



**NEW UPDATED VERSION
IN PREPARATION**



Practical user guide

**Mobile application v 1.26
Website v 1.7**

April 2020

Developers:



With the support of:



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Purpose	To provide a technical description of the functioning of the e-faunalert tool for collecting field data, and of the associated website.
Project	Developed in the framework of the project "Safe Flyways: reducing energy infrastructure-related bird mortality in the Mediterranean" 2017-2020, funded by the MAVA Foundation.

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1. What is e-faunalert and why should we use it?

Each year across the globe thousands of animals, birds in particular, die as a result of a global threat, electrical power line collisions and electrocutions. Different mechanisms and devices have been developed to minimise this risk, with significant success. However, a key question remains: where are the most dangerous sites where these impacts occur?

In order to help identify and map these points that are potentially dangerous for wildlife, e-faunalert was created, a free mobile app, available for Android and iOS, which is visual and easy to use for collecting technical data on electrical power lines.

A tool created for all anyone interested in this issue, from scientists to conservationists, from government agents to workers in the energy sector and the general public, all over the world. After creating an account, the user can register the technical features of electrical pylons and the occurrence of electrocutions or collisions, upload georeferenced images, and also create and join working groups to maximise the fieldwork and share data.

The e-faunalert app aims to serve as a tool for action and facilitate collaboration and decision-making among the different actors involved. With this citizen science tool, anyone interested in this issue can help implement measures to mitigate this type of impact and thus protect the species most badly affected.

Through the app's different screens, with the help of images, the most relevant technical data of a pylon are noted, which determine its potential danger for birds. The app is specially designed to characterise medium-voltage pylons, which are the most problematic in terms of the electrocution of wildlife. However, low-voltage pylons with bare conductors and high-voltage pylons can also be characterised.

The app is complemented by the e-faunalert.org website, which allows users to display, edit and download data, and also access other functions and practical resources.

Via the website you can also manage your account, change or recover your password and access the internal messaging system.

The e-faunalert app is the result of collaboration between the IUCN Centre for Mediterranean Cooperation (IUCN-Med) and the *Fundación Amigos del Águila Imperial Ibérica, el Lince Ibérico y Espacios Naturales Privados* [Foundation of Friends of the Spanish Imperial Eagle, the Iberian Lynx and Private Natural Areas] and is funded by the [MAVA Foundation](#).

NOTE: e-faunalert is undergoing improvements to offer more functionalities and an optimised user experience. A new version will be ready for download/update soon. If you have suggestions, do not hesitate to contact us.

1.1. What is the purpose of collecting data and how are they managed and used?

Using the data collected, a description sheet is generated for each power pole (or pylon), which includes a georeferenced photograph of the latter. It also enables data to be collected on the mortality of the fauna associated with the line and these data are incorporated into the form.

Once the website session has started, we can access the data in our records and edit them. We can also view the records of the members in our working group(s), if we belong to any (see Point 4.3), and look for other users' records. The records and basic information can be viewed by any user through the mapping tool, which is shown when we start the website session (see Point 4.1).

Once they have been sent to the server, the data recorded with a mobile device form part of the e-faunalert database, managed by IUCN-Med and stored in secure facilities. The data's ownership is shared by the user, IUCN-Med and *Fundación Amigos del Águila Imperial Ibérica, el Lince Ibérico y Espacios Naturales Privados*. IUCN-Med undertakes not to use any data or publish them without the permission of the users, apart from the data management and display possibilities permitted by the platform. For more information and details, see "Terms and conditions of use".

This database aims to serve as a global tool for the collection of data on episodes of mortality, mainly through **electrocutions or collisions** with electrical power lines; and for collecting technical data about these lines.

The subsequent analysis of the data will allow for the characterisation of the lines, the identification of dangerous spots for fauna, the drawing up of action plans to mitigate this type of impact, and will serve as a tool to help plan future lines. The data can be used in conservation decision-making and in scientific publications in different types of project, and can help address research into this type of impact worldwide.

1.2. Main characteristics and technical requirements of the app

- It allows for the collection of records of power poles and incidences of mortality all over the world. A large variety of typologies of pole elements have been included to make the app more universal (however, we continue to gather ideas and information to improve it - see point "Contact us" if you have any suggestions).
- Available for Android and iOS.
- Android users require 4.1 and later versions. iOS users require version 9.0 and later versions.
- Size: Android, 24 MB and iOS, 109 MB.
- GPS tracking to ensure the precise location of the recorded sites. They are recorded with the geographic coordinates being expressed in decimal degrees using the 1984 World Geodetic System (WGS84).
- It supports the collection of numeric data, texts and photographs.
- Data are sent from the app to the e-faunalert server.
- Offline data collection feature, for places with very little or no Internet connection, with the possibility of choosing the time when the data are sent to the server (see Point 2.6).

- Associated website (www.e-faunalert.org), accessible with the same user data, to access records uploaded to the server, with map display, the possibility of editing and selecting using different variables, downloading in different formats, etc.
- Available in English, Spanish and French.

2. e-faunalert app. How to register and use the app

2.1. Download the app

In order to start to collect field data, you can download the mobile app easily and free of charge from Google Play Store (download for Android):

<https://play.google.com/store/apps/details?id=com.rd.efauna>



Also available for iPhone from the App Store:

<https://apps.apple.com/es/app/e-faunalert/id1497676395>




After installing the app, you can request access to:

- Camera: to take photographs and videos
- Location: to access your precise location
- Storage: to consult, modify or delete storage contents

2.2. Create an account

You can register for the e-faunalert app easily, both through the website and the app itself. Once you have created your account, **the login details will be the same for the app and the website**. The details to enter are: a username, your e-mail address (optionally and for statistics), the company you belong to, a password, your country, professional sector and, if you wish, the option of sending a request to form part of a public working group (see Point 4.2.2). If you forget your login details, at the start of the app there is a link that redirects you to the website and allows you to reset these details.

2.3. Help in the app

 When going through the mobile app's screens, you will find the help symbol, which will allow you to access a brief explanation of the screen you are viewing. Section 2.5 of this guide lists these explanations and offers complementary help when necessary.

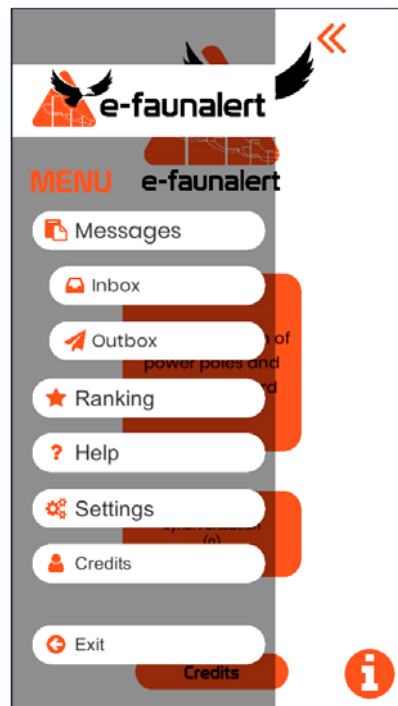
Specific help can also be found in the corresponding sections in the app's drop-down menu (see following point).

2.4. Drop-down menu

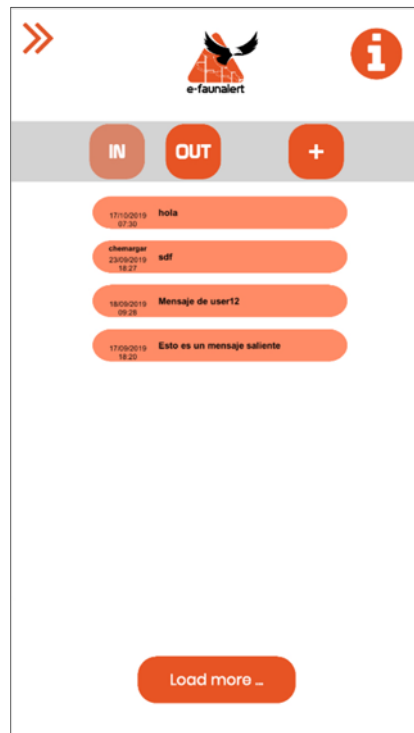
From the Menu (click on the double arrow at the top left-hand part of the screen to open it), you can access the:

- Inbox and outbox of the e-faunalert's internal messaging system
- Rankings: a ranked list of the scores of the most active users, or the electrical pylons recorded with the greatest potential danger (under development)
- Help Menu
- Settings: language, automatic synchronisation and log out
- Exit: to close the app, keeping the session open with the current user connected

To hide the Menu and return to the screen, click on the double arrow again.



2.4.1. Internal messaging: inbox and outbox



By clicking on the “**IN**” button, you can access the inbox, and by clicking on the “**OUT**” button you can access the outbox in the internal messaging system, accessible from the app or the website.

To write a **new message**, click on the “**+**” button. A new window will open in which you can write your message. You must write in the box corresponding to the username(s) of the recipient(s) in e-faunalert (you must know their username(s)). You can look for registered users in the “**Find users and groups**” section in your private account on the e-faunalert website (Point 4.2).

When you open a message, the arrow on the left allows you to reply, the arrow on the right allows you to resend the message, and this symbol ✓ allows you to mark the message as read.

“**Load more**” allows you to display earlier messages in the inbox.

To return to the main menu, open the side menu with the double arrow and click on the e-faunalert logo at the top of the screen.

2.4.2. Ranking

In this section (still being developed), you will be able to access several score lists, either of the most active e-faunalert users or of the electrical pylons recorded that are potentially the most dangerous.

2.4.3. Settings

Allows you to:

- Select the **language** to be used in the app (English, French or Spanish).

- Enable the “**Automatic synchronization**” option (when you click on the orange dot a black dot appears), allowing the device to send records automatically to the server when they are saved. If this option is disabled, the records remain “pending” sending and they will have to be sent “manually” using the “Synchronization” button on the app's home page (see Point 2.6). Users are advised to leave this option disabled and send the records manually when they have a good Internet connection (WiFi).
- “**Log out**”: the session is closed for this user.

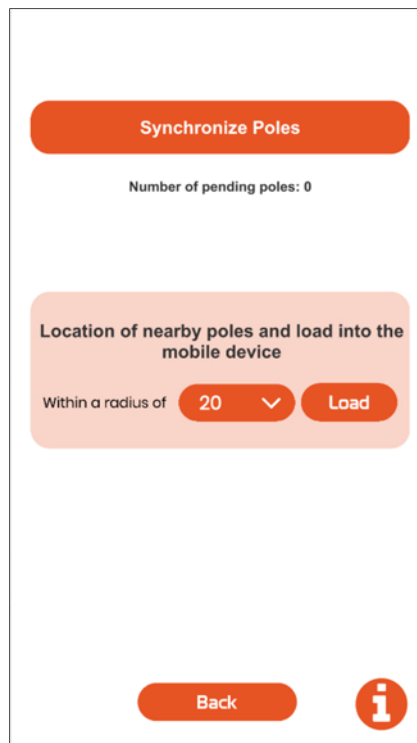
2.5. Start collecting data



On this first screen we have 2 buttons. The first, “**Characterisation of power poles and mortality record**”, is used to begin entering data on a pylon or power line and also to record any dead or injured animal or remains found. The information for entering records, both on pylons and incidents, is described in points 2.7 and 2.8 respectively. The “**Synchronization**” button takes us to another screen with several functions (details below).

2.6. Sending data to the server (Synchronization of pylons) and Location of nearby pylons

The “**Synchronization**” button allows us to access another screen with two different functions:



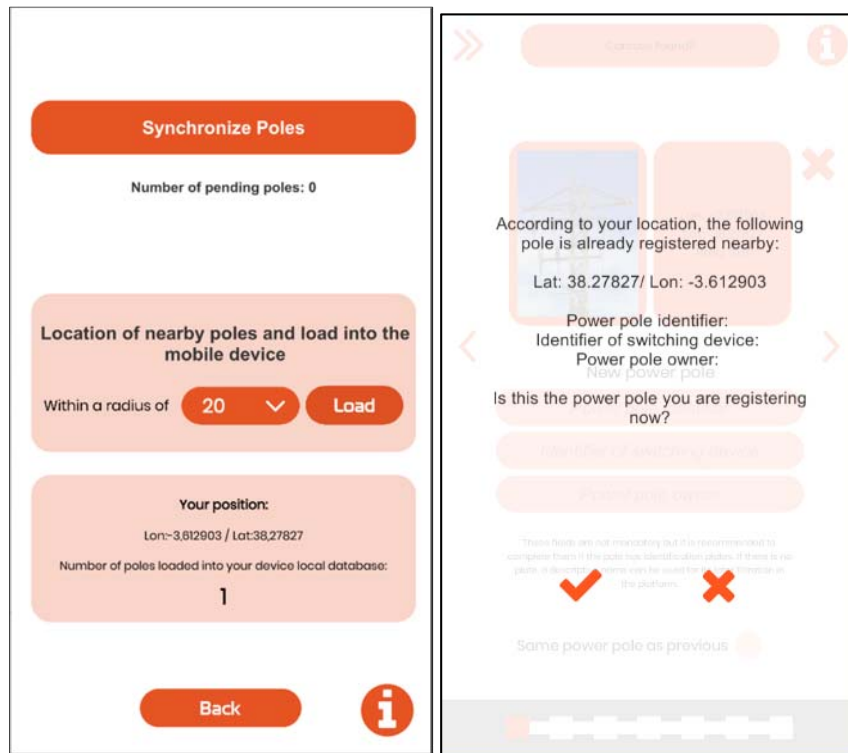
- The **“Synchronize poles”** function allows users to “upload” data gathered with the app, synchronised with the server to send pending records (if there are any) to the e-faunalert database (stored in your account but not sent). This is not necessary if the “Automatic synchronization” option (in the Menu, see Point 2.4.3) is enabled, since the data are uploaded automatically when the “Save pylon” option is selected.

The **“Number of pending poles”** indicates how many pylons you have saved but not sent to the server, simply stored in your mobile device (and thus cannot be edited). When you synchronise, the reports will be sent to the server and it will then be possible to display and edit them from your account on the e-faunalert website.

- The **“Location of nearby poles and load into the mobile device”** function allows you to find records of pylons near to your location, which are already in the e-faunalert database, and upload the available information to your mobile. In order to do this, you must select a maximum distance and upload. The number of pylons uploaded is indicated in the box below. *The GPS on the device must be enabled.*

With the **“nearby poles”** uploaded on the device, the user can see and update the data on a pylon, if another user has already recorded it. When taking photos of a new pylon, the app checks whether the coordinates correspond to those of a pylon that has already been recorded (20 m either side of the coordinates captured). If this possible correspondence is found, a screen appears with the basic data for identifying this pylon that has already been recorded and the confirmation button uploads your data. In this case, it will also be necessary to check for and record any mortality, the state of the anti-collision and anti-electrocution elements (if applicable) and any changes in the data already recorded. If there are no changes, there is no need to add anything.

If when checking the record, we see that the data on the pylon do not tally (sometimes there are pylons that are under 20 m apart), we should exit the record without saving it, go back to the photo and then select the opposite option (the “X”), which will provide us with a new characterisation.



Ideally, the records of existing power poles should be checked and uploaded before going out into the field in order avoid duplicate records of pylons in the database, and users should check whether there have been any changes in the data since the previous record (new anti-electrocution devices, etc.).

2.7. How to create a record of a power pole

In order to start introducing information on a pylon or electrical power line, click on “**Characterisation of power poles and mortality record**”.

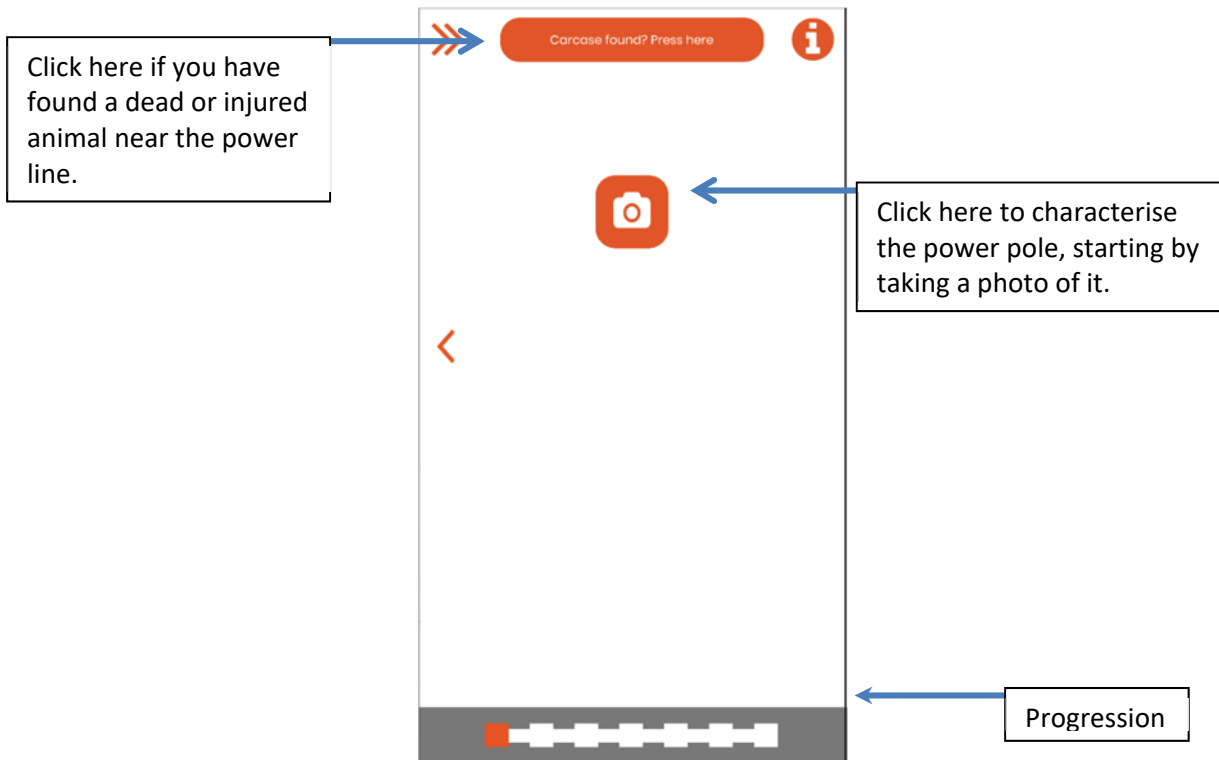
IMPORTANT: The GPS on the device must be enabled. To ensure the location provided by the mobile phone is as precise as possible, in some models the “high precision” mode has to be enabled (combined use of mobile networks and GPS). This is accessed in the mobile phone’s settings under “location” and “mode” (this can vary depending on the brand of phone).

On the following screen, you can start collecting the data for the **recording and characterisation of a new pylon**, by taking a photo of the pylon. **Click on the camera icon**, in order to enable this function.

NOTE: On this screen, you can also find the option of entering **mortality records**, if you find a dead or injured animal (click on “Carcass found? Press here”, see 2.8). This can even be done before

characterising the pylon; if you do this, once all the data related to this discovery have been entered, the application returns to the characterisation of the pylon.

On this screen and the following screens, the bar at the bottom indicates the progression of the uploading of the data on the pylon.



Taking photos of pylons

When taking a photo, it is important that the pylon's crossarm is clearly visible, in order to determine its typology and how dangerous it is. It is also important to show, as far as possible, whether there are any anti-electrocution or anti-collision devices. It is advisable to take the photo at an angle of around 45° from the direction of the conductors, at a certain distance from the pylon (at least 5-6 m; Figure 1). The idea is to capture all the details of the crossarm so that no elements are hidden behind others.

Example of a photo taken properly:



Figure 1. Position recommended for taking a photo of the pylon (aerial view, from above) on the left and expected result on the right.

Check that the photo shows the entire crossarm and its elements clearly, if possible with part of the post. Try to capture the details of the crossarm so that no elements hide any others.

After taking the photo, we go on to the next screen. **If the GPS has recorded the location correctly**, and precisely, the coordinates of the longitude and latitude and the degree of precision (error) will appear on the screen alongside the photo (Figure 2). **If these data have not been recorded precisely enough**, a message will appear to warn you about this (Figure 3). In this case, it is advisable to repeat the photo until this warning message disappears. If the message does not disappear after several attempts, continue collecting data. However, you will have to take the existence of this margin or error into account when displaying the pylon on the map. It is advisable to make a note of this issue on the final screen under "notes and remarks".

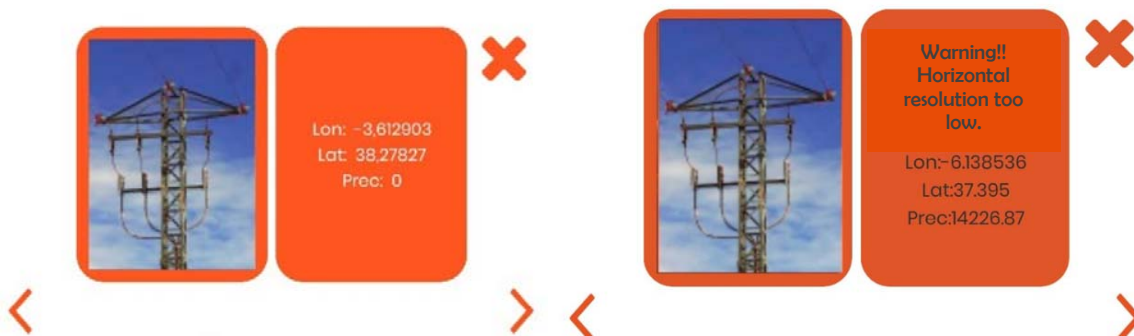
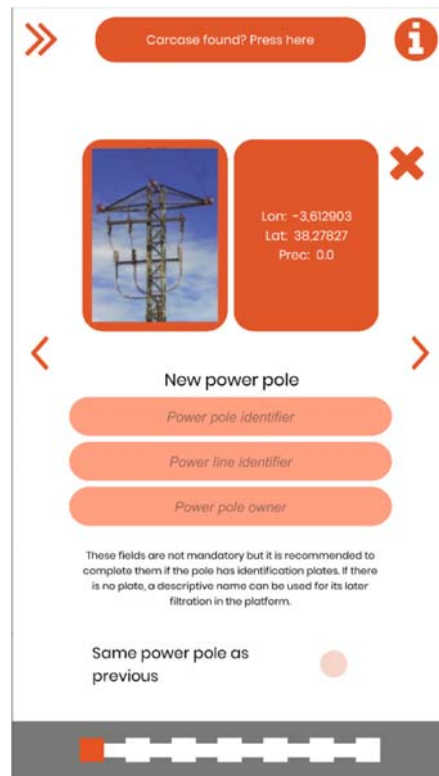


Figure 2

Figure 3

Under the photo of the pylon, we should fill in the following fields:



Power pole identifier: the code we give the pylon to identify it later in the database. *Start with “1” when beginning a line or (001) and continue the numeration consecutively. If you change line, start again, or follow the numeration in the case of an existing line.*

There are electricity companies that have identified the pylons with a specific numeration that appears on an identification plate (1 in Figure 4); in this case, it is advisable to enter this pylon code in the identifier field. In some cases, pylons have more than one identification plate. This occurs when there are switching devices, which have their own identification code (2 in Figure 4). In this case, it is advisable to enter the pylon’s identification code (which will be correlative to the previous one we recorded on the line) and moreover make note of the switching element in the final section, “notes and remarks”.



Figure 4.

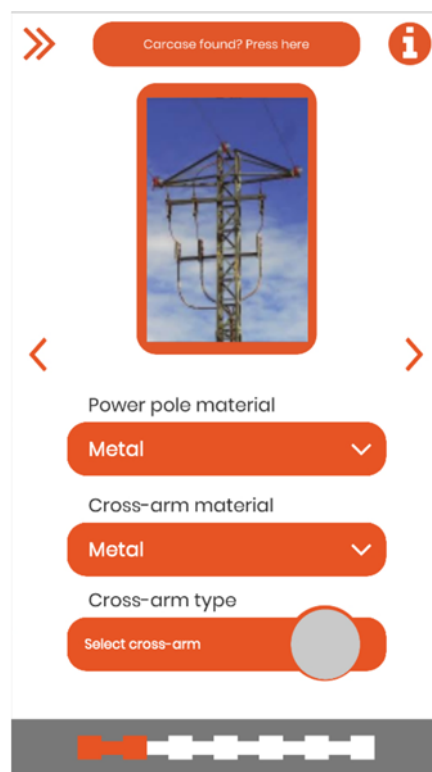
Power line identifier: line number; *if this is not known, choose one that is easy to remember using the location, the area, the region, the start and the end, etc. If several lines run through the same*

area, they can be numbered (Area1, Area2, etc.; and in this case the power pole identifier could be A1-001, A1-002, etc.).

Power pole owner: the owner of the electricity power line, whether this is a company or a private individual (leave blank if the owner is not known).

If you entered another record previously and chose the option “Save and add new pole”, the option “**Same power pole as previous**” will appear on this screen. If this is selected, the first power pole characterisation screens will be filled in automatically, with the same characteristics as the previous pole, thereby speeding up the process. The app redirects us to the last characterisation screens, which allow us to provide more details. If it is necessary to edit or check any of the autofill screens (users are recommended to check that all the fields are the same as those corresponding to the previous pylon), this can be done by going back using the arrows until the relevant screen is found.

On the following screen, we choose the **power pole material** and that of the **crossarm** and the **type of crossarm**, which can be identified thanks to the photos.



Figures to help with the characterisation, providing basic technical details:

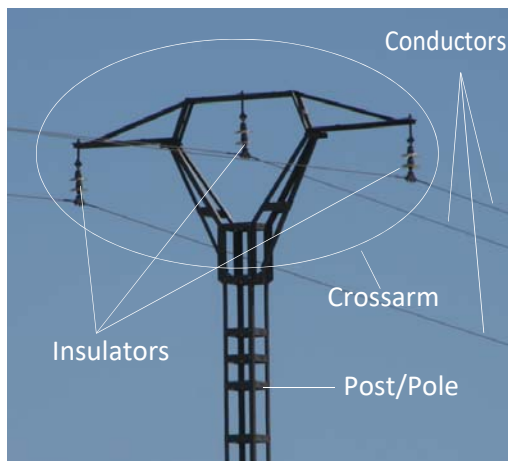
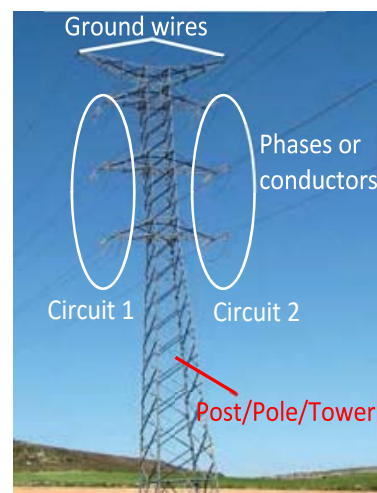
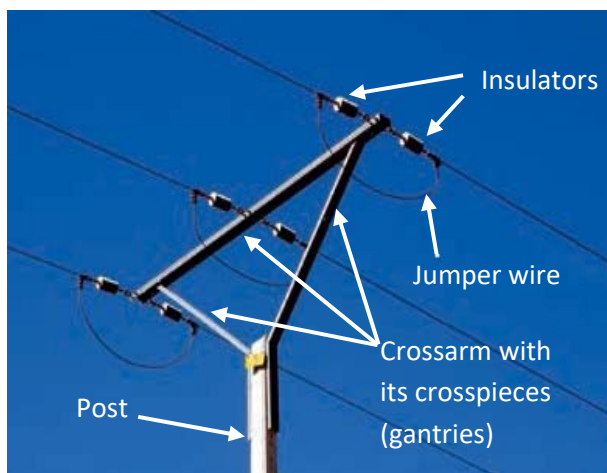


Figure 5.

Pole (or post): vertical element that supports the crossarm.

Crossarm: element at the top of the pylon, which supports the cables, line conductors and phases.

Insulators: elements that support the line conductors (or cables) and insulate them from the earth and other conductors, thereby avoiding any loss of energy.



Figures 6 and 7. Elements to be taken into account when characterising the pylons.

The pole and the crossarm can be made out of metal, concrete or wood, and not necessarily both of the same **material**.

Types of crossarm:

There is a wide variety of designs of crossarm. Here we shall group them into a series of general types (“families”), which, with variants, will allow most of the crossarms to be characterised with photos of examples of the different types.

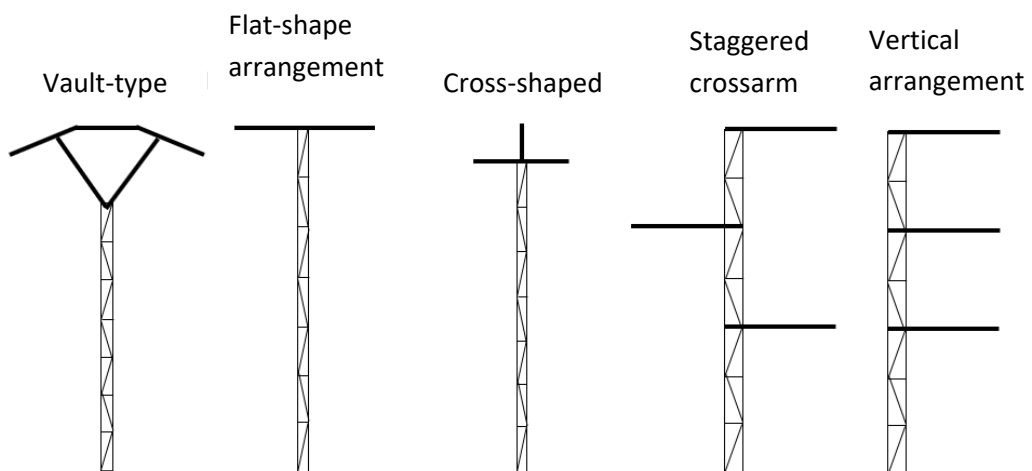
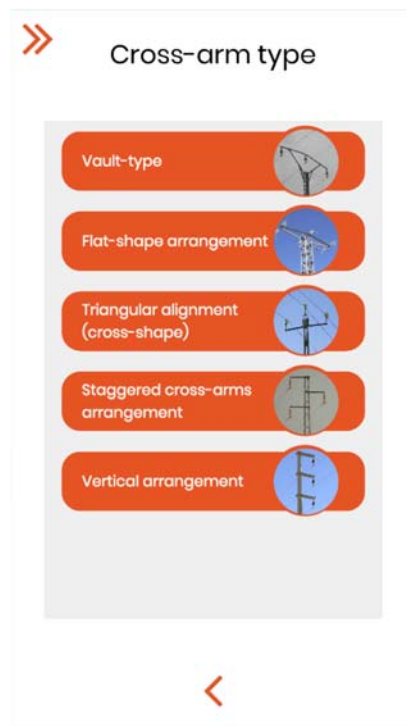
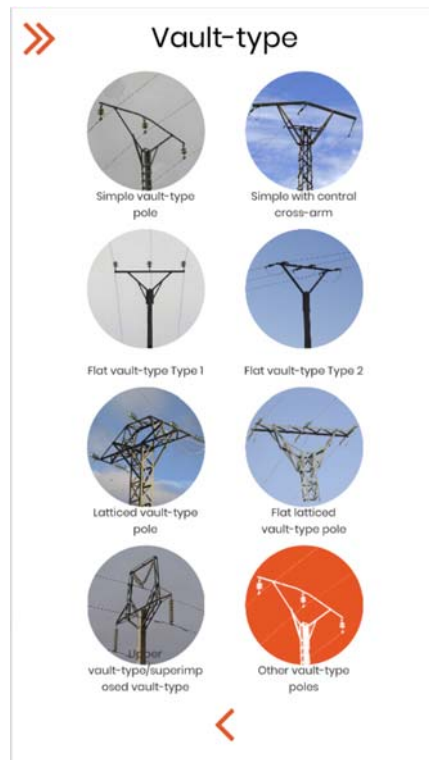


Figure 8. Basic crossarm typologies.

Choose from among the **types of crossarms**, the most similar one, and within each family, the most similar option. If you are not sure, choose the closest one and write down your doubts in "Notes".

If not option is suitable, select "Other". In this case, try to give a description in the "Notes and remarks" section at the end, and ensure that this element is clearly visible in the photo of the crossarm.

For each crossarm "family" or typology, options are given accompanied by photos, as in the this case for the "Vault-type" family:



Below, the different variants in each of the families contained in the application are listed:

-Vault-type:

Simple: the central conductor on a horizontal plane above the sides; inside the vault configuration without elements.

Simple with central crossarm: like the previous type, but with a horizontal crossarm below the central conductor.

Flat type 1: The three conductors on the same plane, with lower crossarms supported on the pole.

Flat type 2: like the previous type, but without lower supporting crosspieces.

Latticed: structure with numerous metallic crosspieces, with the central conductor above the lateral ones.

Flat latticed: like the previous one, but with the three conductors on the same plane.

Upper/superimposed vault-type: central conductor on a vault above the crossarm where the other two conductors are located.

-Flat-shape arrangement:

Simple Type 1: crossarm with lower supporting crosspieces placed at an angle.

Simple Type 2: crossarm without supporting crosspieces.

Simple with side bracket: central conductor with an upper supporting element.

Simple H-frame Type 1: non-metallic double pole.

Simple H-frame T2: metallic double pole.

Parallel H-frame: two parallel double poles.

Double H-frame: triple poles.

-Triangular alignment (cross-shaped):

T1: simple pin insulators (see Figure 9 also).

T2: double pin insulators.

T3: strain insulators with three jumpers above.

T4: strain insulators, the two lateral with the jumper below and the central above.

With crosspieces: central conductor supported by crosspieces at an angle.

With upper bracket: central conductor with an upper supporting element.

With side bracket: central conductor with a lateral supporting element.

-Staggered crossarm arrangement:

Angled strut: semi-crossarms with upper crosspieces at an angle.

Simple type 1: semi-crossarms without crosspieces at an angle; pin insulators.

Simple type 2: pin insulators that are supported directly on a wooden pole.

Simple type 3: semi-crossarms without crosspieces at an angle; suspension insulators.

Simple type 4: semi-crossarms without crosspieces at an angle; strain insulators.

Canadian-type: the three conductors on three different horizontal planes.

False staggered crossarm arrangement: the two lower conductors on the same horizontal plane.

-Vertical arrangement:

Parallel type, angled strut: a single lateral circuit, with semi-crossarms with upper crosspieces at an angle.

Parallel type, simple, with central crosspiece: a single lateral circuit, with semi-crossarms without upper crosspieces at an angle.

Angled strut double circuit T1: two lateral circuits, semi-crossarms with upper crosspieces at an angle, without an upper earth wire.

Angled strut double circuit T2: two lateral circuits, semi-crossarms with upper crosspieces at an angle, with an upper earth wire.

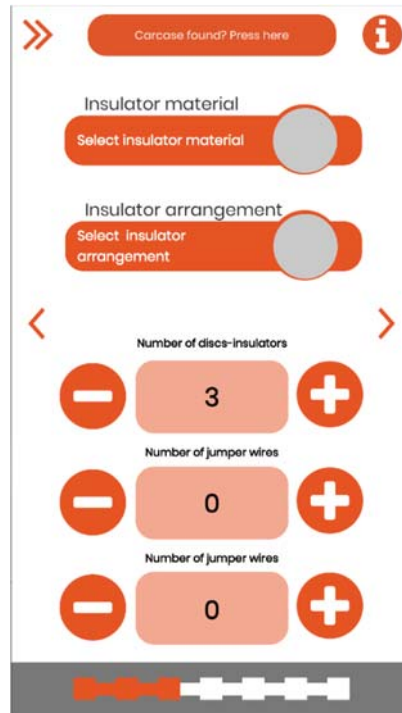
Angled strut simple circuit T1: two lateral circuits, semi-crossarms without upper crosspieces at an angle, the conductors on each circuit are not on the same vertical plane, strain insulators.

Angled strut simple circuit T2: two lateral circuits, semi-crossarms without upper crosspieces at an angle, the conductors on each circuit are not on the same vertical plane.

Angled strut simple circuit T3: two lateral circuits, semi-crossarms without upper crosspieces at an angle, the conductors on each circuit are not on the same vertical plane, pin insulators.

Insulators:

The following screen shows the **material** the insulators are made of and their **arrangement**, in the different options given in the photographs, and the **number of disc insulators or insulating elements** and the **number of jumper wires**:



Insulator material: the insulators can be made of **glass**, **porcelain/ceramic** or **polymers**. In the photos in this section of the app, you can see the three types. The first two are disc-shaped (Figures 10a – glass- and 10b –porcelain-) whilst the third type can have a wide variety of different shapes (Figure 11).

Insulator arrangement: shown in the diagram below (Figure 9).

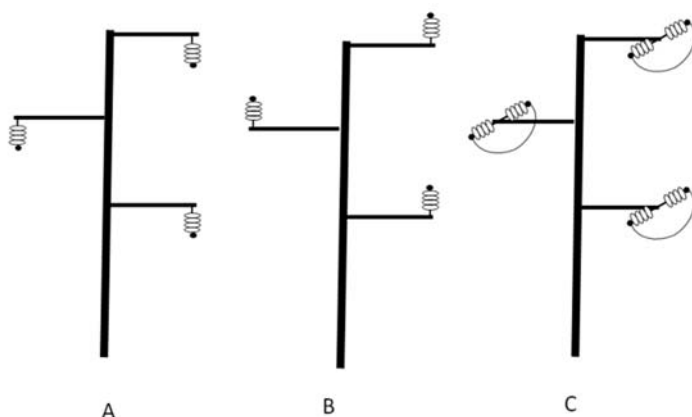


Figure 9. **Suspension insulators:** suspended below the crossarm (A).

Pin insulators: installed on the crossarm (B).

Strain insulators: attached to the crossarm in a horizontal direction (C).

In the case of the strain insulators, the current is connected to the two ends by conductors known as **jumpers** (or jumper wires; Figure 9C, Figure 12), installed above and below the strings (this should be specified later on).

Number of disc insulators:

-For **glass** and **ceramic/porcelain** insulators: several insulators are grouped together, the **discs** or **single insulators**, making up an **insulator chain or string**. Indicate the number of disc-insulators there are in a single insulator string (Figure 10).

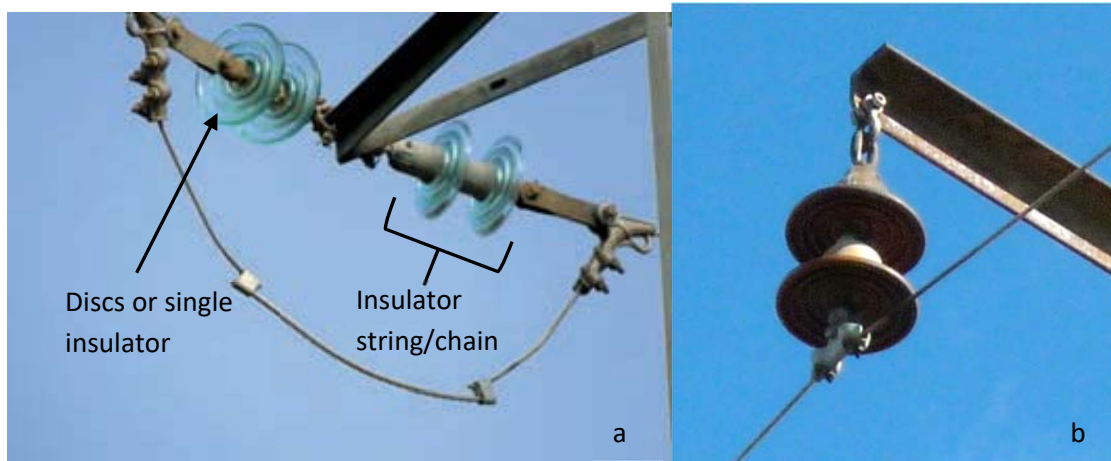


Figure 10. Examples of an insulator string made up of two disc insulators: **insulator string with glass insulators** (a) and **ceramic suspension insulator chain** (b).

-For **polymer insulators**: they are made up of a single piece and the outside of the insulator is covered in this type of material (the glass or porcelain parts cannot be seen). They are very variable in length and appearance: smooth, with discs of equal or different size, with an anti-perching design, combined with anti-perching devices, etc.

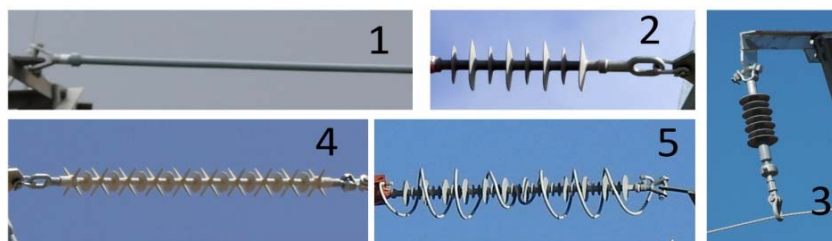


Figure 11. **Polymer insulators**: 1: smooth; 2 and 3: with discs; 4: with anti-perching design; 5: with anti-perching device.

IMPORTANT: In the "Number of disc-insulators" section, for **glass and ceramic insulators**, the number of elements that make up a single **insulator string** should be noted. If the insulator is **polymeric**, note **1** in each case, irrespective of its shape or length.

Number of jumper wires above or below (the insulator strings): indicate the number and position on the pylon crossarm.

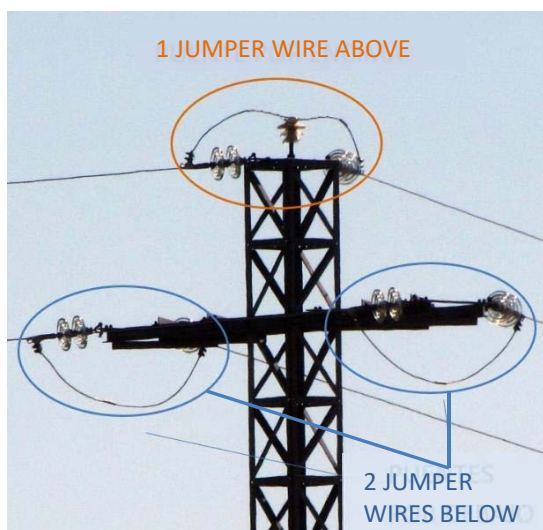


Figure 12. **Cross-shaped crossarm (type 1)**, with glass insulators, with 2 discs, one jumper above and two below.

Other elements

The following screen indicates whether there are any other types of element on the pole:

Derivations (or **branches**): click to indicate whether the power pole is the point of origin of one new electrical line (simple), of two lines (double) or whether there is no branch. If there is a branch, the number of discs or elements on the insulator strings on the branch are noted, following the criteria on the previous screen.

Switches/Cutouts (disconnectors/cut-out fuses): with the help of the photos, click to indicate whether there are any of these types of switching element on the pylon and in which position they are located (see examples in Figures 13, 14 and 16). The disconnectors serve to cut off the voltage

from sections of the line in order to allow work to be carried out safely. The fuse-switch-disconnectors (or cut-out fuses or XS cut-outs) also protect against power surges and short circuits.

Change/End of line: indicates whether the pylon is the point where the line ends or changes its characteristics, either because it goes underground (Undergrounding: special pylons in which the bare overhead cable is insulated and goes into the ground), or because it goes into a transformer and is turned into a low-voltage line (through an External waterproof transformer junction box or a Transformer substation, elements in which the voltage is changed).

Indicate also, if possible (if these elements are known):

Surge arresters or **lightning conductors:** mark in the circle whether the crossarm has these elements. They protect against power surges of atmospheric origin in certain electrical pylon. They are arranged in a vertical position, on the main crossarm or auxiliary crossarm (Figures 13 and 16).

Remotely-operated centre: mark in the circle if this switching element can be found. This device functions both as a **recloser** and a **switching device** and can be operated remotely (the aerial that allows for this is usually fairly visible). Apart from its function, it looks very different from the disconnectors and cut-off fuses. It consists of a block or several compact blocks with different elements connected by a complex cabling system. It is installed on an auxiliary lower crossarm (Figure 15).

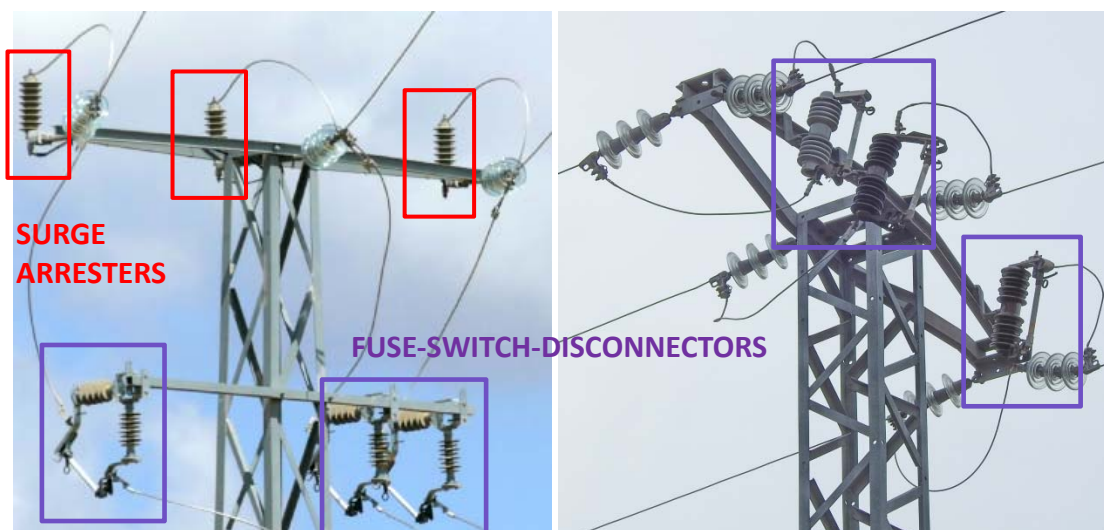


Figure 13.

Figure 14.



Figure 15. a b

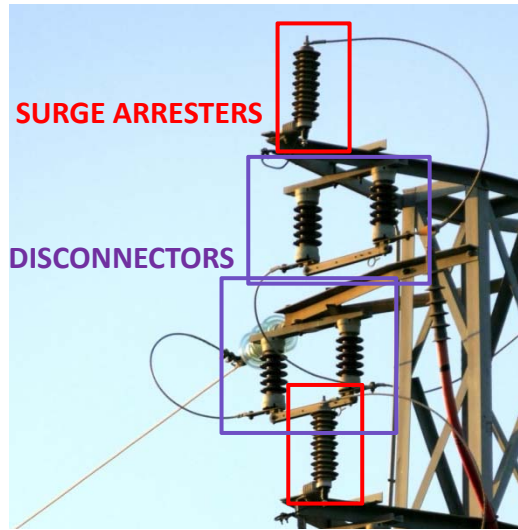
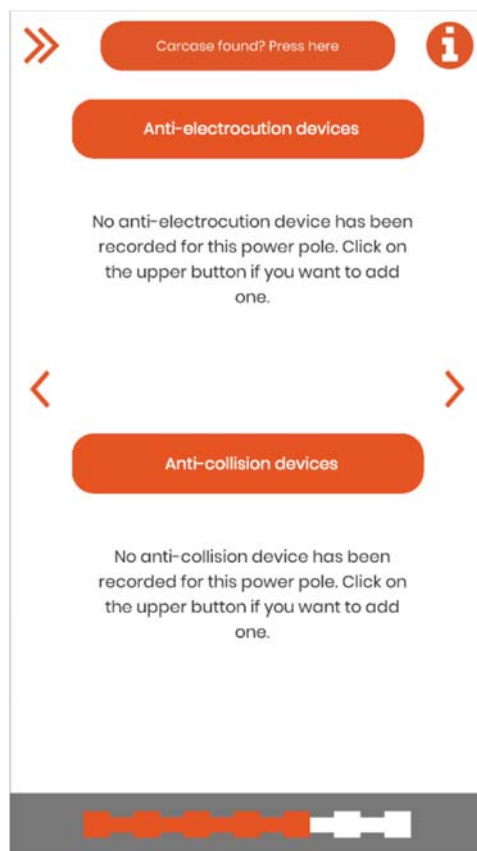


Figure 16.

The pylons with branches or with any of these elements are known as **special pylons**. They are particularly dangerous because the different elements are connected to the conductors by bare cables, which increases the chances of contact and of electrocution for birds.

On the following screen, through each button, we shall indicate whether there are any **anti-electrocution or anti-collision devices**:



If there are any, more than one device can be selected for each type. You must also mark the **condition** they are in, clicking on the hand that appears in each of the selected photos.



Good condition



Poor condition

Poor condition: moved, broken, fallen, installation with bare live sections, several anti-collision devices fallen or with gaps between them, etc.

Select the device(s) and go back with the arrow.

If any device does not appear in the app's catalogue, use the "Others" button or the photo of the device that is most similar and it can then be described on the "Notes and remarks" screen.

Note: the "Others" button is not available for anti-collision devices; it will be added in later versions. If the device cannot be found in the options provided, indicate the device most similar and describe it in the notes and remarks section.

Anti-electrocution devices: these aim to prevent the bird making contact between two live parts or one metallic and another live element. There are three general ways of doing this:

A) **Increasing the distance between the elements.** This is achieved by increasing the number of discs on the insulator string (when they are made out of glass or ceramics), adding an extension wire (extension cable or plate; Figure 17.1) or installing a sufficiently long polymer insulator. As far as possible, the design of the elements should prevent any birds perching between them (Figures 17.2 and 17.3).

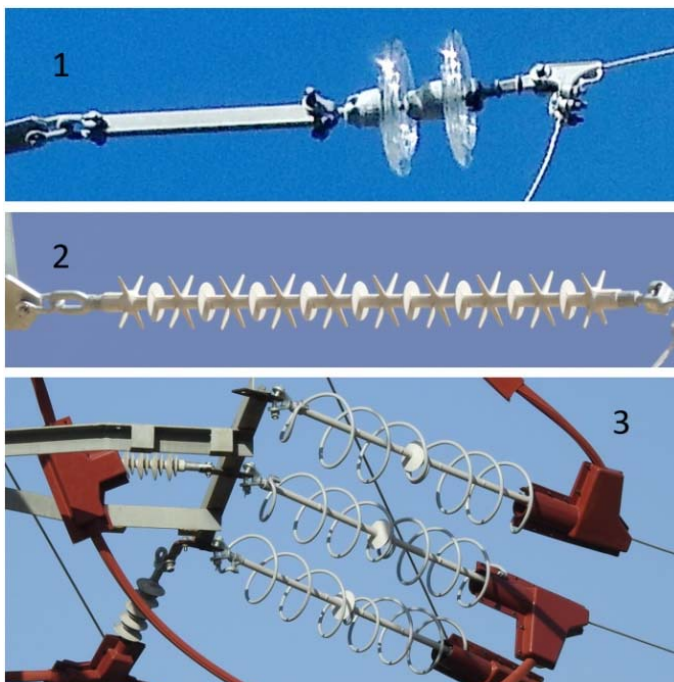


Figure 17. Anti-electrocution elements. 17.1: extension plate; 17.2: polymer insulator with an anti-perching design; 17.3: with anti-perching device combined with preformed insulators (in red).

B) **Covering live elements located near to perching sites with insulating material.** Materials such as rubber, silicone and plastic compounds are used. In the case of the latter, it is common to use preformed pieces (Figure 17.3) in the shape of the piece to cover. Its effectiveness depends on its proper installation and fastening, so that there are no parts lacking insulation and to prevent any pieces separating (Figure 18). If the pieces are badly installed or are in poor condition / have deteriorated, this could lead to electrocutions. Therefore, it is important to indicate the condition of the pieces.

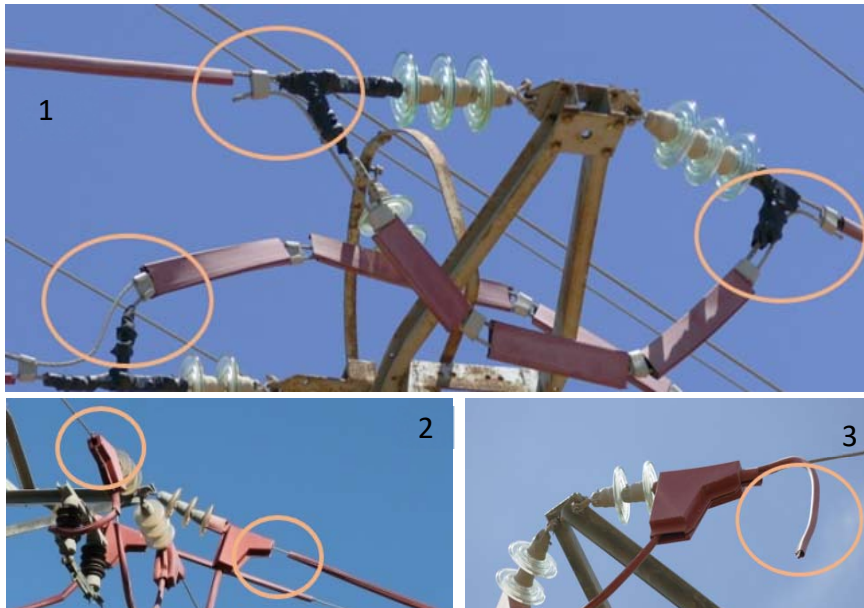


Figure 18: Common defects in the insulating systems. 18.1: bare metal parts; 18.2 and 18.3: elements that have become loose.

C) **Installing devices that make it hard for birds to perch or dissuade them from doing so.** These are the so-called "anti-perching" devices, which are installed on the crossarms to stop birds perching on them and/or trying to build their nests. There are several types of anti-perching device and they can be fixed or mobile (Figure 19). They are the least effective system.

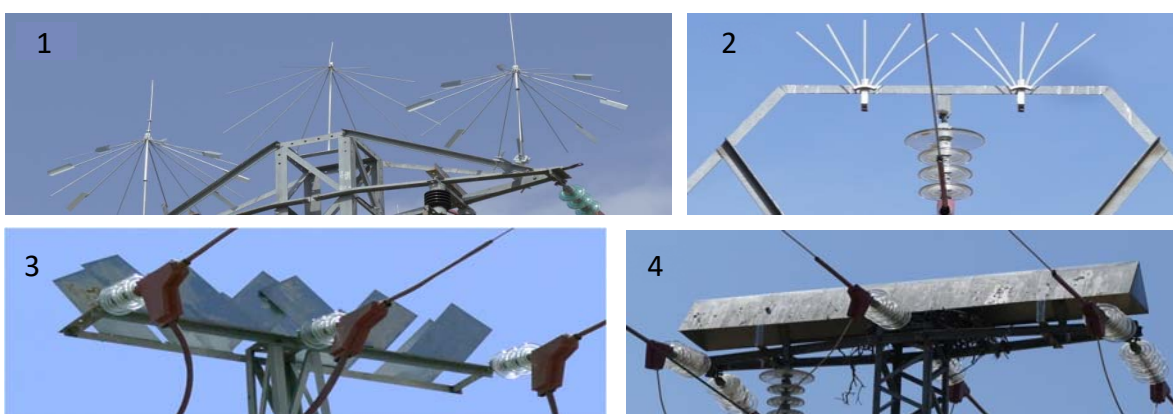


Figure 19: Different types of anti-perching device. 19.1: rotating umbrella-type perch deterrent; 19.2: metal "brush" type rods; 19.3: vertical metal plate perch deterrents; 19.4: "canopy"-type metal plate perch deterrents.

Anti-collision devices: these consist of the installation of different types of markers to increase the visibility of cables, especially earthing cables, which run along the upper part of the highest voltage lines; in lines without earthing cables, they can be installed on the upper conductor, on two of them or on all three. They can be fixed or have mobile and/or reflective parts (Figure 20).

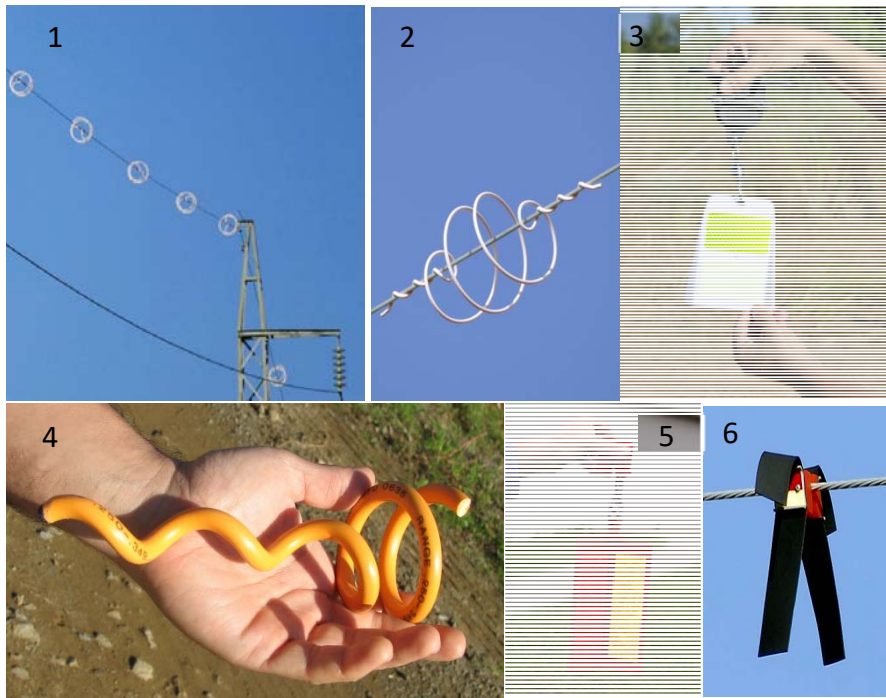
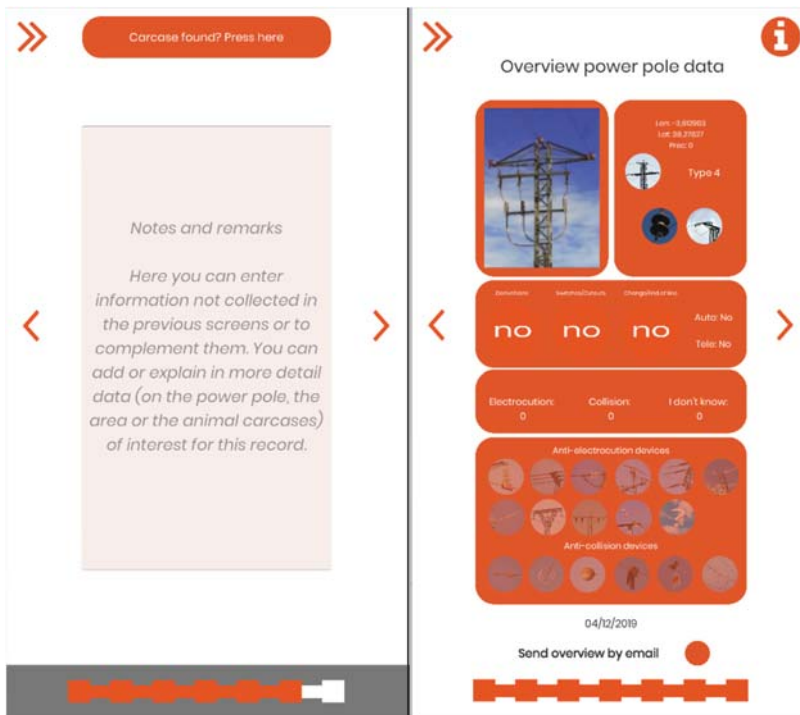


Figure 20: Examples of types of anti-collision marker. 20.1 and 20.2: spiral flight diverter, double anchorage; 20.3: two-sided reflective rotating marker; 20.4: spiral flight diverter, simple anchorage; 20.5: three-sided reflective rotating marker; 20.6: neoprene strips.

Once we have indicated the anti-electrocution / anti-collision systems, we go on to the **Notes and remarks** screen where we can note down information that we were unable to include in previous screens or else we can complement the details already given. You can add data or provide more details of interest for the record (on the pylon, the area or the animal remains).

Then we move on to the **overview screen**, where all the data entered are shown together.



Up until we reach the overview screen, we can edit the data by returning to the corresponding section. On the other hand, if you select the **“Send overview by e-mail”** before moving on to the last screen, you will receive a link by e-mail to view and download this overview in image format. **You must go to the following and last screen to save and finalise the record:**



The last screen gives us several options:

- **Save power pole**: save the data on the recorded pylon.

- **Exit and discard:** return to the beginning of the application without saving the recorded data, which will then be lost.
- **Save and add a new pole:** save the data on the pylon recorded and return to the home screen to start a new record. On this screen, we can find the “**Same power pole as previous**” option, which we can activate if the pylon is the same or similar to the previous one (see a screenshot of this screen on page 11).

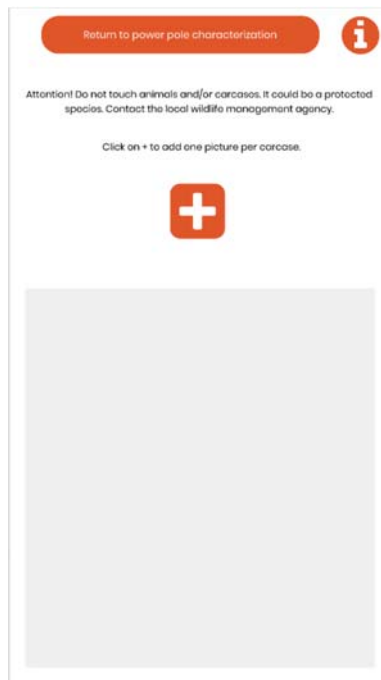
IMPORTANT: *only when you have selected “Save power pole” or “Save and add new pole” will the record be saved. If the “Automatic synchronization” option (in Menu/Settings) is not enabled (see Point 2.4.3), the record will only be saved locally, on the mobile device. At the start of the app, on the “Synchronization” button, you can see how many records you have saved locally and are pending sending to the database (see Point 2.6).*

After clicking on “Synchronize poles”, the records will be sent to the e-faunalert database, which can be accessed from the website (see Point 4.1). For fieldwork, it is advisable to disable the “Automatic synchronization” option and do this manually, thereby avoiding data usage (see Point 2.6).

*Once sent to the server (database), **the saved records can be consulted and edited from your account on the e-faunalert website**. The complete data of the records are visible to you and your working group, if you belong to one. And they can only be edited by you, the administrator of your group and the e-faunalert administrators (see Point 5).*

2.8. How to record mortality / electrocutions / collisions

By using the “**Carcass found? Press here**” button that appears at the top of all the pylon characterisation screens (which allows you to add this information at any time). This allows you to access the screen to enter information on this type of incident:



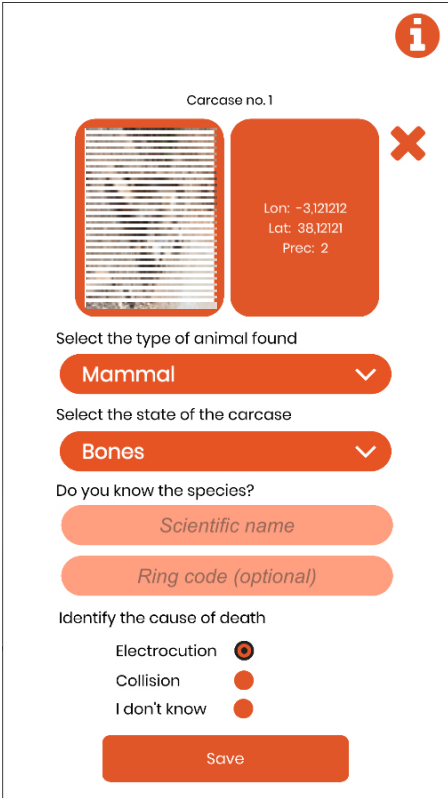
Take photos of the injured animal, carcass or remains

When you find one or more **dead or injured animals or remains/bones/feathers** near a power line, the incident should be recorded, starting with a photo (“+” button). If there is more than one animal or remains, the application allows you to take several photos associated with a single pylon or site, one for each individual, if possible, or for each species at least.

Try to include the whole animal or all the remains in each photo, and ensure all parts can be seen as clearly as possible (talons, wings, etc.).

Any comments or information considered to be of interest can be added at the end, on the “Notes and remarks” screen (for example if more than one photo has been taken of the same remains, this should be pointed out).

Every time we take a photo of a carcass/remains/injured animal, a new screen opens to allow us to collect basic information on these remains:



Carcass no.1

Lon: -3,121212
Lat: 38,12121
Prec: 2

Select the type of animal found
Mammal

Select the state of the carcass
Bones

Do you know the species?

Scientific name

Ring code (optional)

Identify the cause of death

Electrocution

Collision

I don't know

Save

Indicate on this screen the information corresponding to the animal in the photograph (referred to as Carcass no. X). If you find an injured animal, you can indicate “Recent” as the status, and make a note of the information in the final section, “Notes and remarks”.

In the “scientific name” box, enter the animal's scientific name, if it is known. If it is not, enter the common name.

Cause of death

If the animal or remains are found hanging from a pylon, just beneath one or nearby, the cause of death will be considered to be **electrocution**.

If the remains are found over 10-15 m from a pylon and/or around this distance below the power line, the death will be considered to be caused by **collision** (although they can even be further away in the case of transmission lines with large pylons).

If you have any doubts or suspect a different cause (a predator, natural death or poisoning), enter “**I don't know**” and explain the reason on the notes and remarks screen at the end.

Once completed and saved, we return to the characterisation screen for the pylon where we found this animal or remains. If we found the animal or remains under the power line, between two pylons or towers, we should continue walking until we reach the next pylon and then characterise it and associate the incident with this pylon.

The mortality record should be associated with a transmission tower. So, we must continue with the characterisation until the end so that this mortality (or injured animal) record is saved.

Do not touch any carcasses/remains. If it is a protected species, they can constitute proof of a possible administrative fault or offence, which would be invalidated if they are handled by a person who does not act as an environmental authority.

If you do not know what to do when an animal is found, especially if it is alive, it is advisable to contact the competent body in the country (police or environmental agents, wildlife management organisation, emergency services, etc.).

2.9. Can the e-faunalert app be used offline?

Once the application has been downloaded and the account created, it is not necessary to be connected to the Internet in order to record information. In this case, when you start to use the app, the following message will appear: **“You are not connected to the Internet. You can continue saving data on your device locally until you are connected again”**. By clicking on “Continue”, you can start recording data. The data will be stored on our device as we save the records. Once we are connected to the Internet again, by clicking on the **“Synchronization”** button, the number of records pending sending will appear, as will the button we need to click on to send them (see Point 2.6).

IMPORTANT: *If you anticipate having poor connection to the mobile network (which often happens in the field), you should disable the “Automatic synchronization” as already mentioned in Point 2.4.3, and send the records to the server manually when you have a good mobile connection or using WiFi.*

3. Public e-faunalert website

The website address is: www.e-faunalert.org

In the different sections, information can be accessed on the initiative and the platform, on the organisations involved in the creation of the app and the available resources. Here too you can create an e-faunalert account. If you have already created an account on the app, the access data will be the same.

Both the public website and the private area (Point 4) will be available in English, Spanish and French (currently being updated and improved).


4. Private e-faunalert website

This is accessed from the public website, when starting a session in the user’s personal account. The sections available from the side menu are:

- Power pole viewer: displaying, editing and downloading records.

- Find users and groups: search for users in a specific area and working groups.
- My groups: groups you belong to and who forms part of these groups and requests sent to join groups.
- Messages: inbox and outbox.
- Power pole and user rankings: a ranked list of the scores of the most active users, and of the pylons recorded with the greatest potential danger (section under development).
- My account: configuration of the parameters of the user account.
- More information & credits.

4.1. Power poles viewer: displaying, editing and downloading records

A global map is opened, where we can view the location of records using the **Filters** available (to display them, click on button ) , and limit the election we want to see with the existing criteria. In order to do this, choose the filter(s) and click on **“Apply”**. By default, if we do not apply any filters, no information will be shown on the map. On the other hand, if we click on **“Apply”** filters, without selecting any filter, the map will display all the pylons recorded in the database by all the users.

To limit the display to a given area, we can select it using the **“Geopositioning/Selection by rectangle”** filter.

The icons that appear on the map display screen indicate the following:



Pylon recorded by the user or by users who are members of your working group(s).



Pylon recorded by other users.



Pylon with associated mortality record, recorded by the user or by users who are members of your working group(s).



Pylon with associated mortality record, recorded by other users.

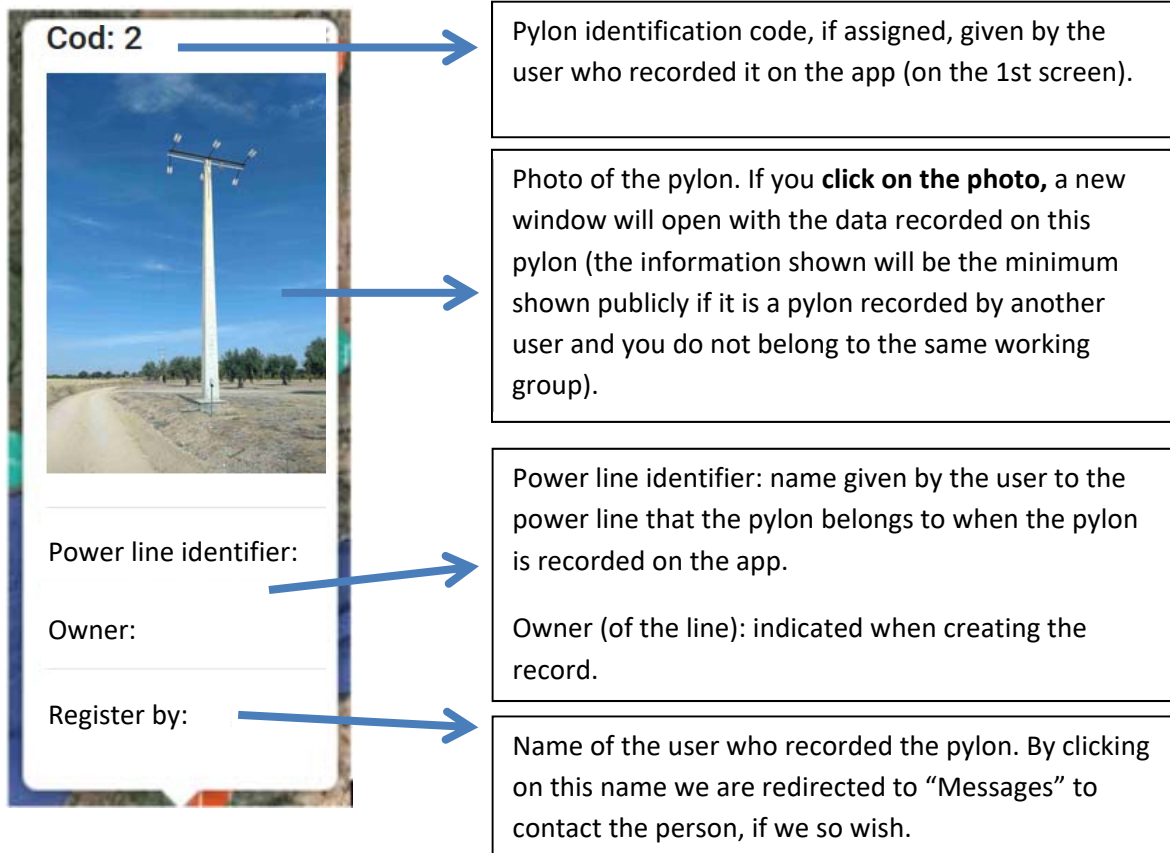


Pylon of which we have shared its data with other users.



Shared pylon with associated mortality.

By clicking on an icon on the map, the minimum information on that record will be shown:



The screenshot shows a mobile app interface for recording a pylon. It includes a text field for 'Cod: 2', a photo of a pylon, and three text input fields: 'Power line identifier:', 'Owner:', and 'Register by:'. Blue arrows point from these elements to explanatory text boxes on the right.




- Cod: 2**: Pylon identification code, if assigned, given by the user who recorded it on the app (on the 1st screen).
- Photo of the pylon**: Photo of the pylon. If you **click on the photo**, a new window will open with the data recorded on this pylon (the information shown will be the minimum shown publicly if it is a pylon recorded by another user and you do not belong to the same working group).
- Power line identifier:** Power line identifier: name given by the user to the power line that the pylon belongs to when the pylon is recorded on the app.
- Owner:** Owner (of the line): indicated when creating the record.
- Register by:** Name of the user who recorded the pylon. By clicking on this name we are redirected to "Messages" to contact the person, if we so wish.

*This pylon form and the one shown by clicking on the photo, is the only **information that will be published publicly for all recorded pylons**. In the case of power poles you have recorded or that were recorded by users in my working group(s), you can view all the data contained in the record following the steps that are explained below.*

Only the user who recorded the pylon and the administrator of their working group and the e-faunalert reviewers (see Point 5), can edit the data in a record.

With the records of interest selected on the map, we have the following options (buttons below the map): With the records of interest selected on the map, we have the following options (buttons below the map):

- **Display list**: this will open the **list of selected records** to allow us to access more detailed information. The list's fields indicate:
 - Reviewed: in green if the data have been reviewed by one of the e-faunalert administrators (see Point 5); in red if they have not been reviewed (which does not mean that they are incorrect).
 - View/Edit/Share:

-  Viewing the record data. If the record was made by another user who is not in the same working group as you, only the basic data will be visible when you click on the icon.
-  Editing the record data. Available for records made by the users themselves. If you make any changes to the fields in the records, do not forget to click on "Save".
-  This allows you to share the data on this record with another user or working group. Also only available for the user who made the record.

-ID. Power pole: identification code given to the pylon when it was recorded.

-Date of record.

-User who created the record. If we need to contact them, by clicking on the user's name a message in the internal messaging system will open directly.

-Elements of interest collected for this record are highlighted in blue if there are any (see "i" button).

The "**Share all**" button at the top of the screen allows you to share with another user or user group the data of the records selected, and the people with whom you share them will see all the data (not only the basic information) on these records.

The share option is only possible with records created by the user that shares them (who is the owner of these records) or by the administrator of a working group (who can share all the group's records). The joint data shared can be seen in the My account section (see 4.6.2).

When we share a "set" of data with a user or group, we assign it a name and a description that will help us to remember the reason for this data transfer in the future. The sharing process is fully reversible at any time. To cancel this transfer of data we must go to "My account" and in "Shared set" we have the list with the different sets that we have shared, who has been the recipient (User or Group) and the description. By clicking on the "Cancel" button we can deactivate this sharing option. This functionality is intended for temporary sharing, for specific studies and collaborations between users and groups.

- **Export to CSV** or **Export to KML**: **download data from the records** selected in these formats. All the records viewed can be downloaded, but in the case of the ones you do not own, you can only download basic information (location and identification). The administrator of a group can download the complete records of all users in the group. The **CSV file** can be opened with any spreadsheet program (Excel, LibreOffice, etc.); in order to view it correctly, when opening the file, you have to choose the set of Unicode (UTF-8) characters and the separator options "semicolon" (depending on the program and the versions, it can also be opened directly). Exporting to **KML** will allow us to obtain the files to work directly with mapping programs (Google Earth, Qgis, etc.).

4.2. Find users and groups

4.2.1. Search for users by location

This function is designed to search for user(s) working in a specific area, for example if we are going to go on field trips to this area and want to contact them.

In order to find users, you must activate the option “Share location” in My account (see point 4,6; you can choose any location to move “My position” on the map in this section). Only the users who have shared their location in this way will appear.

To establish a search distance, the tool will show the users in this distance radius from “My position” established in “My account/Share location”. Clicking on each icon of the user(s) found will display the username(s) and a link to send them a message, if you wish.

4.2.2. Find groups. How do working groups work?

Joining a working group allows you to view all the data of the records made by the users in that group; if you are not a member of the group, you will only see the basic information on the records (see Point 4.1).

To create a group, please contact: efaunalert@gmail.com

The groups can be:

- Public: these groups can be viewed by any user, through the drop-down menu to request to join this type of group.
- Private: these groups are not visible in the list of existing groups; it is necessary to know the name of the group in order to send a request.

The creation of working groups can only be done at the moment by making the request through email. In the request you must specify: name for the group, type of group (public or private), users who wish to join the group, specifying who or who will be the administrators and a brief description of the group.

When creating a user account on the website or on the application, it is possible to request to join a working group. The request will be received by the person who administers the group. They are responsible for approving requests (see Point 5).

4.3. My groups

- **Groups and users** tab:

In this section, you can see the groups you belong to and the members of these groups, as well as the group administrators. By clicking on the “Message” button, you can open the messaging system to write a message to a user.

In order to leave a working group, please contact: efaunalert@gmail.com

- **Applications** (Requests) tab:

Here you can see any requests to join a group that are pending approval.

4.4. Messages

In the **Messages** section you can access the **e-faunalert** internal messaging system's inbox and outbox. In the **Inbox** you can write a new message using the corresponding button. It can be accessed both from this section and from the application (Point 2.4.1). In order to add someone as a recipient, you need to know their username.

On the top navigation bar in the private website, on the right, alongside the user's photo, there is an icon that shows us if we have any unread messages.

4.5. Pylons and user rankings (section under development)

In this section, you will be able to access several score lists, both of the most active e-faunalert users and of the pylons recorded that are potentially most dangerous (section still being developed).

4.6. My account: management of user access data and other parameters

4.6.1. Managing the user account

- **General** tab: to change the account profile details (username, record name, photo) and enable or disable notifications by e-mail from the platform.
- **Account** tab: to change the e-mail address and the password.

4.6.2. Sharing the user's location and managing shared data

- **Share location** tab: allows you to pre-set a working location so that other users can find you if they want to work in a specific area (see Point 4.2.1). If this is enabled, other users can be located and you can be located. The only information visible to other users will be your username. Contact with other users can be made by internal messaging only. You need to enable the "ON" button and find the point on the map where you want to pre-set your **My position** location. The default position will be the IUCN-Med headquarters. This option can be reversed at any time (disabling the option with the "OFF" button).
- **Shared set** tab: shows us all the sets we have shared with other users and those we that have been shared with us, through the function available for this in the Power pole viewer (see Point 4.1), and the possibility of cancelling this.

The changes made to each tab in this section are only saved after clicking on "Save settings".

The data for access to the website on the app are the same and the changes affect access to both tools.

5. Data and group administration

The quality of the data in this type of project is of great importance. In order to ensure that the data entered are correct and valid, the e-faunalert platform has experts in the subject who also act as administrators, **expert-administrators** in this case and who will review the data as far as possible. These **expert-administrators** and the **group administrators can check and edit the data** in order to ensure that the information is entered correctly and that there are no mistakes. If you want to be a verifier or have identified records on the platform that need to be corrected, please contact us.

If a record has been **verified, it will be marked as “reviewed” in green on the list of records** in the viewer (Point 4.1); otherwise, it will appear in red print. Obviously, the fact that a record has not been reviewed does not mean that it contains errors.

The expert-administrators can edit any record entered on the platform, whilst the group administrators can only review and edit data entered by the users in the group they administer.

For now, working groups can only be created making the request by email. In your request, you must specify which of the users (it can be more than one person) will act as the group administrator(s). Their functions are:

- To review the data entered by the group users
- To receive and manage requests to join or leave the group
- To share records of pylons if this is requested by other users who are not in the group, and if the group’s users agree to this

6. Contact

If you have any doubts, comments or suggestions, please write to medspecies@iucn.org or efaunalert@gmail.com

Our address:

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29590 Campanillas, Málaga
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Tel. + 34 952 028430