

IASTracker

Data Management Plan

(IAS Tracker v0.7rev)



Project by: IC5Team
Contact: Ms. Blanca Botey
e-mail: ic5team.co@gmail.com

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1. INTRODUCTION/IAS TRACKER DESCRIPTION

IASTracker is a Citizen Science project. It is a complete tool (Smartphone App and geoporta) to identify Invasive Alien Species (IAS) in different parts of the European Union, fed with citizen's collaboration in order to obtain a dataset of the distribution and spread of IAS in different areas. This information must fulfil a gap of geographic knowledge of IAS in some regions and help the scientific community and the environmental agencies to make progress in this field.

IASTracker will be available through a web site and on a smartphone application. IASTracker App submits the following IAS data: IAS location, an optional brief comment of the observer, IAS images, an approximate amount of specimens and the observation date. IASTracker website will be a portal to query and analyze data observations.

2. DATA SETS

IASTracker contains various data sets divided in two groups, IASTracker data sets and External data sets. IASTracker data sets are citizen's observations and taken pictures, IAS datasheets and IAS regions. Besides, IAS observations can be shown graphically along with external data to compare IAS distribution with earth observation products. Both data sets are detailed below.

2.1 IAS TRACKER DATA SET

1	IAS Observations
Description	Site locations of IAS identified by users.
Format	postgreSQL database
Characteristics	UTF-8 encoding charset
Data source	Created using IAS Tracker App. Includes GPS data, comments, user nickname, date and IAS identifier.

Restrictions	None
Quality checks	IAS observations are revised by an expert who will decide if the data is good enough to appear as validated in IASTracker website. All new observations appear in the first place in the website as observed but not validated until the expert validates the observation and this changes its status from observed to observed and validated.
Volume estimate	Less than 1 MB

2	IAS Images
Description	Images taken by IAS Tracker users
Format	JPEG
Characteristics	-
Data source	Created from IASTracker user devices.
Restrictions	None
Quality checks	IAS images are checked by an expert who will decide if the image is good enough to be shown in IASTracker website.
Volume estimate	Approximately 5 GB

3	IAS datasheets
Description	IAS descriptions and images which guide the user in the identification of the IAS.
Format	Text/JPEG
Characteristics	UTF-8 encoding charset
Data source	IAS datasheets are shared by IC5Team as open data (EUPL). Texts and images of the datasheets that have other kind of licences are properly indicated. IC5Team ensures that text and images published in its website and in the App accomplish with all the terms of licensing.
Updates	This data is updated from IAS Tracker platform. A new datasheet will be created whenever a new IAS is included in the IASTracker list of species.
Restrictions	None
Quality checks	It will be possible to update datasheets as IAS impact or distribution evolves in the territory.
Volume estimate	Less than 100 MB

4	IAS Regions
Description	Predefined areas where IAS are expected to be found
Format	postgreSQL database
Characteristics	UTF-8 encoding charset
Data update	This layer will be updated using shape files from the IAS Tracker platform.
Restrictions	None
Quality checks	Integrity constraints defined in the tables that will maintain the referential database integrity.
Volume estimate	Less than 50 MB

2.2 EXTERNAL DATASETS

IASTracker supports many basemaps useful at different scales. All selected basemaps are available for the Geoportal website but some of them will be only visible at large scales. On the other hand, some basemaps will not be accessible in the smartphone App due to low spatial resolution.

Background maps will be Google maps (license description on <https://developers.google.com/maps/terms>) and OpenStreetMaps (License CC-BY-SA) but to enhance the geoinformation for the users for finding or locating the invasive species, the application could add progressively different Web Map Services (depending on the regions of interest) with suitable layers to enhance environmental, climatic and other data of interest.

The next tables show the main properties of the selected WMS.

1	CORINE Landcover (CLC)
Description	Corine land cover 2006 is the year 2006 update of the first CLC database which was finalised in the early 90's as part of the European Commission programme to COOrdinate INformation on the Environment (Corine).
Basemap Use	Geoportal web and mobile application
Provider	European Environment Agency (EEA)
WMS Source	http://land.discomap.eea.europa.eu/arcgis/services/Land/CLC2006_Dyna_LAEA/MapServer/WMSServer?
GetCapabilities	http://land.discomap.eea.europa.eu/arcgis/services/Land/CLC2006_Dyna_LAEA/MapServer/WMSServer?service=WMS&request=GetCapabilities
GEOSS Core	No
Restrictions	None
Format	Raster
Standard	OGC Web Map Service version 1.3 data provide, (WMS version 1.3.0)
Fees	Free of charge
Licence description	EEA standard re-use policy: Unless otherwise indicated, reuse of content on the EEA website for commercial or non-commercial purposes is permitted free of charge, provided that the source is acknowledged.
License link	http://www.eea.europa.eu/code/gis/gis-applications-api

2	SRTM_RAMP2_TOPO*
Description	Flat maps can create a 3-D effect by making some parts of the map dark and other parts light in RGB. This is called "shading" because it makes features on the surface look like they are casting shadows.
Basemap Use	Geoportal web
Provider	Remote sensing imagery from NASA Earth Observations (NEO)
WMS Source	http://neowms.sci.gsfc.nasa.gov/wms/wms?
GetCapabilities	http://neowms.sci.gsfc.nasa.gov/wms/wms?service=WMS&request=GetCapabilities
GEOSS Core	YES
GEOSS link	http://www.geoportal.org/web/guest/geo_resources_details?p_p_id=vrdPortlet_WAR_geoportal&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_pos=1&p_p_col_count=2&vrdPortlet_WAR_geoportal_uid=JPL_WMS_SRTM_IMAGE&sourceType=USGSGN&navigation=metadata
GEOSS observations	Although this basemap is marked as GEOSS core, the previous link describes a layer that it's not available now. Nevertheless, the same information is available in the Near Earth Object Program (http://neo.jpl.nasa.gov/) in the link of wms source.
Restrictions	None
Format	Raster
Standard	OGC Web Map Service version 1.3 data provide, (WMS version 1.3.0)
Fees	Free of charge
License link	http://neo.sci.gsfc.nasa.gov/about/
License description	The images available in NEO are freely available for public use without further permission. Please use the credit statement attached to each dataset, or at the very least credit NASA Earth Observations as the source.

* SRTM data could be improved with high spatial resolution products.

3	MOD13A2_E_NDVI (Vegetation Index [NDVI] (16-day - Terra/MODIS)
Description	MODIS vegetation index, produced on 16-day intervals and at multiple spatial resolutions, provide consistent spatial and temporal comparisons of vegetation canopy greenness, a composite property of leaf area, chlorophyll and canopy structure.
Basemap Use	Geoportal web
Provider	Remote sensing imagery from NASA Earth Observations (NEO)
WMS Source	http://neowms.sci.gsfc.nasa.gov/wms/wms?
GetCapabilities	http://neowms.sci.gsfc.nasa.gov/wms/wms?service=WMS&request=GetCapabilities
GEOSS Core	YES

GEOSS link	http://www.geoportal.org/web/guest/geo_resources_details?p_p_id=vrPortlet_WAR_geoportal&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-2&p_p_col_pos=1&p_p_col_count=2&_vrPortlet_WAR_geoportal_uuid=f0ad64f4-9085-488b-9c3b-c18923714df4-clh&sourceType=USGSGN&navigation=metadata
GEOSS observations	Although this basemap is marked as GEOSS core, the previous link describes a layer that it's not available now. Nevertheless, the same information is available in the Near Earth Object Program (http://neo.jpl.nasa.gov/) in the link of wms source.
Restrictions	None
Format	raster
Standard	OGC Web Map Service version 1.3 data provide, (WMS version 1.3.0)
Fees	Free of charge
License link	http://neo.sci.gsfc.nasa.gov/about/
License description	The images available in NEO are freely available for public use without further permission. Please use the credit statement attached to each dataset, or at the very least credit NASA Earth Observations as the source.

* MODIS NDVI could be improved with high spatial resolution products.

4	Raster cartography of Catalonia
Description	ICGC has a single service that includes all the current ICGC maps and orthophotos organized by layers. For IAstracher application will be used two different layers, one for images and second for topographic map for all Catalonia region. For images: Orthophoto of Catalonia 1:2.500 current For topographic map: Topographic map of Catalonia 1:5.000
Basemap Use	Geoportal web and mobile application
Provider	Institut Cartogràfic i Geològic de Catalunya (ICGC)
WMS Source	http://geoserveis.icc.cat/icc_mapesbase/wms/service?
GetCapabilities	http://geoserveis.icc.cat/icc_mapesbase/wms/service?service=WMS&request=GetCapabilities
GEOSS Core	No
Restrictions	None
Format	Raster, Supported GetMap formats: GIF, PNG, BMP, JPEG and TIFF
Standard	OGC Web Map Service version 1.3 data provide, (WMS version 1.1.1)
Fees	Free of charge
License	CC-BY
License link	http://www.icc.cat/eng/Home-ICC/Geoinformacio-digital/Sobre-la-geoinformacio-ICGC/Condicions-d-us-de-la-geoinformacio-ICGC

5	NDVI of Catalonia
Description	The NDVI (Normalized Difference Vegetation Index) is basically used to measure the growth of vegetation, to determine regions covered in vegetation and control the production of biomass.
Basemap Use	Geoportal web and mobile application, only equal or large scales than 1: 5000.
Provider	Institut Cartogràfic i Geològic de Catalunya (ICGC)
WMS Source	http://geoserveis.icc.cat/icc_ndvicolor/wms/service?
GetCapabilities	http://geoserveis.icc.cat/icc_ndvicolor/wms/service?service=WMS&request=GetCapabilities
GEOSS Core	No
Restrictions	None
Format	Raster, PNG and JPEG
Standard	OGC Web Map Service version 1.3 data provide, (WMS version 1.1.1)
Fees	Free of charge
License	CC-BY
License link	http://www.icc.cat/eng/Home-ICC/Geoinformacio-digital/Sobre-la-geoinformacio-ICGC/Condicions-d-us-de-la-geoinformacio-ICGC

6	Orthobeeldvorming* (ortoimages)
Description	RGB orthophoto of Brussels and Flanders
Basemap Use	Geoportal web and mobile application
Provider	Geopunt.be
WMS Source	http://geo.agiv.be/inspire/wms/Orthobeeldvorming?
GetCapabilities	http://geo.agiv.be/inspire/wms/Orthobeeldvorming?service=WMS&request=GetCapabilities
GEOSS Core	No
Restrictions	None
Format	Raster, JPEG
Standard	OGC Web Map Service version 1.3 data provide, (WMS version 1.3.0)
Fees	Free of charge
License	Gratis open data licentie Vlaanderen v1.0
License link	http://www.geopunt.be/~media/geopunt/over%20geopunt/documenten/gratis%20open%20data%20licentie%20vlaanderen%20v10%2018%20maart%202013.pdf (Dutch description of the license)

*Information in: <https://metadata.geopunt.be/zoekdienst/apps/tabsearch/?uuid=B7F7047A-987A-450C-AC5D-2464A56D257D>

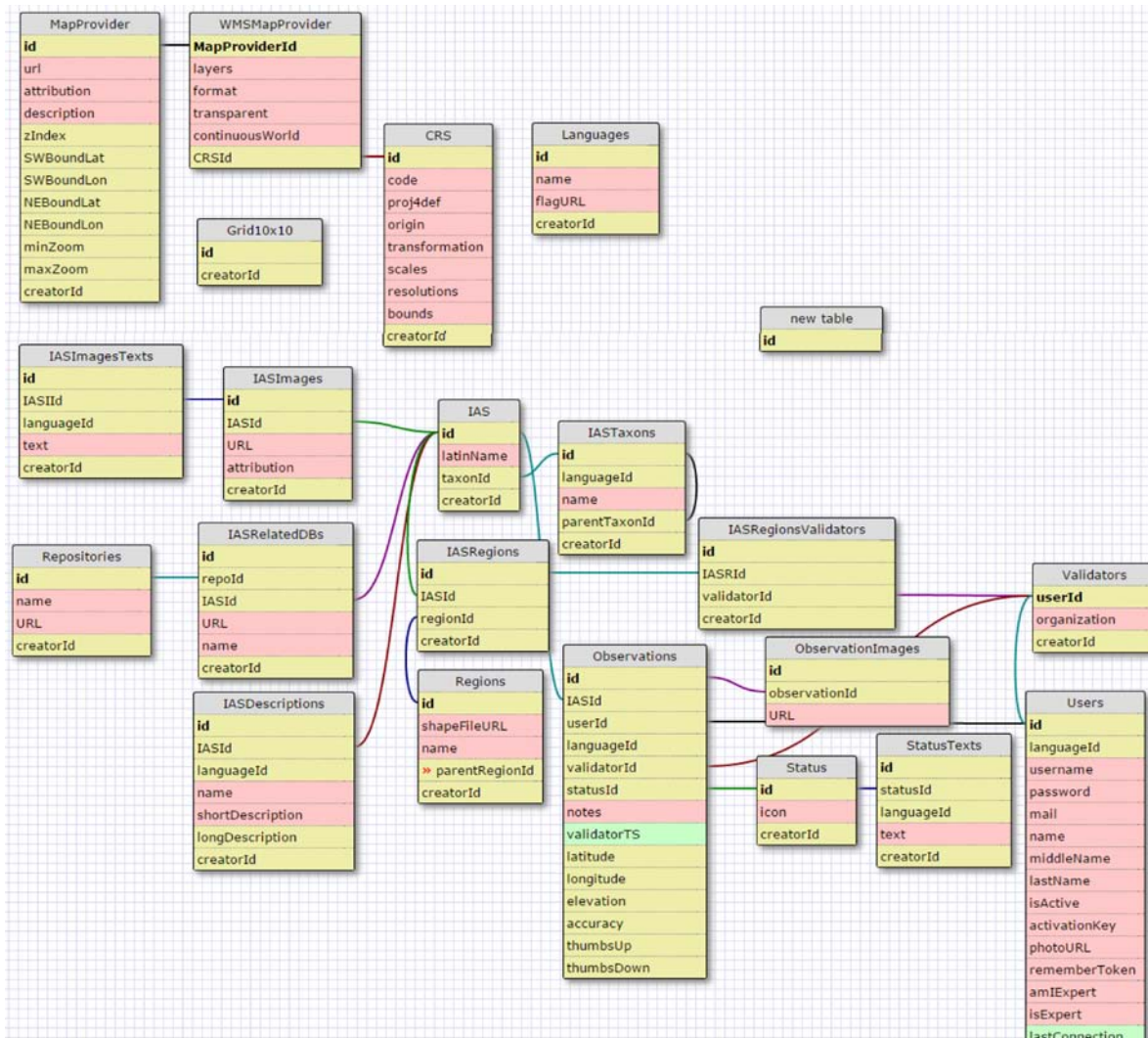
7	RGB orthophoto Wallonie
Description	RGB orthophoto of the Walloon region
Basemap Use	Geoportal web and mobile application
Provider	Walloon Region
WMS Source	http://geoservices.wallonie.be/arcgis/services/IMAGERIE/ORTHO_LAST/MapServer/WMSServer?
GetCapabilities	http://geoservices.wallonie.be/arcgis/services/IMAGERIE/ORTHO_LAST/MapServer/WMSServer? service=WMS&request=GetCapabilities
GEOSS Core	No
Restrictions	None
Format	Raster, JPEG
Standard	OGC Web Map Service version 1.3 data provide, (WMS version 1.3.0)
Fees	Free of charge
License description	http://geoportail.wallonie.be/files/LicServicesSPW.pdf (French description of the license)

3. DATA AND METADATA STANDARDS

IASTracker database is stored as PostgreSQL database. This database uses the PostGIS extension. The IASTracker website is developed using PHP with MapServer and the PostgreSQL database. Quality control of the database is managed by defining integrity constraints in the tables that will maintain the referential database integrity.

CSV file format will be used for downloading IAS Observations and IAS data.

The entity-relationship diagram is shown in the following figure. This diagram will be updated to include the last minute changes.



A data dictionary will be created that defines the definition table, fields table, and field table data types.

Metadata for geographic data and services will be produced using the ISO 19115 and ISO 19119.

4. POLICIES OF ACCESS AND SHARING

The data will be public and will be accessible through the IAS Tracker geoportal. The web data service will be well documented in the geoportal, so it will be able to be found by search engines.

The geoportal and the App will describe the conditions of use and the European Union public license (EUPL) that applies for the App source code.

All data contents as datasheets and images that will have a non EUPL (like CC BY-SA 3.0, CC BY-SA 2.1, ...) will be clearly indicated, and will be cited as required.

A Web Map Service (WMS of OGC) will be set up. This service will allow researchers and GIS users to integrate IASTracker data in their analysis works. The main dataset of IAS Tracker are IAS observations. These data will include all necessary attributes that describe the records but also the attributes used to know the quality of the data, in this case GPS accuracy and validation of the observation status.

An appropriate protection of the users privacy, security, confidentiality will be taken through the Spanish law LOPD, which accomplish with European directive about users data protection.

5. POLICIES FOR RE-USE, DISTRIBUTION

The data collected by IAS Tracker users will be open to be reused. IAS Tracker first step during the installation is to get the agreement of the users to redistribute, and reuse all the information that they will collect. All data collected from the user will be suitably anonymized (if necessary) to avoid breaches of privacy or confidentiality.

Materials generated under the project will be disseminated in accordance with the European Union public license (EUPL).

IAS Observations datasheets have a persistent identifier, so they can be easy cited, nevertheless, it is defined in the geoportal how to cite IAS Tracker as a whole, and a proposal of citation for a IAS Observations datasheet..

6. PLANS OF ARCHIVING AND PRESERVATION

The IAS Tracker data manager will be in charge of the archiving and preservation of the data. He/she will be responsible of updating, maintaining and upgrading the database.

All original raw data files and data source processing programs will be versioned over time and maintained in a date stamped file structure with text files documenting the version and which changes have been done from previous version.

IAS Tracker database will be held in a public organism server. So the backups policies will follow this public organism backup policies. A weekly backup is guaranteed.

IASTracker data is generated with the intention of providing long term data records for the use of citizens, science community and environment agencies in perpetuity.