported a decrease in levels; twelve Parties considered the resources available to have been the same compared to the previous triennium. Of the Parties that received financial or other resources for conservation activities, sixteen (29% of reporting Parties) reported an increase in external financial support compared to the previous reporting period. Throughout the National Reports, Parties consistently highlighted the need for additional resources to boost implementation efforts.

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The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) is a global Centre of excellence on biodiversity. The Centre operates as a collaboration between the UN Environment Programme and the UK-registered charity WCMC. Together we are confronting the global crisis facing nature.