

Communication strategy and dissemination plan

Deliverable 11.3

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PoshBee

Pan-European assessment, monitoring, and mitigation of stressors on the health of bees



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Preface

Communication and dissemination are key elements of PoshBee's planned measures to maximise project impact and ensure sustainable and long-term knowledge exchange. This Communication strategy and dissemination plan, has been developed during the starting phase of the project by the principal WP11 dissemination and outreach partners to ensure the clear definition of, and interactions between, objectives, target groups, message and implementation. This strategy is developed based on activities and findings within WP10 Knowledge Exchange and Impact Strategy, where a Report (D10.1 Report on the knowledge exchange and impact strategy for PoshBee) on the knowledge exchange and impact strategy has been prepared to define and categorize the main stakeholder groups within PoshBee.

Summary

Dissemination and communication play a vital role within PoshBee as a means of ensuring knowledge transfer and uptake of results at every stage during the project lifetime. The project's Communication strategy and dissemination plan have been developed during the starting phase of the project to define objectives, target groups, key messages and outline implementation. The main dissemination tools (website, press releases, newsletters, posters, brochures, social media, videos, meetings and workshops, scientific publications etc.) are listed in this strategy, where the relationship between tools and the different target groups is explained, alongside suggested indicators for actively monitoring of effectiveness.

The strategy represents a concise plan to guide the communication and dissemination efforts to target various audiences and convey clear, understandable, coordinated and effective messages, thus, raising awareness and maximising the benefits resulting from the PoshBee project. Indicative time schedule for implementation is provided.

1. Introduction – Why, Who, What, How and When?

Dissemination and communication efforts within PoshBee will branch out mainly in two directions, namely rising awareness and promoting consensus among stakeholders to contribute to reaching PoshBee goals and objectives, on the one hand, and popularisation and visibility to the wider public, on the other.

The Strategy will answer five main questions related to:

- 1) Scope and objectives (Why?)
- 2) Target groups and stakeholder integration (Who?)
- 3) Key outputs to communicate (What?)
- 4) Communication channels and methods (How?)
- 4) Timelines for delivering successful communication (When?)

In collaboration with the stakeholder identification and networking activities that are carried out in WP10 (see Deliverable 10.1 Report on the knowledge exchange and impact strategy for PoshBee) the strategy will target these main stakeholder groups in key sectors and define the most appropriate methods to tailor materials and communicate results to: (i) policy and decision-makers at the global, EU, and national/regional levels; (ii) local governments; (iii) environment managers and planners; (iv) NGO's; (v) farmers and beekeepers, (vi) citizens.

The strategy represents a concise plan to guide the communication and dissemination efforts to target the various audiences and spread out clear, understandable, coordinated and effective messages, thus raising awareness and maximizing the benefits resulting from PoshBee.

This document outlines in detail the communication and dissemination activities, their motivation and implementation. The time schedule for their implementation is indicated in Annex 1.

2. Scope and objectives

The PoshBee Communication strategy and dissemination plan will be of foremost importance for the project's success. Its main objective is to identify and organize the dissemination activities in order to reach out to the widest possible range of stakeholders and to promote further exploitation of the project results.

To ensure that these aims are met professionally, effectively and in a timely manner the following ten basic principles are adopted as dissemination and communication backbone:

- 1. Open access to PoshBee results to the greatest extent possible, while considering intellectual property rights (IPR);
- 2. Multi-targeted dissemination of results, based on identifying all relevant target groups;
- 3. Tailored and targeted communication messages reflecting the needs of each target group;
- 4. Multivalent modes of dissemination based on traditional (scientific papers, leaflets, posters, fact sheets, policy briefs, press releases, newsletters) and innovative methods (online broadcasting, videos, infographics, blogs, open access journals, data publishing);

- 5. Extensive use of social networks (Twitter, Facebook, YouTube) and Web 2.0 technologies (semantic tagging);
- 6. Translating the scientific results, such as best practices, recommendations, fact sheets, policy briefs, etc. into comprehensive and more understandable forms, and when needed into national languages. The scientific language and the methods of dissemination will be adapted according to the needs and specifics (e.g., educational level, different background, different incentives) with the aim to reach various multi-language and multi-cultural target groups;
- 7. Widest integration of PoshBee results into existing international networks, professional organisations, large symposia, and NGO's;
- 8. Regular press releases and news announcements posted through the world's leading (Eurekalert.org) and EU-based (APIMONDIA, COLOSS, Science for Environment Policy newsletter, BISE, CORDIS Wire, Oppla etc.) distributors of science news;
- 9. Feedback from stakeholders used to improve the usability of results and facilitate the work of PoshBee;
- 10. Sustainability of PoshBee results by maintaining the website at least 5 years after expiration of the funding phase of the project and encouraging the open access publication of all project results including data, reports, methods, etc.

3. Target groups and stakeholder integration

The broad stakeholder groups within PoshBee, as identified by the stakeholder mapping exercise (D10.1), are *Beekeepers* (beekeeper associations/organisations), *Business* (private companies, industry, SMEs), *European Commission* (EC, DG's and agencies), *Farmers* (farmer associations/ organisations), *Government* (national government agencies or ministries), *Media*, *NGO* (non-governmental organisation), *Public, Researchers* (university, government or private research organisation).

Within Deliverable 10.1 these groups were also mapped according to the level of interest and influence they have with regards to key outputs planned within PoshBee.

PoshBee Output: "What"	Stakeholders: "Who"	Dissemination, communication and outreach: "How" and "When"
Standardised protocols	Priority Stakeholders ANSES, Agrochemical industry, EC, ECPA, EFSA, National ministries of agriculture, and Researchers	Task 11.2: Communication and dissemination strategy and the Exploitation Plans and
	COPA-COGECA, National farmer organisations, NGOs, Media, Pollination service suppliers, and Public	Task 11.3: Dissemination, communication and outreach
Bee Health Card	Priority Stakeholders ANSES, Agrochemical industry, Businesses (e.g. Bee medicine suppliers, queen honeybee breeders), EC, EFSA, National beekeeping associations, Media, National farmer organisations, National ministries of agriculture, and National ministries for bee health	Task 11.2: Communication and dissemination strategy and the Exploitation Plans and
	Other Stakeholders Businesses (agri-food, Pollination service suppliers retailers), NGOs, Public, and Researchers	Task 11.3: Dissemination, communication and outreach

Table 1. Overview of knowledge exchange plans for Standardised protocols and the Bee Health Card. (Potts, et al. 2019)

This document will build on the stakeholder mapping exercise results to develop specific actions of PoshBee's communication strategy, namely define the right channels and timing to ensure maximum update and re-use of PoshBee results.

3.1. Communicating results with stakeholders

PoshBee's long-term objective is to support sustainable beekeeping and healthy bee populations, including wild bees. One of the aspects leading to this objective is the successful communication, knowledge transfer and dissemination of the project updates and results. When communicating with stakeholders, it is essential to ensure that clear or plain language explanation of results and updates are provided to non-scientific groups.

As part of the promotional and dissemination toolset of the project selected to make the results of PoshBee available across stakeholders and the general public, PoshBee will prepare and publish practice abstracts on the EIP-AGRI platform. These concise and clear pieces of knowledge aim to present PoshBee results to one of the key project target groups – the practitioners.

As of May 2021, four practice abstracts <u>have been published</u>. Prepared by PoshBee coordinator Prof. Mark Brown of Royal Holloway, University of London, the first abstract provides a summary of the project goals and objectives. The second abstract, drafted by Prof. Simon Hodge and Prof. Jane Stout of the Trinity College in Dublin, lists recommendations for groups planning to perform similar multipartner, farm-scale, field studies on pollinating insects. Practice abstract 3 written by Dr. Joachim Rodrigues De Miranda and Dr. Maj Rundlöf, Swedish University of Agricultural Sciences, introduces a study, which investigates the effect of real-world clothianidin exposure on bees across oilseed rape fields in southern Sweden. The fourth practice abstract provided by Mr. Norman Thürmer of the Imkerverband Sachsen-Anhalt e.V. shares recommendations aiming to maximize the efficiency of the work invested in the project. PoshBee will continue to submit practice abstracts to translate important project research and results for the needs of practitioners.

In March 2022, PoshBee published four new practice abstracts, amassing a total of eight abstracts published on the EIP-AGRI platform. Practice abstract 5, prepared by Tom Breeze (University of Reading), discusses beekeepers' willingness to take up new bee health tools and what influences such willingness. The sixth abstract (available in English and French), by Léna Barascou (INRAE), considers the use of behavioural and reproductive performances of bees as assessment endpoints of honey bees' health. Practice abstracts 7, also produced by Léna Barascou, reviews the effects of pollen nutrition on honey bee tolerance to pesticides. Finally, the eight practice abstract, written by Matt Allan (Atlantic Pollination Ltd), summarises semi-field studies on how pairs of stressors impact honey bees, bumblebees and solitary bees.

Based on feedback of the Scientific Steering Committee (SSC) at the project's annual general meeting in January 2021, a new plan for enforcing the communication with stakeholders and practitioners has been elaborated. Manuscript authors within PoshBee will be targeted to prepare summaries and briefs for specific stakeholders. These new plain language summaries will be directly provided to PoshBee beneficiaries and stakeholders who represent the relevant group for the respective text (e.g., farmers, beekeepers, NGOs, businesses, etc.). Additionally, these summaries will be published on EIP-AGRI and disseminated through the project's website and social media channel.

Pensoft will be monitoring the new manuscripts within PoshBee and will reach out to partners, asking them to contribute to the latter communication effort. For their convenience, a template containing instructions and a field for their summary has been made available. The short briefs should focus on the main results/outcomes of the activity and provide main practical recommendations (main added value/benefit/opportunities to the end-user if the generated knowledge is implemented; how to make use of the results etc.). The summaries should be as interesting as possible for end-users, while using a direct and easily understandable language. Whenever possible, the short texts will also be translated in native languages, in order to reach wider national audiences.

Providing these summaries would incentivise efficient knowledge exchange and disseminate the results of the project in a concise, easy and understandable way to practitioners.

As of April 2022, six stakeholder summaries have been published on PoshBee's website:

- *"Flowering hedges and edges support pollinating insects throughout the season"* (available in English and French) by Irene Bottero, Simon Hodge, and Jane C. Stout
- "The insecticide Clothianidin increases Varroa destructor fertility, with negative implications for honey bee health" (available in English and Italian) by Desiderato Annoscia
- "An integrated system for field studies on honey bees, Journal of Apicultural Research" by Matthew J. Allan and Robin R. Dean
- "Pollen nutrition fosters honeybee tolerance to pesticides" (available in English and French) by Léna Barascou
- "Delayed effects of a single dose of a neurotoxic pesticide (sulfoxaflor) on honeybee foraging activity" (available in English and French) by Léna Barascou
- "Bee Tracker an open-source machine-learning based video analysis software for the assessment of nesting and foraging performance of cavity-nesting solitary bees" (available in English and German) by Anina Knauer, Johannes Gallmann & Matthias Albrecht

To maximise the findability and accessibility of these summaries, PoshBee disseminates them, along with the original paper, to its stakeholders, while also promoting them via the project's website and social media channels.

Additionally, in order to broaden the outreach of PoshBee's results, the project has launched an open research collection in the Research Ideas and Outcomes (RIO) journal called PoshBee Project Outcomes. The collection will host a wide range of outputs, which includes not only standard scientific articles, but also other less traditional pieces, such as the project's Grant Agreement or metadata of scientific papers, thus covering the entire research cycle. This comprehensive results overview allows the centralisation of project outputs and assures their availability throughout and beyond the project's lifetime.

3.2. Receiving Feedback

Getting to know our target groups and how to effectively formulate messages to address them is only one part of the successful communication process. In order to truly understand an audience, communication must be two-directional. Effective feedback, both positive and negative, is a valuable information source that should be utilised to make improvements in the use of various communication channels. Bearing that in mind, PoshBee will modify its actions according to feedback received from users in order to ensure a smooth two-directional communication process and ultimately improve PoshBee outputs based on the user needs and wishes.

As part of this objective, PoshBee has developed two online surveys that aim to consult stakeholders on their needs. The first survey aims to identify the current tools, protocols, methods, criteria etc. that are currently being used by PoshBee stakeholders. The second survey aims to consult stakeholders as to how they would like these outputs delivered to them.

The time plan for launching the two surveys is the end of May 2021. After launch, they will be communicated with the stakeholder advisory committee and PoshBee partners with the aim of cascading the survey to the diverse stakeholder groups. The surveys will also be advertised on the project website and social media channels. They will stay open for a month and, after closing, their data will be analysed, evaluated and used accordingly to improve PoshBee outputs and their delivery.

Both surveys were successfully conducted and ended on the 18th of June, 2021. The first one (aiming to assess how best to circulate information to stakeholders) was completed by 159 contributors, with most of these being beekeepers. Overall, respondents showed significant interest

in the PoshBee outputs covered in the survey, with 50% or more of respondents being interested in every output. The output that had the most interest expressed towards it was 'Nutritional requirements of bees', whilst the least attractive output was the 'ALMaSS landscapes for risk assessment'. Respondents identified an array of routes through which they would like to learn about this output. The most popular routes included direct email, webinars and online courses, publications (including beekeeping journals), and communication from local, national, or international beekeeping groups. In terms of the information, training, or tools that might be needed to best take advantage of this output, respondents identified 9 different approaches that would be of interest to them. In particular, the need for simple, clear, and targeted information was emphasised, with this being made available either through webinars, training, or reading material (from webpages, leaflets, or apps). For beekeepers, several respondents highlighted the need to relate it specifically to bee health.

The second survey (aiming to determine where PoshBee tools could add the most value to stakeholder activities) was completed by 52 participants, the majority of which again represented the beekeepers' stakeholder group. As the majority of respondents were beekeepers, it is only possible to quantify responses to honeybee-specific activities. Honeybee keepers identified 14 criteria, methods, and tools that they used to assess bee health. There was a clear preference for direct visual observations of the hive and bees over any other approach. While some beekeepers either had no choice or did not use any particular approach, others identified convenience, available resources, visual inspection of the area, and security away from the public as key reasons and methods for choosing hive location. Respondents identified a range of approaches, with the most popular being cheap and fast methods for assessing parasites and pesticides. The most popular action, by far, taken by respondents to support wild pollinators was planting and management to provide the resources needed by these pollinators to thrive. Respondents identified a need for good general information about the needs of wild pollinators, as well as a specific focus on what flowering species are best to plant and manage for them.

4. Main outputs to communicate

Table 2 from D10.1 summarises the key PoshBee outputs that will require targeted communication and dissemination efforts to ensure smooth knowledge exchange.

Table 2. Summary of the main expected outputs from PoshBee. (Potts, et al. 2019)

Output Type	Specific outputs
	Chronic and sub-lethal effects of chemicals and combinations
Knowledge	Effects of chemical x pathogen and chemical x nutrition
	Field level effects of stressors
	Testing chemicals on life-stages and castes/sexes of model species
Protocols for bee	Ground nesting model for solitary bees
testing schemes	Chemical x pathogen and chemical x nutrition interactions
	Field testing
Proteomics tools	'Health card' for bees to monitor stressors and impacts
for health monitoring	Proteomics database for wider use
Air sensor tool	Measuring atmospheric agrochemicals exposure inside and outside hives
Toolkits	Multi-media knowledge exchange to enhance tool uptake and use

5. Communication methods and channels

1. Communication and dissemination channels created and maintained by PoshBee:

- Project website
- PoshBee 'Buzz' newsletter
- Promotional materials: brochures, posters, policy briefs, factsheets etc
- Social networks
- Multimedia materials
- Press releases
- Events

2. External dissemination channels:

- Journals
- Mass Media
- Partnering projects' websites, social networks, events, newsletters

More information about these channels and their status is available in D11.1 Project branding.

Table 3: Mapping communication channels to stakeholders, outputs and verification of use

Dissemination tool	Target groups	Related outputs	Verification of use
Project website	Researchers, Beekeepers, Farmers, NGO, Media, Public	All outputs	Number of visits, number of requests, unique visitors and document downloads
Social networks and sharing platforms • Facebook • Twitter • YouTube	Researchers, European Commission, Government, Beekeepers, Farmers, NGOs, Media, Public	All outputs	Number of posts; number of re-tweets (Twitter); number of followers, views and "likes"
Scientific publications	Researchers, NGOs	Knowledge, Protocols, Toolkits	List of publications
Presentations at scientific conferences	Researchers, Government, NGOs, European Commission	Knowledge, Protocols, Toolkits,	List of international or national conferences where the project results are presented
Poster, flyers, leaflets	Researchers, Government, NGOs, European Commission	Knowledge, Protocols, Toolkits	Number of downloads of electronic copies or handouts at conferences
Policy briefs	Government, NGOs, European Commission	Knowledge, Protocols, Toolkits, Health card, Air sensor	Number of downloads of electronic copies or handouts at conferences
Practice factsheets	Beekeepers, farmers, NGOs	Knowledge, Protocols, Toolkits, Health card, Air sensor	Number of downloads of electronic copies or handouts at conferences
Newsletter – PoshBee 'Buzz'	Researchers, European Commission, Government, Beekeepers, Farmers, NGOs, Media, Public	All outputs	Number of successful deliveries, clicks, average per user engagement
External blogs, e- newsletters, websites	Researchers, European Commission, Government, Beekeepers, Farmers, NGOs, Media, Public	Knowledge, Protocols, Toolkits, Health card, Air sensor	Number of successfully placed content

Dissemination tool	Target groups	Related outputs	Verification of use
Press releases and publications in newspapers and popular magazines	Researchers, European Commission, Government, Beekeepers, Farmers, NGOs, Media, Public	Knowledge, Protocols, Toolkits, Health card, Air sensor	Number of press releases issued; number of visits of particular press releases; list of publications
Multimedia materials: videos, infographics, live broadcasts	Researchers, European Commission, Government, Beekeepers, Farmers, NGOs, Media, Public	All outputs	List of multimedia items, engagement per item, where possible to measure

6. Detailed social media strategy

Having a strong social media presence could be very beneficial in the context of project management. The social media is having a global impact on communication and networking, it is also cost and time efficient, it allows access to information anytime, while also providing the possibility to receive feedback. That is why social media should be fully integrated as a part of a project's communication strategy. However, in order to use social media effectively, one must be able to evaluate the impact of their social media channels.

This document provides an overview of the types of audiences interested in PoshBee's social media accounts (Twitter and Facebook). It also discusses various tools, practices and indicators that can be used to measure the impact of social media campaigns. Finally, the document sets up ways to analyse the performance of the project's social media channels and relevant KPIs.

6.1. Social media audiences

This section takes a closer look at the audiences that PoshBee will target on social media channels (Twitter and Facebook).

- Beekeepers (beekeeper associations/organisations)
- Business (private companies, industry, SMEs)
- European Commission (EC, DG's and agencies),
- Farmers (farmer associations/organisations),
- Government (national government agencies or ministries),
- Media, NGO (non-governmental organisation),
- Researchers (university, government or private research organisation).
- Public at large

As of May 2021, the PoshBee project has been making significant progress on all fronts. More field work has been carried out and more results have been achieved. Because of that, a stronger focus has been set in producing videos, which are another effective way of communicating developments

with relevant stakeholders. YouTube has been the medium of choice to disseminate PoshBee videos to the public, and the subsequent sections of this strategy have been updated with all relevant information about this dissemination route.

As of April 2022, the PoshBee YouTube channel has 21 published videos.

6.2. Measuring social media impact

Each social media used by PoshBee offers different benefits and can have a potential unique use in the context of communication and dissemination, but they can also have some shortcomings. Table 4 summarizes the pros and cons of PoshBee's social media.

	Specifications	Impact within PoshBee	
Twitter	Pros: Short, fast, easy communication; popular and with high number of users; Twitter lists - easy way to follow news and interact; Event back-channelling Cons: Rather limited in space and media sharing; Tweets have a short searchability lifetime	-Generate interest and share on-going news and activities through posts/ tweets -Twitter lists: build a community around the project and get relevant news -Conference live stream/post- conference review -Personal messages: Twitter email version	
Facebook	Pros: Useful for sharing media (pictures, videos); High number of users; Create events and invite users; Community-like feel Cons: Less professional and used mainly for personal social activities	-Generate interest and share on-going news and activities through posts -Share relevant multimedia (in posts, or as separate albums) -Events creation and promotion: strengthening the sense of community around the project -Create groups to share group messages -Insights: provide useful analytics for the development of the page	
YouTube	Pros: Simple upload and embedding of videos; free hosting; high discoverability and traffic generation Cons: No customer support option; a relatively high number of ads	 -A highly appealing and effective way of presenting project developments -Easily trackable impact -Video collection will be available beyond the project's lifetime 	

Table 4: Comparison of the pros and cons of social media networks for use in PoshBee

6.2.1. Tools and practices

Social media provides free and efficient tools, which allow the user to measure the success of their campaign, but also to detect weaknesses and address them (e.g. by updating their communication

strategy). Based on the European Commission's updated guidance on social media for EU funded R&I projects, table 5 gives an overview of the main tools, measurements and practices that can be used to measure the performance of the PoshBee social media profiles on Twitter and Facebook. (EC, 2020).

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Table 5. Tools at	nd practices	for measuring	SOCIAL	media impact
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	Twitter	Facebook	YouTube
Analyti c a l tools	Twitter analytics: this tool measures the impact based on two categories, tweet activity and followers. Tweet activity reveals the top tweets, as well as the number & rate of impressions and engagements for a certain period (the longest period available for analysis is 90 days). On the other hand, Twitter can also display the most active and influential followers (active refers to users who often engage with PoshBee tweets and influential refers to users who have a high number of followers).	Facebook insights: this tool is more limited in the sense that it is unable to display each PoshBee follower individually (it just shows the total number of followers), but it is still a tool with a lot of potential. Facebook insights analyses the flow of page followers, views, likes and actions. The tool can also categorize the audience based on age, gender and nationality. It also provides a separate analysis of posts that were advertised, hence revealing whether paying for advertising is worth.	Video analytics: this tool enables us to track the performance of each video, as well as the overall performance of the channel. For both individual videos and channel performance, YouTube provides access to the number of views, watch time (in hours), number of impressions (times when the video has been shown to users), average view duration, etc. The tools also gives an overview of the channel's audience, displaying the number of (new) subscribers and returning visitors.
Criteria	Quantitative & Qualitative: In the case of Twitter, both quantitative and qualitative data analysis can be applied to evaluate the performance of the channel. The quantitative aspects covers factors such as number of clicks, likes, shares, tags, video views, new followers, profile visits, engagement rates etc. The qualitative aspect focuses on the detailed audience analysis (for example, categorization of each Twitter follower to one of the eight stakeholder groups). Qualitative methods can also evaluate the types of comments and their tone.	Quantitative : As mentioned above, Facebook insights do not provide detailed data about the page followers, which makes a qualitative user analysis very hard. Because of that, identifying statistical (data page followers, views, reactions and actions) will be prioritized in the PoshBee social media analysis	Quantitative & Qualitative: In the case of YouTube, the media allows us to track both quantitative and qualitative data. The quantitative aspect is reflected in the various analytical tools described above. The qualitative aspect focuses on the possibility to leave comments under all videos, which is a great way to generate feedback to our content and interact with our stakeholders.

Monito r i n g a n d reporti ng	One further practice helpful for the evaluation of social media performance is the regular monitoring of the channel. In addition to the frequent updates with relevant content (e.g. during conferences, at least one live updated should be tweeted per presentation/ session), one should regularly check the inbox for relevant messages. Additionally, reporting on communication and dissemination activities to the EU (by including information about the social media accounts, activities, achievements and impacts) will deliver sufficient feedback helpful for the evaluation of the	The practices discussed within the Twitter section apply in the case of Facebook as well. One contrast is the frequency of reporting during key events. Unlike Twitter, Facebook provides the use of unlimited characters in each post. Because of that, posting content should be limited to one post a day, which should provide a recap of the progress in that day. One option to capture key messages for both Facebook and Twitter is the use of live video.	YouTube will be monitored similarly to the two other social media profiles. In each reporting periods, the video analytics will be reviewed and the data for the given period will be reported. In contrast to Twitter and Facebook, uploads on YouTube will be much less frequent due to the high amount of time needed to produce a video.
	for the evaluation of the social media performance.		

6.2.2. Qualitative Indicators

Identifying specific indicators that best fit the area of research covered by PoshBee and keeping track of these provides a constructive measurement of the impact of using social media. Acknowledging the factors listed below could ultimately improve the social media performance:

- Number of DG's following the project.
- **Connection with other related projects**: Establishing a connection with other projects in the same field could guarantee a flow of viewers from the project's target group.
- Influence of the followers: One further factor is the "influence" of the followers if a certain profile following the project has a high number of followers themselves, it is more likely that the results of the project will reach a wider audience.
- **Retweet / Share of the posts**: Liking or reacting to a post is certainly a good sign for its performance, but the real indicator is the number of times this post is retweeted on Twitter or shared on Facebook.
- **Tags**: Being tagged in posts related to the project could significantly increase the received attention. This is relevant on both Facebook and Twitter.
- Use of specific hashtags (Twitter specific): During conferences or similar events, creating a specific hashtag provides an easy way to follow the communication around the event. One

example for such approach is the #PoshBee2020, which referred to the AGM in Marseille and connected people communicating the event.

- **Personal messages**: A high number of PMs corresponds to a strong social media presence and ultimately to a high interest in the project. Regularly monitoring the inbox in both Twitter and Facebook can lead to a contact with key persons/institutions.
- Number of unique video views: This factor refers only to the PoshBee YouTube channel, where the number of video views will be monitored as the main key performance indicator of the channel.

6.2.3. Quantitative indicators

This chapter provides an estimation of the future followers and activities on both PoshBee social media channels and discusses the general benefits of social media usage in the context of project dissemination.

Based on numbers of followers and other indicators analyses from previous projects and other projects on the same topic (pollinators, honey bees, food security) we have estimated the following minimum baseline values (table 6).

Indicator	Unit	Twitter	Facebook	YouTube
New followers	Per 6 months	+150 followers	+50 followers	+ 3 subscribers
Tags (being tagged in posts)	Per month	+2	+1	N/A
Followers from specific target groups	Per 6 months	+40	+10	+ 2
Likes (or other reactions)	Av. per post	5	5	15
Share	Av. per post	5	2	5
Impressions / post reach	Av. per month	5000	200	100

Table 6: Estimation of KPIs for PoshBee's Twitter, Facebook and YouTube channels

These numbers will serve as guidelines and may vary each period depending on the relevance and volume of project content. It is expected that with the growth of the PoshBee social media audiences gaining new followers will grow due to the larger exposure of published content.

6.2.4. Baseline expected activities

Differently to the number for future followers, the future activities (e.g. impressions, engagements, retweets/shares) could not be estimated as they are a part of qualitative data analysis and are

dependent on the content provided by PoshBee on social media. Nevertheless, the analysis in chapter 3 revealed that a higher activity rate corresponds to key PoshBee events and outputs. Based on this information, table 7 provides an overview of the periods where a higher social media activity due to the given PoshBee output or event is expected.

Month	PoshBee output/event
M3 (August 2018)	Kick-off meeting
M8 (January 2019)	First AGM
M10-12	Start of first field season, setup of field and semi- field experiments
M13 (June 2019)	BUZZ annual newsletter I
M18 (November 2019)	Practice abstracts I (first practice abstracts on EIP- Agri)
M20 (January 2019)	AGM
M25 (June 2020)	BUZZ annual newsletter II
M32 (January 2021)	AGM
M34-37 (2021)	Field season and semi field experiments season 2
M37 (June 2021)	BUZZ annual newsletter III
M39 (August 2021)	New technology to measure environmental contamination
M39 (August 2021)	Bee health definition and indicators
M41 (October 2021)	Training videos
M44 (January 2022)	AGM
M46 (March 2022)	Training
M48 (May 2022)	BUZZ annual newsletter IV
M56 (January 2023)	AGM
M56 (Jan 2023)	Synthesis of multiple stressor exposure and impact

Table 7: Estimation of key periods for future PoshBee followers on Twitter, Facebook and YouTube

M60 (May 2023)	Practice abstracts II
M60 (May 2023)	Multiple stressor effects on bees in field
M60 (May 2023)	Risk assessment tool for EFSA
M60 (May 2023)	Use of BeeTyping for monitoring

6.2.5. Why social media?

While there is a huge number of studies exploring the effects of social media, only a few have a specific focus on EU project management.

Hysa & Spalek (2019) investigate the areas in which it is possible to use social media in project management and analyze the surrounding opportunities and threats. The authors conclude that social media, although unable to replace face-to-face meetings, can complement traditional communication models in projects, especially when large number of individuals are involved (P. 22). This perfectly exemplifies PoshBee's case, as the project involves hundreds of participants across Europe. In regard to social media benefits, Hysa & Spalek identify such in the following areas: "communication between business partners and shareholders (54%), the coordination of distributed project teams (52%), the work efficiency of project team members (52), knowledge management (50%), the promotion and marketing of the project (46%), and mutual cooperation between team members (46%)" (P. 21).

Furthermore, the study conducted by Pivec & Maček (2019) aimed to analyze the personal social media preferences and opinions, as well as social media features and their usage within projects. Their sample contained 137 answers from respondents across Europe, all of whom are actively involved and participating in EU projects. Their results stressed on the importance of social media for project related work and communication.

6.3. Social media campaigns

6.3.1. PoshBee training and research videos

Short instructional training videos have gained a lot of popularity for both communicational and educational purposes. In terms of communication, developing such video material elevates the dissemination behaviour of the project from classical dissemination to the more contemporary approach of content marketing to stakeholder audiences. Here the popularisation of the project outputs is complemented by the perception of the project as a source of credible and easily accessible valuable information. This can be used not only to become familiar with the results of the project, but also as a general knowledge source. Because of that, PoshBee has produced a total of 14 training videos, all of which are available in a dedicated playlist on the project's YouTube channel.

The first video, "Testing effects of pesticide exposure to bees and bee larvae", shows researcher Piero Onorati (SLU) presenting the different measurements he and his team perform on adult honey bees and bee larvae to find out the effects on bee health of three categories of agricultural pesticides. In the second one ("Sampling honey bee hives in Cork, Ireland"), researcher Eleanor Attridge (Irish Beekeeping Association) demonstrates the application of PoshBee samplers on honey bee hives. Research video 3 ("PoshBee laboratory experiments on pesticide exposure and pollen diet effects on bees") shows a team of PoshBee researchers from INRAE performing laboratory experiments to measure the effects of pollen diet on the sensitivity to pesticides in honeybees. The fourth PoshBee video ("Specialised Equipment for Honeybee Studies") features Matt Allan (Atlantic Pollination Ltd.) and Robin Dean (The Red Beehive Company) carrying out semi-field studies on honeybees in the UK, examining the impact of the nutrition on bees. In video 5 ("Analysis of haemolymph with MALDI BeeType spotting"), researchers from BioPark Archamps and CNRS demonstrate the analysis of bee haemolymph samples with MALDI matrix spotting and spectral analysis. PoshBee's training and research video 6 ("The PoshBee database") shows a team from the Anses Sophia Antipolis laboratory demonstrating the PoshBee database (Poshbase) which serves for gathering and exchange of data between researchers. In the seventh video ("Pathogen analysis"), researchers from the Anses Sophia Antipolis laboratory demonstrate the process of analysis of pathogens in honey bees, bumblebees and solitary bees. PoshBee's eighth video ("Nectar pesticides analysis") presents the procedure for pesticide residue analysis in nectar regurgitated by honey bees and bumblebees. Video 9 ("Methods to assess the health status of the solitary bee Osmia bicornis") showcases Agroscope researchers conducting a semi-field experiment to investigate the effects of a pesticide on a cavity-nesting solitary bee species - Osmia Bicornis. Video 10 ("Wild Bees Fly for Research: A semi-field experiment by Agroscope") showcases Agroscope researcher Matthias Albreht and aims to track whether wild bees that are well-nourished can better cope with plant protection products. In PoshBee's 11th video ("Nectar extraction from bees"), researchers from ANSES demonstrate the PoshBee methods for

nectar extraction from bee stomachs. Video 12 ("PoshBee field and semi-field experiments: University of Freiburg") aims to showcase the PoshBee field and semi-field experiments performed by a team of researchers from the University of Freiburg, Germany. PoshBee's video 13 ("Effects of agrochemical-nutrition interactions on bee health in the laboratory") shows Alexandre Barraud, a PhD student from the University of Mons, giving more insight into bee decline in Europe. Finally, in video 14, Alexandre Barraud ("Pesticide risk assessment experiments on wild bee species") talks about wild bee species and how their communities are affected by pesticides.

More information can be found in MS29 Training videos produced.

6.3.2. The Faces of PoshBee

As part of our efforts to popularise the project and its result, PoshBee has launched a new social media campaign called "The Faces of PoshBee". Its goal is to highlight the work done by the different teams and researchers in the project. To this end, each week a new researcher is presented on Twitter and Facebook. This campaign has proven to be of particular interest to the project's stakeholders since, on average, posts from it have been performing better than other project posts in engagement and impression rates.

This social media campaign has an estimated duration of 17 weeks. Even though the campaign is still ongoing, the project has gathered enough information from participants to already develop a special

"Insider" section on PoshBee's website where all the information is stored and updated, so that it can be easily accessed in the future.



Figure 1: Example of the PoshBee faces weekly campaign on Twitter

7. Dissemination actors

Within the consortium of partners, WP11 will take the responsibility for coordinating communication and dissemination activities and report the results to the PoshBee coordination team. All partners are expected to take part in the dissemination activities and actively contribute to popularise the project and its outcomes.

7.1 Dissemination leader

Pensoft as the leader of WP11 will be leading dissemination efforts during the lifetime of PoshBee. As the dissemination leader Pensoft will be expected to:

- 1. Coordinate and monitor all dissemination activities.
- 2. Organize dissemination activities on all project levels.
- 3. Encourage partners to initiate and to participate.
- 4. Reach out and establish working contacts with relevant activities.
- 5. Ensure regular quality content for the various dissemination channels within this strategy.

7.2 Partners with active engagement in the dissemination process

While all partners will contribute to project dissemination, several institution will have a larger role within WP11 and the preparation and execution of various aspects of this Communication strategy and dissemination plan.

- As a leader of WP10, the University of Reading will be heavily involved in the development of targeted and relevant content for PoshBee's policy briefs.
- The University of Bern will assist the communication leader by serving as a liaison between the project and the COLOSS network to reach out to more than 900 scientists from over 90 countries worldwide.
- The University of Mons will be responsible for training and will thus support the communication leader in the development of tailored training materials and social media campaigns concerning these activities.
- The coordinator Royal Holloway and Bedford New College will play a large role in overseeing all major communication outputs.

7.3 Dissemination at all partners level

To ensure the broadest impact and highest level of dissemination, all partners will be actively engaged in the dissemination process by:

- 1. Use of their own personal and/or institutional networks and websites to promote the project.
- 2. Take advantage of relevant conferences to present the project results and distribute dissemination materials. For this purpose, person months were allocated to all partners according to the dissemination effort to be done.
- 3. Providing content to the dissemination team. Dissemination activities will be reported through a specifically designed feature of the project's Internal Communication Platform (ICP).

The communication within the project consortium will be in English. However, most partners will be communicating to local stakeholders and disseminating project results and conclusions in their native languages. They will be encouraged to produce their own language versions of flyers, newsletters, fact sheets and popular summaries of project results.

8. Timing and frequency of delivery

The following plan outlines baseline activities and frequencies:

Brochure and poster- every time substantial new results come out, the project will develop an updated version of the project flyer and poster.

Press releases – roughly 1 press release per year (this number is a subject to change in accordance with the necessities of the project).

- Press pack updated each year to include new information and multimedia materials as they come
- Electronic newsletter 1 every year
- News and Events on the website: minimum 1 per month
- Social networks activity: minimum 2 posts per week
- Attendance at conferences: minimum 5 per year
- Publications in relevant media minimum 2 per year

More information on the different promotional materials and PR practices and timings is also available in D11.1 Branding products, promotional materials, website, social network profiles, project communication platform, and online libraries.

References

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Potts S.G., Breeze T., Cini E., Senapathi D. (2019). *Report on the knowledge exchange and impact strategy for PoshBee*. Deliverable D10.1 EU Horizon 2020 PoshBee Project, Grant agreement No. 773921.

Sapundzhieva, A., Kuzmova, I. & Stoev, P. (2018). *Branding products, promotional materials, website, social network profiles, project communication platform, and online libraries.* Deliverable D11.1 EU Horizon 2020 PoshBee Project, Grant agreement No. 773921.

Annex 1: Twitter accounts of interest

This list will be reviewed and updated at each reporting period when success of social media use is assessed

Update: 14 May 2021

Update: 28 April 2022

Name	Twitter handle	Short bio/Presentation	Following/ Followers	Direct link
г ! !				
F	I @HighlanderLa Ib II	Research lab on managing and improving populations	3/33	https://twitter.com/ HighlanderLab
The Roslin Institute	e l e l	Investigating animal genetics, welfare, and diseases; Dollythe Sheep I was born there	582/ 6,330	https://twitter.com/ roslininstitute
Department of Agricultural Economics UGent	 @AgEconUGen t 	 	167/ 130	https://twitter.com/ AgEconUGent
Ghent University Research	@ResearchUGe n I 1 I	Giving you a taste of all the wonderful research @ugent while providing information & an online community for our researchers.	1,426 / 8,459	https://twitter.com/ ResearchUGent
I Newbattle Abbey College	— — — — — – @NewbattleTw eets 	Newbattle Abbey College, Scotland's life changing college and Events Venue	1,228/ 817	https://twitter.com/ NewbattleTweets
Naturalis Naturalis Biodiversity Center	 @Naturalis_Sci I I I I I	We are the national natural history institute in The Netherlands with almost 200 researchers, a museum, and a collection of more than 42 million specimens	675/ 2,148	https://twitter.com/ Naturalis_Sci
Faculty of Bioscience Engineering UGent	I @FbwUGent 	The faculty of Bioscience Engineering at Ghent University I	360/ 1,415	https://twitter.com/ FbwUGent

CSEOL	@CSEOLab	Citizen Science Earth Observation Lab. Fast- tracking great ideas to	2,471/	https://twitter.com/ CSEOLab
 	 	eESA -funded projects.		
Centre for Functional Ecology	@CFE_UC	I The Centre for I Functional Ecology (CFE)	630/	https://twitter.com/
		is a research unit funded by FCT and hosted by the Faculty of Sciences and Technology of the University of Coimbra.	568 	
EU Agriculture	@EUAgri	Food, farming and the	967/	https://twitter.com/EUAgri
 		future of agriculture 🌾 Sowing the seeds of EU Agriculture & Rural	80 700	
I	I	Development policy	l	I
 	 	#FutureofCAP 🚫 🏠 		
EU Environment	@EU_ENV	The official account for @EU_Commission	37 100/	https://twitter.com/
		Environment (DG ENV). Rts and likes are not necessarily endorsements.	114 000	
EU Climate Action	@EuClimateAc	The Directorate-General I for #ClimateAction (DG	28 600/	I https://twitter.com/
		CLIMA) is responsible for the @EU_Commission 's international & domestic activities fighting #climatechange	96 500	
Methods in Ecology and Evolution	@MethodsEcol Evol	MEE is a scientific	10 300/	https://twitter.com/ MethodsEcolEvol
		methods in #Ecology & #Evolution, and facilitating their dissemination and uptake by the #Research	25 800	
		NGOs/Associations/	 Clubs:	
Г — — — — — — — — — — — — — — — — — — —	@EIPAGRI SP	T — — — — — — — — — – – – – – – – – – –	ا ــــــــــــــــــــــــــــــــــــ	https://twitter.com/
AGRIServicePoint I I I I	' 	Innovation Partnership on Agricultural Productivity & Sustainability (EIP-AGRI) wants to help	5,605 5,605 	EIPAGRI_SP
1	l 	innovations spread		
I CEJA	@_CEJA_	European Council of Young Farmers // Conseil	1,156/	https://twitter.com/_CEJA_
I	I I			

NewbattleBees	@NewbattleBe es I	Working to train new, and experienced beekeepers at the Bee Academy in the historic setting of Newbattle Abbey	4,617/ 1,270 	https://twitter.com/ NewbattleBees
		The Green Infrastructure Strategic Intervention aims to improve Scotland's urban environment by increasing and enhancing greenspace in our towns and cities.	 398/ 477 	https://twitter.com/ GI_Scotland
The Central Scotland Green Network	@csgreennetw ork 	The Central Scotland Green Network will change the face of Central Scotland, by restoring and transforming the landscape.		https://twitter.com/ csgreennetwork
I Scottish GI Forum I I I I	 @ScottishGIF 	The Forum is a group of I organisations, businesses and individuals interested in promoting and encouraging the building	493/ 493/ 703 	https://twitter.com/ ScottishGIF
Ecosystems Knowledge Network	@EcosystemsN et	Our vision is for Wellbeing and prosperity for everyone through a healthy #environment.	 1,711/ 2,335 	https://twitter.com/ EcosystemsNet
Bees for Development		Tackling poverty in developing countries with low-cost sustainable beekeeping	2,496/ 5,259	https://twitter.com/ BeesForDev
I Bees Abroad I I	I @BeesAbroad I I I	We are all beekeepers I and we are all I volunteers. We relieve I poverty through I	 319/	https://twitter.com/ BeesAbroad
Scottish Beekeepers Association (SBA) charity	@Scotbeekeep ers 	Scottish Beekeepers Association (SBA) charity aims to promote honeybee conservation, beekeeping & honeybee products across Scotland	1,522/ 1,451 1,451	https://twitter.com/ Scotbeekeepers
Glasgow & District Beekeepers' Association	@GlasgowBees I I	Glasgow & District Beekeepers Association founded 1918 by Peter Bebbington, is over 100 years old	182/ 394 	https://twitter.com/ GlasgowBees

г	I – – – – – –	r		
Ayr Beekeepers	@AyrBeekeepe rs 	Ayr & District Beekeepers Association is the local beekeeping association in South Ayrshire and is affiliated to the Scottish	32/ 256 	https://twitter.com/ AyrBeekeepers
⊢	 _@KilbarchanBe es 	Kilbarchan & District Beekeepers Association 		https://twitter.com/ margaretginman
The Bee Effect	@beeeffect201 7	The Bee Effect is all about action to effect change in the threat against honey bees through awareness & education, and bee food diversity programmes.		https://twitter.com/ beeeffect2017
The Buzz Club	 @The_Buzz_Cl ub 	A charity associated with Sussex University undertaking nationwide citizen science to generate usable data on UK insects (specifically bees and pollination)	 678/ 1,459 	https://twitter.com/ The_Buzz_Club
Ldn Beekeepers Assoc		Serving bee keepers & conservation enthusiasts in London.		https://twitter.com/ LondonBeeKeeper
Apimondia I I I I I	 @apimondia 	#Apimondia is the International Federation of #Beekeepers' Associations and apiculture sector since 1895	 1,633/ 4,199 	https://twitter.com/ apimondia
Eva Crane Trust	evaCraneTrus t I	The Trust aims to advance the understanding of bees & beekeeping. A grant awarding organisation supporting bee science & bee projects around the world.		https://twitter.com/ EvaCraneTrust
	 @IBRA_Bee 	IBRA - promotes the value of bees by providing information on bee science & beekeeping worldwide. Non-profit / Charity 209222	— — — — — — — — — — — 3,181 /6,054 	https://twitter.com/ IBRA_Bee
ранана и странана и стр И ПОЛИИ И СТРАНАНИ И С И ПОЛИИ И СТРАНАНИ И С И ПОЛИИ И СТРАНАНИ И С И ПОЛИИ И СТРАНАНИ И С И ПОЛИИ И СТРАНАНИ И С И ПОЛИИ И СТРАНАНИ И СТ И ПОЛИИ И СТРАНАНИ И С И ПОЛИИ И СТРАНАНИ И СТР	 @britishbee 	This is the page for the British Beekeepers' Association, a national charity supporting bees and beekeepers.	 833/ 13.1K 	https://twitter.com/ britishbee

International Commission for Plant-Pollination	@ICPPR_XI	The ICPPR promotes & coordinates research on relationships between plants and pollinators. The ICPPR is one of the 82 scientific commissions of the	129/ 86	https://twitter.com/ICPPR_XI
⊢ Project Maya 	@projectmaya	Cutting edge project founded by scientists. We are creating a global network of #permaculture reserves.	7,142/ 6,543	https://twitter.com/ projectmaya
The World Bee Project CIC	@worldbeeproj ect	Using AI and IoT to monitor bee health and merge environmental, social and economic benefits to impact Pollinators, People, and the Planet.	5,426/	I <u>https://twitter.com/</u> I <u>worldbeeproject</u> I I
Biodiversity Ireland	@BioDataCentr e	Explore wildlife in your area at: http:// maps.biodiversityireland .ie	651/ 22 700	https://twitter.com/ BioDataCentre
The Yield Lab	@ TheYieldLab	Enabling entrepreneurs to revolutionize agrifood systems, globally. Our #resources include: our #global #network; #mentors; #funding; #agrifoodtech #agtech #VC	1,931/ 5,045	https://twitter.com/ TheYieldLab
AllIrelandPollinator Plan	@PollinatorPla n	Working with all sectors, including Councils, Businesses, Schools, Communities, and Farmers to help pollinating insects. Implementation by @BioDataCentre	2,492/ 4,816	https://twitter.com/ PollinatorPlan
⊢ UrbanBeeNetwork 	@UrbanBeeNet work	Interested in urban bees, small scale beekeeping, protecting pollinators and promoting green living in the city.	1,737/ 4,091	https://twitter.com/ UrbanBeeNetwork
Urban Pollinators	@BrisUrbPolls	University of Bristol team for the Urban Pollinators Project. Funded through the Insect Pollinators Initiative, led by	1,095/ 3,532	https://twitter.com/ BrisUrbPolls

#BumblebeeWatch ing	@Bumble_Wat ching	ωματ ις τμις θιfe, ιf fuθθ of ¢αяε, ωε μανε ησ τικε τσ ςταηд αηд ςταяε. ησ τικε τσ τυяη ατ βεαυτγ'ς gθαη¢ε & ωατ¢μ τμε βυκβθεβεες ας τμεγ dαη¢ε. Cotswolds, UK.	4,799 /10.7К	<u>https://twitter.com/</u> <u>Bumble_Watching</u>
FLOWer Lab	@cfe_FLOWerL ab	FLOWer Lab of @cfe_uc of @UnivdeCoimbra - Plant Ecology and Evolution (#Polyploidy), Pollination Services and Agroecology led by @jloureiro_13 and Sílvia Castro	2,667/ 2,066	<u>https://twitter.com/</u> <u>cfe_FLOWerLab</u>
BeeFarmersoftheU K	@BeeFarmersA ssoc	General Secretary Bee Farmers' Association	2,270/ 3,625	<u>https://twitter.com/</u> <u>BeeFarmersAssoc</u>
L	 @BeverlyBees 	Educational Beekeeping website, backyard beekeeper, bee removal, raw local honey, beeswax candles, beeswax cosmetics, bee talks, farmers markets and events.	1,357/ 5,321	<u>https://twitter.com/</u> <u>BeverlyBees</u>
Bumblebee Conservation Trust	I @BumblebeeTr I ust I	The Bumblebee Conservation Trust is the only charity dedicated wholly to saving the UK's bumblebees.	417/ 61.3K	<u>https://twitter.com/</u> <u>BumblebeeTrust</u>
г I I		Individuals:		ا
⊢ Sofia V. Dias I I	 @SofsVDias 	Conservation Biologist and Environmental Educator from Lisbon	61/ 5	https://twitter.com/ SofsVDias
Gregor Gorjanc I I I I I I	l @GregorGorjan I c I I I I	Quantitative geneticist managing and improving populations: @HighlanderLab, @RoslinInstitute & @TheDickVet	1,743/ 1,088	https://twitter.com/ GregorGorjanc
Maria José Amaral I I I I	 @biomaram 	Research Programme Officer at @EU_H2020 Interested in #biodiversity #sustainability #sciencepolicy #scicomm	834	https://twitter.com/ biomaram

Gaëlle Le Bouler	@GaelleLeBoul er	Project adviser #EASME, H2020 Environment and Resources.	227/424	https://twitter.com/ GaelleLeBouler
 I Erik Pentimalli I	@EPentimalli	Project Adviser #EcoInnovation #EASME	245/ 271	https://twitter.com/ EPentimalli
I Mario Pagnotta I I I I	 @pagnotta_ma rio	Degree in Agriculture at Perugia Univ. 1984, PhD in Genetic Ecology at Reading Univ. (UK) 1991. Research Associate at ICARDA 1986-1991	29/ 20	https://twitter.com/ pagnotta_mario
I Francesco Riva	@frariva_riva	Biologico, agroecologico e dalla parte degli agricoli.		https://twitter.com/
⊢	@FerroniFranc 0	Dr. in Natural Sciences Conservation of Nature and its Resources	561/ 693	https://twitter.com/ FerroniFranco
David De Pue	@DpDaaf	' 	791/ 840	https://twitter.com/DpDaaf
L	@StevenRogge	L 	2,700/	https://twitter.com/ StevenRogge
F — — — — — — — — — — — — — — — — — — —	@FienMinnens	Researcher at Ghent University		https://twitter.com/ FienMinnens
Scott Shanks	@ScottShanks0 1			https://twitter.com/ ScottShanks01
E	@emilie_csgn	Based within CSGNT, I work on issues relating to biodiversity, green infrastructure and community food growing	174/ 307	https://twitter.com/ emilie_csgn
Matthew Bradbury	@MattBradbur y01	CEO Nene Park Trust. Chair of The Parks Alliance & Director BMC & ACT. Advocate of parks, wildlife/ wildplaces and 'space'	2,777/ 1,058	https://twitter.com/ MattBradbury01
Ruth Anderson	@RRudiB1		<u>-</u>	https://twitter.com/RRudiB1
I Brigit Strawbridge Howard	@B_Strawbridg e		6,551/ 25K	https://twitter.com/ B_Strawbridge

└	@MichaelFilipi ak	Environmental biologist / ecosystem ecologist	212	https://twitter.com/ MichaelFilipiak
Prof. Jeff Ollerton I I I I I I I I I I I I I I I I I I I		Professor of Biodiversity with teaching and research interests in the ecology, evolution, and conservation of life on earth, especially plants and pollinators	2,926/ 4,107	https://twitter.com/ JeffOllerton
Dr Linda Birkin I I I I I	@LJBees	Entomologist; particularly interested in urban ecology, wildlife gardening in small spaces, and ecological outreach.	641	https://twitter.com/LJBees
F	@earthFgarden er	Kew-trained gardening & environment writer	8,028/ 8,320	https://twitter.com/ earthFgardener
Marten Schoonman I I	 @mato74	beep.nl #beehealth platform @BGood_H2020	3,455/ 2,996	https://twitter.com/mato74
⊢	@WimVerbeke 1	Professor of Agro-Food Marketing and Consumer Behaviour at Ghent University, Department of Agricultural Economics	56/ 241	https://twitter.com/ WimVerbeke1
L	 @ameliecant 	Oceanic and Continental Environments and Paleoenvironments Team LTPC Former Senior Scientist @ReseauES	203/ 53	https://twitter.com/ ameliecant
Ana Rodrigues	@ARamosRodri gues 	Pollinator ecology and conservation, currently studying the impacts of agricultural land-use change on bumblebees	310/ 65	https://twitter.com/ ARamosRodrigues
Lj. Stanisavljevic	@ljstanis	Professor at University of Belgrade - Faculty of Biology Chair of Center for Biology of Bees	119/ 27	https://twitter.com/ljstanis

Marguerite	@mmatherne6	PhD student	73/	https://twitter.com/
i Matherne I	 	@GeorgiaTech	62	mmatheme6
 		studying biological fluid mechanics, specifically mammal tails and honey bees.		
Dr Ana Attlee	@DrAnaAttlee	#entrepreneur	8,296/	https://twitter.com/
 	 	#ecopreneur 承♀ #CEO	8,912	DIAMARILEE
 	 	@collingwoodldn I		
 		collingwood property @seed_ball @projectmaya		
Mark Reed	l @profmarkree d	Professor of Socio-	481/	https://twitter.com/
 		@UniofNewcastle @N8agrifood Co- producing innovation in agri-food systems	7,730	
⊢ − − − − − − − Sarah Rotz	— — — — — — — @Sarah_Rotz	Geographer of political	1,233/	https://twitter.com/
 		she/her. settler. organizer for food, water, climate justice	623	Saran_Rotz
I Pedro Jordano I I I I I I I I	@pedro_jordan 0 1 0 1 1 1 1 1 1 1 1 1	#IAmANaturalist, an evolutionary ecologist, working on how ecological interactions shape complex ecological systems.	655/ 2,666	https://twitter.com/ pedro_jordano
Heather Briggs	@briggs_bee	Insect behavior,	678/	https://twitter.com/
 		Species Interactions, Mutualism. she/her	333	puggs_pee
Richard Comont		Naturalist, entomologist and author. Member of	1,094/	https://twitter.com/ RichardComont
 		the UK Ladybird Survey & Garden Bioblitz teams, now lead the Bumblebee Conservation Trust's science programme.	5,514 	
I Gavin Broad	@BroadGavin	Principal curator in charge of insects	355/	https://twitter.com/ BroadGavin
 	 	@NHM_London	1,644	
Steven Falk	@StevenFalk1	Naturalist with passion	169/	https://twitter.com/
I L		habitats etc.	6,840	

Richard Fox	@RichardFoxBC	Associate Director	271/	https://twitter.com/
1		Recording & Research @savebutterflies UK. Sightings, science & conservation.	7,180	RichardFoxBC
L	emartinswarre	L	429/	https://twitter.com/
I I I	n I	conservation, Europe. Head of Development at Butterfly Conservation Europe.	4,504	martinswarren
Dara Stanley	@DaraStanley	Scientist. Ecology &	941/	https://twitter.com/
		l entomology; insect-plant interactions; bees & pollination. Lecturer/ Assistant Professor	1,952	
		@UCDdublin		'
l Clare Flynn I	@wildaboutnat ure	PhD student (bees) VC45 Joint County Recorder	342/	https://twitter.com/ wildaboutnature
		(Bees)	537	
I Myles Menz	@myles_menz	Ecologist I	576/	https://twitter.com/ myles menz
1			439	I I
Kristal Watrous	@melittophile	Entomologist, research tech specializing in bees.	 1,746/	https://twitter.com/ melittophile
 			1,564	I
Dr. Hollis Woodard	@bee_witcher	I lead a research group @ UC Riverside that uses	772/	https://twitter.com/ bee_witcher
 		experimental I approaches to study I	2,005	
Octavio S. Paulo	@OctavioSPaul	Professor of Evolutionary	763/	https://twitter.com/
 		the University of Lisbon	299	
 Raquel Mendes	@MendesGRaq uel	PhD student of Evolutionary Biology	169/	https://twitter.com/ MendesGRaquel
		BIODIV) at Univ. of I Lisbon I	89 	
Filipa Grilo	@grilo_filipa	#PhDstudent at cE3c –	404/	https://twitter.com/
 		Evolution and Environmental Changes	117	
Edna Correia	@ednarcorreia	Ecologist, Ornithologist	295/	https://twitter.com/
1			291	
I Paul Egan	@phytomonste	Ecologist @_SLU	1,127/	https://twitter.com/
	 	 	722	

Laura Russo		Botanist/Entomologist/ Ecologist		https://twitter.com/lrusso08
I Robert R. Junker I I I I I I I	unker 	ecology evolution communities plant- animal-bacteria interactions ecosystems multidiversity statistics	496/ 433	https://twitter.com/rr_junker
I Miguel Ferreira I I I I	I @miguel_flf I I I	Biologist Science Communicator PhD Student @CFE_UC @UnivdeCoimbra	260/ 157	https://twitter.com/ miguel_flf
⊢ — — — — — — — I João Loureiro I I		 co-Pl @cfe_FLOWerLab 	1,292/ 374	https://twitter.com/ jloureiro_13
Beatriz Robles	@beatrizcalida d	Tecnóloga alimentaria y D-N. Docente @ui1Universidad . Divulgo en @elcomidista ,@materia_ciencia ,@er oskiconsumer , @saludsinbulos , @SaberVivirTVE y mi blog	1,600/ 21 200	https://twitter.com/ beatrizcalidad
Collie Ennis I I I I I I I	@collieennis	Owner/Co host of @CritterShedPod . Science officer for @HerpSocIreland . Zoology research associate @TCD_NatSci . Security officer TCD. Angler. Pugilist. Nerd.	2,366/	https://twitter.com/ collieennis
Sheila Colla I I I I I	@SaveWildBee S	Asst Prof @YorkUEUC YorkU Research Chair Interdisciplinary Conservation Science @LiberEroFellows alum #AcademicMama #MarginSci #GND #COVIDZero She/Her	4,577/ 6,510	https://twitter.com/ SaveWildBees
Lynn Dicks	@LynnDicks	Ecology Lecturer, Uni of Cambridge + UEA, UK; Fellow @Selwyn1882 . Leads agroecology group @CamZoology . Entomology, agriculture, evidence-based conservation.	2,448/	https://twitter.com/ LynnDicks

Nigel Raine	@NigelERaine	Rebanks Family Chair in Pollinator Conservation @uofg 🙀 Wild #pollinator #behaviour, #ecology & #conservation 🕅 College of @RSCTheAcademies 💽	1,718/ 3,256	<u>https://twitter.com/</u> <u>NigelERaine</u>
iBartomeus I I I I	@ibartomeus	Ecology, pollination, invasions, rstats & other personal stuff also tweeting @Abeja_Silvestre and @ecoinf_aeet	475/ 3,744	https://twitter.com/ ibartomeus
Mario Vallejo- Marin	@nicrodemo	Evolutionary biologist interested in pollination, plant reproduction, and the ecological genomics of speciation.	1,610/ 2,300	https://twitter.com/ nicrodemo
Sheila Colla, Ph.D I	@SaveWildBee s l	Associate Prof @YorkUEUC Research Chair Interdisciplinary Conservation Sci @LiberEroFellows alum #AcademicMama #MarginSci #GND #BEY4All She/Her EU H2020 Participa	5,461/ 8,575	https://twitter.com/ SaveWildBees
I RECAP H2020 I Project I I I I I I	I @RECAP_H202 I 0 I I I I I I	The Project's aim is to develop and pilot test a platform for improving the efficiency and transparency of the compliance with the Common Agricultural Policy.	282/ 457	https://twitter.com/ RECAP_H2020
I PLAID I I I I I	l @PLAID_projec I t I I I	The aim is to improve access to demonstration activities on commercial farms, to boost knowledge exchange and innovation	862/ 717	https://twitter.com/ PLAID_project
F	I @fertinnowa I I I I	A knowledge exchange platform to evaluate existing and novel technologies for irrigated and fertigated	422/ 523	https://twitter.com/ fertinnowa

Smart AKIS Smart AKIS Network	@smart_akis	Smart Farming Thematic Network. Embracing Smart Farming in Europe	1,900/ 2,170	https://twitter.com/ smart_akis
I IoF2020 I I I	I @IoF2020	I IoF2020 facilitates the uptake of #IoT in the European food & farming sector •	1,233/ 2,492	https://twitter.com/IoF2020
AgriLink2020	 @AgriLink2020 	It aims to develop better understanding of the role of farm advice in farmer decision-making and innovation	407/ 666	https://twitter.com/ AgriLink2020
I BRESOV_EU I I I	@BRESOV_EU 	I taims at shaping the I future of plantbreeding for the organic sector	693/ 453	https://twitter.com/ BRESOV_EU
SiEUGreen	@sieugreen	It aspires to enhance the EU-China cooperation on urban agriculture	1,992/ 535	https://twitter.com/ sieugreen
L	I I @EU_ecoinno I I	Climate Action, I Environment, Resource I Efficiency&Raw I Materials programmes I	792/ 19K	https://twitter.com/ EU_ecoinno
F – – – – – – – I EXCALIBUR I I	@excalibur_h2 020	H2020 project aiming to exploit the multifunctional potential of belowground biodiversity	65/ 22	https://twitter.com/ excalibur_h2020
L	 @LIVESEEDeu 	It aims to boost Organic Seed and Organic Plant Breeding efforts with 49 partners across Europe.	491/ 855	https://twitter.com/ LIVESEEDeu
UNISECO project	@ProjectUnise co	A H2020 project aiming at understanding and improving the sustainability of agro- ecological farming systems in the EU	463/ 269	https://twitter.com/ ProjectUniseco
ReNature Project	@ReNature_H2 020	#H2020 project promoting research excellence in #naturebasedsolutions for #innovation, #sustainable economic growth & human well- being in #Malta Seedling (GA No 809988)	180/	https://twitter.com/ ReNature_H2020

H2020_FAIRshare	@H2020_FAIRs hare	@EU_H2020 project • Farm Advisory digital Innovation tools Realised and Shared	790/ 884	https://twitter.com/ H2020_FAIRshare
I H2020SUPER- <i>G</i> I I I I	@H2020Super G	Developing SUstainable PERmanent Grassland systems and policies Deciduous tree Leaf fluttering in wind • @EU_H2020 project • http://super-g.eu	1,679/ 660	https://twitter.com/ H2020SuperG
I EFFECT I I I I I I I I I	@effectH2020	EFFECT is a #H2020 project. We develop #agricultural and #environmental contracts, combining needs of local #farmers and #climate public goods.	415/ 501	https://twitter.com/ effectH2020
Safeguard	@Safeguard20 21	Safeguard is a newly funded #H2020 project which aims to expand current assessments oj of the status & trends of #European wild #pollinators (GA No. 101003476).	266/	https://twitter.com/ Safeguard2021
 		Others:		
	@BeekeeperTip s 	Beekeeping advice, quotes and sayings	2,551/ 1,029	https://twitter.com/ BeekeeperTips
Pollinators	@ScotPollinato rs	Updates on pollinators and pollinator projects from around Scotland.	260/ 461	https://twitter.com/ ScotPollinators
L - 	I @Brillianto_GI	Green Infrastructure by I I Ingo Schüder Brillianto		https://twitter.com/ Brillianto_GI
Little Green Space		Award-winning project/ magazine for green living, solutions, action. Creating green spaces for people, wildlife,	20.3K/ 31.5K	https://twitter.com/LGSpace
I Green Adventures	I @GreenTravel	I Online magazine I I I I I I I I I I I I I I I I I I I	15.6К	https://twitter.com/ GreenTravelMag
	_			-

Api:Cultural Api:Cultural	@apiculturalLd n	Ecologist & beekeeper. Beekeeping & wild pollinator conservation consultancy working with businesses & communities to benefit London's pollinators	608/ 1,257	https://twitter.com/ apiculturalLdn
I Show	 @nathoneysho w	The National Honey Show 24th October - 26th October 2019 at Sandown Park Racecourse, Esher,	272/ 2,145	https://twitter.com/ nathoneyshow
I The Bee Man I I I I	 @TheBeeMan2 	Queen Breeder & seller based in Scotland we also run #beekeeping courses YouTube videos The Beeman TV	946/ 3,355	https://twitter.com/
DrBeekeeper I I I	@DrBeekeeper	Doctor Beekeeper Advocate We fell in love with bees when we realised the health benefits of raw honey	953/ 2,464	https://twitter.com/ DrBeekeeper
medno.mk	@MednoMk	Macedonian web-portal about honey bees and beekeeping		https://twitter.com/ MednoMk
Journalof ExpBiol	@J_Exp_Biol	Journal of Experimental Biology is the leading journal in integrative and comparative physiology.	430/ 3,348	https://twitter.com/ J_Exp_Biol
⊢	 @N8agrifood 	The N8 AgriFood Resilience Programme - focused on the stability & integrity of agri-food supply chains in the face of environmental & socioeconomic challenges.		I
I NHM Bees		Bee Curator David Notton	3,495/ 7,150	https://twitter.com/ NHM_Bees
Evolutionary Genetics @ cE3c	@egce3c	Evolutionary Genetics research group from @CE3CResearch	 15/ 59	https://twitter.com/egce3c
AbejasSilvestres	Abeja_Silvest re	berian Peninsula bees	56 /	https://twitter.com/ Abeja_Silvestre

	@biophilliabod	Connecting with nature #biophilia Wildflower Cons. Bumblebee/ Solitary Bee/Pollinator/ Wildlife & Meadowlands guardian.	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	https://twitter.com/ biophilliabod
Functional Ecology	@FunEcology	Functional Ecology, a @BritishEcolSoc journal. Publishes high impact papers on ecology, including physiological, behavioural and evolutionary ecology.	393/ 22.4K 1 1 1	https://twitter.com/ FunEcology