

**Towards establishment of effective data support  
mechanism of EASIN – potential contribution  
of thematic international open access journals  
as cost-effective tools for data collection and  
information management**

**Experts' position document**  
for open discussion on further strengthening  
EASIN as supporting tool to the IAS EU Regulation

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## Key points for open discussion:

1. “Official”/”formal” approaches to developing of operational **data support mechanism (DSM)** for EASIN may not work;
2. Effective **DSM** for EASIN should include relevant services for “informal” reporting by primary dataholders;
3. Open data publishing /thematic open access journals should be integrated into EASIN as **a core component of DSM**
4. **EASIN Board of Editors** should play a key role in verification of information submitted to EASIN by primary dataholders via online data submission interface/service (to be developed);
5. Mechanisms for support of editorial work by EASIN Editors and for open data publishing should be elaborated.

# Initial concept of EASIN, agreed among key European expert networks and database managers - 1



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Viewpoint

<http://www.reabic.net/journals/mbi/2013/Issue1.aspx>

## Implementing the European policies for alien species – networking, science, and partnership in a complex environment

Stelios Katsanevakis<sup>1</sup>, Piero Genovesi<sup>2</sup>, Samy Gaiji<sup>3</sup>, Helene Nyegaard Hvid<sup>4</sup>, Helen Roy<sup>5</sup>, Ana Luísa Nunes<sup>1</sup>, Francisco Sánchez Aguado<sup>6</sup>, Konstantins Bogucarskis<sup>1</sup>, Bos Debusscher<sup>7</sup>, Ivan Deriu<sup>1</sup>, Colin Harrower<sup>5</sup>, Melanie Josefsson<sup>8</sup>, Frances E. Lucy<sup>9,10</sup>, Agnese Marchini<sup>11</sup>, Gareth Richards<sup>12</sup>, Teodora Trichkova<sup>13</sup>, Sonia Vanderhoeven<sup>14</sup>, Argyro Zenetos<sup>15</sup> and Ana Cristina Cardoso<sup>1</sup>

<sup>1</sup> European Commission, Joint Research Centre, Institute for Environment and Sustainability, Water Resources Unit, Ispra, Italy

Result of a workshop organized in Ispra by JRC on 6–7 December 2012 aiming to bring together representatives of key alien species initiatives in Europe to discuss future collaboration

# Initial concept of EASIN, agreed among key European expert networks and database managers - 2



Management of Biological Invasions (2013) Volume 4, Issue 1: 3–6

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## Viewpoint

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## Implementing the European policies for alien species – networking, science, and partnership in a complex environment

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<sup>1</sup> Europe

1. **“EASIN will not create new knowledge *per se*, but will instead – working in contact with all involved actors – harmonize and aggregate information made available by data providers, thereby facilitating timely access to key data on alien species and providing valuable tools and services to scientists and policy makers.”**

# Initial concept of EASIN, agreed among key European expert networks and database managers - 3



Management of Biological Invasions (2013) Volume 4, Issue 1: 3–6

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## Implementing the European policies for alien species – networking, science, and partnership in a complex environment

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<sup>1</sup> *Europ*

**2. “EASIN will work in partnership with European and global data providers to facilitate access to key data and information on alien species and to demonstrate the usefulness of the existing databases. Ultimately, EASIN should facilitate further support to data collection and database maintenance and sustainability.”**

# Initial concept of EASIN, agreed among key European expert networks and database managers - 3



Management of Biological Invasions (2013) Volume 4, Issue 1: 3–6

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Viewpoint

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## Implementing the European policies for alien species – networking, science, and partnership in a complex environment

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<sup>1</sup> *Europe*

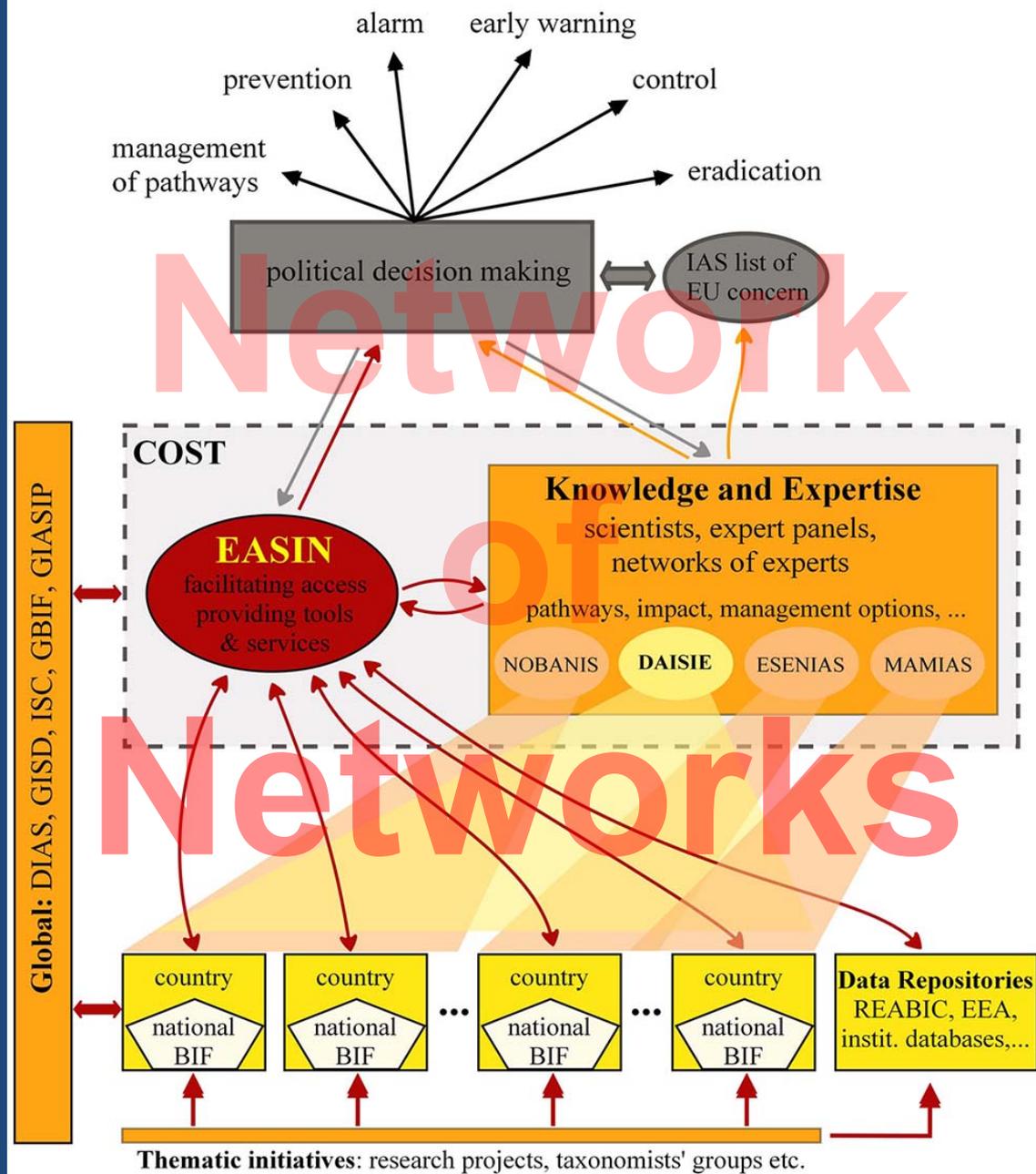
3. “EASIN will promote the principles of open-source, ensure accreditation of data publishers and data owners, highlight the work of other initiatives and increase their visibility, and facilitate direct access to the original information/data.”

## Players involved in the process:

1. Networks of environmental agencies and managers (“Data users”)
2. Networks of national, regional, and global information systems (“Data managers”)
3. Formal and informal networks of experts and citizens (“Data holders”)

**EASIN should serve this Network of Networks**

The proposed organizational chart of all the players in developing an EU information network for alien species (EASIN)  
(after Katsanevakis et al. 2013)



## Current status of EASIN:

### Official information support system supporting the European Regulation 1143/2014

European Regulation 1143/2014 on prevention and management of introduction and spread of Invasive Alien Species (IAS):

Article 25

#### Information support system

1. The Commission shall progressively establish an **information support system** necessary to facilitate the application of this Regulation.
2. **By 2 January 2016** that system shall include a **data support mechanism** interconnecting existing data systems on invasive alien species....

How to develop **effective** data support mechanism for EASIN?

Two possible approaches:

“**official**” (top-down – governments-supported information systems)

and “**informal**” (bottom-up – initiatives by concerned scientists and citizens,  
**to be supported by EASIN,  
as it was initially agreed by EASIN team  
and European scientific community)**)

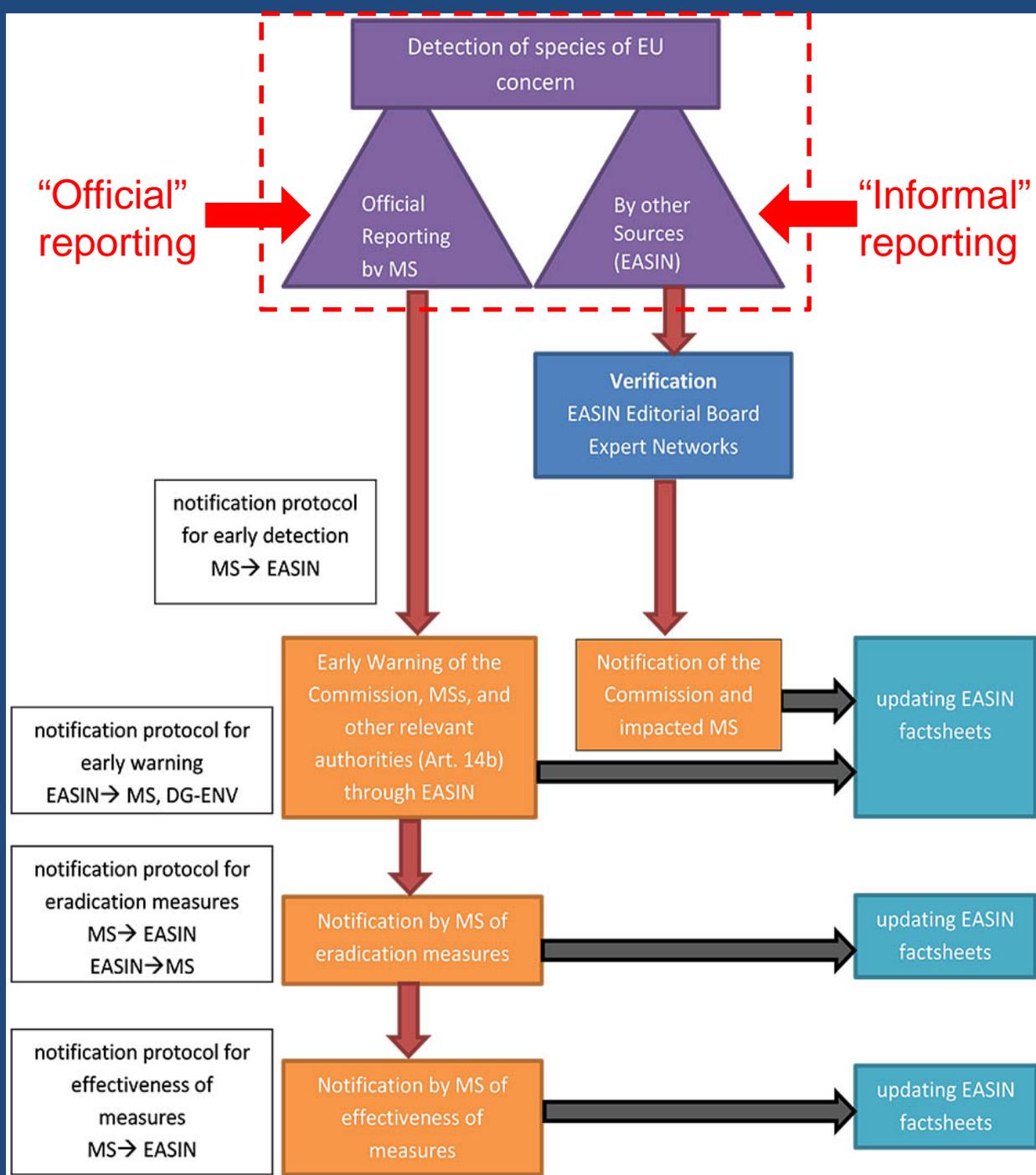
**Which approach is more effective?**

# Towards effective EASIN data support mechanism

First critical stage in delivering of IAS-related information to the level of decision-making:

Transfer of primary data from dataholders to information management system (EASIN in case of EU)

Flow chart for the early warning and rapid notification system for IAS of European concern to be implemented through EASIN in support of the new IAS Regulation (after Katsanevakis et al. 2015)



Networks of environmental agencies and managers

How to make this complex

**Network of Networks**

interconnected and function effectively?

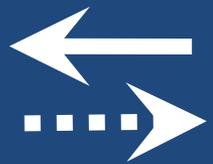
Networks of IAS-related databases



Networks of primary data owners: scientists, citizens

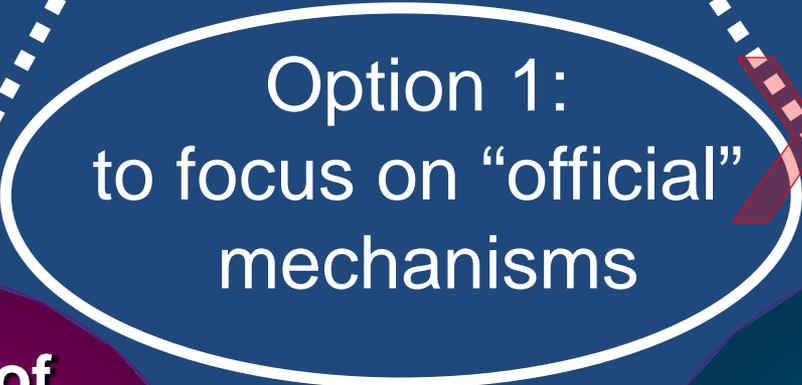


**Towards effective EASIN data support mechanism**

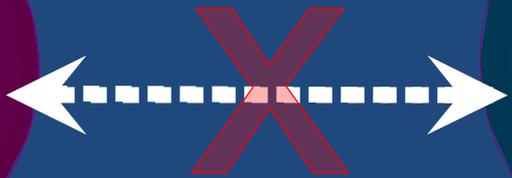
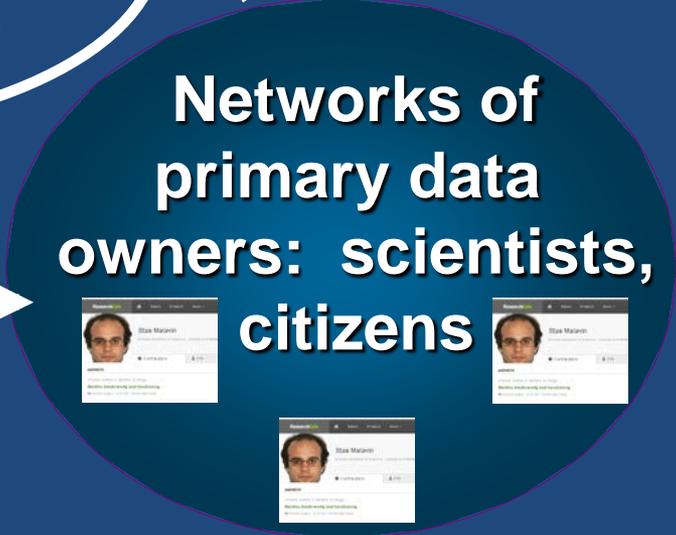
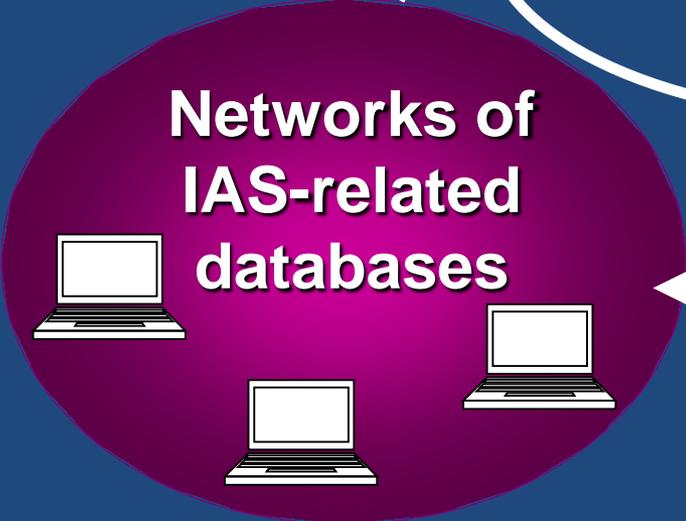


**Information flow and services**

Can be potentially effective via EC-supported EASIN team – but only in case of primary data availability



**NOT effective:  
Contract-based  
Expensive**



**NOT effective:  
Project-based  
Expensive**

# Example of “official” approach for development of informational resources on IAS: 12-year history of HELCOM efforts to establish regional information system on IAS



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HELCOM AT WORK

BALTIC SEA TRENDS

ACTIO

BALTIC MARINE ENVIRONMENT PROTECTION COMMISSION

## May 2003 – HELCOM requested Contracting Parties to:

1. Nominate focal points on aquatic bioinvasions to provide up-to-date information on invasive aquatic species in the areas of their jurisdiction;
2. Provide access to the HELCOM environmental monitoring data on non-native species for timely incorporation of information into open informational resources (GIS “Invasive Species of the Baltic Sea” – **RBIC(former name of REABIC)-based!** )

## Results:

1. During 2003-2004 HELCOM Contracting Parties nominated scientists from governmental institutions as National Focal Points on aquatic bioinvasions for the Baltic Sea area;
2. National Focal Points provided first data to GIS “Invasive Species of the Baltic Sea” **in 2006 only in format of research articles – after establishment of the first REABIC journal – *Aquatic Invasions*, which was developed specifically for protection of authors rights on primary species record data.**

## Conclusion:

**Scientists are not interested to share their unpublished data with open information systems, but they are highly interested in good publication services!**

# Example of “official” approach for development of informational resources on IAS: 12-year history of HELCOM efforts to establish regional information system on IAS

Result of HELCOM efforts during 2012-2015 under three formal HELCOM projects (HELCOM ALIENS 2 , ALIENS 3 and BALSAM):  
**sophisticated online IAS decision support tool**

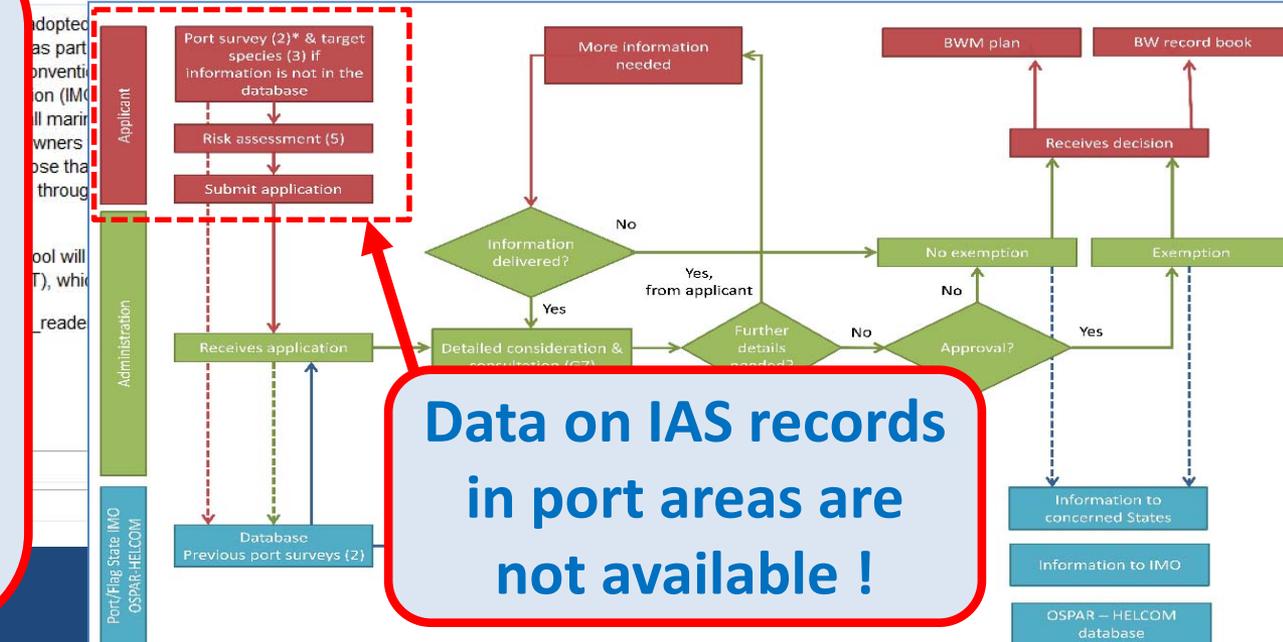
## Risk Assessment Tool under the HELCOM/OSPAR Harmonised Procedure on Exemptions under the Ballast Water Management Convention



**BUT:**

**this sophisticated and expensive “official” tool is not operational – data support mechanism is missing, or not working!**

Decision support tool on alien species introductions via Ballast Water



**Networks of environmental agencies and managers**

**Option 2:  
to develop “informal” mechanisms**

**Networks of IAS-related databases**



**Networks of primary data owners: scientists, citizens**



**Towards effective EASIN data support mechanism**

**Networks of environmental agencies and managers**

**Highly effective:** experts can provide recommendations for management of IAS, and managers can report on best management practices in applied papers

**Highly effective:** experts always interested in journal publications and even ready to pay for open access to their papers – but some of them may need support for data publication

**Open Access journals**

**Networks of IAS-related databases**



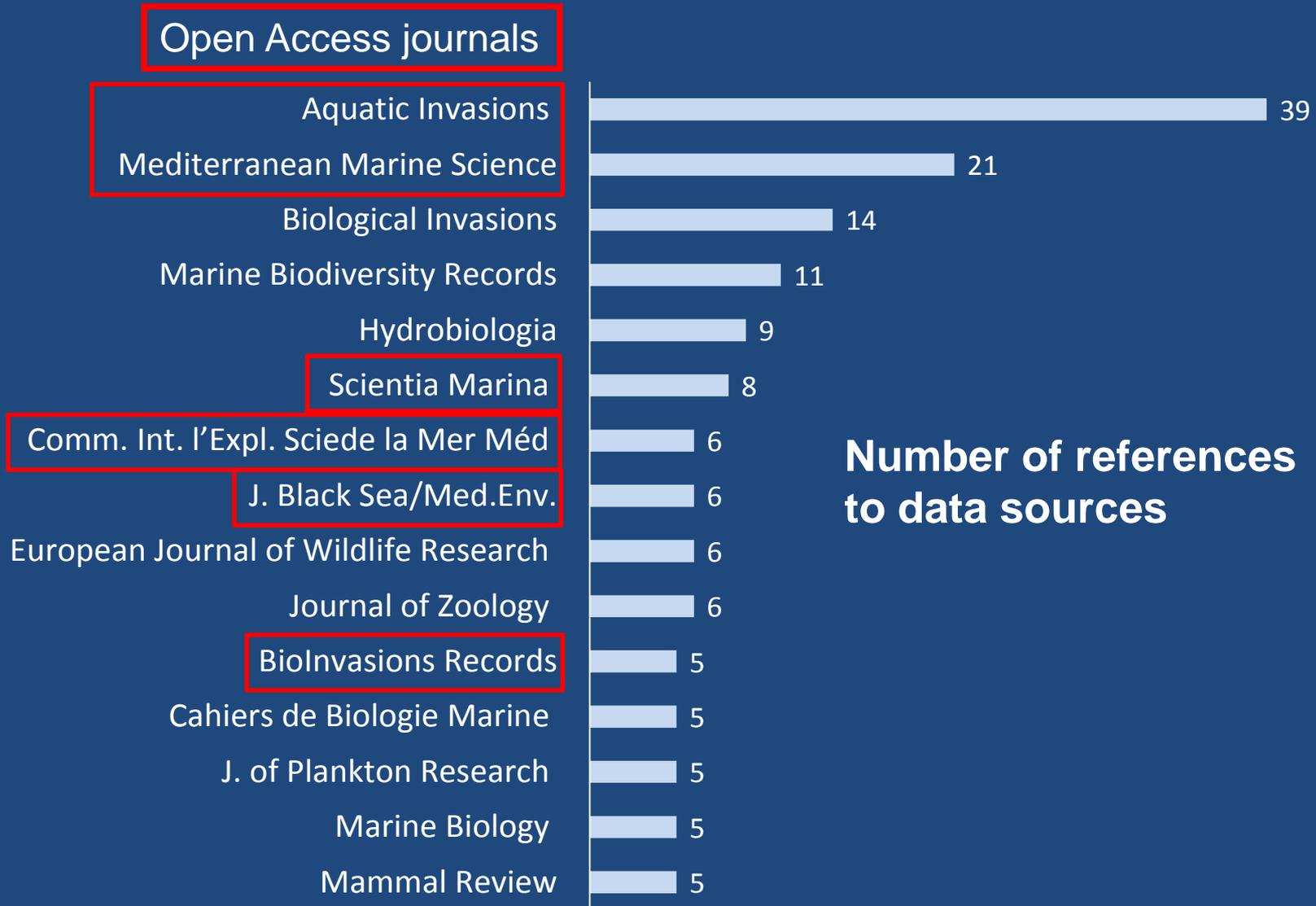
**Cost-effective:** some resources are needed for transfer of published data to the database

**Networks of primary data owners: scientists, citizens**



**Information flow and services**

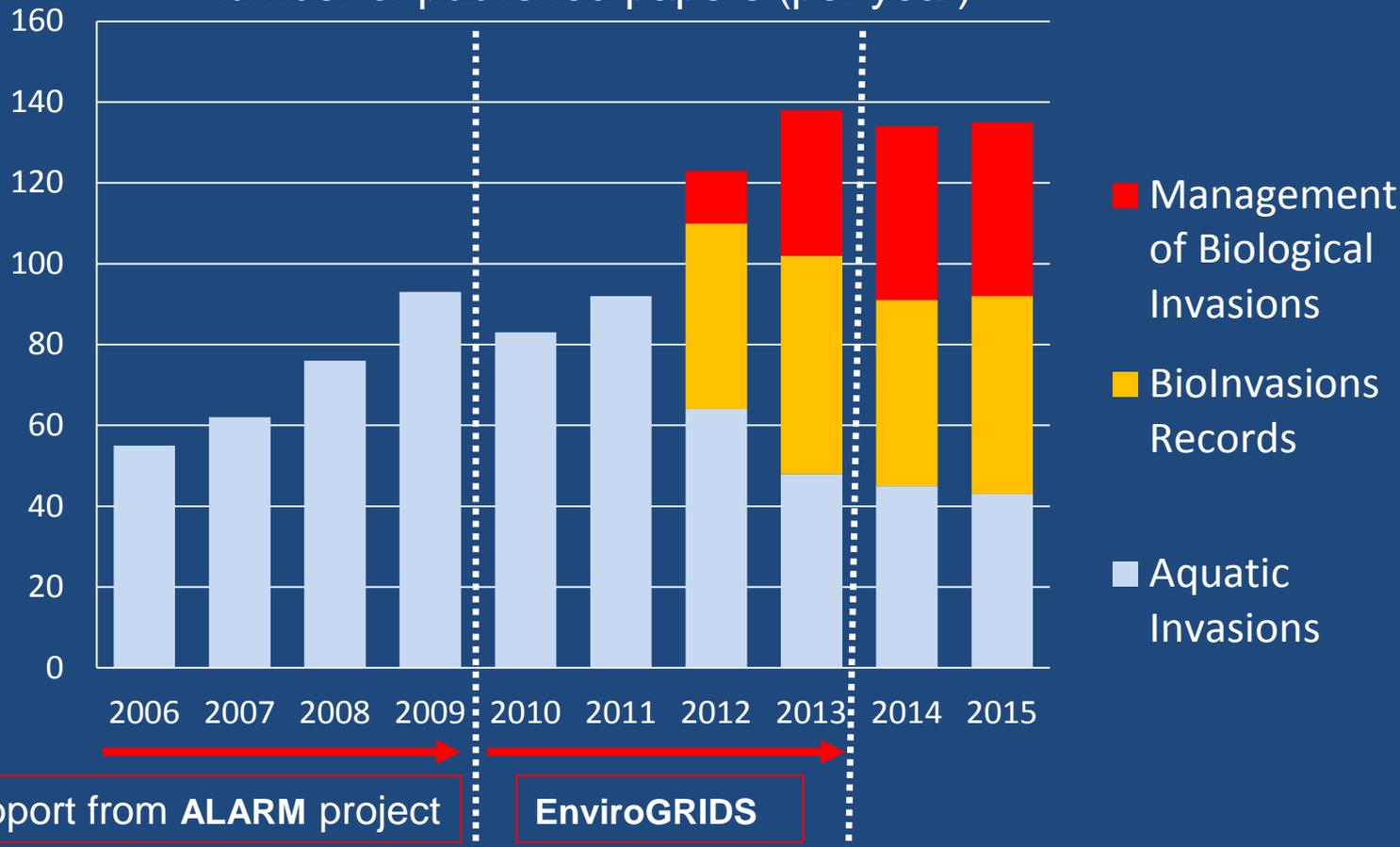
# Data publishing services of open access journals: contribution to EASIN-lit with geo-referenced IAS record data, top 15 journals (2015)



Services of three thematic open access REABIC journals for scientists, database managers and environmental managers: established as a bottom-up initiative of concerned scientists for support of open informational resources on IAS in Europe (with start-up funding from European Commission FP6 and FP7 projects **ALARM** and **EnviroGRIDS**)

<http://www.reabic.net/journals/>

Number of published papers (per year)



Support from **ALARM** project

**EnviroGRIDS**

# Open Access journals support expert networks by publishing collaborative research –

## EU COST action TD1209: Alien Challenge



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### Research Article

## Inventory of alien and cryptogenic species of the Dodecanese (Aegean Sea, Greece): collaboration through COST action training school

Maria Corsini-Foka<sup>1\*</sup>, Argyro Zenetos<sup>2</sup>, Fabio Crocetta<sup>3</sup>, Melih Ertan Çinar<sup>4</sup>, Ferah Koçak<sup>5</sup>, Daniel Golani<sup>6</sup>, Stelios Katsanevakis<sup>7, 8</sup>, Konstantinos Tsiamis<sup>9, 7</sup>, Elizabeth Cook<sup>10</sup>, Carlo Frogli<sup>11</sup>, Maria Triandaphyllou<sup>12</sup>, Sami Lakkis<sup>13</sup>, Gerasimos Kondylatos<sup>14</sup>, Elena Tricarico<sup>15</sup>, Ante Zuljevic<sup>16</sup>, Mariana Almeida<sup>17</sup>, Frederico Cardigos<sup>18</sup>, Senem Çağlar<sup>19</sup>, Furkan Durucan<sup>20</sup>, António M.D. Fernandes<sup>21</sup>, Jasmine Ferrario<sup>22</sup>, Ines Haberle<sup>23</sup>, Paraskevi Louizidou<sup>1</sup>, Josif Makris<sup>24</sup>, Martina Marić<sup>25</sup>, Dragoş Micu<sup>26</sup>, Carmen Mifsud<sup>27</sup>, Chris Nall<sup>28</sup>, Eleni Kytinou<sup>29, 9</sup>, Dimitris Poursanidis<sup>30</sup>, Daniele Spigoli<sup>31</sup>, Gianluca Stasolla<sup>32</sup>, Sercan Yapici<sup>33</sup> and Helen E. Roy<sup>34</sup>

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**Table S1.** Inventory of marine alien and cryptogenic species in Dodecanese Islands (March 2015).

Species	Origin	Introduction pathway	Establishment success
<b>Cyanobacteria</b>			
<i>Trichodesmium erythraeum</i> Ehrenberg ex Gomont, 1893	Indo-Pacific/Red Sea	Unknown	Alien?/Unknown
<b>Prymnesiophyceae</b>			
<i>Phaeocystis pouchetii</i> (Hariot) Lagerheim, 1896	Cosmopolitan	Shipping?	Cryptogenic/Established
<b>Bacillariophyceae</b>			
<i>Proboscia indica</i> (Peragallo) Hernández-Becerril, 1995	Indo-Pacific	Suez/spreading	Cryptogenic/Unknown
<b>Ulvophyceae</b>			
<i>Caulerpa cylindracea</i> Sonder	Indo West Pacific	Aquarium trade	Alien/Invasive
<i>Caulerpa distichophylla</i> Sonder	South Pacific	Aquarium trade	Alien/Established
<i>Caulerpa racemosa</i> var. <i>lamourouxii</i> f. <i>requienii</i> (Montagne) Weber-vanBosse	Indo West Pacific	Suez/spreading	Alien/Established

# Open Access journals services for support of expert networks: publication of collaborative research – pan-European reviews



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Review

## Impacts of invasive alien marine species on ecosystem services and biodiversity: a pan-European review

Stelios Katsanevakis<sup>1\*</sup>, Inger Wallentinus<sup>2</sup>, Argyro Zenetos<sup>3</sup>, Erkki Leppäkoski<sup>4</sup>, Melih Ertan Çinar<sup>5</sup>, Bayram Oztürk<sup>6</sup>, Michal Grabowski<sup>7</sup>, Daniel Golani<sup>8</sup> and Ana Cristina Cardoso<sup>1</sup>

<sup>1</sup>European Commission, Joint

<sup>2</sup>Department of Biological a

<sup>3</sup>Institute of Marine Biologic

<sup>4</sup>Department of Biosciences,

<sup>5</sup>Ege University, Faculty of I

<sup>6</sup>Faculty of Fisheries, Marin

<sup>7</sup>Department of Invertebrate

<sup>8</sup>Department of Ecology, Ev  
of Jerusalem, Israel



Aquatic Invasions (2015) Volume 10, Issue 4: 359–370

doi: <http://dx.doi.org/10.3391/ai.2015.10.4.01>

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Review

## Pathways and gateways of freshwater invasions in Europe

Ana L. Nunes<sup>1,2,3§\*</sup>, Elena Tricarico<sup>4§</sup>, Vadim E. Panov<sup>5</sup>, Ana C. Cardoso<sup>1</sup> and Stelios Katsanevakis<sup>1,6</sup>

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<sup>5</sup>Regional Euro-Asian Biological Invasions Centre (REABIC), PL 3, 00981 Helsinki, Finland

<sup>6</sup>Department of Marine Sciences, University of the Aegean, 81100 Mytilene, Greece

# Open Access journals services for support of expert networks: publication of collaborative research – *Mediterranean Marine Science Collective articles*

*Mediterranean Marine Science*

Indexed in WoS (Web of Science, ISI Thomson) and SCOPUS  
The journal is available on line at <http://www.medit-mar-sc.net>  
DOI: <http://dx.doi.org/10.12681/mms.1477>

Collective Article A

## New Mediterranean Biodiversity Records (October 2015)

F. CROCETTA<sup>1</sup>, D. AGIUS<sup>2</sup>, P. BALISTRERI<sup>3</sup>, M. BARICHE<sup>4</sup>, Y.K. BAYHAN<sup>5</sup>, M. ÇAKIR<sup>6</sup>, S. CIRIACO<sup>7</sup>,  
M. CORSINI-FOKA<sup>8</sup>, A. DEIDUN<sup>9</sup>, R. EL ZRELLI<sup>10</sup>, D. ERGÜDEN<sup>11</sup>, J. EVANS<sup>12</sup>, M. GHELIA<sup>13</sup>, M. GIAVASI<sup>14</sup>,  
P. KLEITOU<sup>15</sup>,

D. POURSA

*Mediterranean Marine Science*  
Indexed in WoS (Web of Science, ISI Thomson) and SCOPUS  
The journal is available on line at <http://www.medit-mar-sc.net>  
DOI: <http://dx.doi.org/10.12681/mms.1292>

Collective Article A

## New Mediterranean Biodiversity Records (April 2015)

A. ZENETOS<sup>1</sup>, E.H. KH. AKEL<sup>2</sup>, C. APOSTOLIDIS<sup>1</sup>, M. BILECENOGLU<sup>3</sup>, G. BITAR<sup>4</sup>, V. BUCHET<sup>5</sup>, N. CHA-  
LARI<sup>1</sup>, M.

GLIO<sup>9</sup>, A. I  
TOU<sup>1</sup>, L. LI

W. REN

*Mediterranean Marine Science*  
Indexed in WoS (Web of Science, ISI Thomson) and SCOPUS  
The journal is available on line at <http://www.medit-mar-sc.net>  
DOI: <http://dx.doi.org/10.12681/mms.1440>

Collective Article A

## New Mediterranean Biodiversity Records (July 2015)

K. TSIAMIS<sup>1,2</sup>, Ö. AYDOGAN<sup>3</sup>, N. BAILLY<sup>4,5</sup>, P. BALISTRERI<sup>6</sup>, M. BARICHE<sup>7</sup>, S. CARDEN-NOAD<sup>8,9</sup>, M. CORSINI-  
FOKA<sup>10</sup>, F. CROCETTA<sup>11</sup>, B. DAVIDOV<sup>12</sup>, C. DIMITRIADIS<sup>13</sup>, B. DRAGIČEVIĆ<sup>14</sup>, M. DRAKULIĆ<sup>9</sup>, J. DULČIĆ<sup>14</sup>,  
A. ESCÁNEZ<sup>15</sup>, F.A. FERNÁNDEZ-ÁLVAREZ<sup>16</sup>, V. GERAKARIS<sup>1</sup>, V. GEROVASILEIOU<sup>4</sup>, R. HOFFMAN<sup>17</sup>, D.  
IZQUIERDO-GÓMEZ<sup>18</sup>, A. IZQUIERDO-MUÑOZ<sup>19</sup>, G. KONDYLATOS<sup>10</sup>, P. LATSLOUDIS<sup>20</sup>, L. LIPEJ<sup>21</sup>,  
F. MADIRACA<sup>12</sup>, B. MAVRIČ<sup>21</sup>, M. PARASPORO<sup>22</sup>, L. SOURBÈS<sup>13</sup>, E. TAŞKIN<sup>3</sup>, A. TÜRKER<sup>23</sup> and S. YAPICI<sup>23</sup>

# Open Access journals services for delivering scientific advice for IAS-related policies and management:

## Viewpoint papers - 1



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### Viewpoint

## Tackling Invasive Alien Species in Europe: the Top 20 Issues

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### Viewpoint

## Identifying the top issues of marine invasive alien species in Europe

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## Viewpoint papers - 2



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### Viewpoint

## Implementing the European policies for alien species – networking, science, and partnership in a complex environment

Stelios Katsanevakis<sup>1\*</sup>, Piero Genovesi<sup>2</sup>, Samy Gaiji<sup>3</sup>, Helene Nyegaard Hvid<sup>4</sup>, Helen Roy<sup>5</sup>, Ana Luísa Nunes<sup>1</sup>, Francisco Sánchez Aguado<sup>6</sup>, Konstantins Bogucarskis<sup>1</sup>, Bos Debusscher<sup>7</sup>, Ivan Deriu<sup>1</sup>, Colin Harrower<sup>5</sup>, Melanie Josefsson<sup>8</sup>, Frances E. Lucy<sup>9,10</sup>, Agnese Marchini<sup>11</sup>, Gareth Richards<sup>12</sup>, Teodora Trichkova<sup>13</sup>, Sonia Vanderhoeven<sup>14</sup>, Argyro Zenetos<sup>15</sup> and Ana Cristina Cardoso<sup>1</sup>

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### Viewpoint

## The importance of open data for invasive alien species research, policy and management

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## Management in Practice

### **Twenty five years of invasion: management of the round goby *Neogobius melanostomus* in the Baltic Sea**

Henn Ojaveer<sup>1\*</sup>, Bella S. Galil<sup>2</sup>, Maiju Lehtiniemi<sup>3</sup>, Mads Christoffersen<sup>4</sup>, Sally Clink<sup>5</sup>, Ann-Britt Florin<sup>6</sup>, Piotr Gruszka<sup>5,7</sup>, Riikka Puntala<sup>3</sup> and Jane W. Behrens<sup>4</sup>

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# Open Access journals services for database managers and information management and exchange networks:

## *Information Management papers*



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Information Management

### **Building the European Alien Species Information Network (EASIN): a novel approach for the exploration of distributed alien species data**

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and Ana Cristina

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*Special Issue: Alien species related information systems and information management*

Information Management

### **European Alien Species Information Network (EASIN): supporting European policies and scientific research**

Stelios Katsanevakis<sup>1,2\*</sup>, Ivan Deriu<sup>1</sup>, Fabio D'Amico<sup>1</sup>, Ana Luísa Nunes<sup>1</sup>, Sara Pelaez Sanchez<sup>1</sup>, Fabio Crocetta<sup>1</sup>, Margarita Arianoutsou<sup>3</sup>, Ioannis Bazos<sup>3</sup>, Anastasia Christopoulou<sup>3</sup>, Giovanna Curto<sup>4</sup>, Pinelopi Delipetrou<sup>5</sup>, Yannis Kokkoris<sup>3</sup>, Vadim E. Panov<sup>6</sup>, Wolfgang Rabitsch<sup>7</sup>, Alain Roques<sup>8</sup>, Riccardo Scalera<sup>9</sup>, Susan M. Shirley<sup>10</sup>, Elena Tricarico<sup>11</sup>, Andrea Vannini<sup>12</sup>, Argyro Zenetos<sup>13</sup>, Sevasti Zervou<sup>3</sup>, Andreas Zikos<sup>3</sup> and Ana Cristina Cardoso<sup>1</sup>

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# Open Access journals services for database managers and information management and exchange networks: *Mediterranean Marine Science review papers*

Review Article

*Mediterranean Marine Science*

Indexed in WoS (Web of Science, ISI Thomson) and SCOPUS

The journal is available on line at <http://www.medit-mar-sc.net>

DOI: <http://dx.doi.org/10.12681/mms.1064>

## **Updated review of marine alien species and other ‘newcomers’ recorded from the Maltese Islands (Central Mediterranean)**

**J. EVANS, J. BARBARA and P.J. SCHEMBRI**

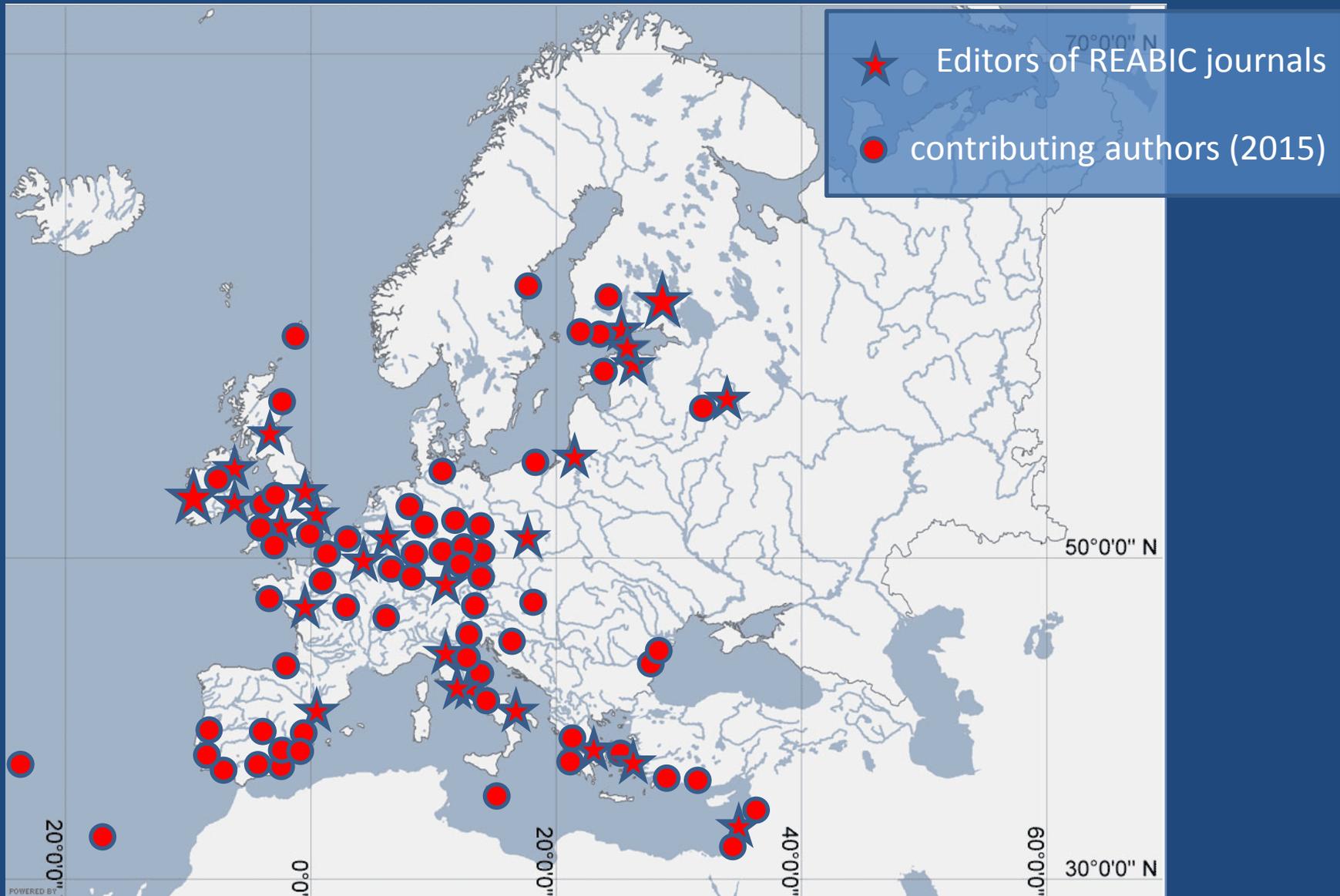
Department of Biology, University of Malta, Msida MSD2080, Malta

Corresponding author: [patrick.j.schembri@um.edu.mt](mailto:patrick.j.schembri@um.edu.mt)

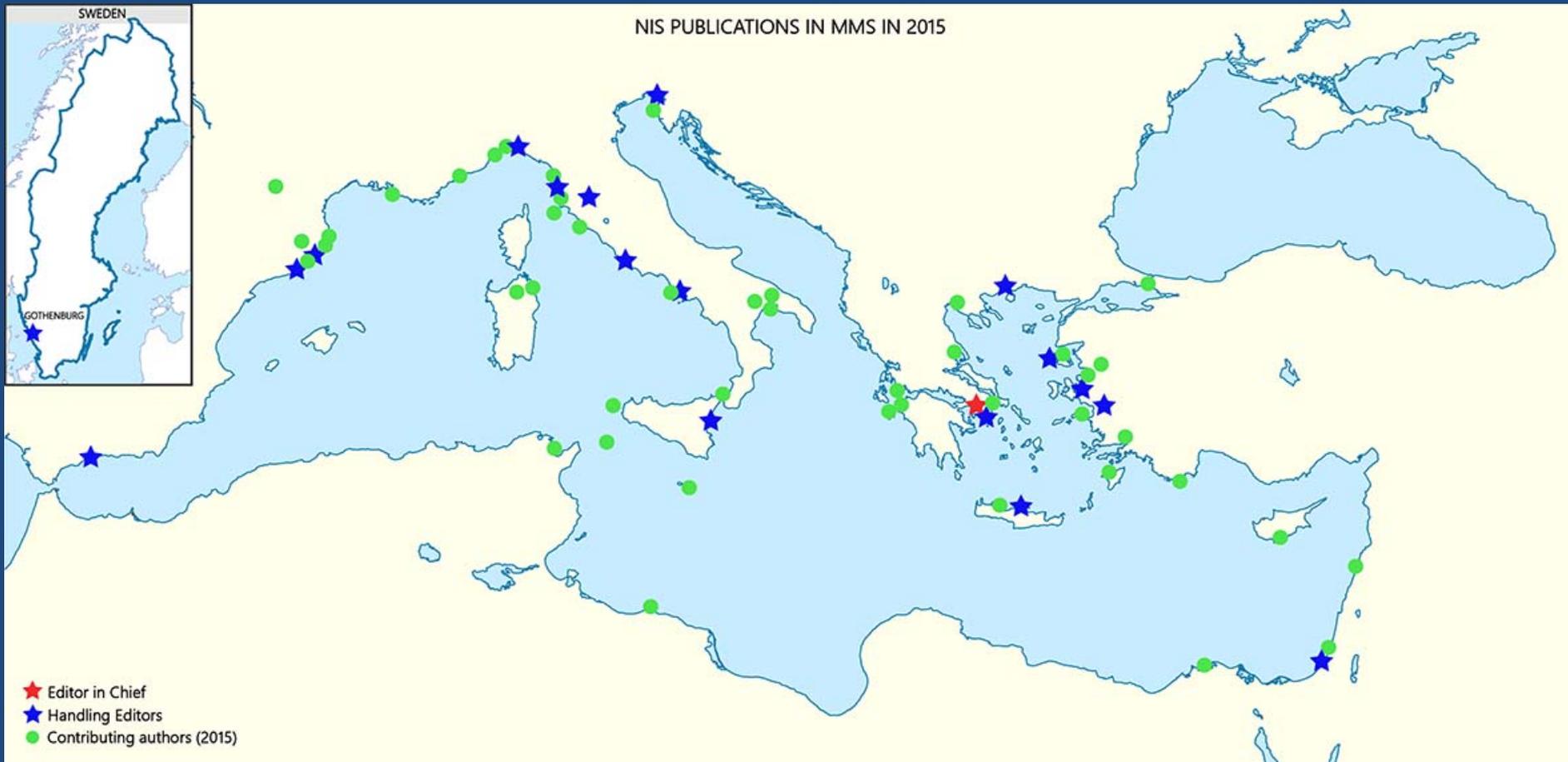
Handling Editor: Argyro Zenetos

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# Services of REABIC journals for support of expert networks: European Information and Research Network on Aquatic Invasive Species (ERNAIS) – informal “Network of Networks”

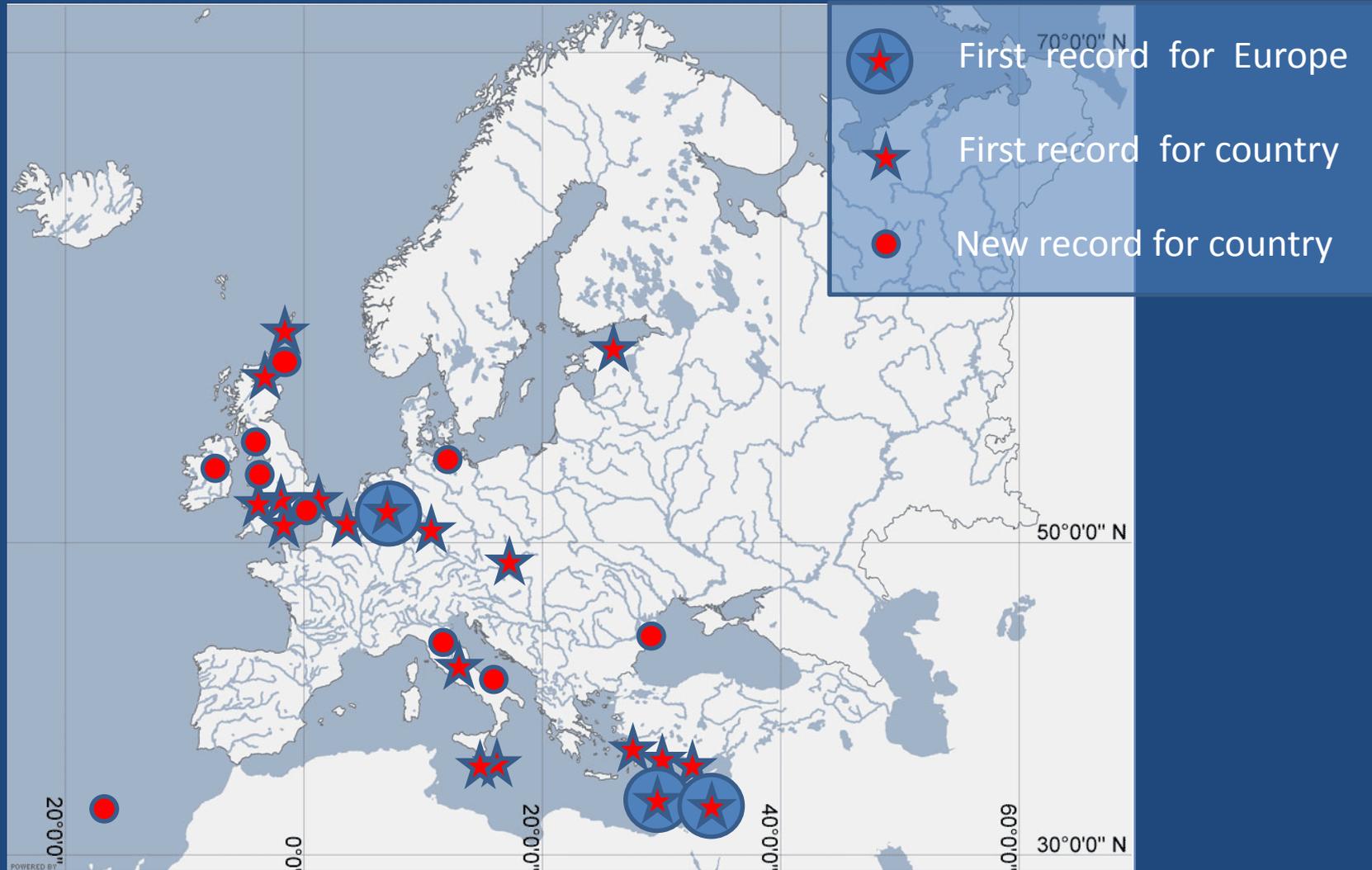


# Services of open access journals for support of expert networks: *Mediterranean Marine Science experts*



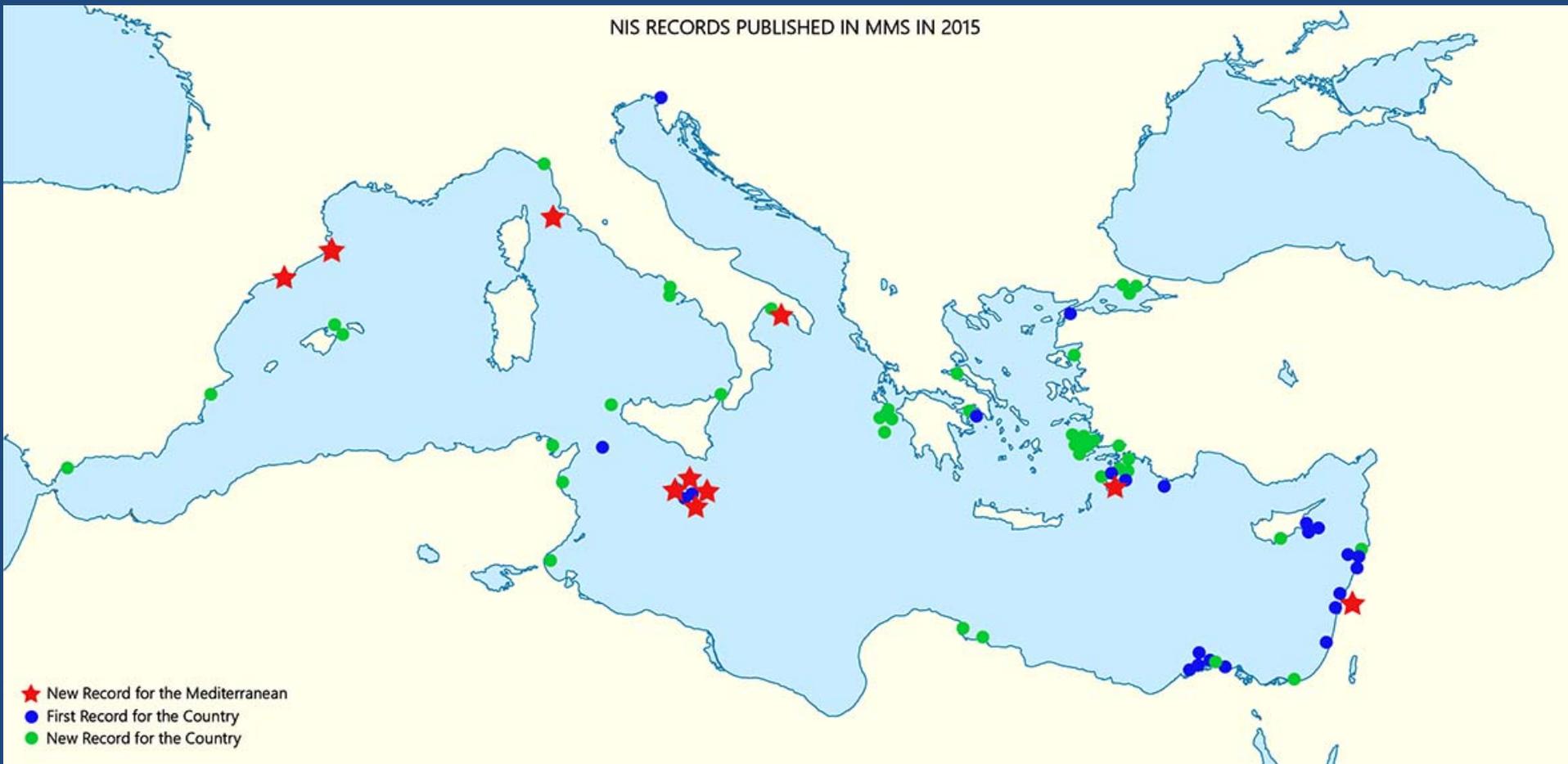
# Publishing services of REABIC: Support of developing European early warning system on IAS

## Selected records of IAS, published in REABIC journals in 2015



# Early warning services of open access journals: Support of developing European early warning system on IAS

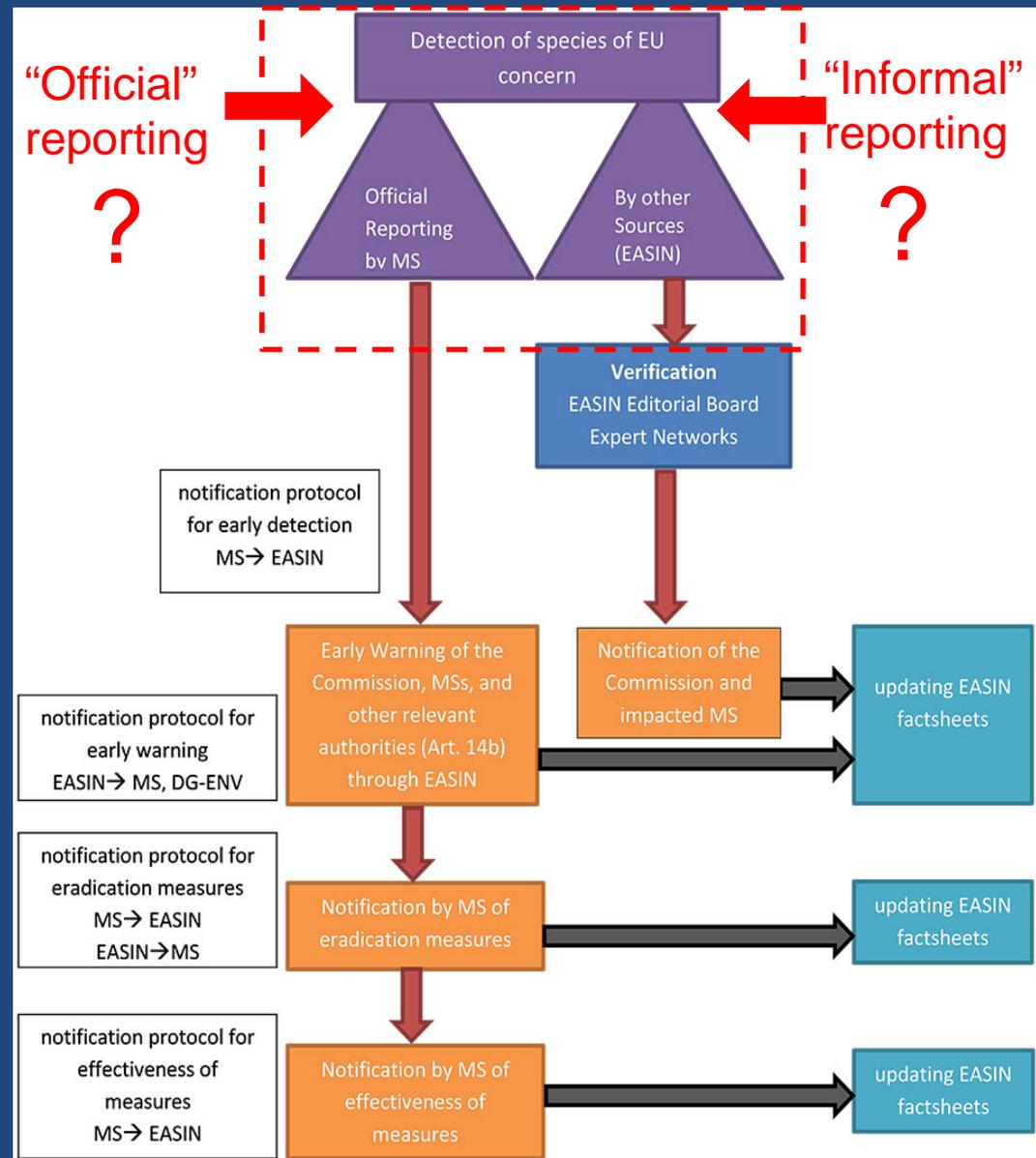
## Selected records of IAS, published in Mediterranean Marine Science in 2015



# How to make EU information support system on IAS operational?

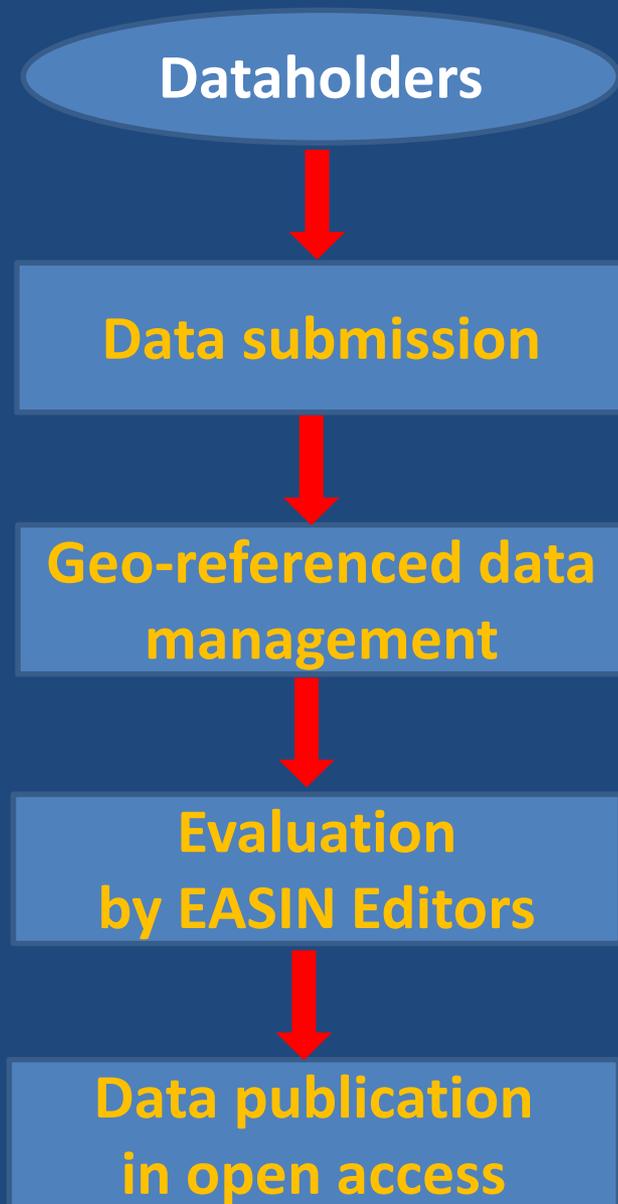
Present situation:

**Effective data support mechanism is missing**



Flow chart for the early warning and rapid notification system for IAS of European concern to be implemented through EASIN in support of the new IAS Regulation (after Katsanevakis et al. 2015)

# How to make EU information support system on IAS operational?



Effective **data support mechanism** for EASIN should include technical tools and services for “informal” reporting by dataholders:

1. **User-friendly interface** for uploading geo-referenced species record information (incl. photographs, and/or other information with data description/analysis);
2. **Online GIS application** for verification of geo-referenced data by dataholders with opportunity to generate print-quality species distribution maps;
3. **Data quality control mechanism** – verification of species identification and evaluation of other submitted information by reviewers (**EASIN Editors?**);
4. **Data publication service** with opportunity to generate data papers in standard format for rapid publication in open access journals, associated with EASIN

# Main problems for data publishing and possible solutions

1. Funds for open access publishing are still limited or even not available for many scientists (dataholders) in Europe

**Possible solutions:** In the long-term, this issue can be resolved after implementation of developing EU policy on Open Access publishing (**New policy Initiative: The Establishment of an Open Science Policy Platform** <http://ec.europa.eu/research/swafs/index.cfm?pg=policy&lib=science>). In short-term, **establishment of targeted public fund** to cover data paper publishing cost could be helpful. Also, open access publishers should consider **opportunities of private foundations**.

2. Scientists are more interested in publication of their research in journals with high impact factors. Most of these journals are not open access (or open access option is very expensive for authors), and not requesting authors to publish primary species record data.

**Possible solutions:** open access publishers should provide better publication services in terms of editorial process and availability for authors of user-friendly technical tools for their data presentation and management (incl. mapping tools). In this regard **integration of open access publishing in EASIN information system** could be very useful.

# Conclusions

1. “Official” approaches to development of data support mechanisms for open information systems on IAS may not work - **scientists** (primary dataholders) are not interested to share their unpublished data, but they **are highly interested in good publication services!**
2. Thematic open access journals, as informal bottom-up initiatives by concerned scientists, can serve as cost-effective instruments for data collection and information management, and provide platform for linking IAS-related networks of scientists, database and environmental managers (supporting **Network of Networks**).
3. The incorporation of thematic open access journals into any IAS-related information system represents **an innovative cost-effective approach** to IAS-related information management and may contribute to sustainability and cost-effectiveness of operational information resources on IAS.
4. **Effective data support mechanism for decision support tool on IAS should include user-friendly online software for data submission, data management, data presentation, and data publication services for primary dataholders - scientists and citizens.**