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Internet Center for Wildlife Damage Management 2004-2013

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ABSTRACT: The Internet Center for Wildlife Damage Management (ICWDM, at http://ICWDM.org) has been a pioneer in providing research-based information on wildlife damage management via the Internet. In the 2002 edition of the Proceedings of the Vertebrate Pest Conference, Virchow and Hygnstrom summarized the activities of the ICWDM from 1996 to 2002. Several changes occurred in the ICWDM from 2003 to 2013. In 2013, the ICWDM received nearly 2 million visitors from 215 countries. Based on a survey of online respondents, we conservatively estimate that the ICWDM saves nearly \$17 million in resources annually. We anticipate continued growth of the ICWDM, including expansion of social networking and increased curriculum development.

KEY WORDS: Internet, Internet Center for Wildlife Damage Management, National Wildlife Control Training Program, resources, training, websites

INTRODUCTION

From its inception in 1993, the Internet has revolutionized the way people obtain and disseminate information (Leiner et al. 2013). The first decade of the 21st century has witnessed phenomenal growth in both the content and use of the Internet. In 2002, a mere 9.1% of the world's population spent an average of 46 minutes per day accessing the 3 million websites available on the Internet. By 2012, the percentage of Internet users grew to 33% of the world's population. They used the Internet 4 hours a day to access to the Internet's 555 million websites (Koetsier 2012).

The Internet Center for Wildlife Damage Management (ICWDM) became an early adopter of this technology when it began in 1996. In 2000, the site underwent an upgrade and adopted the URL http:// wildlifedamage.unl.edu. Though the Internet was in its infancy, the ICWDM became the Internet's premiere site for research-based information on wildlife damage management (Virchow and Hygnstrom 2002). The ICWDM benefited from the increased use of the Internet by the public, but keeping pace with the changes in technology, as well as managing the volume of information, has been a continuing challenge. This article updates the changes and impacts of the latest version of the ICWDM (http://ICWDM.org) from 2002 to 2013 and provides thoughts on future opportunities.

ICWDM.ORG 2003-2013

When the site's webmaster, Dallas Virchow, left for a new job in October 2003, the ICWDM experienced inactivity until Stephen M. Vantassel took over in September 2004 (Vantassel 2004a,b). Since web pages disappear at a rate of 0.25 to 0.5% per week in a phenomenon known as link-rot (Bar-Yousef et al. 2004), Stephen's first task was to repair broken backlinks. It quickly became apparent, however, that the website's database-like structure needed to be changed to one capable of being catalogued Proc. 26th Vertebr. Pest Conf. (R. M. Timm and J. M. O'Brien, Eds.) Published at Univ. of Calif., Davis. 2014. Pp. 437-439.

more thoroughly by search engines and adaptable to the increasing functionality of the Internet. With a \$60,000 grant from the USDA-CREES-North Central Region Integrated Pest Management (IPM), we chose to develop the site using .ASP coding. In addition, we thought that the site needed its own URL to fully represent the multi-institutional nature of our program as well as to ensure our ability to change the site as needed. Therefore, we chose ICWDM.org and launched on July 21, 2005 (Vantassel et al. 2006).

The transition to a new URL required us to increase our marketing efforts to make past users aware of the new site, as well as attract new visitors. We presented on the ICWDM at conferences such as WERA-95 (Reno, NV, 2006), Wildlife Control Technology Seminar (Las Vegas, NV, 2006), and the Vertebrate Pest Conference (Berkeley, CA, 2006). We also highlighted the site in publications such as *Wildlife Control Technology* (Vantassel 2005), *The Fur Taker* (Vantassel 2006), and through direct e-mails, and listserves such as *WDAMAGE* and *WILDLIFEOPERATORS*.

In 2009, we began to transition ICWDM.org to ASP.net to keep abreast of advancing technology. The transition was completed in 2013. During this time the use of the site continued to rise although not at the near-exponential pace of its beginnings (Table 1). The apparent drop in visitors between 2012 and 2013 can be explained by our transition to Google Analytics to track visitors. Unlike our previous software, Google Analytics does not record traffic to personal document files (PDFs).

In 2010, we initiated a survey to determine how information on the ICWDM impacted the lives of visitors. The survey revealed that 35% of visitors saved \$50 or more after visiting the site. Based on these values and the number of visitors, we conservatively estimate that the ICWDM.org saved visitors \$16.8 million dollars in 2013.

Year	Visitors	Countries
2003	26,302	NA
2004	25,772	NA
2006	490,000	133
2007	1,000,000	133
2008	1,200,000	140
2009	1,500,000	143
2010	1,600,000	144
2011	1,800,000	145
2012	2,100,000	NA
2013	1,198,347	215

Table 1. Number and countries of origin of individual visitors using the Internet Center for Wildlife Damage Management (ICWDM.org), 2003-2013.

NA - not available

Technical Resources

The ICWDM.org is more than just a website. We wanted to be the source for technical information as well a leading provider of personal assistance and training in wildlife damage management. In 2005, we recognized that a significant amount of literature on wildlife damage management was not readily available to researchers and other end-users. Lack of access to this information resulted in unnecessary duplication of research and continued use of ineffective management techniques. With additional funding of \$67,000 in 2005, we scanned hundreds of proceedings, reports, and other valuable documents to make them available through the ICWDM. Our efforts in this project were enhanced substantially with the help of the University of Nebraska-Lincoln library. The library had purchased DigitalCommons[®] software that allowed users to perform Google-like searches of PDF files stored in its database. The library was eager to include our materials in their project and established a section to house content on wildlife damage management (http://digitalcommons.unl.edu/icwdm/). By the end of 2005, the ICWDM section held 369 articles, including the 2003 and 2004 Bird Strike Articles and Abstracts; 10th Great Plains Wildlife Damage Control Workshop Proceedings; 9th Wildlife Damage Management Conference Proceedings; Vertebrate Pest Conference Proceedings (volumes 1-4 and 13); Bird Control Seminar Proceedings (volumes 2 and 4-8); and other miscellaneous files.

Public use of the DigitalCommons, measured by number of downloads, increased substantially (Table 2). In 2007, downloads comprised 38% of total downloads of the DigitalCommons in the University of Nebraska-Lincoln system. In 2008, a survey of users of the DigitalCommons revealed that they saved over \$450,000 in time and materials over a 3-year period (Vantassel 2008). Assuming visitors saved \$2 for each document that was downloaded, we estimate that users saved more than \$1 million in 2013.

In conjunction with the Digital Commons, the ICWDM.org developed a digital image library. Though we had many images on wildlife damage management, we lacked an organizational system to provide easy access. In addition, we had stacks of film slides in need of scanning to make them more accessible, but also to

preserve the images from being lost due to decay of the film. We began an aggressive program to digitize and record the metadata of the slides. By the end of 2005, the image database held over 5,000 images. We initiated discussion with the USDA-APHIS-WS-National Wildlife Research Center in Fort Collins, CO to collaborate on the development of a database for images. We launched the site http://contentdm.unl.edu/wildlife/ with the help of the University of Nebraska-Lincoln Library on September 15, 2006. By the end of 2007, the database held 350 images. By 2013, our offline database held more than 80,000 images.

Table 2.	Content and use of articles in the Digital		
Commons section of the Internet Center for Wildlife			
Damage Management (http://digitalcommons.unl.edu/			
icwdm	/), 2005-2013.		

Year	Articles	Downloads
2005	369	1,953
2006	1,793	37,505
2007	3,287	184,683
2008	4,333	379,837
2009	4,766	361,003
2010	5,145	457, 543
2011	5,220	478,583
2012	5,496	603,318
2013	5,894	520,483

Direct Assistance and Training

Direct assistance and training comprise the third area of the ICWDM.org's activities. Direct assistance refers to our efforts to answer questions submitted by e-mail, phone, internet, or word of mouth. In addition to e-mails sent through the ICWDM.org, we also received questions through our work with AllExperts.com (Vantassel 2013) and eXtension.org. While precise numbers are not available, the ICWDM.org responded to thousands of requests over the past decade.

Our efforts in training can be categorized as in person and curriculum development. We presented information at the Vertebrate Pest Conference, WCC-95, Wildlife Control Technology Conference, Wildlife Expo, Urban Pest Management Conference, Pest World, and others. We also saw a need for hands-on training, so beginning in 2009 we created or helped manage several workshops to provide hands-on training on wildlife damage manage-Workshop topics have included Deer Damage ment. Management (Blair, Nebraska, 2009, Vantassel 2009), Canada Goose Management (Lincoln, Nebraska, 2010, New Paltz, New York, 2012, Indianapolis, Indiana, 2013), Shooting in Sensitive Environments (Lincoln, Nebraska, 2010, Vantassel 2010) and Urban Coyote Management Workshop (Lincoln, Nebraska, 2011, Vantassel 2011).

Our efforts in curriculum development started in 2009 when Orkin[™] contracted with us to create training manuals for their technicians. We develop a curriculum that would be adaptable for training wildlife control operators (WCO) around the U.S. We published our preliminary edition of the National Wildlife Control Training Program in 2011 (Vantassel et al. 2011). After incorporating suggestions from WCOs, we published the final program in 2012 (Vantassel et al. 2012). The National Wildlife Control Training Program: Core Principles and Information covers all the skills essential for beginning a career as a wildlife control operator. This training, in various versions, has been presented at the annual meeting of the National Wildlife Control Operators Association (NWCOA) since 2010. The NWCOA certified the curriculum in 2012 and the State of Delaware adopted it for licensing their WCOs in 2013. In 2013, we published a companion volume, "Supplemental Species Information," that provided biology, damage identification, and management information on 29 additional species (Vantassel et al. 2013).

FUTURE OF ICWDM

From its modest beginnings in 1995, the Internet has continued to grow in content and usage. As of March 2014, an estimated 40.7% of the world's inhabitants now use the Internet (Internet World Stats 2014). Increased use of the Internet, however, does not necessarily mean that the ICWDM will receive greater traffic. The ICWDM's voice is under increasing pressure from the growth of private industry in the digital space. In response, we have entered the realm of social media (Facebook[®] and Twitter); will increase our connection to the NWCOA, National Pest Management Association (NPMA); and seek to develop training materials for new audiences, such as Master Gardeners, golf course superintendents, and other professionals who need highquality information on wildlife damage management.

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