Hunting and Conservation of Turtle Dove in Europe

Three years in the Adaptive Harvest Management programme - MAY 2024

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Take home messages

- The Turtle Dove population in the Western flyway increased after the moratorium, but the population in the Central/Eastern flyway decreased, even after a harvest reduction of more than 50%.

- In 2023, Member States and hunters in the Central/Eastern flyway have once again successfully implemented harvest reduction measures, and the moratorium in the Western flyway remains.

- The analysis requested by FACE to assess the population trend predictions under different harvest scenarios shows a significant difference from the real observed trend, highlighting a potential overestimation of the impacts of hunting.

- In the Western flyway, Member States are invited to prepare for a potential reopening of hunting in 2025, by submitting their proposals for quota, enforcement, and implementation systems to be in place.

- In the Central/Eastern flyway, actions related to changes in hunting, habitat management, data analysis, and research are crucially needed in view of the declining state of the population.

The population trend 2024 update

The 2024 population monitoring update provided by the Pan-European Common Bird Monitoring Scheme (PECBMS) is now covering the first two breeding seasons (2022 and 2023) since the start of the Adaptive Harvest Management (AHM) programme in 2021.

In the Western flyway, where a moratorium has been in place since 2021, a population increase has been observed. The 10-year trend, measured by the PECBMS multiplicative slope, went from "moderate decline" to "stable". The breeding population size of this flyway was estimated at 1.96 million breeding pairs in 2023.

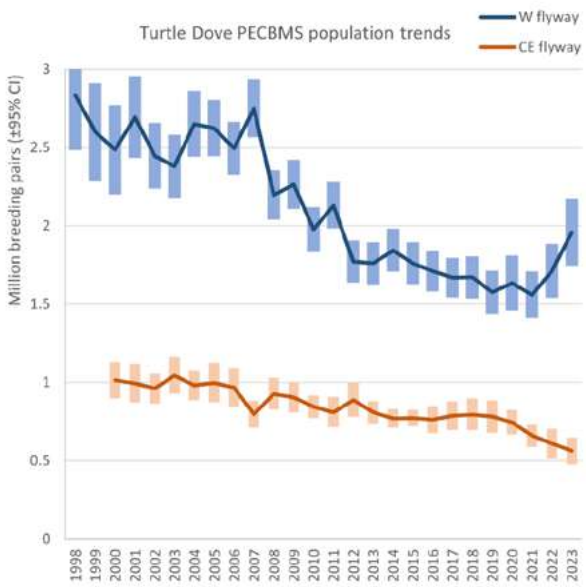

Figure 1
PECBMS'Turtle Dove population trend 2024 update per flyway (source: EU TFRB document "TFRB 24-04-05 TD AHM update - W flyway").

However, the opposite situation was observed in the Central/Eastern flyway, where the population decreased in 2022 and 2023. This flyway's 10-year trend went from "stable" to "moderate decline".

The breeding population size of this flyway is now estimated at 560 thousand breeding pairs in 2023. Aside from hunting, continued pressures from land use change may be a key factor in this flyway.

Since the start of the AHM, the evolution of the 10-year trends has been monitored, as these trends are an important factor in this process. A positive 10-year PECBMS trend is one of the three criteria necessary to reopen hunting.

For the Central/Eastern flyway, the 10-year multiplicative slope estimate decreased from 0.988 ± 0.013 95%CI (2012-2021) to 0.968 ± 0.014 95%CI (2014-2023), see figure 2. Therefore, the 10-year population trend, which has been "stable" since 2021 has now changed into "moderate decline", according to PECBMS criteria, a surprising change given the significant harvest reductions.

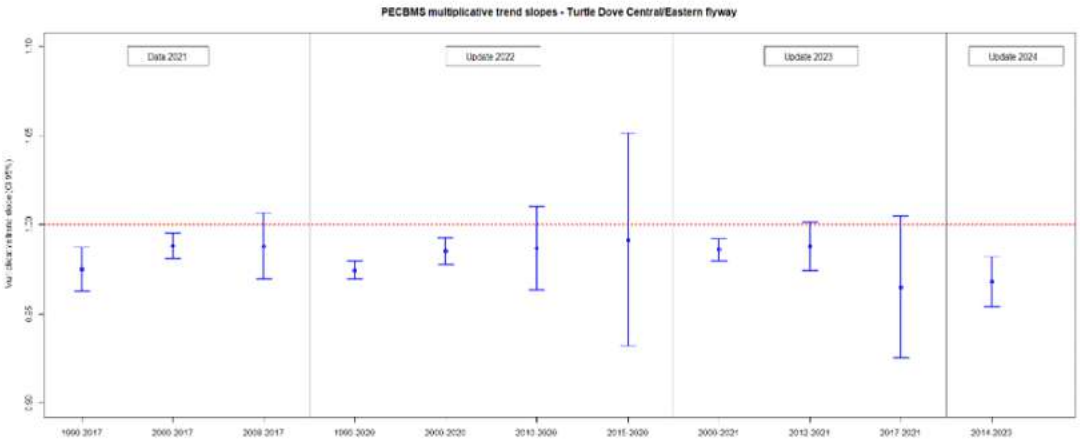

Figure 2
PECBMS multiplicative trend slopes (with 95% CI intervals) for the Central/Eastern flyway, as per each successive update since 2021.update since 2021.

For the Western flyway, the 10-year multiplicative slope estimate increased from 0.983 ± 0.010 95%CI (2012-2021) to 0.999 ± 0.011 95%CI (2014-2023), see figure 3. The slope estimate is almost at 1, so very close to a population growth over 10 years. The trend is now qualified as "stable". The 10-year trend 2010-20 was also qualified as "stable".

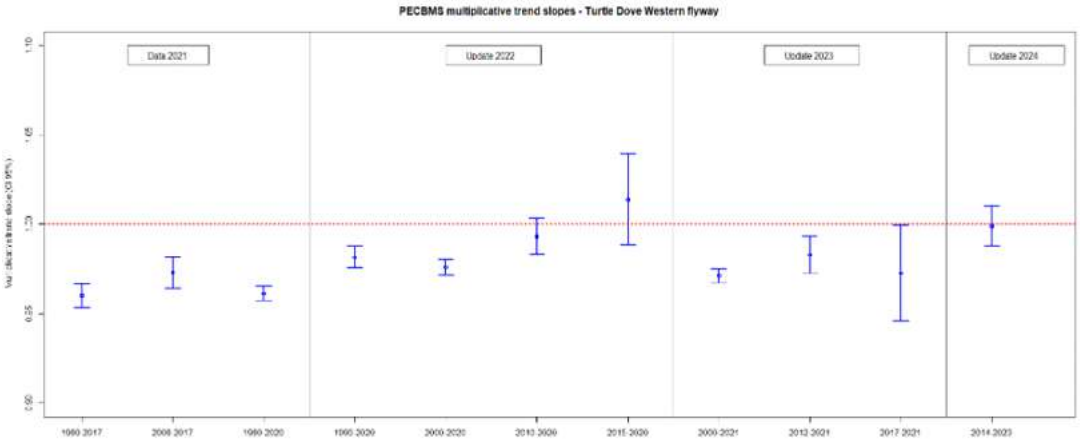

Figure 3
PECBMS multiplicative trend slopes (with 95% CI intervals) for the Central/Eastern flyway, as per each successive update since 2021.

According to the EC scientific consortium, the most likely reason for the increase in the Western flyway is an increase in survival following the moratorium on hunting. This would be in line with the Integrative Population Model (IPM) predictions, which, according to a sensitivity analysis, suggest that adult and juvenile survival are the factors most likely to influence the Turtle Dove population's dynamics, which is supported by another study (see Bacon et al., 2023 and de Vries et al., 2022).

Accordingly, the IPM previously predicted that stopping hunting would lead to a higher survival resulting in a significant increase in population size.

However, the data from 2 sites monitored in Spain presented so far to support this hypothesis is not convincing.

At one site (Quintos de Mora), estimates provided before and after the ban show a non-significantly higher adult survival (0.595 ± 0.042 and 0.559 ± 0.046, post and pre-moratorium, respectively) and a lower juvenile survival after the moratorium (estimates not provided), see figure 4.

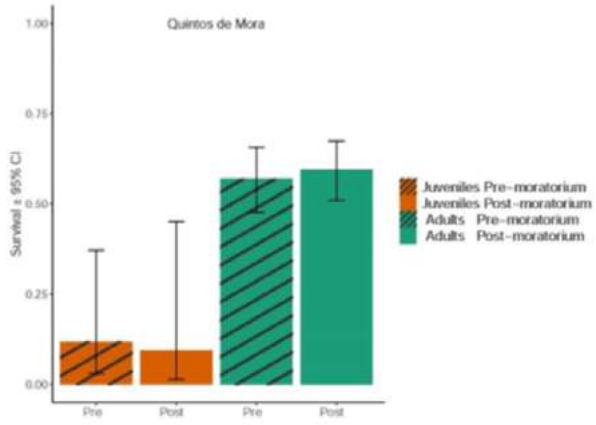

Figure 4
Turtle Dove survival estimates before and after the moratorium in Quintos de Mora, Spain (source: EU TFRB document "TFRB 24-04-05 TD AHM update - W flyway").

For the other site (Menorca), only post-ban survival estimates are provided. The adult survival estimate provided (0.624 ± 0.111) is compared to the survival output of the IPM (0.597 [0.531; 0.663], Bacon et al., 2023) and is higher and based on French data. However, it is in the range of other published pre-moratorium studies (e.g., 0.661 in NL (de Vries et al., 2021) or 0.623 in the UK (Siriwardena et al., 2000)), see table 1. There is no indication that survival was indeed higher after the moratorium, and that such a difference could be responsible for the population increase.

Adult survival estimates	Sources
0.5	UK, 1952–64 (Murton 1968)
0.525	UK, 1979–95 (Siriwardena et al., 2000)
0.559 ± 0.046	ES, Quintos de Mora - Pre-moratorium
0.595 ± 0.042	ES, Quintos de Mora - Post-moratorium
0.597 [0.531; 0.664]	FR (Bacon et al., 2023)
0.623	UK, 1962–78 (Siriwardena et al., 2000)
0.624 ± 0.111	ES, Menorca - Post-moratorium
0.661	NL, 1930–2017 (de Vries et al., 2021)

Table 1
Non-exhaustive list of published Turtle Dove adult survival estimates, including recent estimates provided in the framework of the Turtle Dove AHM. The survival estimates provided from both Quintos de Mora and Menorca fall in the range of published adult survival values.

FACE's take is that the survival data presented so far do not allow us to conclude that the population increase is only a result of a higher survival induced by the moratorium. A variety of other factors can influence population dynamics (such as weather or productivity, monitoring, …), and a better assessment is needed. More data on survival and productivity is required to update the IPM, which could take some time, but studies are being carried out in several Member States.

The harvest in 2023

In the Western flyway, Member States maintained the moratorium initiated in 2021 and there was no Turtle Dove hunting in 2023.

In the Central/Eastern flyway, Member States maintained their commitment and efforts to the reduction of Turtle Dove harvest. As for the two previous years, this was achieved successfully, with an overall reduction of harvest of around 75% in 2023, as seen in table 2.

	Baseline 2013/2018	2021	2022	2023	Reduction from baseline in 2023
AT	7.800	100		1.104	-86%
BG	134.455	82.486	50.599	65.037	-52%
CY	39.015	2.250	13.882	13.699	-65%
GR	285.600	109.860	120.000	96.198	-66%
IT	304.140	8.297	19.929	19.149	-94%
MT	4.099	500	949	2.000	-51%
RO	21.616	22.376	0	1.710	-92%
Total	796.725	225.869	205.359	198.897	-75%

Table 2
Summary of Turtle Dove harvest reported by Member States in the Central/Eastern flyway for the seasons 2021, 2022 and 2023, and the related harvest reduction from the baseline harvest 2013-18.

It should be noted that harvest data for some regions in Italy is missing in this table. However, their absence (or addition) should not significantly affect the reduction percentages calculated, as the main regions provided data. If discarding Italy from the calculations, the reduction in the Central/Eastern flyway except Italy would be of around 65%.

The progress of the harvest reduction in the Central/Eastern flyway is best visualized in the following graph (figure 5), which clearly shows the success of the strong commitments taken by Member States in the flyway to reduce harvest, as agreed in 2021.

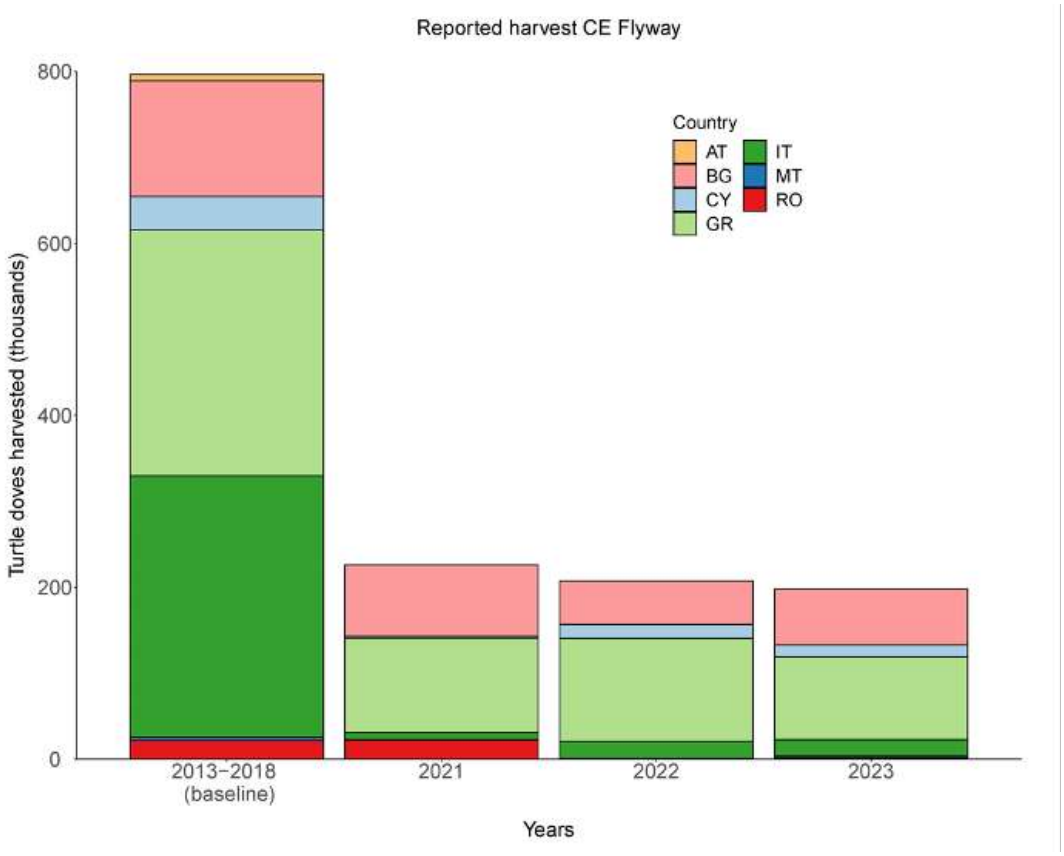

Figure 5
Turtle Dove harvest reported by Member States in the Central/Eastern flyway in 2021, 2022 and 2023 compared to the baseline 2013-2018. As mentioned above, note that only partial data is available for Italy. Source: EU TFRB document "TFRB 24-04-08 MS Updates CE Flyway".

To collect this data, 5 of the 7 Member States now have online reporting systems which allow hunters to register their harvest and to follow the progress towards the national quota. Once this quota is reached, the hunting open season for Turtle Dove closes. This is a significant step forward since 2021 and the start of the AHM programme.

Despite statements about the lack of engagement by Member States in the Central/Eastern flyway, FACE's take is that this information clearly demonstrates the significant buy-in and efforts put in place by these countries, as well as by hunters. Unfortunately, no positive results on the Turtle Dove population could be observed so far.

The update of the population model

No update of the IPM was presented in the spring update of the Turtle Dove AHM, although new survival and productivity data were provided. An update of the PDP projections was presented for the Western flyway, but not for the Central/Eastern flyway.

The update of the PPD model for the Western flyway projects that harvest rates below 4% would lead to population increase, while harvest rates above 4% would lead to population decline, see figure 6.

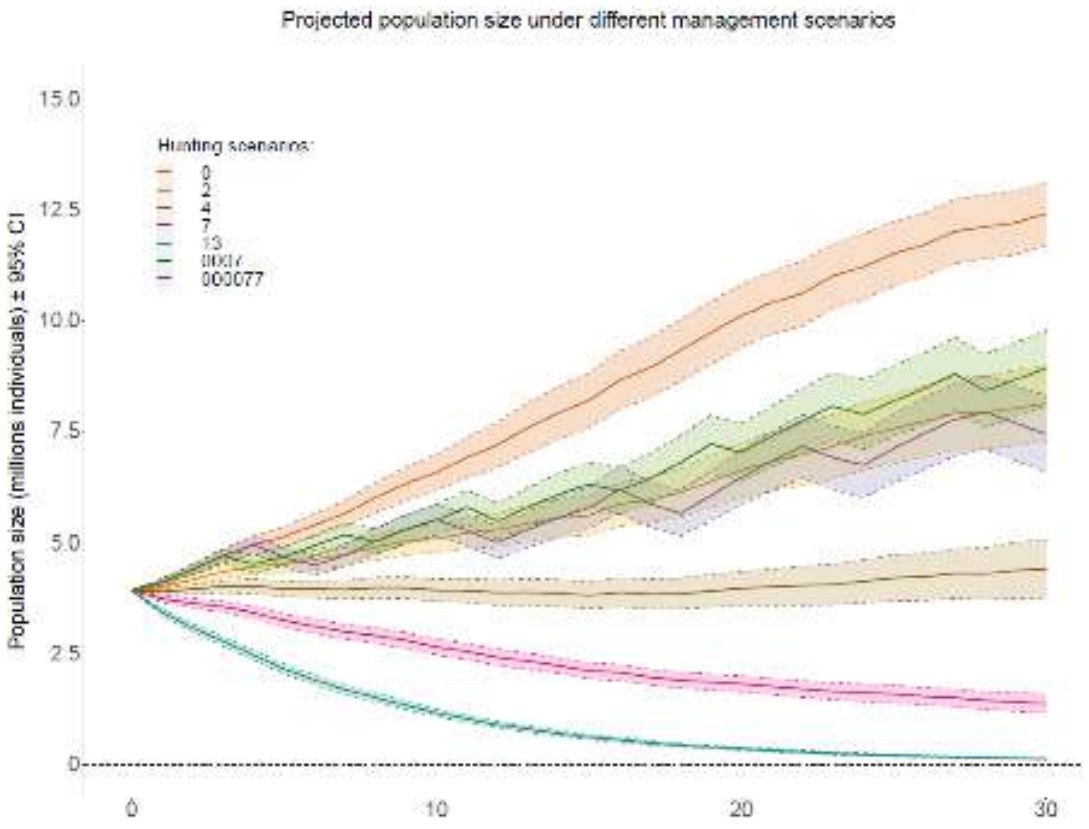

Figure 6
Projected Turtle Dove population size in the Western flyway under different hunting scenarios, with the Population Dynamics P Systems method (PDP). 95% Confidence Intervals are shown in dashed lines. Source: EU TFRB document "TFRB 24-04-05 TD AHM update - W flyway".

As requested by FACE in previous meetings, an analysis of the results produced by the PDP was conducted by comparing the observed PECBMS trend with the PDP projections (figure 7). With these results, we now have a reference to appreciate the PDP's accuracy in terms of population trend predictions.

Looking at these interesting results, FACE notes that the PDP failed to predict (a posteriori) the population's relative stability since 2013 and instead predicted a significant population decline.

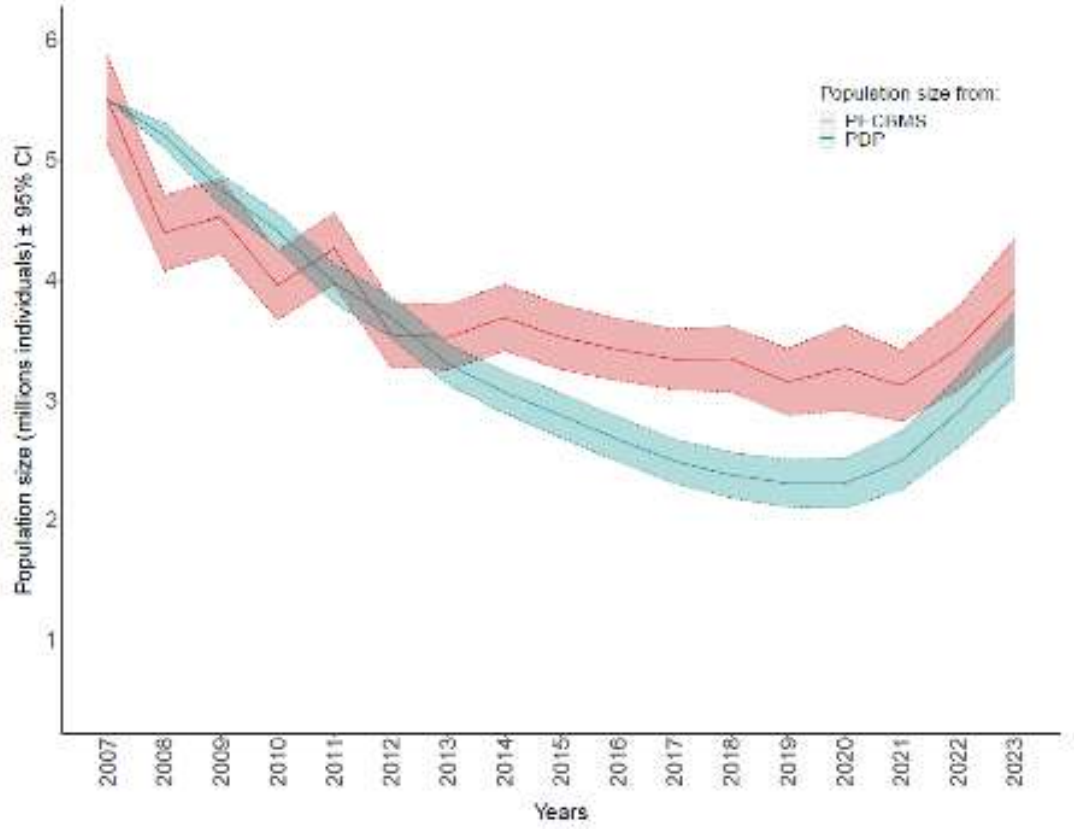

Figure 7
Turtle Dove population trend in the Western flyway monitored by PECBMS (red) and predicted a posteriori with the Population Dynamics P Systems method (blue) from 2007 to 2023. 95% Confidence Intervals are shown with dashed lines. Source: EU TFRB document "TFRB 24-04-05 TD AHM update - W flyway".

As seen in figure 7, after starting the projection in 2007, both PECBMS and PDP trends show a similar population size around 2012, after a period of decline. However, the PDP trend projected a significant decline up to 2020, although, in reality, there was a period of relative stability. From 2012 to 2020**, the PDP projection predicted a loss of about 1.3 million individuals, while the (real) observed trend actually shows a loss of 0.3 million.**

This produces a difference of population estimate in 2020 of about 1 million individuals less for the PDP projection than for the actual population trend, and this represents about a third of the population estimate. The final figure in 2023 shows a difference of about half a million individuals, so about a quarter of the latest total population size estimate.

This analysis highlights a significant difference between what the PDP projects and the real population trend, which in turn highlights that the impact of hunting is significantly overestimated in the PDP model, either through underestimated productivity or survival, or potentially underestimated population size.

Regardless of the underlying cause, this also suggests that the same issue could be present in the IPM, as it is its outputs that are used in the PDP.

Looking back at the scenario's projections with the PDP (figure 6), it seems realistic to conclude that the impact of hunting is overestimated, as the PDP projects a loss of about half the population by 2028, so in 5 years, with the 13% harvest (i.e. from about 3.8 million birds in 2023 to about 2 million in 2028), although the harvest rate of 13% was associated with a period of relative stability since 2013, so for about 10 years. This type of projection result was the reason why FACE asked for a verification analysis during previous meetings.

Now that this analysis has been performed, for it to be useful, FACE strongly recommends using this opportunity to learn and adjust the models according to the gap between the population projection and the observed population trend.

In addition, FACE would also advise that the projections should be shown for shorter periods than 30 years, as such long-term predictions are not reliable in population projections. A good option for projections would be 2028, the end of the action plan period.

The scope for hunting

In the **Western flyway,** the population increase corresponds to one of the three criteria for reopening hunting being met. The European Commission encourages Member States to submit their proposals for the third criterion, which is to have implementation systems in place, to prepare for reopening hunting in 2025.

Fortunately, Member States have worked on this in the last couple of years, with the creation of harvest reporting systems, for example.

Reopening hunting will also require the second criterion to be met: having a positive population growth rate estimated by the IPM. For this, the IPM will need to be updated by the EC consortium.

Importantly, reopening hunting in the Western flyway will require an agreed flyway quota to be distributed to Member States (ES, FR, PT, northern IT) following an agreed methodology. This methodology is still under preparation within the Task Force. Setting the quota will be based on the IPM and PDP modelling results.

In the **Central/Eastern flyway**, the declining state of the population will require Member States to take further actions regarding hunting. This should urgently be accompanied by habitat restoration and management actions to support the Turtle Dove, as is already the case in many Member States, to address the **leading driver of population decline, habitat loss resulting from continuedagricultural intensification.**

In addition, research on demographic parameters in this flyway is crucially needed to run the IPM to understand the population dynamics and identify the harvest scenarios compatible with population increase.

Literature

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