

Diffusion and use of *Galemys* (Spanish Journal of Mammalogy) by the scientific community: citations and recent impact

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Abstract

This paper examines the trends in publication and citation of *Galemys*, the scientific journal of the Spanish Society of Mammalogist (SECEM) in the last 15 years. We reviewed the citations obtained in the 38 issues of *Galemys* published between 1997 and 2012 in journals covered by the Journal Citation Reports, as well as in the journal itself. As a whole, 425 articles have been published in *Galemys* (296 articles and 129 short notes), with an average of 26.5 ± 13.2 (SD) items / year. There have been 596 citations to 408 articles and notes published in *Galemys*, both in international journals (349 citations, 58.6%) and in the journal itself (247 citations, 41.4%). The average impact of *Galemys* in the period 1997-2012 was 0.09 citations/year, with a five-years impact factor of 0.15 citations/year, and with a half-life of 7.5 years. *Galemys* is currently only moderately used by the scientific community, but patterns of use are growing, especially by the Spanish mammalogists linked to the SECEM. Its potential for future use and larger impacts is probably high. This suggestion is sustained on results obtained on recent trends, together with the expected effect of the last changes in the journal, especially its open access publication an identification with a DOI and their inclusion in the CrossRef database.

Keywords: *Galemys*, Impact factor, *Journal Citation Reports*, Science Citation Index, Scientific journal

Resumen

En este artículo se examinan las tendencias en la publicación y citas de *Galemys*, la revista científica de la Sociedad Española para la Conservación y Estudio de los Mamíferos (SECEM) durante los últimos 15 años (1997 - 2012). Para ello se revisaron los artículos aparecidos en los 38 números de la revista y sus citas bibliográficas tanto de revistas incluidas en el *Journal Citation Reports*, como del propio *Galemys*. En total se han publicado 425 artículos (296 artículos y 129 notas breves), con una media de $26,5 \pm 13,2$ (SD) artículos/año. Ha habido 596 citas de 408 artículos y notas publicados en *Galemys*, tanto en revistas internacionales (349 citas, 58,6%) y en la propia revista (247 citas, 41,4%). El impacto promedio de *Galemys* en el período 1997-2012 ha sido de 0,09 citas/año, con un factor de impacto a cinco años de 0,15 citas/año, y con una vida media de 7,5 años. *Galemys* es en la actualidad utilizada de forma moderada por la comunidad científica, pero su uso está creciendo, especialmente entre los mastozoólogos vinculados a la SECEM. Su potencial futuro es elevado, así como el incremento de su actual factor de impacto. Estas apreciaciones se sustentan al evaluar las tendencias más recientes, más las previsiones tras los recientes cambios introducidos en la revista: su publicación en abierto, su identificación mediante un DOI y su inclusión en la base de datos CrossRef.

Palabras clave: Factor de impacto, *Galemys*, *Journal Citation Reports*, Publicación científica, Science Citation Index.

Introduction

As a channel publishing original ideas and results, scientific journals mostly have a key role in disseminating knowledge to the scientific community. Journals are intermediate as compared to the other two main publication channels in science, conference proceedings and books. Scientific journals are faster than books, and hence are preferred to publish the most recent findings and ideas, and are evaluated with more accuracy by peers than conference proceedings, thus combining close scrutiny by the scientific community and speed of publication. Keeping close track of any scientific field thus implies the use, as both author and reader, of the scientific journals of that field.

The most common way to test whether scientific publications reach its goal of knowledge diffusion is to analyse the citations of papers published by authors, journals, institutions, or even countries (Garfield 2007, <http://wokinfo.com/espanol>). Citations, and especially citations made shortly after publication (impact factors; Bollen *et al.* 2009), are an acknowledgment of the utility of the cited work, and analysis of trends can inform about the relative degree of use of a journal and its changes over time (Carrascal & Díaz 1998), as well as the impact or utility of the published research (Eyre-Walker & Stoletzki 2013). In spite of the many biases associated to impact factors when the goal is to estimate research quality (Kokko & Sutherland 1999, Valdecasas *et al.* 2000), such an analysis will provide interesting cues on the journal's performance, and suggest ways for improving it (Carrascal & Díaz 1998, Bautista & Pantoja 2000).

Spanish science have been performing increasingly well since the 1990s, with a doubling in the number of publications between 2000 and 2010 (Santamaría *et al.* 2013a, b). Analyses of publication rate and numbers of international journals made in the late-nineties revealed a mismatch between the international relevance of Spanish scientist and those of the scientific journals published in Spain (Carrascal & Díaz 1998, Díaz *et al.* 2001). This paper examines the trends in the last 15 years in publication and citation of *Galemys*, the scientific journal of the Spanish Society for the Conservation and Study of Mammals (SECEM). Both Spanish and Portuguese mammalogists have increased its international relevance in the

last years, but analyses of the performance of the scientific journal edited by the Spanish Society has not been performed yet. Our ultimate goal is to evaluate the recent use of *Galemys* by the scientific community, at both the Spanish and the international levels, and to suggest ways to improve it if necessary. Such an analyses was done in 1998 for *Ardeola*, the scientific journal published by the Spanish Society of Ornithology (Carrascal & Díaz 1998), but no update of it, or published analyses for similar journals such as *Animal Biodiversity and Conservation*, are available.

Material and methods

We reviewed the citations obtained in the issues of *Galemys* published between 1997 and 2012 in journals covered by the Journal Citation Reports (JCR, available online from the Web of Knowledge website), as well as in the journal itself, that was thoroughly reviewed. To calculate the annual impact index (impact factor, IF; Garfield 2007) of the journal, the number of citations received in a given year for all articles published in the previous two years were divided by the total number of articles published in those two years (Carrascal & Díaz 1998). The IF was calculated separately for citations in JCR journals, for citations in *Galemys* (which would be self-citations of the journal itself), and overall (IFs are additive). These IFs were compared with the IFs of the mammalogy journals covered by the JCR, also available online: *Acta Theriologica*, *Journal of Mammalogy*, *Mammalia* and *Mammalian Biology - Zeitschrift für Säugetierkunde* (the JCR has no specific category for mammalogy journals –they are included within the Zoology category–, but specialist in the field consider these as specific journals for this group of animals). Finally, we analysed temporal trends in publication (number of articles and notes per year) and citations (number of citations per article and its temporal evolution) of the papers published in *Galemys* in order to identify opportunities for improvement. The cited half-life for the journal is the median age of its items cited in the current JCR year. It is computed on the basis that half of the citations to the journal are to items published within the cited half-life, ie., the half-life is the time span where half of the citations to published items are received.

Results and discussion

During the study period (1997-2012) a total of 38 volumes of the journal *Galemys* have been published. Out of these, 27 were regular issues and 11 corresponded to special ones. Special issues published the proceedings of seven SECEM Congresses, three international Congresses (Hispano -Portuguese Congress on the wolf, International Congress on the wild boar, and International Congress on mountain Ungulates) and a special number that included the checklist of Spanish mammals. The journal publishes issues fairly timely, with an average of two regular issues per year, although in some years only one has been published (2005, 2006, 2012). No regular issue was published in 2011. The low number of regular issues published in some years was offset by the publication of special volumes after each SECEM Congresses, that is held every two years. Thus, as a whole, 425 articles have been published in *Galemys* (296 articles and 129 short notes), with an average of 26.5 ± 13.2 (SD) items/year (Fig. 1). The smallest number of articles was published in 1997, while the largest was published in 2010. 200 articles (47%) were published in the eleven special volumes. The remaining 96 articles and 129 notes correspond to regular issues.

The average number of contributions to each regular issue was 6.4 ± 2.2 articles and 8.6 ± 3.2 notes (Total 15 ± 3.5 , $n=15$), whereas contributions to national proceedings are 17.1 ± 3.9 articles ($n=7$; short notes are not accepted for publication). Published contributions to international congresses

were more numerous on average (26.3 ± 8.4 articles per issue, $n=3$).

Number of citations and Impact Factor (IF)

Between 1997 and 2012, articles published in *Galemys* have received a total of 247 citations in the journal, of which 79 (32%) were self-citations of authors to their own articles. Interestingly, *Galemys* received more citations in that period than four other international journals of mammalogy: *Acta Theriologica* (188 citations), *Mammalia* (149 citations), *Mammalian Biology - Zeitschrift für Säugetierkunde* (121 citations) and *Journal of Mammalogy* (99 citations). Yearly average citations per article of *Galemys* in *Galemys* presents a clear increasing pattern with time ($r=0.76$, $r^2=0.55$, $n=16$, $p=0.0005$, Fig. 2), a fact that is consistent with the greater availability of items to be cited as time pass by. This pattern was also detected in the citations of *Journal of Mammalogy* in *Galemys* ($r=0.63$, $r^2=0.35$, $n=16$, $p=0.008$), but not in other international journals (*Acta Theriologica*: $r=0.02$, $n=16$, $p=0.92$; *Mammalia*: $r=0.005$, $n=16$, $p=0.98$; *Mammalian Biology-Zeitschrift für Säugetierkunde*: $r=0.02$, $n=16$, $p=0.92$).

Overall, during the study period there have been 596 citations to 408 articles and notes published in *Galemys* (the year 2012 was not included as the potential citations period extends until the end of 2014), both in international journals (349 citations, 58.6%) and in the journal itself (247 citations, 41.4%). However, almost half of the articles has never been cited (49.5%), 80

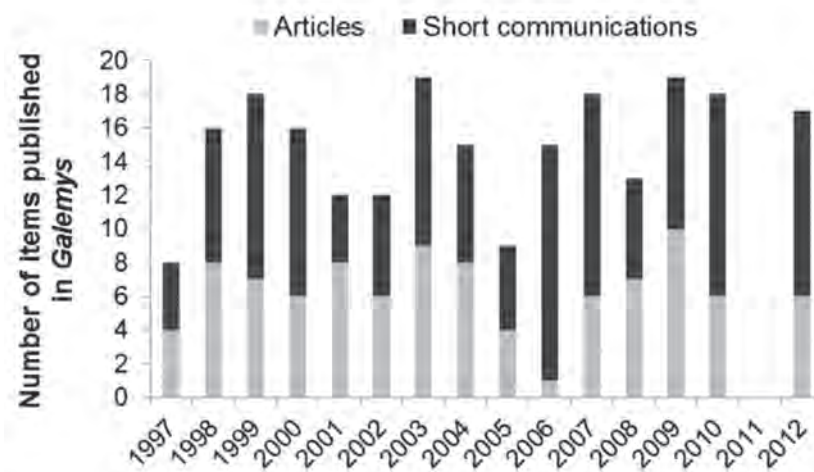


Figure 1. Number of articles and short communications published in the Journal *Galemys* between years 1997 and 2012.

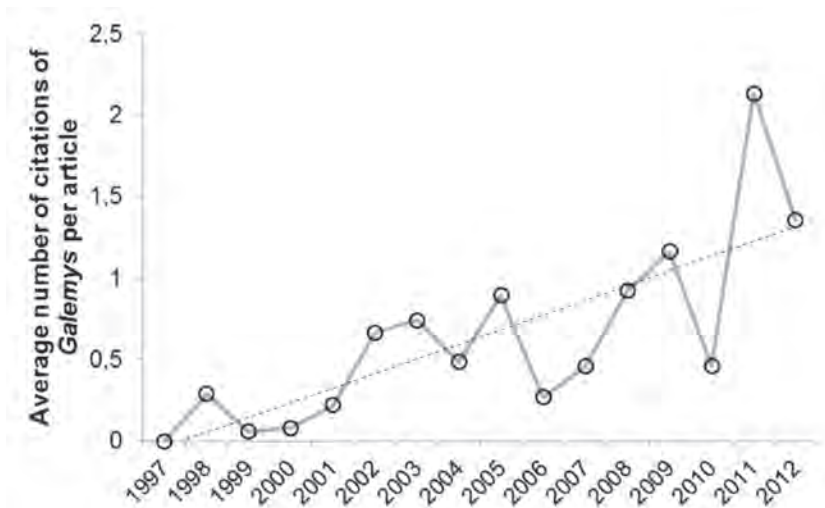


Figure 2. Average number of citations of *Galemys* per article between years 1997 and 2012 ($r = 0.76$, $r^2 = 0.55$, $n = 16$, $p = 0.0005$).

articles have been cited only once (19.6%), and 46 articles have been cited twice (11.2%). On the other hand, seven articles have been cited more than 10 times, one with 21 citations (1.40 events/year), the following received 17 citations (1.13 events/year), and a third with 13 citations (0.86 events/year). The most cited article was published in the special volume dedicated to the Proceedings of the 4th International Symposium on the Wild boar (2004), organized in Portugal in 2002; it was written in English and received 19 citations in JCR journals and only two in *Galemys*. The following two articles with more citations were two reviews on Spanish mammals (wild boar and wood mouse), both written in Spanish, which have also received higher proportion of citations in JCR journals than in *Galemys* (10/17 = 58.8%, 11/13 = 84.6%, respectively) (Fig. 3).

The average IF of *Galemys* in the period 1997-2012 was 0.09 citations/year (range 0.0-0.24, Fig. 4), with a five-years IF of 0.15 citations/year (range 0.04-0.23, Fig. 5), and with a half-life of 7.5 years. In 2001 *Galemys* had a IF of zero, while the maximum was recorded for 2010.

Overall, the IF of *Galemys* increased significantly during the study period ($r = 0.71$, $r^2 = 0.47$, $p = 0.003$, $n = 14$; Fig. 4). The IF of *Galemys* in journals included in the JCR showed an increasing pattern over time ($r = 0.69$, $r^2 = 0.43$, $p = 0.01$, $n = 12$), while the IF coming from self-citations (citations of *Galemys* in *Galemys*) showed no temporal trend ($r = 0.27$, $r^2 = 0.003$, $p = 0.34$, $n = 14$).

Galemys has been formally renamed as *Galemys-Spanish Journal of Mammalogy* in 2011, also

introducing several editorial improvements. An Editorial Board consisting of a dozen renowned researchers in the field of mammalogy was established, and a team of Associate Editors responsible for ensuring the quality of the content was created. From volume 23 onwards the format layout was modified (two columns and DINA4 size) in accordance with the usual format of the other international mammalogy journals. Only scientific peer-reviewed papers are accepted, with English as the preferred language, and published articles and notes are available for free, under the Creative Commons license by the Open Journal System (OJS) from the web site of the journal (www.secem.es/galemys). All articles and notes that have appeared since then carry a identification DOI and are included in the CrossRef database, which undoubtedly will facilitate its distribution, visualization, and potential impact (Mukherjee 2009, Björk *et al.* 2010). It must be stressed that this system is really open access as there are no publication costs for either readers or authors, as compared with the recent plethora of the so-called 'pay-to-publish' journals that finance themselves by charging fees to authors.

Conclusions

Galemys is currently only moderately used by the scientific community, but patterns of use are growing, especially by the Spanish mammalogists linked to the SECEM. Rates of increase are comparable or even larger than those of the international journals of mammalogy currently

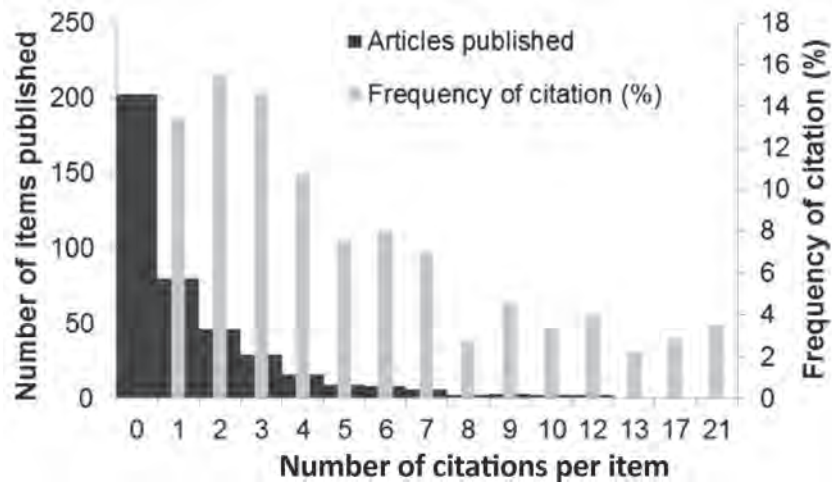


Figure 3. Number of articles and frequency of citation (%) of the articles published in *Galemys* between years 1997 and 2012.

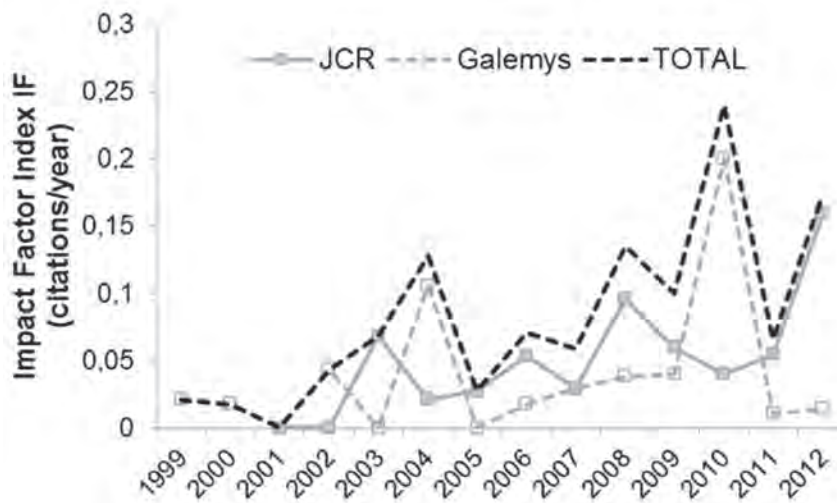


Figure 4. Impact factor (IF) indices for articles published in *Galemys* and cited in the journals covered by the Journal Citation Reports (JCR), cited in the journal itself, and overall (TOTAL).

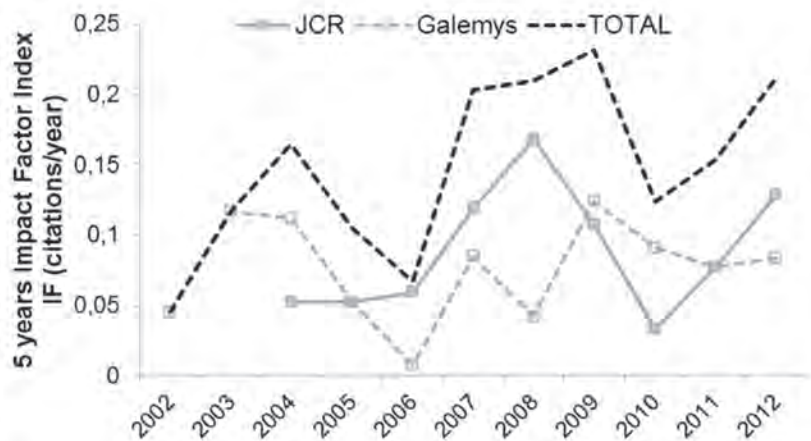


Figure 5. Five-year Impact factor (IF) indices for articles published in *Galemys* and cited in the journals covered by the Journal Citation Reports (JCR), cited in the journal itself, and overall (TOTAL).

covered by the JCR. Its potential for future use and larger impacts is probably high, as it has happened with similar Spanish journals (eg. *Ardeola* or *Animal Biodiversity and Conservation*, currently covered by the JCR). This suggestion is sustained on results obtained on recent trends, together with the expected effect of the last changes in the journal, especially its open access publication (Björk *et al.* 2010), that would compensate for the negative effects of the small number of papers published each year and other traits typical from a formerly local journal published by a national society (e.g. Seglen 1997, Leimu and Koricheva 2005). Dark clouds due to the current financial uncertainties of the Spanish I+D+i system (Santamaría *et al.* 2013a, b) will be surely overcome by the support of the healthy scientific society that publish the journal (Díaz *et al.*, 2001). Recent format changes aimed at capturing the interest of the international scientific community (eg. two columns and DINA4 size, English as the preferred language, etc.; see above), with a view to the future inclusion of *Galemys* in the Journal Citation Reports, will also help maintaining and improving a journal that is definitely useful for the scientific community.

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