

# MAMBO

MODERN APPROACHES TO THE  
MONITORING OF BIODIVERSITY

## D1.3 Report on stakeholder mapping and network analysis

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## D1.3 Report on stakeholder mapping and network analysis

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### Preface

This deliverable report has been prepared for the Modern Approaches to the Monitoring of Biodiversity (MAMBO) project, funded by the EU Horizon Europe Research and Innovation Action grant (No. 101060639). The MAMBO project aims to deliver tools and technologies that will assist with monitoring European biodiversity.

One of Work Package (WP) 1 – MAMBO’s User needs and Co-design work package’s key tasks is identifying stakeholders and understanding their interconnections. This document presents the results of stakeholder mapping carried out in the first 18 months of the project.

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### Summary

The MAMBO project will depend on stakeholder engagement over the entire course of the project. These engagement activities will be diverse and include user-needs assessments, co-design, demonstrations, implementation and ensuring the uptake and sustained use of MAMBO tools and technologies. Identifying key interested parties comprises the first step in stakeholder engagement, and so over the first 18 months of the project MAMBO's User needs and co-design work package (WP 1) has carried out several stakeholder mapping activities.

MAMBO's stakeholder mapping began with online consultations with work package leads and stakeholder data were collected online prior to a more comprehensive in-person stakeholder mapping workshop held at the project's first Annual General Meeting (AGM) in September 2023. This report presents methods and results of these stakeholder mapping activities, however, the in-person workshop will be the primary focus of this report as these more specific data were used to carry out a series of network analyses.

In total 99 unique stakeholders were identified by MAMBO consortium members during the stakeholder mapping workshop, and interest and influence scores were assigned to each based on their relevance to species monitoring (WP 3 – ground based recording and monitoring) and habitat monitoring (WP 4 – remote sensing for habitat assessment). Beyond these two key WPs, these stakeholders have also been mapped to tasks that require stakeholder engagement within WP 5 – equipment and demonstrations, WP 6 – costs/benefits analysis and WP 7 – science-policy interface. While different networks have been created for each of these WPs there are considerable overlap within networks (amongst tasks) and between WPs, indicating that consortium members identified a community of stakeholders with broad interests in all aspects of biodiversity monitoring.

Results of this stakeholder analysis can benefit MAMBO researchers beyond the 17 tasks that were mapped. By mapping interested parties to tasks across six WPs, MAMBO researchers can quickly identify relevant stakeholders, and can explore the overlap and intersectionality of the stakeholder landscapes in which they work.



### Key Messages

**MAMBO's primary stakeholder mapping exercise has identified 99 stakeholders**, which have been mapped to seventeen tasks and arranged as a series of network maps according to work package. This approach allows readers to identify important stakeholders for key tasks and explore the overlap between relevant stakeholder communities.

**The stakeholders identified through this exercise represent expertise from a range of sectors** (policy, practice, research and NGOs etc.).

**Of the 99 identified stakeholders, 43 were assigned high interest and high influence scores.** These stakeholders will be prioritised in MAMBO's stakeholder engagement strategies, but it is likely that through sustained stakeholder engagement interest levels can be increased amongst other stakeholders.



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**Just over a third of total stakeholders (36 of the 99) were identified as important for both species and habitats monitoring with the stakeholder network maps highlighting overlap in stakeholder communities according to task. (WPs 3 and 4). Considering how these stakeholders map across tasks and work packages will be important in the design of efficient and effective stakeholder engagement strategies and to ensure stakeholder fatigue is avoided.**

**All of the 99 identified stakeholders were recognised as important to T6.4 “Costs and benefits of using novel monitoring technology”, as a diverse pool of stakeholders will be important to achieving this task.** To assist with this, WP 6 has categorised the full list of stakeholders according to their economic roles which will inform how they are engaged with.

### List of abbreviations

ABC Centre, NSF & NSERC	AI for biodiversity and climate change
AGM	Annual General Meeting
ALA	Atlas of Living Australia
AMMOD	Automated Multisensor stations for Monitoring of BioDiversity
AU	Aarhus Universitet
AVJF	AVJF - Aage V. Jensen's Foundation
BCE	Butterfly Conservation Europe
BioDT	Biodiversity Digital Twin
Easy Rider	Easy Real-time IDentification for Ecological Research and monitoring
eBMS	European Butterfly Monitoring Scheme
EEA	European Environment Agency
EMBAL	European Monitoring of Biodiversity in Agricultural Landscapes
EOSC	European Open Science Cloud
EPI	European Pollinators Initiative
ERA	ERA - Environment and resources authority Malta
EU	European Union
EUPoMs	EU Pollinator Monitoring Scheme
ExEA Bulgaria	Bulgarian Executive Environment Agency
GBIF	Global Biodiversity Information Facility
GOSH	Global Open Software & Hardware community
GRIIS	Global Register of Introduced and Invasive Species
INRIA	Institut de Recherche en Informatique et en Automatique
IPBES	Intergovernmental Panel for Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel for Climate Change
JNCC	Joint Nature Conservation Committee
JRC	Joint Research Centre
KCBD	Knowledge Centre on BioDiversity
LTER	Long term ecological research - global monitoring network
MAMBO	Modern Approaches to the Monitoring of BiOdiversity
MS Authorities	Member State Authorities
NEYEDC	North and East Yorkshire Ecological Data Centre
PECBMS	Pan-European Common Bird Monitoring Scheme
RI	Research Infrastructure
RS	Remote Sensing
RVO	Rijksdienst voor Ondernemend Nederland (Netherlands Enterprise Agency)
SMEs	Small and Medium-sized Enterprises
SPRING	Strengthening Pollinator Recovery Through Indicators and Monitoring
TETTRIs	Transforming European Taxonomy through Training, Research and Innovations
UFZ	Helmholtz Centre for Environmental Research - UFZ
UKCEH	UK Centre for Ecology and Hydrology
UREAD	University of Reading
VoI	Value of Information
WCMC-UNEP	World Conservation Monitoring Centre – United Nations Environment Programme
WP	Work Package
WWF	World Wildlife Fund



# 1. Introduction

## 1.1 Context and background

Modern technologies can address conservation issues and support policy targets by addressing gaps in biodiversity data (Stephenson, 2020). The MAMBO project aims to design and develop several novel tools and technologies to assist with the monitoring of species and habitats. Stakeholders will play a vital role for MAMBO, with several engagement activities planned over the duration of the project, from user needs assessments, co-design, expert interviews, dissemination of project outputs and demonstrations of MAMBO tools and technologies.

Understanding the relevant stakeholder landscape relevant to MAMBO and the tools and technologies during the course of this project, is a key first step in MAMBO's stakeholder engagement and is vital in order to achieve effective and targeted engagement activities. The MAMBO project itself comprises of 9 work packages (WPs), and despite having different aims and methodologies, many require engaging with stakeholders. It is likely these networks of relevant stakeholders may overlap, and with this in mind MAMBO's stakeholder mapping will involve creating network maps of key tasks across six WPs to allow the user needs and co-design WP (WP1) to understand and explore the intersectionality between stakeholder landscapes.

## 1.2 The importance of stakeholder mapping

Stakeholders can be defined as any individual, group or organisation that may be interested in a particular issue or project, who may have the power to impact on the success of a that project or who may be impacted by the project's outputs or outcome (Reed et al., 2018). Stakeholder mapping involves applying a systematic approach to identifying these key interested parties and assessing their potential involvement by analysing and prioritising them according to a predefined set of criteria (Raum, 2018) (Figure 1). Interest and influence matrices are a common method used to assign relative importance to identified stakeholders. This approach categorises stakeholders into four main groups which can inform strategies for engagement and determine how key parties are approached and communicated with (Reed et al., 2009). The resulting groups are described below;

**High Interest and High Influence** – these stakeholders are **key players** and should be prioritised and actively engaged with.

**High Interest and Low Influence** – these stakeholders have high levels of interest but little power, it may be useful to **keep them informed and consider trying to build their capacity.**

**Low Interest and High Influence** – these stakeholders can be defined as '**context setters**', while they may have low levels of interest in the project, they are highly influential. It may be useful to tailor communication and engagement activities to try to increase their level of interest.

**Low Interest and Low Influence** – these stakeholders have little interest or influence in the projects outcomes and are therefore **low priority for engagement activities.**





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Those with high interest and influence are key stakeholders to target, while those which fall into other categories might benefit from increased engagement (to raise their awareness and interest in MAMBO) or considering how to raise their capacity within stakeholder networks.

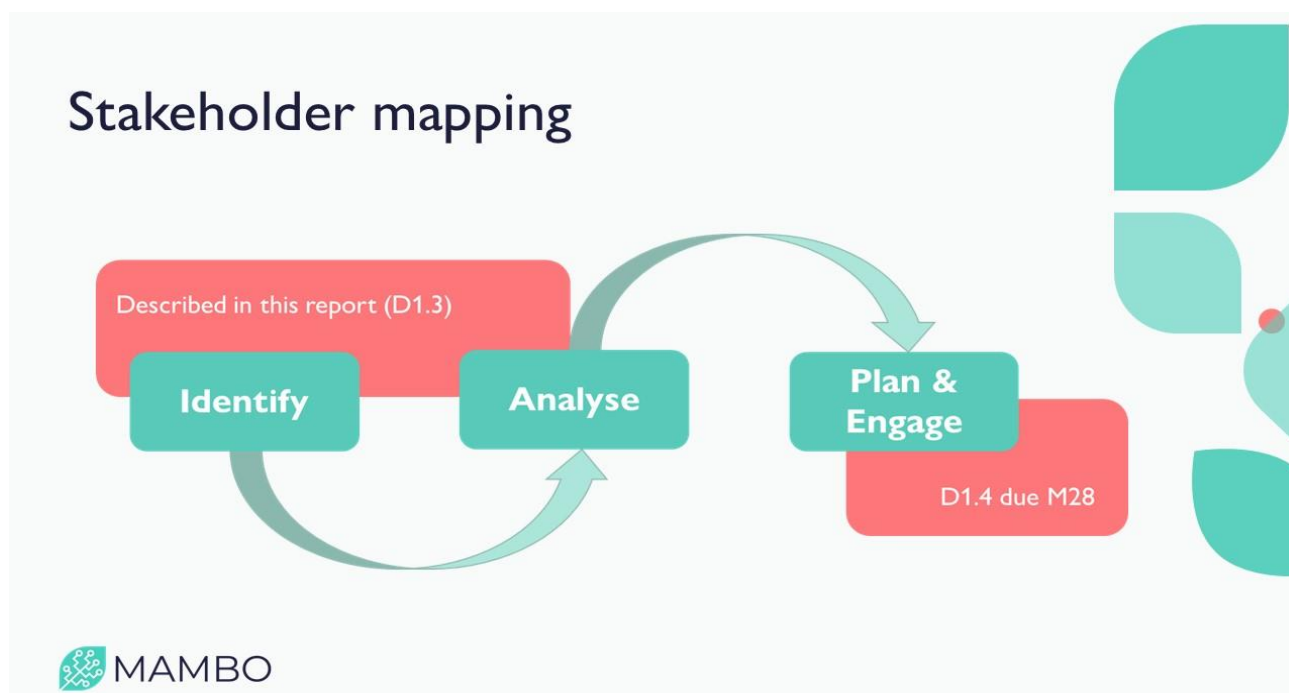


Figure 1 Outline of the concept of stakeholder mapping and steps involved. Note this deliverable report (D1.3) will present the first two steps (identifying key stakeholders and analysing their relationships) while a strategy for engagement (D1.4) will follow in M28 of the project.

The aim of this stakeholder mapping exercise was to identify **who the relevant stakeholders are for MAMBO** and to map them to key project tasks. These data will then be used to inform **when** and **how** to engage with them.

### 1.3 Scope and structure of this report

While the aim of stakeholder mapping is to identify key interested parties and prioritise them in a manner that can inform communication and engagement activities (Figure 1). The focus of this report will be on the first two phases (i) identity of important stakeholders and (ii) analysis of how stakeholder networks relate to one another. However, results of this process will also inform D1.4 Strategy for engagement document due in M28 of the project.

This report is organized as follows;

**Section 1** of this report provides the background and importance of stakeholder mapping to the MAMBO project.

**Section 2** presents the process and methods we have applied to identify key interested parties over the first 18 months of the project.

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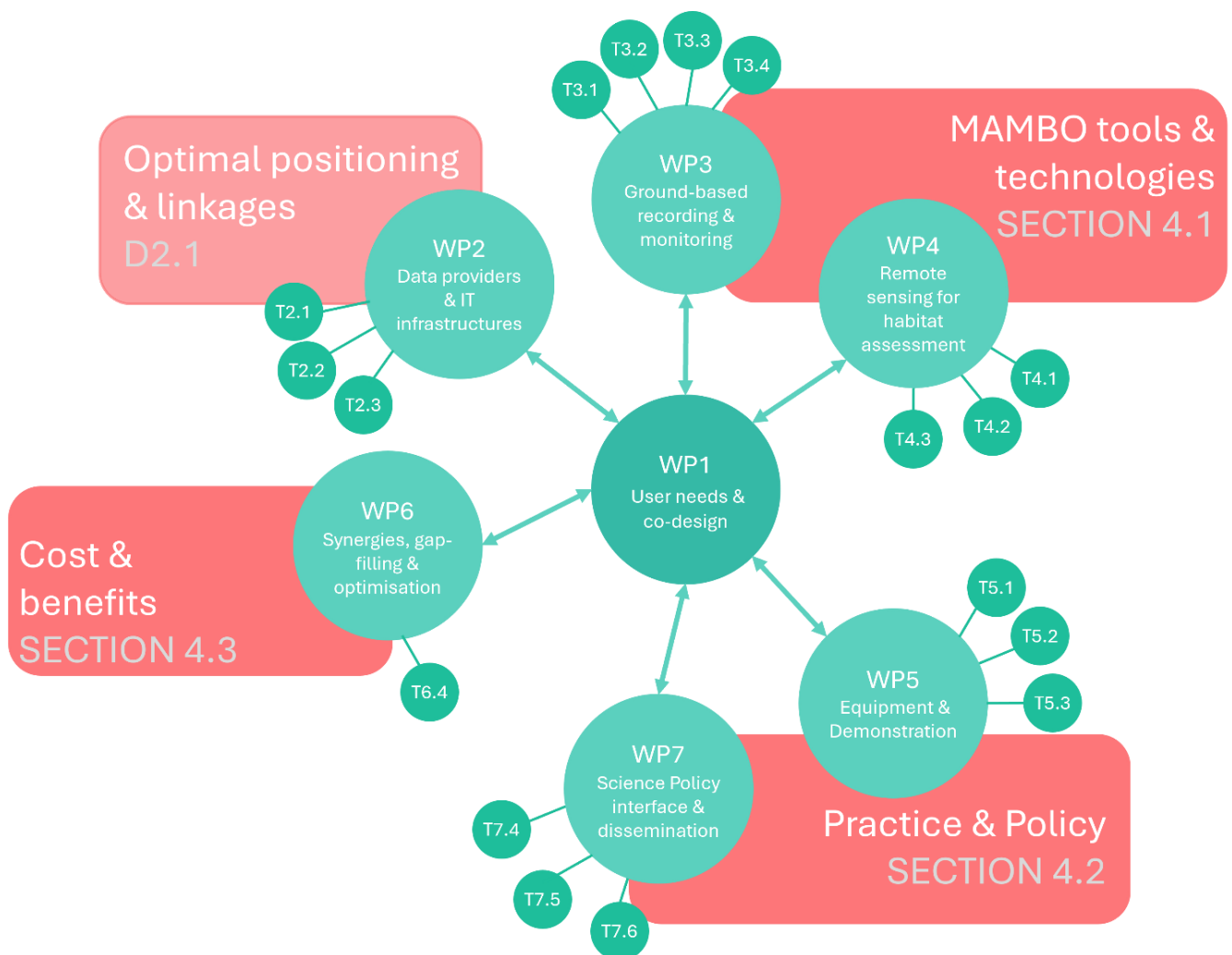
**Section 3** introduces the main stakeholder mapping exercise carried out during a targeted workshop at MAMBO's Annual General Meeting (AGM) in September 2023.

**Section 4** presents results of the analysis of stakeholder networks for key MAMBO tasks, organized under different themes –

**Section 4.1** those relevant to MAMBO's tools and technologies (WPs 3 and 4),

**Section 4.2** those relevant to policy and practice (WPs 5 and 7),

**Section 4.3** those relevant to a cost/benefit analysis to be carried out by WP6.



*Figure 2 Schematic depicting two-way interactions between WP1 and other MAMBO WPs and the key tasks that stakeholders have been mapped for. These have been organised under three themes MAMBO tools and technologies (Section 4.1 of this report), Practice and Policy (Section 4.2) and Cost and benefits (Section 4.3). WP2 requires interactions with a specific type of stakeholder Research Infrastructures (RIs) and have been identified by WP2 researchers and described in Deliverable report D2.1. Descriptions of each task can be found in Table 1.*

## 2 Preliminary mapping activities

### 2.1 Initial consultations with WP leads – identifying stakeholder mapping priorities

As a first step in MAMBO's stakeholder mapping, online consultations were held with task leads to identify priorities, establish timelines and provide initial insight into stakeholder needs for key tasks. The structure, content and some outcomes of these meetings are outlined in further depth elsewhere, in [M1.2 Online consultations for multi-level stakeholder mapping](#).

Some specific suggestions from these consultations and their implications for MAMBO's stakeholder mapping are highlighted below:

**MAMBOs stakeholder identification needs to reflect the diversity of workstreams across the project.** For example, WP3 – MAMBO's ground-based recording and monitoring WP identified the importance of citizen scientists who are a target group for the species identification technologies they are developing (Tasks 3.1 – Image recognition of animals and 3.2 – Acoustic recognition of animals).

**Specific tasks aimed at development of monitoring tools or technologies will require specialist stakeholder knowledge.** The MAMBO project comprises multiple WPs with individual tasks that will require different stakeholder communities to be identified (Figure 2). For example WP4's T4.2 – develop habitat condition metrics requires input from experts in terms of measuring and monitoring habitat condition.

**End-users represent an important target group across all MAMBO WPs in addition to the stakeholders engaging in the development of tools such as hardware developers or specific naturalist groups who provide the taxonomic expertise necessary to power the technologies.** It is important to engage with and consider users during the development (WP3 & 4) and demonstration (WP5) of MAMBO tools. MAMBO researchers were asked to identify possible end-users or adopters of MAMBO outputs during the stakeholder mapping process.

**It is important to consider the varied and specific roles that stakeholders can play.** Beyond primary users who could be key adopters of MAMBO tools and technologies, MAMBO will benefit from understanding stakeholders that can play different key roles such as advocates (e.g. understanding the placement of MAMBO outputs in larger context – T7.5 Integrating MAMBO tools into EU biodiversity policy). The co-design process will also need expertise from other developers allowing for collaboration.

**Several MAMBO researchers have already established regular contact with key stakeholders.** The MAMBO consortium comprises a diverse array of researchers who have knowledge of key players related to their work, MAMBO's stakeholder mapping will therefore be carried out by MAMBO members to optimise these well-established connections. These relationships should be nurtured and managed over the course of the project while other stakeholders identified through the mapping process may require entry points to be identified.

### 2.2 Relevant stakeholders identified and described elsewhere

#### 2.2.1 Online stakeholder mapping



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Following online consultations with key task leads, an attempt was made to gather stakeholder data online. A shared spreadsheet was created to allow task leads to add details of any stakeholders they were aware of. This was hosted on the MAMBO project website and only accessible to MAMBO consortium members, individuals were invited to name organisations and describe any initial engagement they had had.

This approach did not yield much data on the breadth of the stakeholder community, so an online stakeholder mapping workshop was held during MAMBO’s virtual consortium meeting in March 2023. This involved a brief presentation on stakeholder mapping in which attendees were introduced to the concept, the term ‘stakeholder’ was defined and a link to an interactive Miro board was shared. Individuals were invited to add stakeholders to an interest and influence matrix and to colour-code them based on whether they were relevant to species monitoring, habitat monitoring or both.

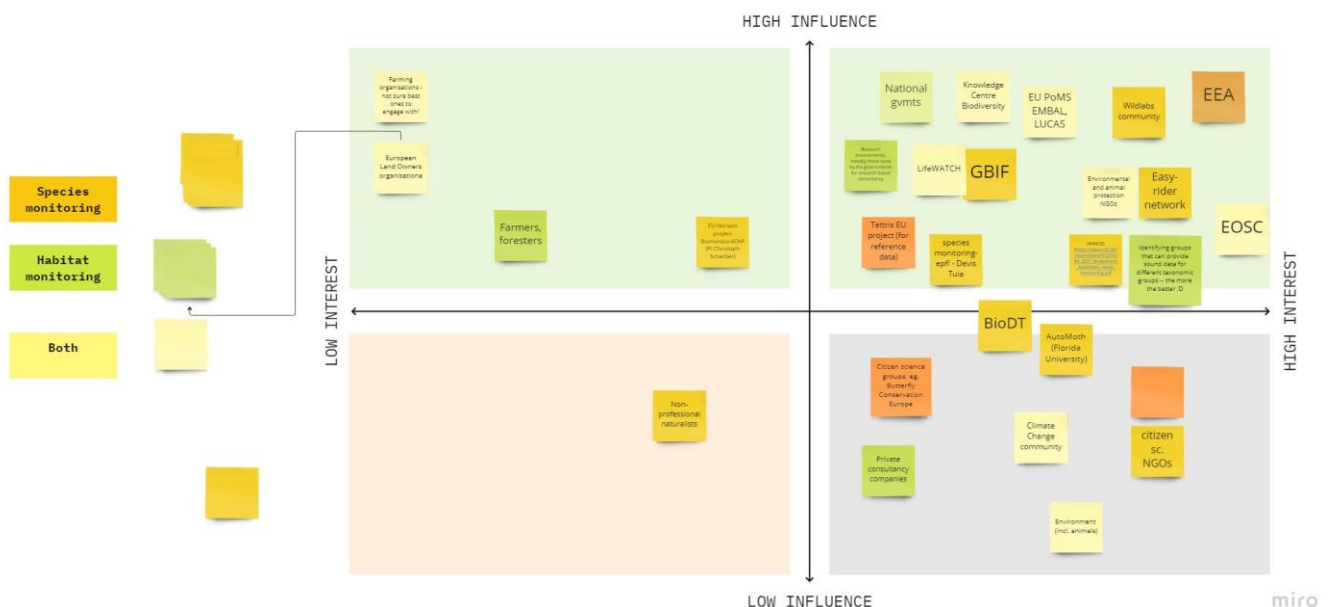


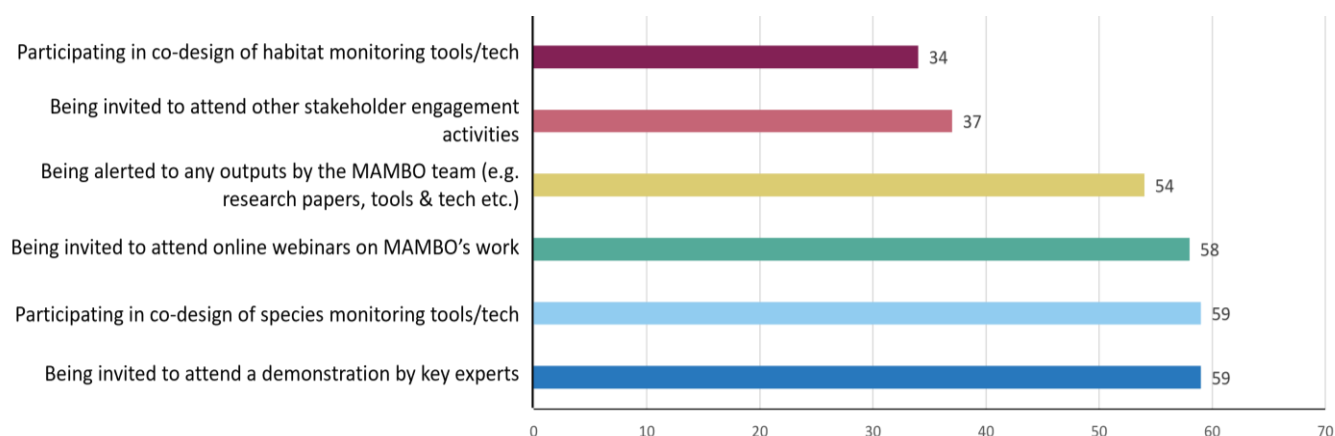
Figure 3 Results of an online stakeholder mapping exercise carried out at the MAMBO virtual consortium meeting.

The online stakeholder mapping yielded broad stakeholder groups organized according to their interest and influence. The European Environment Agency (EEA) was listed as highly influential and highly interested in MAMBO’s outcomes. Research projects and infrastructures also tended to be rated highly, such as AMMOD, EasyRider, Biomonitor4CAP, Tettris, BioDT, LifeWatch, EOSC, Knowledge Centre Biodiversity and GBIF. Generic or broad stakeholder terms were also suggested including farmers, foresters, private consultancies, the climate change community and the environment in itself. “The environment” includes animals and plants and represents the need to take into consideration what you are monitoring and to treat them as a potential influential component of the stakeholder landscape.

### 2.2.2 Biodiversity monitors

WP1 has carried out a user-needs assessment ([D1.1 Report on stakeholder needs](#)) with individuals who carry out biodiversity monitoring, who were identified as key potential end-users of MAMBO tools and technologies who may offer insight into both their development and use. During this process participants were invited to self-nominate as stakeholders and indicate how they would like to engage with MAMBO over the course of the project (Figure 4). Individuals were allowed to select multiple categories and provided their contact information for follow-up communication. This network of self-nominated stakeholders could be relevant across many tasks and should be considered when MAMBO researchers are holding stakeholder engagement activities.

To comply with GDPR requirements, the identities of these self-nominated stakeholders are not disclosed in this report, but MAMBO researchers can contact WP1 to facilitate communication and to distribute invitations to any relevant MAMBO stakeholder engagement events.



*Figure 4 The number of individuals who expressed interest in being invited to or included in stakeholder engagement activities through a user-needs survey run by WP1 in Summer 2023.*

### 2.2.3 Research Infrastructures (RIs)

As part of T2.1 - Inventory of & agreement with RIs about linking MAMBO & its tools, WP2 researchers identified 66 RIs to invite to interview, the results of that mapping and the subsequent interviews are presented in [D2.1 Report on optimal positioning and linkage of MAMBO tools to KCBD and RI landscape](#).

To produce this report, WP2 took a two stage approach involving (1) identifying 66 relevant RIs and (2) engaging with a subset of these RIs through interviews with representatives. The interviews followed the same structure; participants were asked which MAMBO tools and technologies were relevant to them, what could increase interoperability between established RIs and MAMBO tools, and what data standards were commonly used by RIs. The interviewed RIs showed strong interest in MAMBO tools and therefore may comprise a network of stakeholders who should be kept informed of MAMBOs progress and outputs over the course of the project.



### 3 Stakeholder mapping

To gather further data on relevant stakeholders, **WP1 held a stakeholder mapping workshop at MAMBO's AGM in September 2023**. During this session, the concept of stakeholder mapping was introduced and the term 'stakeholder' was defined broadly as any interested party (individual, organization and or research group etc.) which could play a key role (end-users, adopters, advocates, beneficiaries, experts, natural interest groups etc.).

**Attendees were invited to suggest key stakeholders and place them on three different interest and influence matrices organized according to their relevance to species monitoring, habitat monitoring or both.** By using a four plot matrix, stakeholders were classified as having either high or low interest and influence. Several instances occurred when participants in the stakeholder mapping identified the same organization, and in some cases interest and influence differed based on their relevance to habitat monitoring and/or species monitoring. On these occasions, data were kept separate unless interest and influence matched, in which case, the stakeholder was classified as relevant to both and duplicate data were removed.

**Priority for engagement** scores were also assigned using a scale from 1-5 where 1 indicated a low priority and 5 indicated high priority. Participants were also asked to use colour-coded post-its to reflect whether or not entry points and/or engagement had already been established. These data will contribute to the preparation of D1.4 Strategy for engagement document due in M28 of the project and are therefore not included as a focus in this report. These data will be important when prioritizing which stakeholders to include in MAMBO events – in order to avoid stakeholder fatigue.

During the stakeholder mapping, participants were encouraged to suggest stakeholders they already engage with who are relevant to MAMBO or identify relevant stakeholders they were familiar but for which entry points will need to be identified. Once more, this will contribute to D1.4 and so those data are not presented here.

**A total of 99 unique stakeholders were identified** during MAMBO's stakeholder mapping workshop. These were then mapped to MAMBO tasks that will require stakeholder engagement (See Table 1 for number of stakeholders mapped to each task). Mapping these stakeholders to different tasks across six WPs allowed networks to be analysed according to theme; those relevant to the development of MAMBO tools and technologies (WPs 3 & 4), those relevant to policy and practice (WPs 5 and 7) and those relevant to cost-benefit analysis (WP 6). Each are presented separately in the following sections.

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*Table 1 The number of relevant stakeholders identified, according to work package (WP) and task, at MAMBO's stakeholder mapping workshop.*

WP	Task	Brief task description	No. stakeholders identified
2*	2.1*	Inventory of & agreement with RIs about linking MAMBO & its tools	18
	2.2	Data standards & long-term use & accessibility of MAMBO tools	25
	2.3	Making RIs, Data & technology work for EU Pollinators	22
3	3.1	AI based image recognition for European animals	39
	3.2	Acoustic detection & monitoring of animals	39
	3.3	Automatic insect cameras	65
	3.4	AI-powered vegetation-quadrats analyses	39
4	4.1	Develop habitat extent monitoring	46
	4.2	Develop habitat condition metrics	29
	4.3	Develop automated execution of workflows	10
5	5.1	Implementation of image & sound recognition with national biodiversity portals	9
	5.2	Demonstration of sensors of relevance to pollinator monitoring	10
	5.3	Demonstration of RS derived habitat metrics & their data processing pipelines	4
6	6.4	Costs & benefits of using novel monitoring technology	99
7	7.4	Integrating new technologies & innovations into the EU Pollinators Monitoring Scheme	28
	7.5	Integrating MAMBO results into the EU Biodiversity Strategy & the EU-wide framework for mapping & monitoring biodiversity	16
	7.6	Providing IPBES & IPCC (& ultimately the EC) with a route-map for implementation	7

\* WP 2 has already identified 66 relevant research infrastructures and expert interviews have been carried out with 23 to explore their interest in MAMBO tools and technologies. Described in [D2.1](#).

## 4 Network Analyses

While stakeholder engagement will be vital for many MAMBO tasks, seventeen have been identified as dependent on stakeholders (Table 1). Network maps have been developed for tasks under WPs 3, 4, 5 and 7, as WP2 and WP 6 require different stakeholder communities. As mentioned previously, WP2 will rely on research infrastructures which have been identified by WP2 researchers previously, although some of the stakeholders identified in MAMBO's stakeholder mapping workshop have been mapped for to some of their tasks (See Table A1). All of the stakeholders identified are classed as important to T6.4, and therefore a



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different type of analysis is presented in Section 4.3 Cost effectiveness. To ease with interpretation of network analyses, stakeholder communities for WPs 3 and 4 are presented in Section 4.1: MAMBO Tools and Technologies, and stakeholder communities relevant to tasks under WPs 5 and 7 are presented in Section 4.2: Policy and Practice.

## SECTION 4.1: MAMBO Tools and Technologies

Stakeholder engagement will be required at multiple stages of development of MAMBO tools and technologies. Key interested parties were therefore identified for four tasks for WP 3 (ground-based recording and monitoring) and three tasks for WP 4 (remote sensing for habitat assessment).

Of the total 99 unique stakeholders identified in this mapping exercise, 93 were marked as relevant to the seven tasks across WP 3 (ground-based recording and monitoring) and WP 4 (remote sensing for habitat assessment) that will require stakeholder engagement (Table 1). Significant overlap occurred between tasks within each work package and between tasks, indicating that participants in the stakeholder mapping exercise identified stakeholders with broad relevance to biodiversity monitoring – both species and habitats.

As a large number of stakeholders were identified for WP 3 (82 stakeholders) and WP 4 (49 stakeholders), the resulting network maps contain many nodes with several links between different tasks. Stakeholders have been given a code and each map is associated with a table that gives the full name of each codified stakeholder and includes interest and influence scores. This should allow the reader to understand the relevance or importance of each stakeholder.

Thirty-six stakeholders were mapped across both species and habitat tools and technologies. In very few instances did interest and influence levels vary within the same stakeholder mapped to both WP3 and WP4, but one example is the Danish foundation 15. Juni Fonden, this NGO aims to create spaces for biodiversity, improve biodiversity and increase the general public's interest and knowledge in biodiversity. For WP4 tasks, it was identified as important for Tasks 4.1 and 4.2 which aim to develop habitat extent models and metrics to assess habitat condition, and while the foundations interest was ranked as high, its influence was said to be low. Indicating that this stakeholder might be an important advocate of MAMBO's WP 4 solutions (Figure 6). For WP 3 (Figure 5), the 15. Juni Fonden was linked to all four tasks and associated with high influence and low interest indicating that it might be important to employ targeted communication and engagement activities to increase their knowledge and awareness of WP3 tools and technologies as they might be well-placed to adopt them within the foundation or influence others to.



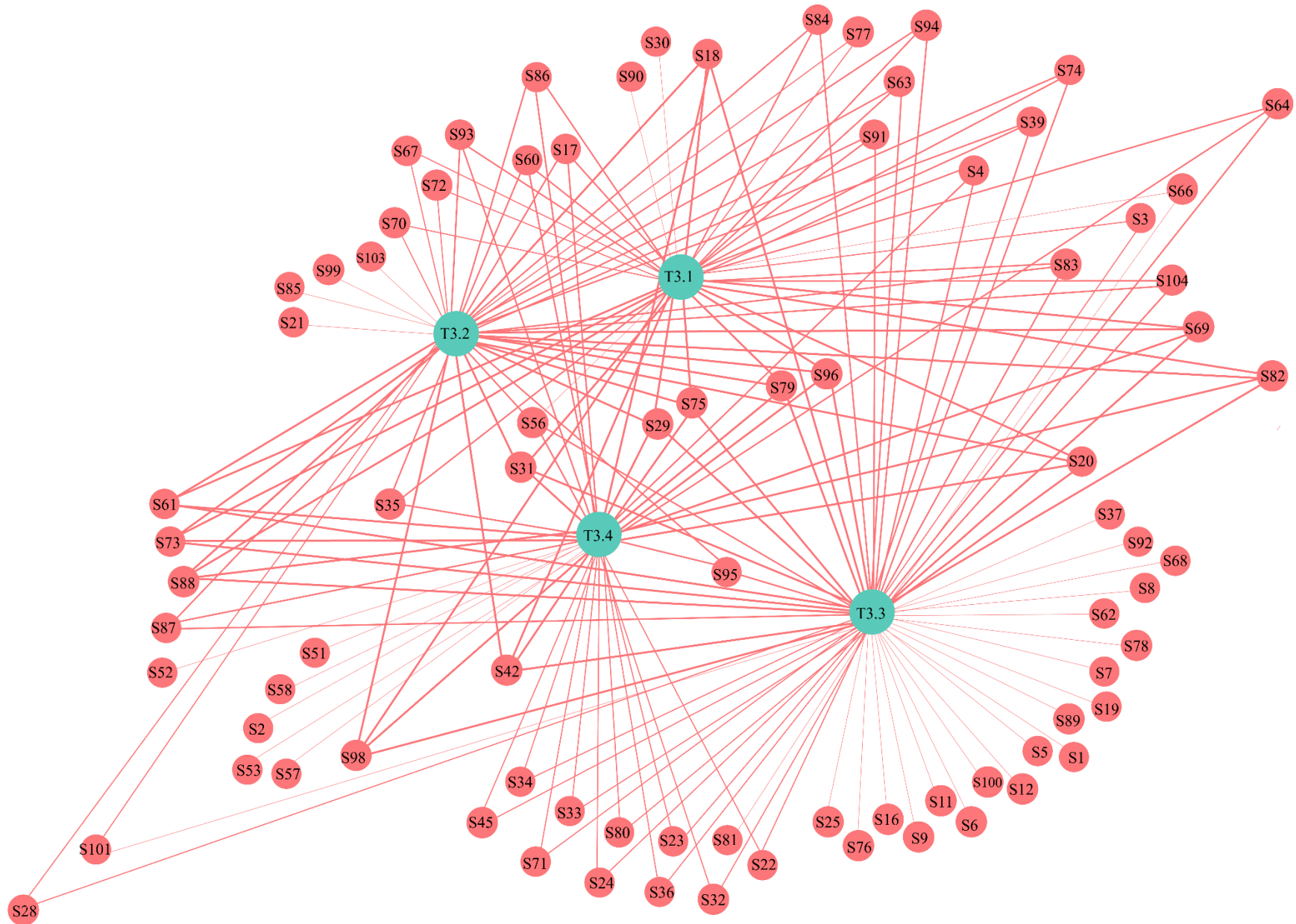


Figure 5 Stakeholder network map for tasks relevant to WP 3. 82 stakeholders were identified as relevant across the four tasks being mapped and were categorised based on their interest and influence

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Table 2 Full list of 82 stakeholders mapped to tasks relevant to WP 3, with interest and influence scores.

Code	Name	Interest	Influence	Tasks	Code	Name	Interest	Influence	Tasks
S1	Danish nature protection agency	High	High	3.3	S61	Observation.org	High	High	3.1, 3.2, 3.3, 3.4
S2	INRIA	High	High	3.4	S62	JNCC	High	High	3.3
S3	SPRING	High	High	3.1, 3.3	S63	National citizen science recording schemes	High	High	3.1, 3.2, 3.3
S4	EU PoMs Network	High	High	3.1, 3.3, 3.4	S64	eBMS - European Butterfly Monitoring Scheme	High	High	3.1, 3.3, 3.4
S5	Danish Environmental Agency	High	High	3.3	S66	Local authorities	High	High	3.1, 3.3
S6	MS Authorities	High	High	3.3	S67	Spipol project	High	High	3.1, 3.3
S7	ExEA Bulgaria	High	High	3.3	S68	ABC Centre NSF & NSERC - AI for biodiversity and climate change	High	High	3.3
S8	Staatsbosbeheer	High	High	3.3	S69	LTER	High	High	3.1, 3.2, 3.3, 3.4
S9	EPI	High	High	3.3	S70	Institutes working on marine mammals	High	High	3.1, 3.2
S11	UFZ	High	High	3.3	S71	Local NGOs	High	High	3.3, 3.4
S12	Natura 2000	High	High	3.3	S72	Institutes working on bats	High	High	3.1, 3.2
S16	Nature conservation bodies	High	High	3.3	S73	GRIIS	High	High	3.1, 3.2, 3.3, 3.4
S17	Danmarks naturfredningsforening	High	High	3.1, 3.2, 3.4	S74	Urban developers	High	High	3.1, 3.2, 3.3
S18	Tech companies	Low	High	3.1, 3.2, 3.3, 3.4	S75	GOSH	High	Low	3.1, 3.2, 3.3, 3.4
S19	DG Agri	Low	High	3.3	S76	Pesticide companies	High	Low	3.3
S20	Businesses	Low	High	3.1, 3.2, 3.3, 3.4	S77	Natural history museums	High	Low	3.1, 3.2, 3.3
S21	Bulgaria Society for Protection of birds	Low	High	3.2	S78	Consultancies	High	Low	3.3
S22	Farmers organisation	Low	High	3.3, 3.4	S79	Researcher	High	Low	3.1, 3.2, 3.3, 3.4
S23	Cities	Low	Low	3.3, 3.4	S80	Private companies managing agriculture	High	Low	3.3, 3.4
S24	WWF Bulgaria	Low	Low	3.3, 3.4	S81	Solar companies	High	Low	3.3, 3.4
S25	Nat Cap	Low	Low	3.3	S82	XPrize	High	Low	3.1, 3.2, 3.3, 3.4
S28	Ambjent Malta	Low	Low	3.2, 3.3	S83	The wildlife trusts	High	Low	3.1, 3.2, 3.3
S29	Monitoring NGOs	Low	Low	3.1, 3.2, 3.3, 3.4	S84	WCMC - UNEP	High	Low	3.1, 3.2, 3.3
S30	PECBMS	Low	Low	3.1	S85	Energy companies	High	Low	3.2
S31	Leps	Low	Low	3.1, 3.2, 3.3, 3.4	S86	Natural history societies	Low	High	3.1, 3.2, 3.3
S32	National Parks administration Bulgaria	Low	Low	3.3, 3.4	S87	AVJF - Aage V. Jensen's Foundation	Low	High	3.2, 3.3, 3.4
S33	Farmer interest groups	Low	Low	3.3, 3.4	S88	15. Juni Fonden	Low	High	3.1, 3.2, 3.3, 3.4
S34	Landowners	Low	Low	3.3, 3.4	S89	Environment Bank	Low	High	3.3
S35	ERA Malta	Low	Low	3.1, 3.2, 3.3, 3.4	S90	Networks of small woodland owners	Low	High	3.1
S36	Rewilders	High	Low	3.3, 3.4	S91	AI centre	Low	High	3.1, 3.2, 3.3
S37	Natura 2000 site managers	High	Low	3.3	S92	ForestGeo	Low	High	3.3
S39	National museum of natural history Bulgaria	High	Low	3.1, 3.2, 3.3	S93	DIGIT - Aarhus	Low	High	3.1, 3.2, 3.3
S42	SMEs - tech to market	High	Low	3.1, 3.2, 3.3, 3.4	S94	Railroad and road authorities	Low	High	3.1, 3.2, 3.3
S45	Natural England	High	High	3.1, 3.3, 3.4	S95	Beekeeper associations	Low	Low	3.2, 3.4
S51	JRC	High	High	3.4	S96	Hardware development companies	Low	Low	3.1, 3.2, 3.3, 3.4
S52	Natura 2000	High	Low	3.4	S98	Citizen scientists	Low	Low	3.1, 3.2, 3.3, 3.4
S53	Consultancies	High	Low	3.4	S99	BirdLife Malta	High	High	3.2
S56	NEYEDC	High	Low	3.1, 3.2, 3.3, 3.4	S100	NatureTrust Malta	High	High	3.3
S57	Naturalist Associations - Ecologistes de L'Euzière	High	Low	3.4	S101	Malta Beekeepers Association	Low	Low	3.2, 3.3
S58	High nature value farmland	Low	Low	3.4	S103	Irish Wildlife Sounds	High	Low	3.2
S60	iNaturalist	High	High	3.1, 3.2, 3.4	S104	BCE - Butterfly Conservation Europe	Low	Low	3.1, 3.2, 3.3

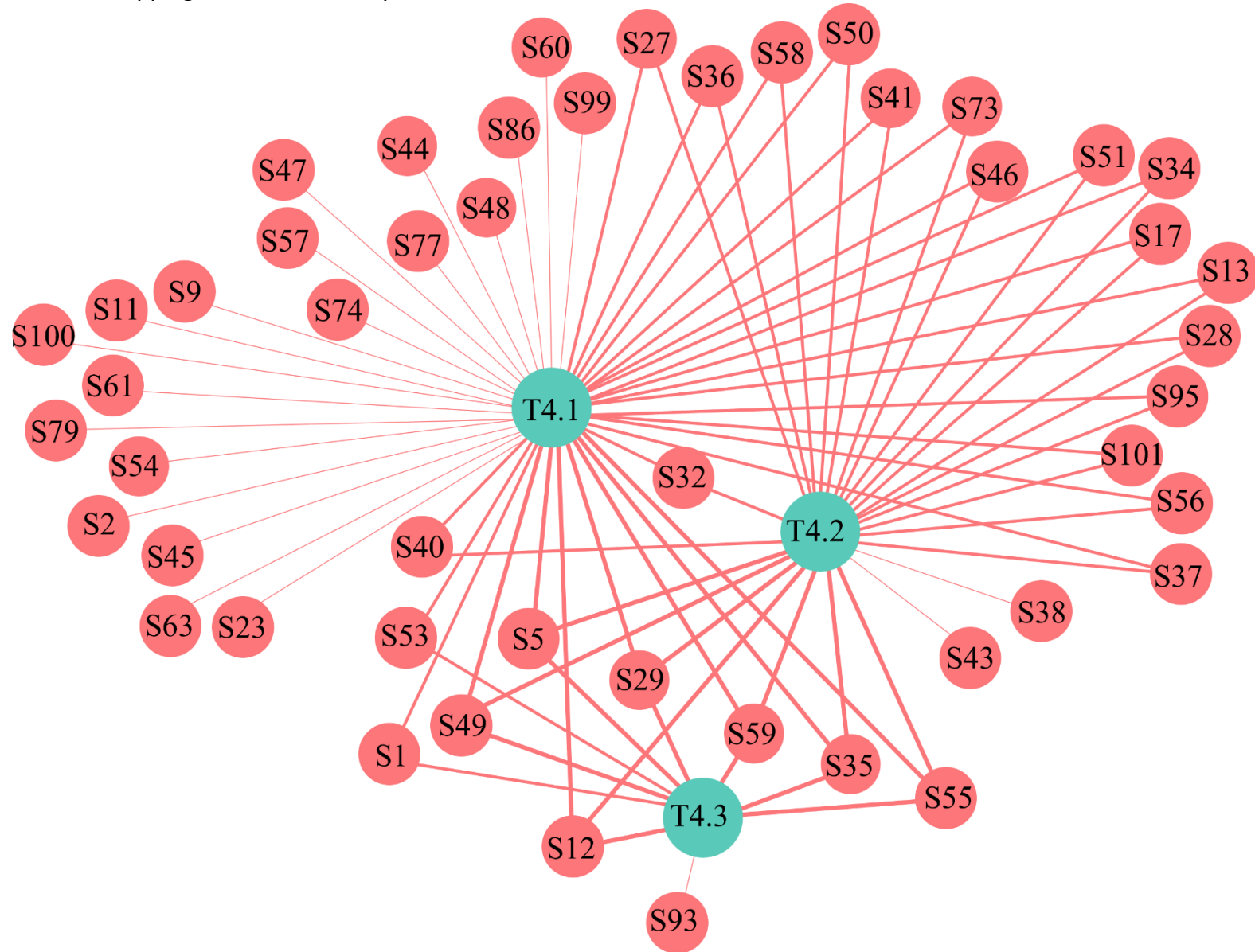


Figure 6 Stakeholder network map for tasks relevant to WP4. 49 stakeholders were identified as relevant to three key tasks for this work package. These were then categorised based on their interest and influence.



### D1.3 Report on stakeholder mapping and network analysis

Table 3 Full list of the 49 stakeholders mapped to tasks relevant to WP 3, with interest and influence scores.

Code	Name	Interest	Influence	Tasks	Code	Name	Interest	Influence	Tasks
S1	Danish nature protection agency	High	High	4.1, 4.2, 4.3	S48	RVO	High	High	4.1
S2	INRIA	High	High	4.1	S49	Biodiversa+	High	High	4.1, 4.2, 4.2
S5	Danish Environmental Agency	High	High	4.1, 4.2, 4.3	S50	Network of French land use managers	High	High	4.1, 4.2
S9	EPI	High	High	4.1	S51	JRC	High	High	4.1, 4.2
S11	UFZ	High	High	4.1	S53	Consultancies	High	Low	4.1, 4.2, 4.3
S12	Natura 2000	High	High	4.1, 4.2, 4.3	S54	BIOTOPE	High	Low	4.1
S13	EEA	High	High	4.1, 4.2	S55	Wildlife Trust	High	Low	4.1, 4.2, 4.3
S17	Danmarks naturfredningsforening	High	High	4.1, 4.2	S56	NEYEDC	High	Low	4.1, 4.2
S23	Cities	Low	Low	4.1	S57	Naturalist Associations - Ecologistes de L'Euzière	High	Low	4.1
S27	Revalue Nature	Low	Low	4.2	S58	High nature value farmland	Low	Low	4.1, 4.2
S28	Ambjent Malta	Low	Low	4.1, 4.2	S59	NL: Wijland	Low	Low	4.1, 4.2, 4.3
S29	Monitoring NGOs	Low	Low	4.1, 4.2, 4.3	S60	iNaturalist	High	High	4.1
S32	National Parks administration Bulgaria	Low	Low	4.1, 4.2	S61	Observation.org	High	High	4.1
S34	Landowners	Low	Low	4.1, 4.2	S63	National citizen science recording schemes	High	High	4.1
S35	ERA Malta	Low	Low	4.1, 4.2, 4.3	S73	GRIIS	High	High	4.1, 4.2
S36	Rewilders	High	Low	4.2	S74	Urban developers	High	High	4.1
S37	Natura 2000 site managers	High	Low	4.1, 4.2	S77	Natural history museums	High	Low	4.1
S38	Hempel foundation	High	Low	4.2	S79	Researcher	High	Low	4.1
S40	AVJF	High	Low	4.1, 4.2	S86	Natural history societies	Low	High	4.1
S41	15. Juni Fonden	High	Low	4.1, 4.2	S93	DIGIT - Aarhus	Low	High	4.3
S43	National organisations	High	High	4.2	S95	Beekeeper associations	Low	Low	4.1, 4.2
S44	Defra	High	High	4.1	S99	BirdLife Malta	High	High	4.1
S45	Natural England	High	High	4.1	S100	NatureTrust Malta	High	High	4.1
S46	Nature Protection	High	High	4.1, 4.2	S101	Malta Beekeepers Association	Low	Low	4.1, 4.2
S47	Nature restoration law Netherlands	High	High	4.1					

The stakeholders mapped to MAMBO tools and technologies include diverse networks of policy-relevant organisations at European- level (such as the EEA, and several Directorate Generals of the EU) and national scales (e.g. Danish Environment Agency, the UK's Department of Environment, Food and Rural Affairs (Defra) etc.). Some stakeholders comprise broad groups such as citizen scientists which have been mapped to several tasks, and Hardware Development companies which were mapped to tasks which include the development of on the ground sensors. It will be important for MAMBO researchers to **interpret these network maps as a starting point in stakeholder engagement, and to identify further relevant stakeholders as they progress.**

The importance of engaging with the research community is evident from the networks presented in Figures 5 and 6 which include many relevant research projects and the term “researcher” which signifies a specific individual whose name and contact details were provided during the stakeholder mapping exercise and which has been anonymized for this public-facing report. Those working on all tasks within WP 3 and T4.1 for WP 4 may benefit from interacting with this individual.

## SECTION 4.2: Policy and Practice

39 stakeholders were mapped across tasks for WPs 5 and 7 suggesting these are relevant to policy and practice.

Considering WP 5 – Equipment and demonstration work package, 14 stakeholders were identified as potentially important to include in practical demonstrations of MAMBO tools and technologies. These included the EEA, which would have power and influence to advocate for the use of MAMBO tools and technologies, therefore including them in targeted demonstration activities might be particularly useful. The Natura 2000 network and their site managers were also identified, possibly as a potentially influential framework that could be both important adopters and advocates for MAMBO tools. Natural history museums, societies and more specifically the national natural history museum of Bulgaria were also listed, due to their role in outreach and possibility to advocate and share information on MAMBO solutions.

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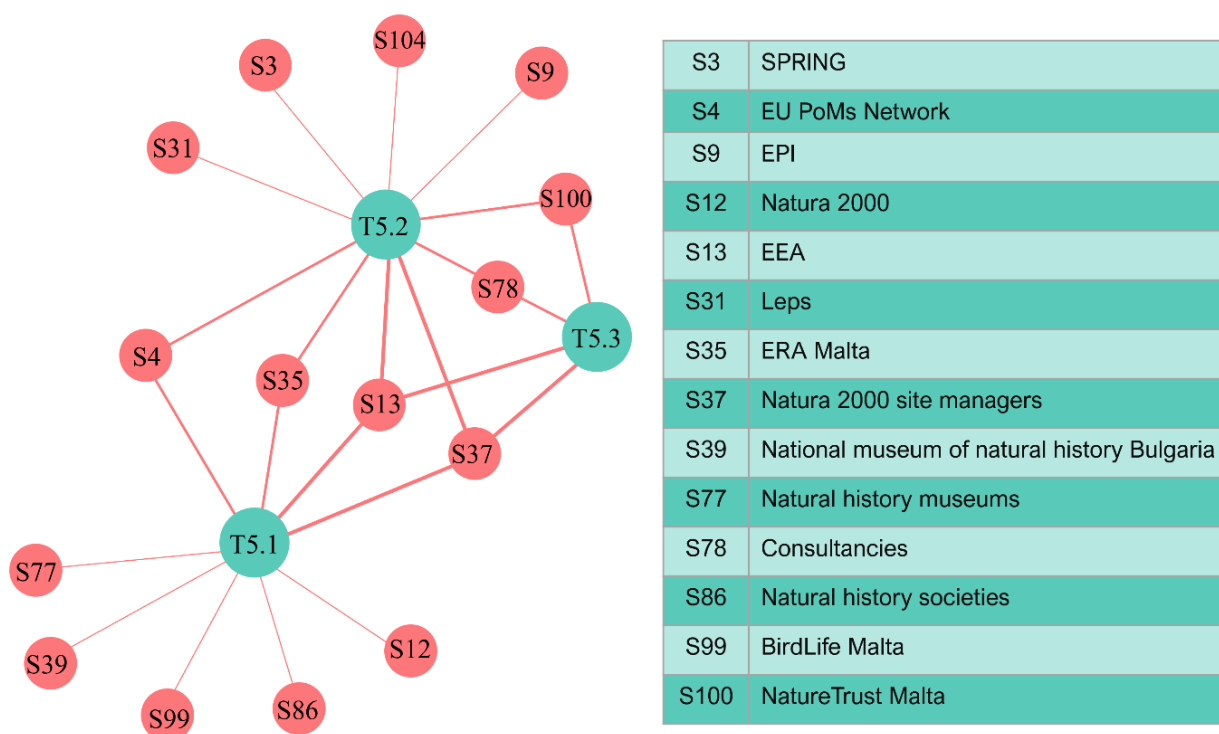
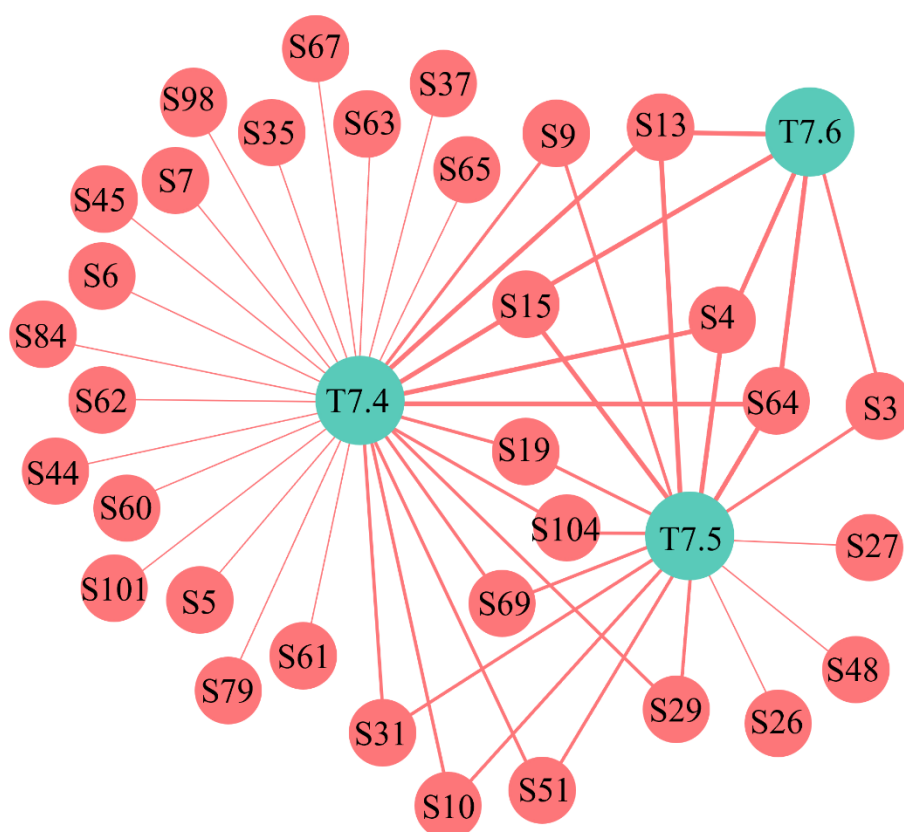


Figure 7 Stakeholder network map for tasks relevant to WP 5. 14 stakeholders were identified as important to three tasks for WP5.

For WP 7, 33 stakeholders were linked to three tasks (Figure 8), these tasks primarily involve integrating MAMBO outputs (tools, technologies, policy recommendations etc.) to different policy communities. The stakeholders in this network comprise policy-focused groups, including European organisations such as the Directorate-General for Environment (DG ENV), the Directorate-General for Agriculture (DG Agri), European Environment Agency (EEA) and some national entities such as Executive Environment Agency Bulgaria (ExEA Bulgaria), the Danish Environment Agency, the Danish Environmental Protection Agency, the Joint Nature Conservation Committee (JNCC), and Defra etc. NGOs also identified as important included Leps and BCE (Butterfly Conservation Europe).

Most stakeholders linked to this WP were identified as relevant to Task 7.4 which aims to integrate MAMBO results into the EU Pollinator Monitoring Scheme (EUPoMs). It is unsurprising that the EUPoMs network was highlighted as important to this task, however it was also identified as relevant to the other two tasks in WP 7. The European Pollinator Initiative (EPI) was also linked to this task and T7.5. As was the Lepidopteran-focused NGO 'Leps', and the European Butterfly Monitoring Scheme was linked to all three tasks. Suggesting the pollinator-focused stakeholders would be important to engage with beyond just T7.4. Other initiatives such as the EU COST Action InsectAI should also be considered as potentially useful stakeholders for T7.4.

### D1.3 Report on stakeholder mapping and network analysis



S3	SPRING	S45	Natural England
S4	EU PoMs Network	S48	RVO
S5	Danish Environmental Agency	S51	JRC
S6	MS Authorities	S60	iNaturalist
S7	ExEA Bulgaria	S61	Observation.org
S9	EPI	S62	JNCC
S10	DG ENV	S63	National citizen science recording schemes
S13	EEA	S64	eBMS
S15	EMBAL	S65	Natural England
S19	DG Agri	S67	Spipol project
S26	Pivotal Earth	S69	LTER
S27	Revalue Nature	S79	Researcher
S29	Monitoring NGOs	S84	WCMC - UNEP
S31	Leps	S98	Citizen scientists
S35	ERA Malta	S101	Malta Beekeepers Association
S37	Natura 2000 site managers	S104	BCE
S44	Defra		

Figure 8 Stakeholder network map for tasks relevant to WP 7. 33 stakeholders were identified as important for three tasks for this work package.

Fewer stakeholders were identified as important to Task 7.6 which involves creating a route map for implementation for IPBES, the IPCC and ultimately the EU. Important stakeholders for this task included the EEA, EMBAL, EU PoMs Network, eBMS and SPRING. [SPRING](#) is a pollinator-focused project aiming to support conservation and monitoring of European pollinators. This project ended towards the end of 2023, but researchers involved may



## D1.3 Report on stakeholder mapping and network analysis

represent a pool of knowledge and expertise that could support the development of a road map for implementation.

### SECTION 4.3: Cost Effectiveness

All 99 unique stakeholders identified during MAMBO’s stakeholder mapping workshop are relevant to the work and tasks in WP 6. Under Task 6.4 Report on the costs and benefits of using novel monitoring technology, due in Month 43 of the project, MAMBO researchers will apply a delphi-panel approach to generate “probability of outcome” data to use in a “Value of Information (Vol)” analysis to determine the value added by new tools and technologies in achieving biodiversity objectives. This will require a diverse set of stakeholders who can consider how probable achieving a particular conservation objective (e.g. healthy bee populations) is with or without modern monitoring tools.

To assist with this, the full list of stakeholders has been classified by WP6 in a slightly different manner to reflect the varying ways in which they might be interested in the costs and benefits of modern tools and technologies (Figure 9). Descriptions of the five categories can be found in Table 4. Several stakeholders were assigned to more than one category reflecting the differing ways in which they may be interested in MAMBO outputs; consultancies (e.g. BIOTOPE – a French biodiversity and ecosystem consultancy firm) and citizen science recording schemes were both classified as small-scale practice and developers as they may operate at a smaller scale compared to larger global companies and both may offer practical information during development phase. NGOs (such as PECBMS, BCE and Wildlife Trust) and Beekeepers associations were classified as both larger scale practice and smaller scale practice as they operate at both local and wider scales depending on projects and themes. Some national authorities (e.g. Danish Environmental Protection Agency, Bulgaria Executive Environmental Agency, Environment and resources authority Malta, and the Dutch State Forestry Service and the generic term ‘EU Member State authorities’) and pesticide companies (Bayer and Syngenta) were classified as central authorities and large scale practice, once again reflecting the scale at which they operate and their position within decision making. One research network (UFZ) was also classified as large scale practice.

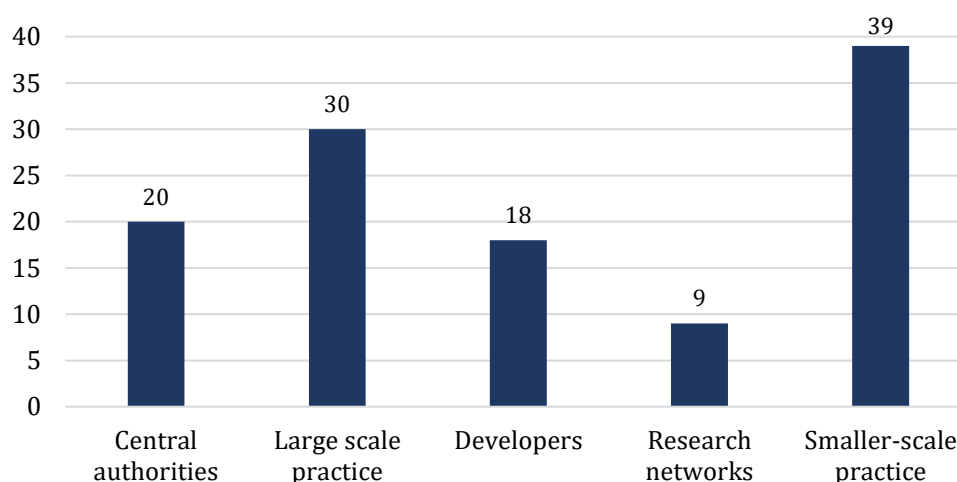


Figure 9 The number of stakeholders identified under each category for Task 6.4 Costs and benefits of using novel monitoring technologies.



### D1.3 Report on stakeholder mapping and network analysis

Table 4 The five categories used to classify stakeholder relevance to Task 6.4 - Costs and benefits of using novel monitoring tools, with descriptions of why they may be interested in MAMBO outputs.

Category	Description
Central authorities	Stakeholders who are interested in costs of monitoring for funding or adapting to it.
Large scale practice	Stakeholders who are interested in making monitoring cost effective and increasing investment.
Developers	Interested in getting investment for their work.
Research networks	Interested in investing in the tech for research.
Smaller scale practice	Interested in buying tech to take part in monitoring but not on a large scale basis.

The economic categories used to analyse stakeholders for this task T6.4 Cost Effectiveness, could also be applied to other work packages. As such, the identifies of stakeholders under each category are provided in Table S2.

## 5 Conclusions and future directions

This report has presented results from stakeholder mapping carried out in the first 18 months of the MAMBO project. [This process has yielded a landscape of stakeholders made up of 99 unique organisations mapped to 17 tasks across six work packages.](#) The resulting networks can be used by MAMBO researchers to quickly identify relevant interested parties for key tasks. These data can also be used to explore and understand who they should consider including in their engagement activities, but this should not be seen as the end point in terms of identifying key interested parties.

[Stakeholder mapping is a dynamic process](#) and over the course of the project it is expected that different stakeholders will emerge as highly relevant and so the stakeholder networks will expand. MAMBO researchers should use these initial networks to identify the different types of stakeholders that are relevant to MAMBO and consider adding to these communities by identifying similar stakeholders as they encounter them through their work.

Not only will the number of stakeholders shift as more are identified over the course of the project, [it is expected that regular engagement activities will improve or increase the interest levels of those already identified.](#) Similarly, as stakeholder capacity may change their influence levels might increase to reflect this. It is therefore likely that if interest and influence levels of stakeholders were assessed at different timepoints they would shift too.

The importance of stakeholder mapping and engagement activities is now well-established in biodiversity research (Hermoso et al., 2022), and as such is carried out by many research consortia. [There is likely to be overlap in stakeholder landscapes between these projects and initiatives. Strategic planning of engagement activities through collaboration and clear communication will be vital to reduce stakeholder fatigue.](#) In this report, WP1 has found considerable overlap across tasks and work packages, and this will inform strategies for



### D1.3 Report on stakeholder mapping and network analysis

engagement within the MAMBO project. At a larger scale, WP 1 has also begun to reach out to different biodiversity monitoring research consortia and will continue to communicate results with them to enable multiple projects to work together towards common goals.

This analysis has revealed the importance of organisations across different operational scales from local to continental scales. Consortium members have captured many stakeholders that have European-wide reach (such as Directorate-generals of the EU and the EEA) but also smaller-scale stakeholders within partner countries (UK, France, Denmark, Germany, Malta and Bulgaria) that will be important as MAMBO will trial their tools and technologies in these areas.

Engaging with policy-relevant stakeholders will be important over the course of MAMBO. As they can act as influential stakeholders that can impact the success and sustained uptake of MAMBO outputs. Several authorities at EU- and Member State- levels have been identified and mapped across multiple tasks and work packages. From communication with the stakeholder researchers at the B-Cubed project, MAMBO's WP1 has learnt the importance of engaging with national authorities. Through stakeholder interviews with policymakers, B-Cubed has learned that higher authorities such as the EU are unlikely to adopt and advocate the use of novel tools in monitoring policies if member states have not begun to implement them. Several national authorities, particularly in partner countries, were identified as important to MAMBO, and it will be vital that they are targeted for engagement activities.

## Acknowledgements

We thank WP leads for engaging early on in the process and expressing their priorities in terms of stakeholder engagement. We also thank the consortium members that contributed to MAMBO's stakeholder mapping workshops.

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# MAMBO

MODERN APPROACHES TO THE  
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#### Project partners



## Annex

*Table S1 Full list of stakeholders identified at MAMBO's stakeholder mapping workshop with the code used to produce the series of network maps and the tasks that each stakeholder was mapped to.*

Code	Name	Tasks
S1	Danish nature protection agency	3.3, 4.1, 4.2, 4.3, 6.4
S2	INRIA	2.2, 3.4, 4.1, 6.4
S3	SPRING	2.1, 2.2, 2.3, 3.1, 3.3, 5.2, 6.4, 7.5, 7.6
S4	EU PoMs Network	2.1, 2.2, 2.3, 3.1, 3.3, 3.4, 5.1, 5.2, 6.4, 7.4, 7.5, 7.6
S5	Danish Environmental Agency	3.3, 4.1, 4.2, 4.3, 6.4, 7.4
S6	MS Authorities	3.3, 6.4, 7.4
S7	ExEA Bulgaria	3.3, 6.4, 7.4
S8	Staatsbosbeheer	3.3, 6.4
S9	EPI	2.2, 2.3, 3.3, 4.1, 5.2, 6.4, 7.4, 7.5, 7.6
S10	DG ENV	6.4, 7.4, 7.5
S11	UFZ	3.3, 4.1, 6.4
S12, S52	Natura 2000	2.2, 3.3, 3.4, 4.1, 4.2, 4.3, 5.1, 6.4
S13	EEA	2.1, 2.2, 4.1, 4.2, 5.1, 5.2, 5.3, 6.4, 7.4, 7.5, 7.6
S14	"Vild med Vilje" - Wild on purpose	6.4
S15	EMBAL	6.4, 7.4, 7.5, 7.6
S16	Nature conservation bodies	3.3, 6.4
S17	Danmarks naturfredningsforening	3.1, 3.2, 3.4, 4.1, 4.2, 6.4
S18	Tech companies	3.1, 3.2, 3.3, 3.4, 6.4
S19	DG Agri	2.2, 2.3, 3.3, 6.4, 7.4, 7.5, 7.6
S20	Businesses	3.1, 3.2, 3.3, 3.4, 6.4
S21	Bulgaria Society for Protection of birds	3.2, 6.4
S22	Farmers organisation	3.3, 3.4, 6.4
S23	Cities	3.3, 3.4, 4.1, 6.4
S24	WWF Bulgaria	2.1, 3.3, 3.4, 6.4
S25	Nat Cap	3.3, 6.4
S26	Pivotal Earth	2.2, 6.4, 7.5
S27	Revalue Nature	4.1, 4.2, 6.4, 7.5
S28	Ambjent Malta	2.1, 2.2, 2.3, 3.2, 3.3, 4.1, 4.2, 6.4
S29	Monitoring NGOs	2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 6.4, 7.4, 7.5
S30	PECBMS	3.1, 6.4
S31	Leps	2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 5.2, 6.4, 7.4, 7.5
S32	National Parks administration Bulgaria	3.3, 3.4, 4.1, 4.2, 6.4
S33	Farmer interest groups	3.3, 3.4, 6.4
S34	Landowners	3.3, 3.4, 4.1, 4.2, 6.4
S35	ERA Malta	2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 5.1, 5.2, 6.4, 7.4
S36	Rewilders	3.3, 3.4, 4.1, 4.2, 6.4
S37	Natura 2000 site managers	2.2, 2.3, 3.3, 4.1, 4.2, 5.1, 5.2, 5.3, 6.4, 7.4
S38	Hempel foundation	4.2, 6.4
S39	National museum of natural history Bulgaria	2.3, 3.1, 3.2, 3.3, 5.1, 6.4

## D1.3 Report on stakeholder mapping and network analysis

Code	Name	Tasks
S40, S87	AVJF	3.2, 3.3, 3.4, 4.1, 4.2, 6.4
S41, S88	15. Juni Fonden	3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 6.4
S42	SMEs - tech to market	3.1, 3.2, 3.3, 3.4, 6.4
S43	National organisations	4.2, 6.4
S44	Defra	4.1, 6.4, 7.4
S45	Natural England	3.1, 3.3, 3.4, 4.1, 6.4, 7.4
S46	Nature Protection	4.1, 4.2, 6.4
S47	Nature restoration law Netherlands	4.1, 6.4
S48	RVO	4.1, 6.4, 7.5
S49	Biodiversa+	2.1, 4.1, 4.2, 4.3, 6.4
S50	Network of French land use managers	4.1, 4.2, 6.4
S51	JRC	2.2, 3.4, 4.1, 4.2, 6.4, 7.4, 7.5
S53, S78	Consultancies	3.3, 3.4, 4.1, 4.2, 4.3, 5.2, 5.3, 6.4
S54	BIOTOPE	4.1, 6.4
S55	Wildlife Trust	4.1, 4.2, 4.3, 6.4
S56	NEYEDC	3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 6.4
S57	Naturalist Associations - Ecologistes de L'Euzière	3.4, 4.1, 6.4
S58	High nature value farmland	3.4, 4.1, 4.2, 6.4
S59	NL: Wijland	4.1, 4.2, 4.3, 6.4
S60	iNaturalist	2.1, 2.2, 3.1, 3.2, 3.4, 4.1, 6.4, 7.4
S61	Observation.org	2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 4.1, 6.4, 7.4
S62	JNCC	3.3, 6.4, 7.4
S63	National citizen science recording schemes	2.2, 2.3, 3.1, 3.2, 3.3, 4.1, 6.4, 7.4
S64	eBMS	2.2, 2.3, 3.1, 3.3, 3.4, 6.4, 7.4, 7.5, 7.6
S66	Local authorities	3.1, 3.3, 6.4
S67	Spipol project	2.3, 3.1, 3.3, 6.4, 7.4
S68	ABC Centre, NSF & NSERC	2.1, 3.3, 6.4
S69	LTER	2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 6.4, 7.4, 7.5
S70	Institutes working on marine mammals	3.1, 3.2, 6.4
S71	Local NGOs	3.3, 3.4, 6.4
S72	Institutes working on bats	3.1, 3.2, 6.4
S73	GRIIS	3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 6.4
S74	Urban developers	3.1, 3.2, 3.3, 4.1, 6.4
S75	GOSH	3.1, 3.2, 3.3, 3.4, 6.4
S76	Pesticide companies	3.3, 6.4
S77	Natural history museums	3.1, 3.2, 3.3, 4.1, 5.1, 6.4
S79	Researcher*	3.1, 3.2, 3.3, 3.4, 4.1, 6.4, 7.4
S80	Private companies managing agriculture	3.3, 3.4, 6.4
S81	Solar companies	3.3, 3.4, 6.4
S82	XPrize	2.1, 3.1, 3.2, 3.3, 3.4, 6.4
S83	The wildlife trusts	2.1, 3.1, 3.2, 3.3, 6.4



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Code	Name	Tasks
S84	WCMC - UNEP	2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 6.4, 7.4
S85	Energy companies	3.2, 6.4
S86	Natural history societies	2.3, 3.1, 3.2, 3.3, 4.1, 5.1, 6.4
S89	Environment Bank	3.3, 6.4
S90	Networks of small woodland owners	2.3, 3.1, 6.4
S91	AI centre	2.3, 3.1, 3.2, 3.3, 6.4
S92	ForestGeo	3.3, 6.4
S93	DIGIT - Aarhus	2.2, 3.1, 3.2, 3.3, 4.3, 6.4
S94	Railroad and road authorities	3.1, 3.2, 3.3, 6.4
S95	Beekeepers associations	2.3, 3.2, 3.4, 4.1, 4.2, 6.4
S96	Hardware development companies	3.1, 3.2, 3.3, 3.4, 6.4
S97	ALA	2.2, 6.4
S98	Citizen scientists	2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 6.4, 7.4
S99	BirdLife Malta	3.2, 4.1, 5.1, 6.4
S100	NatureTrust Malta	3.3, 4.1, 5.2, 5.3, 6.4
S101	Malta Beekeepers Association	3.2, 3.3, 4.1, 4.2, 6.4, 7.4
S102	GBIF	2.1, 2.2, 6.4
S103	Irish Wildlife Sounds	3.2
S104	BCE	2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 5.2, 6.4, 7.4, 7.5

\* A specific researcher was named at the stakeholder mapping workshop, however they have been anonymised as “researcher” for this report to comply with GDPR. Participants were encouraged to name organisations and/or specific roles within organisations during the exercise.

## D1.3 Report on stakeholder mapping and network analysis

Table S2 The stakeholders identified for each of the five economic categories proposed for T6.4

Category	Stakeholders
<b>Central authorities</b>	Bulgaria Executive Environment Agency, Ministry of Environment and Water, Danish Environmental Protection Agency, Danish nature protection agency, Defra, DG Agri, DG ENV, EEA, Environment and resources authority Malta, Environmental Agency DK, JNCC in UK, JRC, LTER - Longterm global monitoring network, MS Authorities, National organisations, Natural England, Nature Protection, Nature restoration law Netherlands, Biodiversity portals, Pesticide companies, Bayer, Syngenta, Staatsbosbeheer
<b>Large scale practice</b>	"Vild med Vilje" - Wild on purpose, Ambjent Malta, Beekeeper associations, Bulgaria Executive Environment Agency (Ministry of Environment and Water), Danish Environmental Agency, Danmarks naturfredningsforening, EMBAL, Environment and resources authority Malta, Environment Bank, GRIIS - Global Register of Introduced and Invasive Species, Institutes working on bats, Institutes working on marine mammals, Monitoring NGOs, PECMS, Butterfly Conservation Europe, MS Authorities, National Parks administration Bulgaria, Natura 2000, Natura 2000 site managers, Natural England, NatureScot, NEYEDC - North and East Yorkshire Ecological Data Centre, Pesticide companies, Bayer, Syngenta, Solar companies, Staatsbosbeheer, UFZ, Urban developers, WCMC – UNEP, Wildlife Trust, WWF Bulgaria
<b>Developers</b>	ABC Centre NSF & NSERC - AI for biodiversity and climate change, AI centre, Businesses (Biodiversity credits, net gain, etc.), BIOTOPE, Consultancies, DIGIT, ForestGeo, GOSH - open software & hardware community, iNaturalist, Nat Cap, National citizen science recording schemes (butterflies, bees, hoverflies), Biodiversity portals, RVO - Netherlands Enterprise Agency, SMEs - tech to market, Start ups e.g. pivotal.earth, revalue nature, Tech companies, XPrize
<b>Research networks</b>	Biodiversa+, eBMS: European Butterfly Monitoring Scheme, EU Pollinators Initiative, EU PoMs network, INRIA, Researcher, SPRING, UFZ
<b>Smaller scale practice</b>	15. Juni Fonden, Aage V. Jensen's Foundation, ALA, Beekeeper associations, Bulgaria Society for Protection of birds, Cities, Consultancies, BIOTOPE, Energy companies, Farmer interest groups, Farmers organisation, French Natural History museum - spipol project, Hardware assemble/production companies, Hempel foundation, High nature value farmland, Landowners, Local authorities e.g. City of Montpellier, Local NGOs involved in the management of natural places e.g. based in Marseille France, Monitoring NGOs, PECMS, Butterfly Conservation Europe, National citizen science recording schemes (butterflies, bees, hoverflies), National museum of natural history Bulgaria, Natural Histories societies in southern Europe, Natural history museums in (mainly) southern Europe, Natural history societies, Naturalist Associations - Ecologistes de L'Euzière, Network of French land use managers, Networks of small woodland owners, NL: Wijland, Observation.org, Railroad and road authorities, Rewilders, Specialised expert citizen scientists, The Wildlife Trusts

