

EBONE and the Biodiversity year 2010

By Rob Jongman

The year 2009 is nearly over. EBONE gets into a crucial phase. After 18 months work some of the products that are needed for reaching its objective, a coherent cost effective European monitoring system are near completion. Most will be produced in the next three months as input for the data collection phase of the project.. In the beginning of 2010 we will deliver several products such as the hand-book, the field computer, concept documents on how to set up a biodiversity monitoring system and a global ecosystem classification.

The year 2010 will be a remarkable year. In 2006 the UN declared 2010 as the International Year of Biodiversity (resolution 61/203). It designated the secretariat of the Convention on Biological Diversity as the focal point for the Year and invited the secretariat to cooperate with other relevant United Nations bodies, multilateral environmental agreements, international organizations and other stakeholders, with a view to bringing greater international attention to the continued loss of biodiversity.. There will be several events during the year. The most important issue is the Convention of Parties of the CBD in November 2010 in Japan. However there are more important events such as the Ministerial Summit of GEO, the pre CoP meeting in March in Nagoya, organized by Japan

in cooperation with Diversitas International and the on May 22 the International Biodiversity Day. The global activities will be many and we hope that full attention is given to the events through television, internet, radio and newspapers.

It is also an important year for EBONE. Not only we will deliver the products mentioned above, we also will be working in the field in several regions in Europe and we hope to get public attention with this work. We will finalise the field work in August 2010 and then we can start with the analysis providing coherent European information on biodiversity. It will not be enough to draw European conclusions, but we hope to end 2010 (around the CoP meeting in Japan with the conclusion that we succeeded to collect coherent European data on biodiversity. Therefore, with others we will develop a campaign to get attention for the biodiversity research and biodiversity monitoring in Europe

I wish all partners in EBONE and readers of this newsletter a good and successful 2010.

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News from the Work Packages

WP4 *Updates on the Field Handbook*

By Marion Bogers

The last few months have seen major updates of the Field Handbook. First of all clarifications have been made and some adjustments to make the Handbook transferable to the Field Computer. Also an option is now available to record a limited number of linear features making the process much quicker. An addition has been made for the recording of vegetation

layers in forests as part the official protocol. An expert system has been developed and tested in Portugal to identify if the element is an Annex I habitat, which is then recorded. The protocol for vegetation plots has been improved and new life form qualifiers have been added to allow for a further subdivision. selected by purposive sub-sampling of the randomly selected 5x5 km² square. This purposive sub-sampling seriously complicates statistical estimation of stock and changes of ecological variables in Austria.

WP5 *Using of time series analysis of NDVI for detection of grassland management*

By Andrej Halabuk

Satellite images with high spatial resolution are widely used for landscape assessment and surveillance. Their low temporal resolution however, limits their ability for regular monitoring of landscape in adequate time span. Recently, after the launch of the Terra and Aqua satellites with the MODIS (Moderate Resolution Imaging Spectroradiometer) on board, new approaches started to be more frequently used for landscape classification and monitoring. One of the most widespread approaches uses time series analysis of vegetation indices (e.g. NDVI – Normalized Difference Vegetation Index) that reflects the temporal profile of vegetation greenness on the land surface. In our case study, we used MOD09GQ product (daily surface spectral reflectance of red and near infrared bands at 250m spatial resolution) in order to derive daily NDVI. These data were masked for clouds, heavy aerosols and cloud shadows (using MOD09GA product) in order to get useful reliable NDVI data series. Later on, we used interpolation and smoothing techniques for creating the final NDVI profile for 2009. Temporal curve of NDVI provides useful

information that can be used for a broad habitat classification, change detection or land surface phenology. At the spatial resolution of 250 m, this approach could be sufficiently used even at regional and national scales. In WP5 we have been studying the usefulness of this approach for near-real time monitoring of grasslands and wetlands. Specifically, we focused on detection of management practices in grasslands (e.g. cutting frequency), identification of abandonment or overgrowing and detection of flooding in alluvial wetlands. We applied this approach in Slovakia using existing data on grassland habitat distribution and management practice data validated during the field campaign of 2009. The results proved that the time series analysis of MODIS products can allow detection of management practice in grassland habitats and thus can be used for near-real time monitoring of valuable grasslands. In close future, we will prepare a longer time series (since 2000) in order to identify changes in management practice and related trends of habitat status (e.g. overgrowing, drying...). Finally, we will use EBONE study sites in order to test this approach in a wider biogeographical extent.

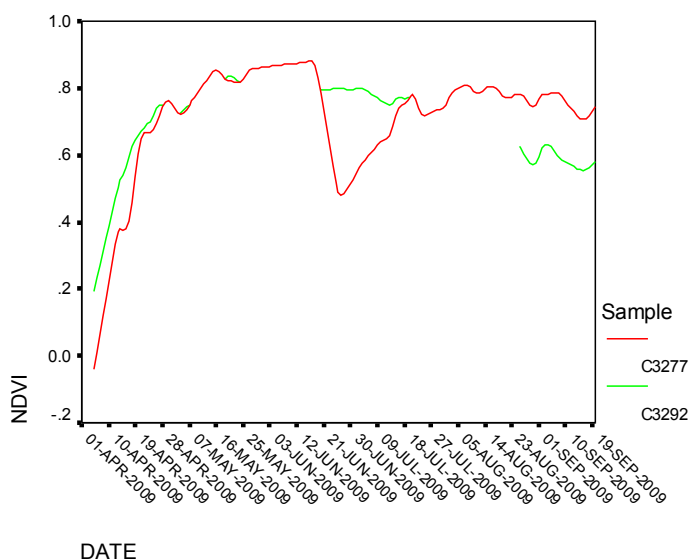


Fig. 1. Detection of cut (red) vs. uncut (green) meadows in the Latorica Natura 2000 site (SKUEV0006)

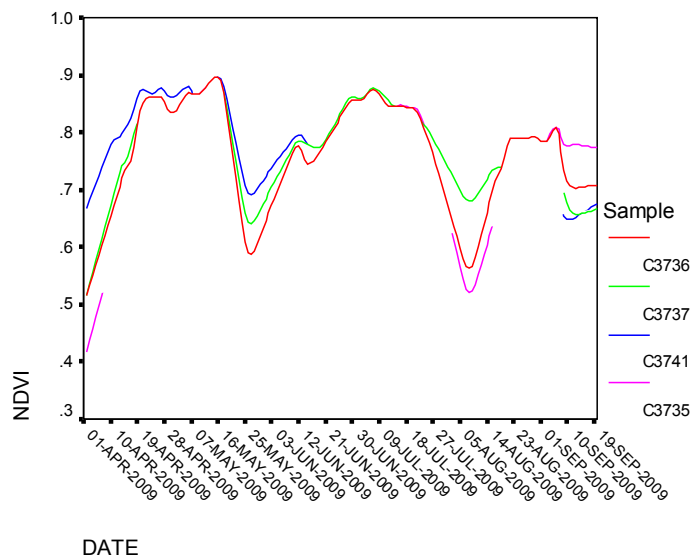


Fig. 2. Two-phase cutting in the Ipoly valley Natura 2000 site (SKUEV0257)

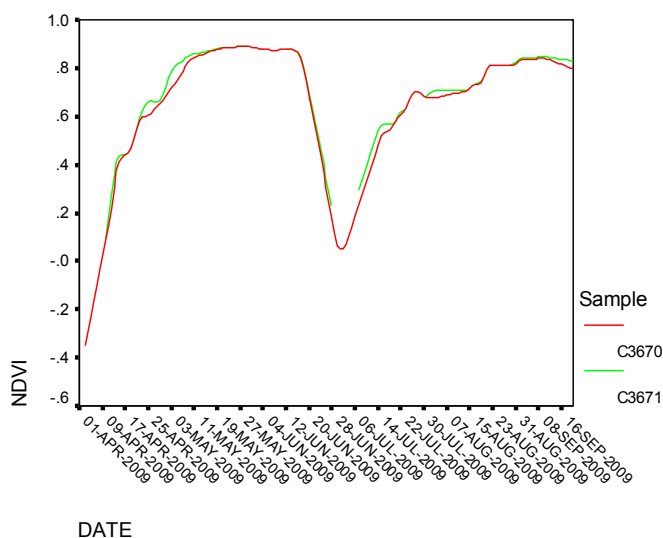


Fig. 3. Detection of flooding of the Morava river alluvial wetlands (SKUEV0313)

WP7

Setting up the basic Database Structure

By Johannes Peterseil

Background

Data management is a key feature in a monitoring framework with the aim to provide the data with sufficient meta information for the analysis. The EBONE data management framework will build on existing tools and adopt these for the

needs for a European Biodiversity Monitoring framework. This includes the determination of essential operational core services, the determination of relevant data flows and data according to INSPIRE and GEO data sharing principles, the establishment of a database for the collected field test data, and the design of data architecture and technical tools for needed services.

To set up the basic data structure for the EBONE data management framework a data workshop was held in June 2009 in Vienna.

This workshop had the aim to explore existing data sources for EBONE based on examples and discuss the data model needed for EBONE.

Data sources and Data flow

In principal two types of data sources can be identified for the EBONE network the data management has to deal with:

- Data mapped according to the EBONE mapping procedure (GHC/species) on new sites. These data are full compliant to the EBONE data structure and raw data should be available in most of the cases.
- Data from existing monitoring schemas which are harmonised and transformed according to the EBONE transformation rules for GHC/species. These data show different data models which have only a certain level of compliancy to the EBONE data structure. Furthermore often raw data together with their metadata can not be directly accessed but only aggregated values for different parameters for a defined analysis unit (e.g. landscape squares) are available.

Based on the existing data relevant for EBONE the data flows can be identified (see Figure 1). In principal there is no difference in the process between the species and habitat information.

Proof of concept

Based on existing habitat mapping data within the EBONE consortium the steps of the data flow model were implemented using a simple Access database. Example data from existing habitat mapping projects - the British Country Side Survey (UK), the North Ireland Country Side Survey (N-IRL), NILS (Sweden), SINUS (Austria) – as well as from landscape squares mapped according to the EBONE habitat protocol – example data from France and Israel – were used to do the test (see Figure 2).

Coming work

The results of the test proofed the data flows. Further steps are to provide an overview on the existing data management solutions dealing with habitat/species monitoring data or environmental monitoring data in Europe and decide on the most appropriate for EBONE, and to provide a quick solution to start with and further develop the EBONE system.

Selection of relevant Data sources (WP 2/7)
Incl. Stratification (WP3)

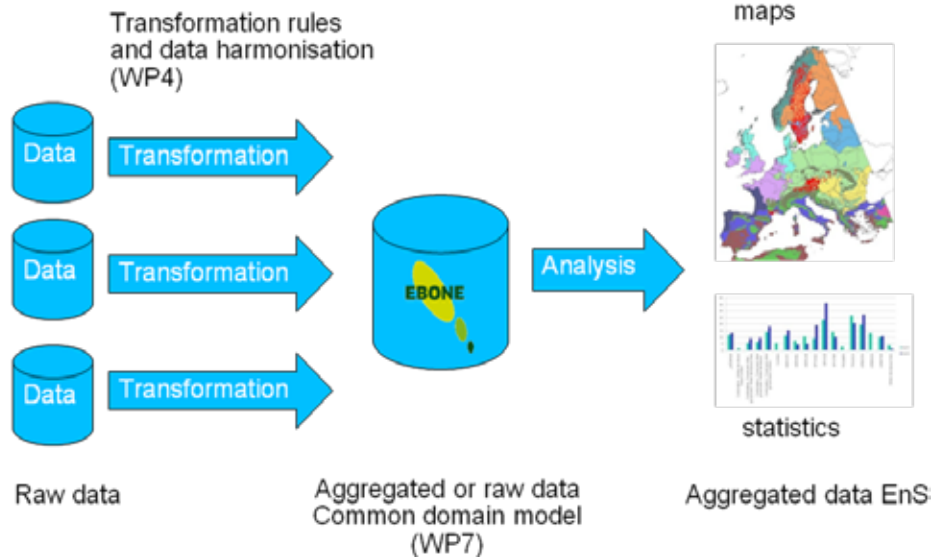


Figure 1 Schema of the data flows for the EBONE data management

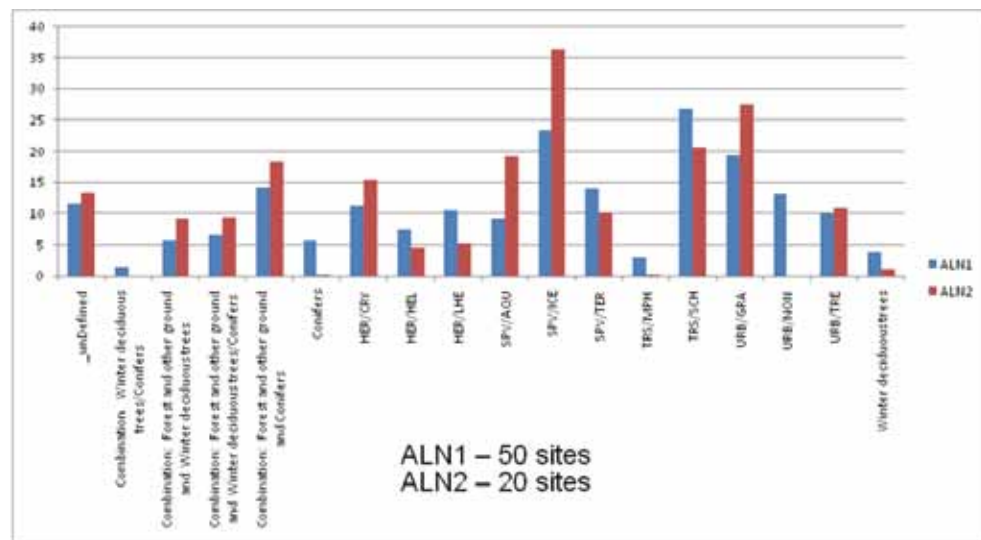


Figure 2 Exemplary calculation of the mean share of GHC per EnS on the basis of the harmonised example data for the two strata Alpine North 1 (ALN1) and 2 (ALN2). The number of landscape squares for the EnS is given in the diagram as the number of sites

Presentation of partners: University of Vienna (UNIVIE)



UNIVIE is involved in the WP's 4, 5, 6 and 8. Current activities include the possible incorporation of Austrian SINUS-Data into the EBONE system and contribution to the work of WP5 concerning forest fragmentation. An important part in the coming year will be field work in Austrian lowlands as well as in mountainous regions in Austria.

The Department of Conservation Biology, Vegetation and Landscape Ecology from the University of Vienna (UNIVIE) has a focus on vegetation development in a regional and global perspective. At the department, research in conservation biology is focused on naturalness of vegetation, biodiversity hot spots in Austria and gap analysis for conservation. The maintenance of traditional human made landscapes or cultural landscapes has become a matter of broad interest during recent years. Thomas Wrba and his colleagues are exploring this field trying to find an objective way in landscape classification, analysing structural and functional landscape components, and finally trying to present solutions for the future development, both for Austrian and in the European context. Extensive research has dealt with the use of structural landscape features as indicators for sustainable land-use, biodiversity in cultural landscapes and the driving forces acting upon, as well as historical analysis of interactions between society and nature. They are studying the interplay of biodiversity and landscape and cover a wide field from remote sensing based landscape ecology over habitat mapping to vegetation analysis in the landscape context.

The origin of the institution reaches back to the year 1973, where the chair for plant sociology and vegetation science was founded at the Institute of Plant Physiology. In the year 1988 the chair changed the focus to vegetation ecology and nature conservation science. Since 1992, a research group surrounding Thomas Wrba started working on landscape ecology.

When the Institute of Ecology and Nature Conservation was founded in the year 2000, landscape ecology was included into the name of the chair. A reorganisation of the whole university in 2005 led to the foundation of the Faculty of Life Sciences with currently 24 departments including the Department of Conservation Biology, Vegetation and Landscape Ecology.



Joint Research Centre (JRC)

The Joint Research Centre (JRC) is a Directorate General of the European Commission, and a research based policy support organisation. The JRC is providing the scientific advice and technical know-how to support a wide range of EU policies. Our status as a Commission service, which guarantees our independence from private or national interests, is crucial for pursuing our mission:

“The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether private or national.”

The JRC has seven scientific institutes, located at five different sites in Belgium, Germany, Italy, the Netherlands and Spain, with a wide range of laboratories and unique research facilities. Through numerous collaborations, access to many facilities is granted to scientists from partner organisations. Our work ranges from detecting and measuring genetically modified organisms (GMO) in food and feed to developing nuclear forensics technology for combating illicit trafficking of nuclear material and to using satellite technologies for monitoring land use and emergency situations such as forest fires and floods. Our activities also involve the definition of food safety standards, research into new energy technologies and evaluating policy options, for instance related to climate change. The JRC employs around 2750 staff



Landscape view of the JRC Ispra site (North of Italy).



Locations of the seven JRC Institutes in the five different sites in Belgium, Germany, Italy, the Netherlands and Spain.

coming from throughout the EU, and its budget comprises €330 million annually, coming from the EU's research budget. Further income is generated through the JRC's participation in indirect actions, additional work for Commission services and contract work for third parties, such as regional authorities and industry. The latest figures are available in the JRC annual report.

JRC is involved in EBONE through the Institute for the Environment and Sustainability (IES), located in Ispra (North Italy). The IES was created in 2001 through a merger of the former Environment Institute of the JRC with the Space Applications Institute, which resulted in a scientific structure that covers the entire range of environmental sciences, with particular competences in the field of earth observation and remote sensing. With over 400 staff, the IES is one of the largest interdisciplinary

environmental research institutes in Europe. Its institutional budget of approx. 45 million Euro per year (staff costs and research credits) stems from direct funding through the EU Framework Research Programme and competitive income. Made up of six scientific Units, the Institute is engaged in seven main fields of activity:

- Sustainable Use of Natural Resources: Water, Soils, Forests
- Sustainable Agriculture and Rural Development
- Climate Change Mitigation and Adaptation
- Environmental Risks and Natural Hazards
- Sustainable Transport and Air Quality
- Environmental Dimension of Development Co-operation
- Environmental Monitoring and Information Systems: GMES and INSPIRE.

Umweltbundesamt (EAA)

Umweltbundesamt, the Environment Agency Austria (EAA), is the leading Austrian expert organisation for all environmental issues and media. EAA works for the conservation of nature and the environment, and thus contributes to the sustainable development of society. Its core tasks include the monitoring, management and evaluation of environmental data. EAA employees work in four programmes: Data & Diagnosis, Substances & Analysis, Economy & Impact and Nature & Usages. Using an interdisciplinary approach, EAA experts provide recommendations for decision-makers in politics, business and administration and develop strategic perspectives and scenarios for the achievement of environmental policy targets in Austria and Europe. EAA promotes interdisciplinary expertise in all environmental disciplines, as well as in software development and the operation of applications, air quality monitoring, chemical and GMO analysis and project management.

EAA currently employs more than 480 experts. Within the scope of environmental control, EAA records, analyses and evaluates data on the state and development of the environment, including biodiversity. It is one of the leading Austrian institutions involved in the development of the national biodiversity monitoring scheme (MOBI) and managing the Austrian LTER. In the IT relevant departments of

the EAA e-Government compliant for environmental control are designed, developed and run.

EAA has internationally recognized experience in individual ecological domains, ecosystem research and information technology. It plays an important role in the EIONET serving as National Focal Point (NFP) for the European Environment Agency and as partner in the European Topic Centres (ETCs) for Regional and Territorial Development of Rural Areas (LUSI), Biological Diversity, Air and Climate Change, and Resource and Waste Management.

EAA is involved in numerous national research activities and projects of FP6/7 (e.g. leading 3 work packages within the NoE ALTER-Net, including those dealing with the design for LTER-Europe, integration of socio-economic and ecological research and information technology and leading the work package on Database management in EBONE). It currently holds the Chair of the European Long-Term Ecosystem Research Network, LTER-Europe, which is a key component of the European Research Area. EAA has gained experience in the creation and management of ontologies for semantic data networking in various projects, inter alia

- MORIS (MONitoring Research Information System): using ontologies to store and manage data from Long Term Socio-Ecological Research on the site- and sub-regional level and
- ALTER-Net NoE: up-scaling national solutions to a European level and harmonisation with international standards.

Contribution to the EBONE project: EAA is participating in the project as a coordinator of WP7 (data management) and is involved in WP0, WP1, WP5, WP6, WP8 and WP10. The activities, carried out in WP7 are focused on the development and implementation of a common information management strategy for biodiversity related data resulting from the EBONE project.



Project meetings

WP9 **The WP9 international workshop at Neve Shalom**

by *Linda Olsvig-Whittaker*

WP9 held an international workshop during 27-29 October 2009 at Neve Shalom/Wahat al-Salaam, a beautiful Jewish and Arab agricultural village in the coastal plain of Israel. Visiting participants included Bob Bunce, France Gerard, Lubos Halada, Melanie Luck-Vogel, Sander Mucher, and Philip Roche. Israeli EBONE members included Eliezer Frankenberg, Yonat Magal, Linda Olsvig-Whittaker, Yehoshua Shkedy, and Margareta Walczak.

The first day consisted of formal presentations on remote sensing in habitat classification, habitat mapping in EBONE, stakeholders and their needs, and biodiversity and in-situ data. Altogether, 47 participants were in the first day of meetings, including the 11 EBONE members. Most of the participants were stakeholders or Israelis who had participated in EBONE field and analytical work as students. We also had a representative of the European Commission in Israel who spoke to us on scientific cooperation between Europe and Israel. All presentations from the first day are in the internal EBONE wiki as pdf files in the folder (available on request to those not in EBONE).

The second day was a field excursion mainly organized to give the visiting EBONE members a grasp of

the variety of Israeli landscapes covered in very short distances. We travelled from Mediterranean to desert landscapes, ending at the oasis of Ein Gedi and the ancient fortress of Masada, a World Heritage Site, where the manager conducted our visitors on a guided tour that finished with cheese and wine on the terrace of the visitor's center. Altogether, our visiting guests had a good dose of Middle Eastern history, landscape, culture, hospitality, and food.

The third day was a smaller workshop of EBONE members and Israelis who had worked closely with us. This was organized into three morning sessions: habitat, remote sensing, and biodiversity, and an afternoon session to pull together our work plan for the next stage. Among the new ideas, WP5 commits to work with the Israeli team on selecting suitable thematic scanning and testing land cover mapping correlations mapped areas.

The greatest challenge is the study of biodiversity. We agreed among ourselves to select some preliminary biodiversity parameters and start making correlations with both habitat mapping and EO land cover data during the coming year. We recognized the need to cooperate more closely with the other partners and developed some specific plans for remote sensing and biodiversity work in the coming year.



The EBONE project meeting in Thessaloniki

At a beautiful location overlooking the town of Thessaloniki the EBONE team joined forces with the Advisory Board in an productive working meeting. Having just finished the 18th month report it was clear to all what was achieved and where there were still challenges ahead. The meeting was organised allowing ample time for breakout sessions where working plans could be discussed in small groups, resulting in a clear overview of tasks, deadlines and responsible persons. First results of the Work Packages were either presented during the meeting or on posters displayed in the meeting room.

Several members of the Advisory Board were present throughout the meeting and were pleased with this extra time to be able to speak to EBONE participants to get a better insight of the project's on-goings. Therefore it was decided to connect the next Advisory Board meeting to the project meeting in Sweden, September 2010.



Forthcoming conferences and events

UNESCO IYB Biodiversity Science-Policy Conference

Date: 25-29 January, 2010

Place: Paris, France

Further information: <http://events.unesco.org/>

Sixth Trondheim Conference on Biodiversity

Date: 1-5 February, 2010

Place: Trondheim, Norway

Further information: www.trondheimconference.org/

Diversitas pre-COP meeting

Date: 25-26 March, 2010

Place: Nagoya, Japan

Further information: Invitation only

Field Training Habitat Monitoring

Date: 29 March - 1 April, 2010

Place: El Tiemblo, Spain

Further information: Marion Bogers/Bob Bunce

EBONE project meeting

Date: 27 - 29 April, 2010

Place: Bucharest, Romania

Further information: Elena Preda

Field Training Habitat Monitoring

Date: 3 - 7 May, 2010

Place: Bulgaria.

Further information: Marion Bogers/Bob Bunce

SBTTA 14

Date: 10 - 21 May, 2010

Place: Nairobi, Kenya

Editorial

Responsible: Marion Bogers,

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More information: www.ebone.wur.nl

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