

## A Three-Part Proposal Regarding Web Access To Back Issues

Submitted to the ESA Pubs Council, 18 Feb 2005, by T. J. Walker

Each of the three parts of this proposal requires that the Pubs Council approve a motion. *Suggested wording for each motion is in italics.*

### PART ONE: A NEW MEMBER BENEFIT

*Beginning with 1999, the first year that ESA published e-versions, ESA should make its journal articles freely web accessible 24 months after publication.*

This action will constitute a member benefit because only ESA members can publish in ESA journals. Now, in addition to offering its authors OA-by-the-article at a very reasonable price, ESA will benefit its authors who do not value OA enough to pay for it by making web access to their articles free after 24 months.

ESA will not be a leader in making articles in back issues freely web accessible. In 1999, the Florida Entomological Society completed a two-year project to make the articles in back issues of *Florida Entomologist*, from 1917 to date, freely accessible ([http://www.fcla.edu/FlaEnt/fe\\_about.htm](http://www.fcla.edu/FlaEnt/fe_about.htm)). Currently HighWire Press lists 194 journals that provide free web access to articles in back issues after some embargo period.

Among the publishers of such journals (and the number of months in their embargo periods) are American Dairy Science Association (12), American Society for Microbiology (6), American Society of Agronomy (18), American Society of Animal Science (12), Biophysical Society (12), Company of Biologists (6), Genetics Society of America (3), and Society for Experimental Biology (12).

The value of this member benefit, as well as that of offering OA-by-the-article, will increase as new software makes it easier to find web-posted journal articles. Two recent developments in this respect are worth noting:

Google Scholar (beta version online at <http://scholar.google.com>) restricts Google searches to scholarly literature, including peer-reviewed papers, theses, books, preprints, abstracts and technical reports from all fields of research, and finds articles from a wide variety of academic publishers, professional societies, preprint repositories and universities, as well as scholarly articles available across the web. Google Scholar ranks search results by their relevance to the query, so the most useful references should appear at the top of the page. The relevance ranking takes into account the full text of each article as well as the article's author, the publication in which the article appeared and how often it has been cited in scholarly literature. Google Scholar also automatically analyzes and extracts citations and presents them as separate results, even if the documents they refer to are not online. This means that search results may include citations of older works and seminal articles that appear only in books or other offline publications. [Parts of this description taken directly from <http://scholar.google.com/scholar/about.html#about>.]

CrossRef is a not-for-profit network based on publisher collaboration, with the goal of making reference linking throughout scholarly literature efficient and reliable. As such, it is an infrastructure for linking citations across publishers, and the only full-scale implementation of the Digital Object Identifier (or DOI) System to date. Its mission is to serve as the complete citation-linking backbone for all scholarly literature online, as a means of lowering barriers to content discovery and access for the researcher. All BioOne publishers are members of CrossRef. [Much of this description is taken directly from <http://www.crossref.org/16fastfacts.html>.]

Potential users who find web-posted articles through Google Scholar or CrossRef will often chose not to view or download the full text if they must pay a fee to do so.

To my knowledge, the American Society of Limnology and Oceanography (ASLO), which has sold OA by the article since 2001, is the only publisher who has compared downloads of articles with and without free web access in the same journal issues. At the

end of 2003, it found that OA articles in issues of *Limnology and Oceanography* posted on its server in 2002 had been downloaded 3.4 times as often as articles to which only ASLO subscribers had access. It also found that, on average, its OA articles had been downloaded more than 1200 times in two years. [Compare that to the usefulness of 100 paper reprints!] ASLO used these statistics to justify an increase in its price of OA for an article of average length from \$126 to \$350.

(<http://aslo.org/lo/information/freeaccess.html>)

By allowing free web access to journal articles after 24 months and by continuing to sell OA-by-the-article at a competitive price, ESA will ensure that the articles in its journals are as freely accessible as possible, within the bounds of fiscal responsibility. ESA will also be doing its part to improve communication of research results and will be viewed as proactive in terms of helping its authors comply with the desires of governmental agencies to speed public access to the results of publicly funded research.

## **PART TWO: COMPENSATING FOR THE COSTS**

*ESA should increase the price of its OA reprints to pay for providing free web access to its journal articles 24 months after publication.*

OA reprints are a good choice for a source of the needed revenues because ESA's current price for its OA reprints is low, both in terms of the value of OA and in terms of what other publishers charge for similar services.

Since the start of its service in January 2000, ESA's price for OA has been 75% of the cost of 100 paper reprints. This currently amounts to \$126 for an article of average length. An April 2004 survey of what other publishers charge for OA revealed an average price of \$1251 with the lowest prices being 100% of the cost of 500 paper reprints (American Society of Limnology and Oceanography; \$350 for an article of average length) and the highest being a per-article fee of \$2160 (Company of Biologists). All were generating significant revenues from their sales of OA. (<http://www.nature.com/nature/focus/accessdebate/13.html>). Recently Springer became the first commercial publisher to offer OA-by-the article. Its price is \$3000 per article.

How much ESA would need to increase its OA price depends on the sum of all costs associated with providing the new member benefit. The categories of costs, and an estimate of the annual cost of each, are these:

- **Cost of making articles freely web accessible (\$1000)**  
Ingenta already makes the OA article in each newly published issue freely web accessible. The proposed member benefit would only require that the remaining articles in an issue be made freely web accessible 24 months after the issue's publication. With a modest amount of programming, the process might be automated.
- **Reduced sales of back issues (\$5000)**  
I assume that 400 back issues would have been purchased in 2006 but that 250 of these will be libraries buying replacements for lost or damaged issues in order to bind their 2005 volumes. That leaves 150 issues, of which I'll assume that all are post 1998, with 110 bought by libraries and 40 bought by members.  $(110 \times \$40 + 40 \times \$13.50 = \$4940)$
- **Reduced income from copying and reuse royalty fees (\$1500)**  
I assume that the 2006 income from these fees would have been \$5000, and that 30% of this would have been for articles published after 1998 and already 24 months or more out of date.

- Reduced pay-per-view income from Ingenta (\$1000)  
I assume that the 2006 income from this source would have been \$2000 and that half of that would have been from articles published after 1998 and already 24 months or more out of date.
- Reduced royalties from JSTOR (\$500)  
I assume that the 2006 usage royalties from JSTOR would have amounted to \$1000 and that half of this would have been from articles published after 1998.
- Contingencies (\$1000)

The total of these estimates is \$10,000.

In 2004, 67.2% of ESA authors bought OA for their articles, creating a gross income of \$78,411 and an estimated net income of \$74,072 (see Table 1).

**Table 1.** Summary of ESA experience with selling OA by the article, 2000-2004. This table is from the first worksheet in an Excel workbook that also has the five worksheets that Table 1 summarizes. The workbook is posted at [http://tjwalker.ifas.ufl.edu/ESAoa\\$00-04.xls](http://tjwalker.ifas.ufl.edu/ESAoa$00-04.xls)

Year	Pages published*	Articles published	OA price for 8-page article	OA sales (no. of articles)	OA sales (no. of pages)	percent of authors buying OA	Gross income (all OA sales)	Gross income per page	Estimated net income per page	Estimated net income (all OA sales)
2000	5723	748	\$90	189	1446	25.3%	\$18,391	\$12.72	\$11.72	<b>\$16,945</b>
2001	4656	639	\$90	328	2390	51.3%	\$31,259	\$13.08	\$12.08	<b>\$28,869</b>
2002	4365	594	\$95	327	2403	55.1%	\$32,863	\$13.68	\$12.68	<b>\$30,460</b>
2003	5348	672	\$120	414	3295	61.6%	\$56,592	\$17.18	\$16.18	<b>\$53,297</b>
2004	6453	818	\$124	550	4339	67.2%	\$78,411	\$18.07	\$17.07	<b>\$74,072</b>

\*Estimated from number of OA pages and percent of authors buying OA.

If ESA had charged 100% of the price of 100 paper reprints in 2004 (instead of 75%), its estimated net income from OA would have increased by \$26,137, which is 2.6 times as much as the estimated total cost of providing free web access to articles after 24 months.

*Details of calculations:* If ESA had charged 100% of the price of 100 paper reprints in 2004 (instead of 75%), its gross income from OA sales would have been \$104,548 [ $4/3 \times \$78,411$ ] and estimated net income would have been \$100,209 [ $\$104,548 - \$4,339$ ], or \$26,137 more than the net generated by the actual price in 2004 [ $\$100,209 - \$74,072$ ]. This is \$16,137 more than the estimated cost of providing free access to articles 24 months after publication [ $\$26,137 - \$10,000$ ].

If the 2002-04 trend in the percent of authors buying OA continues, purchases will be 73.3% in 2005 and 79.4% in 2006. Thus a 2006 OA price increase to 100% of the price of 100 paper reprints (that is, ca. \$173 for an 8-page article) would need to reduce the percent of OA purchases by 12.2 percentage points to return the level of acceptance to 67.2%, the level used for the calculations above. (For details, see the “extrapolation” work sheet in [http://tjwalker.ifas.ufl.edu/ESAoa\\$00-04.xls](http://tjwalker.ifas.ufl.edu/ESAoa$00-04.xls).)

### PART THREE: GIVING MORE ACCESS THROUGH JSTOR

*In its contract with JSTOR, ESA should specify a two-year “moving wall.”*

ESA staff are to be commended for recommending that ESA contract with JSTOR to make most of its back articles available online to the clients of the research libraries that subscribe to JSTOR. The articles that JSTOR makes web accessible to subscribers are from a journal’s initial volume forward to a “moving wall” of a fixed number of years. For volumes published prior to e-publication, JSTOR scans and optically character reads each page. The scans are converted to high-resolution PDF files, and the OCR files are used to digitally index every word and phrase and the pages and lines where they occur. JSTOR performs this expensive process to high standards and without charge to the publisher. [For the PDF files of e-published versions, JSTOR has only to do the sort of

indexing that Google does for free.]. For their participation, JSTOR pays publishers an annual flat amount per journal and annual usage royalties (the latter is only when JSTOR revenues exceed a target set for the year). The flat amount is \$1300 for 4- to 5-year moving walls and \$2000 for walls of 3 years or less. JSTOR does not restrict other uses that publishers may wish to make of their back files.

By making the moving wall two years instead of the currently recommended five years, ESA will receive annually \$2800 more from the flat amounts paid for its four journals [\$8000 instead of \$5200].

Specifying a two-year moving wall will probably have little effect on the usage royalties that ESA may receive from JSTOR. Because JSTOR has an inviting, feature-rich interface and will have *all* volumes of ESA journals prior to the two-year moving wall, users at institutions that subscribe to JSTOR seem likely to use JSTOR to access back issues of ESA journals *no matter what the date*.

#### ADDENDUM: FOOD FOR THOUGHT

Except for Springer (at \$3000 per article), commercial publishers deny their authors the opportunity to buy OA. On the other hand, commercial publishers do not require their authors to pay page charges--in contrast with ESA and many other society publishers that do. Because OA is valuable to authors and will become even more so (see above), ESA should consider augmenting its publication revenues by significantly increasing its OA charges and using some or all of the "extra" revenue to reduce its page charges. This should better ESA's ability to compete with commercial publishers for researchers and their papers.

To illustrate, if ESA were to follow the example of ASLO (see above) and cite increased downloads of OA papers to justify more than doubling the price of its OA service, it could increase publication revenue enough to compensate for reducing its page charges by one half. Specifically, if ESA were to increase the price of OA reprints to 228% of the 2005 price of 100 paper reprints, authors who bought OA reprints would, on average, be paying \$38.91 per page more than currently (see Table 2). Assuming that neither the percent of authors buying OA nor the number of articles published declined from their 2004 values (Table 1: 67.2% and 550), the amount of new revenue generated would equal \$26.35 per page published by ESA--that is, more than half of the revenues generated by the current \$52 page charge. [ $.672 \times \$38.91 = \$26.15$ ]

At this price for OA (228% of the cost of the 2005 price of 100 paper reprints), authors of 98.7% of papers (those with no more than 16 pages) would pay as little as \$116 and as much as \$718 for OA. For 90% of articles (those of 5 to 12 pages), the price would be either \$385 or \$554. The price of an average-length article (\$385 for 8 pages) would be only \$35 higher than ASLO's 2004 price for an average-length article in its journal (\$350 for 10 pages).

As services such as Google Scholar and CrossRef make it easier to find scholarly papers on the web, researchers (and their sponsors) will increasingly seek to have their papers available on the web for free instead of for fee. Commercial publishers, who depend on extraordinary prices for library subscriptions for most of their income, can ill afford to promote open access. Many society-based journals already depend more on author fees than on subscription revenues and thus are in a better position to compensate for the decline (and eventually the end?) of subscription revenues.

Table 2. Spreadsheet that can be used to examine the effects of changing the price of ESA's OA reprints. This printout shows the effects of making the price 100%, 228%, and 280% of the price of 100 paper reprints, instead of the current 75%. The "live" Excel worksheet can be downloaded from <http://tjwalker.ifas.ufl.edu/OAreprintPrices.xls>.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	
1	<b>Spreadsheet to examine the effects of changing the price of ESA's OA reprints.</b>																					
2	ESA's current price for OA is based on 75% of the price of 100 paper reprints, which is in turn based on the number of pages in the article (columns A, B, and C).																					
3	Columns D and E show prices for OA if the price was based on 100% and 228% of the price of 100 paper reprints (rather than the current 75%).																					
4	Column F shows the same for any value entered here. 280																					
5	Cells T33, U33, V33 show the weighted, per-page, new revenue that the three specified increases in price would generate.																					
6	(The rest of the spread sheet is used to generate the values in those three cells.)																					
7																						
8																						
9	2005 price: 2005 price of		Price for OA 100 reprints		Price per OA reprint page		Price per OA reprint page		NEW revenue per page		OA reprints sold in 2004		Weighted NEW revenue per page									
10	number of 100 paper reprints	ca 75% OA reprints	100%	228%	280	2005 OA reprints	228%	280	100%	228%	280	number proportion	100%	228%	280							
11	of pages		51	116	143	38.00	116.28	142.80	13.00	78.28	104.80	2	0.004	0.047619	0.28674	0.3838828	0.07	0.10	0.15	0.24	0.31	
12	1	51	38	51	116	19.00	58.14	71.40	6.50	39.14	52.40	1	0.002	0.01	0.07	0.07	0.08	0.08	0.08	0.08	0.08	
13	2	51	38	51	116	21.67	29.00	36.12	7.33	44.45	59.53	6	0.011	0.04	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
14	3	87	65	87	198	16.25	21.75	49.59	5.50	33.34	44.65	24	0.044	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
15	4	87	65	87	198	25.20	33.80	77.06	8.60	51.86	69.44	62	0.114	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
16	5	169	126	169	385	21.00	28.17	64.22	7.17	43.22	57.87	79	0.145	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
17	6	169	126	169	385	18.00	24.14	55.05	6.14	37.05	49.60	92	0.168	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
18	7	169	126	169	385	15.75	21.13	48.17	5.38	32.42	43.40	97	0.178	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
19	8	169	126	169	385	20.11	27.00	61.56	6.89	41.45	55.49	65	0.119	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
20	9	243	181	243	554	18.10	24.30	55.40	6.20	37.30	49.94	47	0.086	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
21	10	243	181	243	554	16.45	22.09	50.37	5.64	33.91	45.40	30	0.055	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
22	11	243	181	243	554	15.08	20.25	46.17	5.17	31.09	41.62	20	0.037	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
23	12	243	181	243	554	18.15	24.23	55.25	6.08	37.09	49.69	4	0.007	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
24	13	315	236	315	718	16.86	22.50	51.30	5.64	34.44	46.14	9	0.016	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
25	14	315	236	315	718	15.73	21.00	47.88	5.27	32.15	43.07	2	0.004	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
26	15	315	236	315	718	14.75	19.69	44.89	4.94	30.14	40.38	2	0.004	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
27	16	315	236	315	718	17.35	23.18	52.84	5.82	35.49	47.54	1	0.002	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
28	17	394	295	394	898	16.39	21.89	49.91	5.50	33.52	44.90	1	0.002	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
29	18	394	295	394	898	15.53	20.74	47.28	5.21	31.75	42.54	0	0.000	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
30	19	394	295	394	898	14.75	19.70	44.92	4.95	30.17	40.41	2	0.004	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	
31	20	394	295	394	898	18.71	25.05	57.12	6.35	38.41	51.44	Sum*	1.000	6.45	38.91	546	1.000	6.45	38.91	546	1.000	
32	<b>Average per page price:</b>				18.71		25.05		57.12		70.15		6.35		38.41		51.44		Sum*		546	
33	*Of the 550 OA articles in 2004																					
34	only 8 (1.5%) had 17 pages or more.																					
35	*Four of the 550 OA reprints sold																					
36	in 2004 had more than 20 pages.																					
37	Sum for articles of 5 to 12 pages: 0.90																					
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