

WETLAND SCIENCE AND PRACTICE

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Canada geese over Millbrook Marsh - Photo by Charles Andrew Cole

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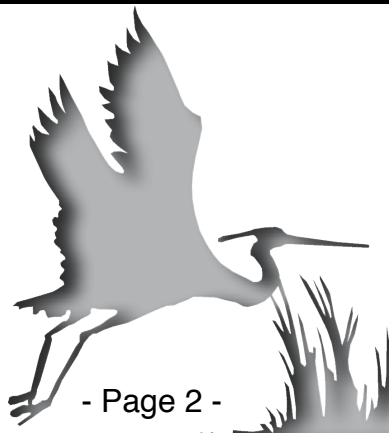
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Aim and Scope of Wetland Science and Practice

The *WSP* is the formal voice of the Society of Wetland Scientists. It is a quarterly publication focusing on news of the *SWS*, at international, national and chapter levels, as well as important and relevant announcements for members. In addition, manuscripts are published on topics that are descriptive in nature, that focus on particular case studies, or analyze policies. All manuscripts should follow guidelines for authors as listed for *Wetlands* as closely as possible. All papers published in *WSP* will be reviewed by the editor for suitability. Letters to the editor are also encouraged but must be relevant to broad wetland-related topics. All material should be sent electronically to the current editor of *WSP*. Complaints about *SWS* policy or personnel should be sent directly to the elected officers of *SWS* and will not be considered for publication in *WSP*.

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WSP

PRESIDENT'S MESSAGE

Announcement

SWS is pleased to provide you with an electronic copy of our quarterly publication, Wetland Science and Practice (WSP). After reviewing responses to our membership survey and taking into consideration all aspects of publishing a printed piece, the Board of Directors has decided that WSP will be distributed electronically. More details on this decision can be found in my President's Message in this issue.

I hope you enjoy WSP's new format!

Stephen Faulkner
SWS President



"If nothing ever changed, there'd be no butterflies." Author Unknown

You are looking at change in action with this issue of Wetland Science and Practice (WSP) where we have converted from print to electronic publishing. Returning to an electronic format was not a decision we took lightly or hastily. While driven by financial considerations to use your membership dollars efficiently, we also reviewed your responses to specific survey questions on this issue and discussed the pros and cons. In the end, the ~ \$17,000 annual cost of printing WSP was simply too much to justify when compared with the minimal expense for this version, and it has the added benefits of being more environmentally friendly and more flexible. For those of you who enjoy having a hard copy to read away from your screen or pass around to colleagues and students, please use the Share option and then select Download. Once downloaded, you'll be able to print only items of interest or the entire publication.

On behalf of SWS, I would also like to thank Andy Cole for his many years of service as WSP Editor. Andy will be stepping down from his role as editor in 2014. If you're interested in serving in this role, be on the lookout for more information coming soon.

I have been working closely with the rest of the Executive Board and AMPED staff to continue building our capacity to provide forward-looking, cost-effective member services. In November, President-Elect Jim Perry and I met with AMPED staff in Madison to finalize our 2014 budget, develop the agenda for the mid-year Board meeting, and continue updating and streamlining our leadership and governance documents. The Ways and Means Committee has selected an investment advisor to help us implement our investment strategy. We are also well underway on the redesign of our website and on track to have it up and running by the time of our annual meeting in May.

Speaking of our meeting, I hope you are already planning to attend the inaugural Joint Aquatic Sciences Meeting (JASM), "Bridging Genes to Ecosystems: Aquatic Science at a Time of Rapid Change", in Portland, Oregon, May 18-23, 2014. This meeting will bring us together with the other leading aquatic scientific societies: Society for Freshwater Science (SFS), Association for the Sciences of Limnology and Oceanography (ASLO), and Phycological Society of America (PSA). Abstract submittal is now open so please visit <http://www.sgmeet.com/jasm2014/> and register. Also, please take the time to nominate a deserving colleague for one of the many awards that we will present at the meeting. Portland is a fabulous venue and we anticipate a great meeting!

PRESIDENT'S MESSAGE

Finally, I want to thank you for your support of SWS, especially those who are volunteering their time and talents in service to a section, chapter, or at the national level. SWS is strongest when we have our greatest asset - YOU! - engaged and involved. Feel free to contact me or any other Executive Board member if you are interested in getting more involved or have other ideas on how we can better serve YOU.

Stephen Faulkner
SWS President



In memoriam: Thomas M. Burton

Thomas M. Burton, professor emeritus of Zoology and Fisheries & Wildlife at Michigan State University and a pioneer in the bioassessment of the Great Lakes Wetlands, passed away on June 1, 2013.

Thomas Burton was born on November 24, 1941. He attended the University of Louisiana-Monroe, where he received a B.S. degree in Biology in 1963, and an M.S. degree in Biology (Ichthyology) in 1965. Dr. Burton received a



Ph.D in Aquatic Ecology from Cornell University in 1973, and then completed his post-doctoral work in Biogeochemistry at Florida State University in 1974.

Dr. Burton was a faculty member with the Department of Zoology for over thirty-two years, from 1975-2007. He began his career at Michigan State University with a tenure track research position in the Institute of Water Research. He conducted research on the Water Quality Management Project, and became the lead researcher on a pilot watershed study funded by the International Joint Commission through the U.S. Environmental Protection Agency. Dr. Burton also served as Chairperson of the Zoology Department and Director of the Biological Science Program from 1996-2000.

Dr. Burton's research focused on community dynamics of streams, wetlands and lakes, and the monitoring and restoration of the Great Lakes coastal marshes, inland forested wetlands and streams. He published over 130 papers on salamander and fish ecology, use of natural systems for recycling wastewater, effects of stormwater runoff on lakes and streams, and plant and animal community dynamics in streams and wetlands.

Dr. Burton was awarded research funding from the National Science Foundation, the U.S. Environmental Protection Agency, the U.S. Department of Defense, the U.S. Department of Interior, Michigan Departments of Environmental Quality and Natural Resources, the Great Lakes Fishery Commission, The Nature Conservancy and Dow Chemical Company. Other career awards included a Smithsonian Short Term Fellowship for research on

EDITOR'S MESSAGE

the streams in Panama (1989-90), an Indo-American Fellowship for research on the streams in the Nilgiri Hills in Bangalore, India (1989-90), and a Fulbright Fellowship.

Dr. Burton's advice was sought by federal and state agencies and by non-governmental organizations. He was selected as a spokesperson for the wetlands environmental indicators group, and presented the Canadian-U.S.A report at the 2000 State of the Lakes Ecosystems Conference. Dr. Burton also presented numerous keynote addresses at international conferences, including the Wetlands 2000 conference in Quebec City; the Michigan-Shiga Large Lakes conference in Japan in 2001; and scientific sessions on wetlands and streams in Ireland and New Zealand for the International Limnological Society. He was a member of the American Association for the Advancement of Science, the Wetlands Society, and the International Society for Tropical Ecology. Additionally, he served as Chair of the Great Lakes Commission Wetland Consortium and Co-Chair of the Science Committee, responsible for writing the science report on bio-assessment indicators for Great Lakes Wetlands.

Dr. Burton was an exceptional researcher and teacher, highly recognized by his peers in the aquatic sciences, and deeply appreciated by his students.

"Tom enjoyed and cherished his career, his friends and students, his years at MSU and the beautiful natural world he loved to study, advocate for, and immerse himself in." -- Mrs. Delorus Burton

[reprinted by permission of the MSU Zoology Department]



The Environmental Protection of Wetlands under International Law

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Abstract

The environmental protection of wetlands under international law is accomplished through various methods including conventions, customary principles of international water law and decisions of the International Court of Justice. The most representative instrument is the Ramsar Convention, which specifically focuses on wetlands protection through conservation and “wise use” of such an ecosystem and its resources. The principles of international water law codified in the 1997 United Nations Watercourses Convention provide a management approach to be applied to each watercourse, requiring all watercourse States to ensure the protection and preservation of ecosystems through the application of principles of cooperation, reasonable utilization and causing no harm along the entirety of each basin. An analysis of these instruments reveals the best practices to manage wetlands in transboundary basins around the world.

Key Words

Wetlands, International Law, Watercourse, Protection

Introduction

Wetlands are one of the most valuable natural resources on earth. The main ecological function is to provide adequate habitat for riparian and aquatic ecosystems through storing and releasing surface water, improving flood control, and recharging groundwater. They provide adequate habitat for waterfowl and shorebirds as well as hotbeds of biological diversity. Their essential processes, also known as environmental services, are to improve water quality along streams, control erosion, and reduce sedimentation; in essence wetlands are the natural filters for rivers. However, the environmental services of wetlands were not well recognized until the late 20th century, when constructed wetlands were used as best management practices to control nutrients and sediment discharge to rivers from agricultural land (Diaz et al. 2012). Although significant efforts have been made to preserve them, a large

number of wetlands have been lost through human practices such as streamflow reduction, diversions for agricultural use and urban expansion (Gabor 2007, Kwasniak 2007).

International law has recognized the ecological importance and economic value of wetlands. As a result, international agreements regarding wetlands have created international legal obligations to protect and restore wetlands (Dodd, 1999). The Convention on Wetlands of International Importance Especially as Waterfowl Habitats, known as the Ramsar Convention, is an intergovernmental treaty that establishes the framework for “national action and international cooperation” to ensure protection, conservation and “wise use” of wetlands and their resources (Ramsar 2013).

“Almost one third of the world’s protected wetlands are transboundary river basins” (Verschuuren, 2008). A River Basin Initiative has been developed between the Ramsar Convention Bureau and the Secretariat of the Convention on Biodiversity to achieve integration along basin management (Vriesinga, 2008) (River Basin Initiative Portal, 2013). In addition, the 1997 U.N. Watercourses Convention contains specific provisions for the protection and preservation of ecosystems where principles of international water law provide for the conservation of wetlands in transboundary basins around the world. Watercourse states are riparian states, and each has the obligations to cooperate, to use water in an equitable and reasonable way, with the responsibility not to cause significant harm (U.N. Convention 1997). These principles must be reflected and enforced through the national and regional regulations of countries in order to ensure the effective protection and preservation of ecosystems.

This article provides an overview of existing international law for protection of wetlands, and it describes how the principles of international water law must be incorporated into any legislation concerning the management of water resources.

International Protection of Wetlands

The international protection of wetlands has been addressed in environmental principles and policies reflected in international agreements (Jamieson 1986). The Stockholm Declaration on the Human Environment (U.N. 1972) and the World Charter for Nature (U.N. 1982) together establish the foundation of international environmental law.

The Stockholm Declaration sets forth 26 principles, which “inspire and guide the peoples of the world in the preservation and enhancement of the human environment” (U.N. 1972). Its main goal is to provide states with guidelines for



“treating environmental problems as a whole” as well as to provide coordination in an effective manner (Beyerlin and Marauhn 2011). For example, Principle 2 specifically establishes protection of natural ecosystems implying that conservation of wetlands is for the benefit of present and future generations. It provides as follow:

“The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate” (U.N. 1972).

The World Charter for Nature, adopted in 1982 by the U.N. General Assembly in the form of a resolution, focuses on the protection of nature for its own benefit (U.N. 1982). This instrument provides guidelines for ethical conduct and has inspired a number of international treaty practices (Beyerlin and Marauhn 2011). The Charter contains five main principles of conservation to protect the earth with the main goal of respecting nature so that “its essential process shall not be impaired” (U.N. 1982), this is connected with the hydrologic definition of wetlands (IUCN1980). Both land and sea are covered by these principles, as well as ecosystems and organisms (U.N., 1982). Principle 4 establishes that:

“Ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist” (U.N. 1982).

In addition, principles of international water law provide the basis for managing riparian states and therefore wetlands located in an entire basin. Cooperation, equitable and reasonable use, and no harm are the main principles governing the law of international freshwater. These principles have been codified by the International Law Commission in the 1997 U.N. Watercourses Convention (McCaffrey 2007).

The Stockholm Declaration and the World Charter for Nature both reflect the principles of international water law in their provisions. For example, principle 7 of the Stockholm Declaration specifically addresses the principle of cooperation, which establishes that in order to achieve environmental goals for the protection and conservation of the environment, citizens, communities and institutions at every level should share equitably in common efforts. “Local and national governments will bear the greatest burden for large-scale environmental policy and action within their jurisdictions” (U.N. 1972). The Charter emphasizes international cooperation among nations and action

by international organizations in order to achieve the common interest. Similarly, the World Charter for Nature recognizes “the need for appropriate measures at the national and international levels to protect nature and promote international co-operation” (U.N. 1982).

The protection of habitat and ecosystems including wetlands is also reflected in additional international legal instruments such as the Convention Concerning the Protection of the World Cultural and Natural Heritage 1972 (UNESCO 1972), the Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973 (CITES 1973), the Convention on the Conservation of Migratory Species of Wild Animals 1979 (CMS 1979), the Convention on Biological Diversity 1992 (UNEP 1992), the Convention to Combat Desertification 1994 (UNCCD 1994), the Convention on the Law of the Non-Navigational Uses of International Watercourses 1997 (U.N. 1997), and especially the Convention on Wetlands of International Importance of 1971, known as the Ramsar Convention (U.N. 1971). Because of their special focus, a specific analysis is provided below of the Convention on Wetlands of International Importance of 1971, (U.N. 1971), and the Convention on the Law of the Non-Navigational Uses of International Watercourses 1997 (U.N. 1997), the most authoritative instruments in the field of international freshwater law.

Ramsar Convention and Important Instruments for the Protection of Wetlands

The Convention on Wetlands of International Importance Especially as Waterfowl Habitats (Ramsar Convention) of 2 February 1971 was adopted in the Iranian city of Ramsar. It entered into force on 21 December 1975 and was amended by the Paris Protocol of 3 December 1982 and by the Regina Amendments of 28 May 1987. There are currently 168 contracting parties, and it covers all geographic regions of the planet. It includes a total of 2,161 sites in the List of Wetlands of International Importance. The total surface area of designated sites in the world is 205,682,155 hectares (Ramsar.org 2013). As defined by the Eighth COP to the Ramsar Convention in Valencia 2002, the mission of the Ramsar Convention is

“the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world” (COP 2002).

The Ramsar Convention is the only environmental treaty that focuses on a specific ecosystem using the expression ‘wetlands’, thus establishing the relationship between land and water (Fisher 2013). Originally, wetlands were important as waterfowl habitats. This is reflected in Article 1(2), which



establishes that “[f]or the purposes of this Convention waterfowl are birds ecologically dependent on wetlands” (U.N. 1971). However, the concept of wetlands in the Convention has a broad definition as stated in its mission, including “lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans” (U.N. 1971) and (Resolution VIII.25 2002).

The “wise use” concept is at the center of the Ramsar mission. The wise use of wetlands is defined as “the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development” (Ramsar.org 2013). Article 2(6), Article 3(1), Article 6(2) and (3) respectively of the treaty text emphasize this concept in order to protect migratory stocks of waterfowl, to promote the conservation of the wetlands included in the List, to make general or specific recommendations to the Contracting Parties regarding the conservation, and management of their flora and fauna (U.N. 1971). “Wise use” “therefore has at its heart the conservation and sustainable use of wetlands and their resources, for the benefit of humankind” (Ramsar.org 2013).

Article 2 of the treaty text establishes the Ramsar List of Wetlands of International Importance, which is the “keystone” of the Convention (U.N. 1971) (Ramsar.org 2013). The Strategic Framework’s “Vision for the List” has as its main goal to “develop and maintain an international network of wetlands which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes and benefits/services” (Ramsar.org 2013). The maintenance of the Ramsar List is one of the two original fundamental duties of the Ramsar Secretariat (Article 8.2 of the treaty) (U.N. 1971) (Ramsar.org 2013).

The United States is used as a model to show how the list applies to one specific country. The United States became a contracting party of the Ramsar Convention on Wetlands in 1987. The number of Ramsar sites listed in the United States is 35 containing a total surface area of 1,827,196 hectares. Table 1 shows each of the Ramsar sites, date of designation, each of the 26 states in which they are located and hectares per site. Florida, Hawaii, and California are the states with the largest surface area of wetlands designated as Ramsar sites in the U.S. The most recent designated Ramsar site is the San Francisco Bay/ Estuary, in February 2013.

Ramsar Sites	Date of designation	State	Hectares
Ash Meadows National Wildlife Refuge	18/12/86	Nevada	9,509 ha
Bolinas Lagoon	01/09/98	California	445 ha
Cache-Lower White Rivers	21/11/89	Arkansas	81,376 ha
Cache River-Cypress Creek Wetlands	01/11/94	Illinois	24,281 ha
Caddo Lake	23/10/93	Texas	7,977 ha
Catahoula Lake	18/06/91	Louisiana	12,150 ha
Chesapeake Bay Estuarine Complex	04/06/87	Virginia	45,000 ha
Cheyenne Bottoms	19/10/88	Kansas	10,978 ha
Congaree National Park	02/02/12	South Carolina	10,539 ha
Connecticut River Estuary & Tidal Wetlands Complex	14/10/94	Connecticut	6,484 ha
Corkscrew Swamp Sanctuary	23/03/09	Florida	5,261 ha
Delaware Bay Estuary	20/05/92	Delaware, New Jersey	51,252 ha
Edwin B Forsythe National Wildlife Refuge	18/12/86	New Jersey	13,080 ha
Everglades National Park	04/06/87	Florida	610,497 ha
Francis Beidler Forest	30/05/08	South Carolina	6,438 ha
Grassland Ecological Area	02/02/05	California	65,000 ha
Humbug Marsh	20/01/10	Michigan	188 ha
Horicon Marsh	04/12/90	Wisconsin	12,912 ha
Izembek Lagoon National Wildlife Refuge	18/12/86	Alaska	168,433 ha
Kakagon and Bad River Sloughs	02/02/12	Wisconsin	4,355 ha
Kawainui and Hamakua Marsh Complex	02/02/05	Hawaii	414 ha

Table 1: United States of America, Ramsar Sites
UNITED STATES OF AMERICA / ETATS-UNIS D'AMÉRIQUE / ESTADOS UNIDOS DE AMÉRICA (35 Ramsar Sites, 1,827,196 hectares)

The source of this list is available at http://www.ramsar.org/cda/en/ramsar-documents-list/main/ramsar/1-31-218_4000_0__



Ramsar Sites	Date of designation	State	Hectares
Laguna de Santa Rosa Wetland Complex	16/04/10	California	1,576 ha
Okefenokee National Wildlife Refuge	18/12/86	Georgia, Florida	162,635 ha
Palmyra Atoll National Wildlife Refuge	01/04/11	Hawaii	204,127 ha
Pelican Island National Wildlife Refuge	14/03/93	Florida	1,908 ha
Quivira National Wildlife Refuge	12/02/02	Kansas	8,958 ha
Roswell Artesian Wetlands	07/09/10	New Mexico	917 ha
San Francisco Bay/ Estuary (SFBE)	02/02/13	California	158,711 ha
Sand Lake National Wildlife Refuge	03/08/98	South Dakota	8,700 ha
Sue and Wes Dixon Waterfowl Refuge at Hennepin & Hopper Lakes	02/02/12	Illinois	1,117 ha
The Emiquon Complex	02/02/12	Illinois	5,729 ha
Tijuana River National Estuarine Research Reserve	02/02/05	California	1,021 ha
Tomales Bay	30/09/02	California	2,850 ha
Upper Mississippi River Floodplain Wetlands	05/01/10	Minnesota, Wisconsin, Iowa, Illinois	122,357 ha
Wilma H. Schiermeier Olentangy River Wetland Research Park	18/04/08	Ohio	21 ha

Table 1 cont'd: United States of America, Ramsar Sites
 UNITED STATES OF AMERICA / ETATS-UNIS D'AMÉRIQUE / ESTADOS UNIDOS
 DE AMÉRICA (35 Ramsar Sites, 1,827,196 hectares)

In addition to the Ramsar list of sites, the UNESCO Biosphere Reserves are sites designated by countries and recognized under UNESCO's Man and the Biosphere (MAB) Program established in 1977 (UNESCO.org 2013). The main goal is to promote "sustainable development based on local community efforts and sound science" (UNESCO.org 2013). The Man and the Biosphere (MAB) Program is considered an Intergovernmental Scientific Program. It establishes a scientific basis for achieving an improvement of the relationship between people and their environment globally (UNESCO.org 2013). Among different considerations, biosphere reserves have been characterized as "tools to help countries implement the results of the World Summit on Sustainable Development and, in particular, the Convention on Biological Diversity and its Ecosystem Approach" (UNESCO.org 2013). Currently, there are 621 biosphere reserves in 117 countries, including 12 transboundary sites (UNESCO.org 2013).

Another agreement addressing habitat is the Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO 1972), which was adopted by the General Conference of UNESCO on 16 November 1972 and entered into force on 17 December 1975, with 190 States being parties to the Convention as of September 19, 2012. The United States of America deposited its ratification to this Convention in 1973. Similar to the Ramsar Convention, this Convention also includes a list of sites; however, the scope differs from that of the Ramsar Convention. The Convention covers cultural heritage and also 'natural heritage' as established in Article 2, including natural features, geological and physiographical formations, and natural sites. Currently, the World Heritage List contains 981 properties forming part of the cultural and natural heritage that the World Heritage Committee considers as having outstanding universal value. These include 759 cultural, 193 natural and 29 mixed properties located in 160 States Parties (WHC.UNESCO.org 2013).

Table 2 shows the List of UNESCO Biosphere Reserves that are wholly or partially Ramsar wetlands in the U.S. It also presents the list of Ramsar Wetlands of International Importance in the U.S. that are also inscribed (all or partly) on the World Heritage List under the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage.

The most important instrument for the protection of biological diversity is the Convention on Biological Diversity (CBD), which was adopted at Nairobi in May 1993 and entered into force on 29 December 1993 (UNEP 1992) (Beyerlin and Marauhn 2011) with 193 States being Parties to it currently. The United States of America signed this Convention in 1993, but because there has been no ratification to date, it is not a contracting party to the CBD. This Convention protects biodiversity as a whole, including every ecological system and in particular its genetic bases. The three main objectives of the CBD



identified in Article 1 and the preamble are “(i) the conservation of biological diversity; (ii) the sustainable use; and (iii) the fair and equitable sharing of the benefits arising out of the genetic resources” (Beyerlin and Marauhn 2011).

List of UNESCO Biosphere Reserves that are wholly or partially Ramsar Wetlands in the U.S.

Biosphere Reserve	Ramsar Sites
Everglades (1976)	Everglades National Park (1987)
Golden Gate (1988)	San Francisco Bay/Estuary (SFBE) 2013

Ramsar and World Heritage Sites in the U.S.

World Heritage Site Name	Ramsar Site
Everglades National Park, 1979	Everglades National Park, 1987

Table 2: United States of America, Ramsar Sites

UNITED STATES OF AMERICA / ETATS-UNIS D’AMÉRIQUE / ESTADOS UNIDOS DE AMÉRICA (35 Ramsar Sites, 1,827,196 hectares)

http://www.ramsar.org/cda/en/ramsar-documents-list-world-heritage/main/ramsar/1-31-218%5E21960_4000_0__

One important global activity is the River Basin Initiative established under the joint work plan of both the Convention on Biological Diversity (CBD) and the Ramsar Convention on Wetlands. The main goal of this initiative is to share information where the principles of integrated management of biodiversity, wetlands and river basins are in play (RBI.org 2013). New guidelines were developed in 1999-2000 under both conventions in order to provide guidance on how to apply these new concepts to the River Basin Initiative mechanism in order to apply best practices and integrated management of river basins based on an ecosystem approach (RBI.org 2013). The goal is to have a global network to share information where “the principles of integrated management of biodiversity, wetlands and river basins are demonstrated” (RBI.org 2013). The objectives imply participation by government at the local, national and international levels in order to achieve integrated management of biodiversity, wetlands and river basins (RBI.org 2013). The expected outputs include “a working partnership between water, biodiversity and wetland sector agencies at national and international levels” as well as manuals and review documents providing guidance to governments and practitioners” (RBI.org 2013). This will contribute to the protection of wetlands through the integration of different agencies and levels of government.

Another important aspect that must be addressed before the analysis of the 1997 UN Watercourse Convention is the designation of Transboundary Ramsar Sites. Resolution VII.19 (1999) specifically recalled Article 5 of the Ramsar Convention, which obliges Contracting Parties to

“consult each other about implementing obligations arising from the Convention especially in the case of wetlands extending over the territories of more than one Contracting Party or where the water system is shared by Contracting Parties. They shall at the same time endeavour to coordinate and support present and future policies and regulations concerning the conservation of wetlands and their flora and fauna”; (U.N., 1971).

Article 5 of the Ramsar Convention approaches the principle of cooperation through consultation with each party when implementing policies and regulations. In addition, pursuant to Article 5 of the Convention and Resolution VII.19 (1999) on international cooperation:

“Increasingly, Ramsar Contracting Parties are designating their new and existing Ramsar Sites as Transboundary Ramsar Sites, meaning that an ecologically coherent wetland extends across national borders and the Ramsar Site authorities on both or all sides of the border have formally agreed to collaborate in its management, and have notified the Secretariat of this intent” (Ramsar Manual 2013).

As of today, 16 transboundary Ramsar sites have been identified and included in a cooperative management arrangement, rather than creating a distinct legal status for each Ramsar Site. Integration and cooperation are fundamental in proper management of transboundary wetlands. Wetlands located in transboundary basins, or in the language of Article 5 “wetlands extending [...] where the water system is shared by Contracting Parties,” must be managed according to the principles of international water law of cooperation, no harm, and reasonable utilization.

The principles of international water law codified in the 1997 UN Watercourses Convention are reflected in the Ramsar Convention as well as in Resolution VII.19 (1999). For example, in Article 3 of the Ramsar Convention, the principle of reasonable use is implicit in the words “the Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands [...]”. This implies that a reasonable use of water will help to achieve conservation of wetlands. Similarly, Article 4 implies the principle of no harm, stating “[w]here a Contracting Party in its urgent national interest deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and should create additional nature reserves [...]”. It should be emphasized that the restriction of the boundaries of wetlands is only contemplated in case of urgent national interest, thus establishing a limited exception for the duty not to damage



wetlands, and in any case any such damage must be compensated through mitigation. Article 5 of the Ramsar Convention as mentioned above applies the principle of cooperation by stating that “the Contracting Parties shall consult with each other [...] where a water system is shared by Contracting Parties.” Therefore, the integration of wetlands as part of a basin system must be addressed as water of a unitary whole, and the principles of international water law must govern the relations among the different riparian countries.

The 1997 UN Watercourses Convention and the Protection of Ecosystems

The Convention on the Law of the Non-Navigational Uses of International Watercourses was adopted by the United Nations General Assembly on May 21, 1997 (U.N. 1997). The vote was 106 countries in favor and 3 against (Burundi, China and Turkey). The negative votes of China and Turkey were probably due to their locations as upstream states in ongoing controversies such as the construction plans of additional dams on the upper Mekong River in China and the Guneydagu Anadolu Projesi (GAP Project) developed by Turkey on the Euphrates River (The Economist 1996, McCaffrey 2007).

According to Article 36 “the present Convention shall enter into force on the ninetieth day following the date of deposit of the thirty-fifth instrument of ratification, acceptance, approval or accession with the Secretary-General of the United Nations.” Currently 30 states have ratified the Convention, and although it needs the ratification of 5 more countries to enter into force, the Convention is the most authoritative statement of international law in the field of international freshwater law (Rieu-Clark 2013).

The scope of the Convention in Article 1 focuses on “uses of international watercourses and of their waters for purposes other than navigation and to measures of protection, preservation and management related to the uses of those watercourses and their waters” (U.N. 1997). Water is an element that “moves from one state to another, from underground to surface, from surface to atmosphere, from atmosphere back to surface, and so on in the hydrologic cycle” (McCaffrey 2009). The term “located” means situated, which does not define an element flowing through an aquifer (McCaffrey 2009). The 1997 U.N. Convention applies to all those waters, aquifers and groundwater connected with surface water in a watercourse basin “constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus” (U.N., 1997).

Even though the Convention has not yet entered into force, it has significant importance for several reasons (McCaffrey, 2007). First, the Convention codifies the principles of international water law-equitable utilization, prevention of harm, and prior notification, and it establishes an emerging

obligation to protect the ecosystems of international watercourses. The International Law Commission drafted the Convention, and this United Nations body is in charge of the “progressive development of international law and its codification” (U.N. 1982) (McCaffrey, 2007). Therefore, all the provisions in the Convention are expected to become international obligations of riparian states (McCaffrey 2007). Second, the Convention shows the opinion of the international community, especially because it was addressed in an international forum where each country could express its opinion, and it “was adopted by a weighty majority of countries” (McCaffre, 2007). This implies a consensus of the international community upon the principles of international water law. As a consequence, if the Convention enters into force, it will even bear upon controversies where one or more states are not a party to the Convention (McCaffrey, 2007).

In addition, the 1997 U.N. Watercourses Convention has influenced agreements focus on shared fresh water, such as the 1995 Protocol on Shared Watercourse Systems in the Southern African Development Community Region, and has had significant relevance in controversies. For example, in the Case Concerning Kasikili/Sedudu Island 1999 I.C.J. 1045, the International Court of Justice specifically referred to the Watercourses Convention and stated that “The Chobe River around Kasikili/Sedudu Island can be said to be part of a watercourse” in the sense of the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses. Article 2(a) of the Convention gives the following definition of a watercourse: ‘Watercourse’ means a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.”

The Court in the Kasikili/Sedudu Island case provides an analysis of the concept of a watercourse-system as a unitary whole and established that this term

“was already recognized by the Institut de Droit International in its 1961 Salzburg Resolution on the utilization of non-maritime international waters (except for navigation) (Annuaire de l’Institut de Droit International, Vol. 49, Part II (1961), pp. 381 ff.). In this Resolution, which was adopted unanimously, the Institute referred to “waters which form part of a watercourse or hydrographic basin which extends over the territory of two or more States”. In Article 2 the Institute observes that the right of a State to utilize waters which traverse or border its territory “is limited by the right of utilization of other States interested in the same watercourse or hydrographic basin”, whereas Article 3 states that “if States are in disagreement over the scope of the right of utilization, settlement will take place on the basis of equity, taking particular account of their respective needs, as well as of other pertinent circumstances”



(1999 I.C.J. 1045).

The watercourse concept addresses the whole basin as a unitary system where the action of one state or country can affect the other. Therefore all the riparian countries must cooperate and act in order to avoid harm to each other while using water in a reasonable way.

The 1997 U.N. Watercourses Convention codifies the principles of international water law in Part II General Principles from Article 5 to Article 10. The principle of equitable and reasonable utilization and participation is addressed in Article 5, which established that “Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner,” while taking into account “[...] the interests of the watercourse States concerned, consistent with adequate protection of the watercourse” (U.N. 1997). This implies that the watercourse as a whole should be protected by each riparian country using water in a reasonable way in order to ensure the protection of the whole watercourse. Even if there is a portion of special protection, such as wetlands located geographically in one specific watercourse state, every other watercourse state should apply this principle and protect those wetlands looking at the watercourse as a whole and not just at the part within its own territory.

For example, the Mesopotamian Marshlands located in Southern Iraq are part of the Tigris and Euphrates watercourse. These wetlands need the application of cooperation, reasonable use and no harm by the other watercourse states, especially Turkey as an upstream State, in order to guarantee enough water to ensure their protection and conservation. A series of dams were constructed on the Euphrates beginning in the 1960s in Turkey and Syria reducing the streamflow and causing downstream impacts in the wetlands. In addition since the 1980s, Turkey has constructed a massive project on the Euphrates in southeast Anatolia, called GAP Project. It has been estimated that could cause Syria and Iraq to lose up to 40% and 90% of the water flowing through each respective country (McCaffrey 2007). The application of the 1997 U.N. Watercourse Convention in the Tigris and Euphrates watercourse will help to ensure the protection of wetlands throughout by applying the principles of international water law and the preservation of ecosystems (U.N. 1997).

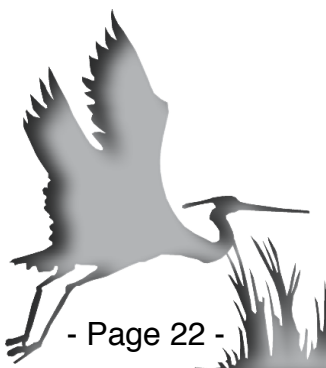
Article 6 of the 1997 U.N. Watercourses Convention establishes the relevant factors of equitable and reasonable utilization, considering “geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character.” This shows the importance of protecting ecosystem in the whole watercourse, by requiring each state containing part of the watercourse to contribute to the protection of the ecosystems in the entire basin even if a specific type of wetlands or environment is not located within its own territory.

The obligation not to cause significant harm is reflected in Article 7 and requires that “[w]atercourse States, in utilizing an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse States” (U.N. 1997). Using the same example of the Mesopotamian Marshlands, Turkey, as an upstream state in the Tigris and Euphrates watercourse, must use water in a way that prevents any significant harm to other watercourse States. The GAP project may cause significant harm to Syria and Iraq, with each country losing a large percent of its water. Therefore, under the terms of the Convention, Turkey should halt the project and cooperate with the other watercourse states in the recuperation and protection of the Mesopotamian Marshlands.

The 1997 U.N. Watercourses Convention addresses the principle of cooperation in Article 8 as the general obligation to cooperate and Article 9 through regular exchange of data and information. Article 8 establishes the principle of cooperation, in accordance with the concepts of sovereign equality and territorial integrity, saying that “watercourse states shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith” (GA Resolution 1997). The concept of “sovereign equality” means “that states sharing an international watercourse have rights to use of its waters, that those rights are, in principle, equal, and that accordingly each state must respect the rights of the other” (McCaffrey 2007). The concept of “territorial integrity” means that a country cannot exercise its jurisdiction “outside its territory except by virtue of a permissive rule derived from international custom or from a convention” (Janis. and Noyes 2001). Both concepts imply the cooperation of neighboring countries in order to protect their water resources.

Part IV of the 1997 U.N. Watercourses Convention focuses on protection, preservation and management, especially Article 20, which addresses the protection and preservation of ecosystems by establishing that “[w]atercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses” (U.N. 1997). This provision represents an important step forward in the international protection and preservation of ecosystems. The International Court of Justice in the Gabcikovo-Nagymaros case and in the Pulp Mill case recognized that “international law is adapting to take into account advances in scientific understanding of natural systems” (McCaffrey 2007).

The 1992 ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes, also known as the Helsinki Convention, defines “transboundary impact” as “any significant adverse effect on the environment,” and establishes that “Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate,



landscape and historical monuments or other physical structures or the interaction among these factors;...” while providing that the parties shall “take all appropriate measures ... To ensure that transboundary waters are used with the aim of ecologically sound and rational water management, conservation of water resources and environmental protection;... and To ensure conservation and, where necessary, restoration of ecosystems” (ECE 1992, McCaffrey, 2007). The Helsinki Convention describes the basic elements of cooperation among riparian countries to protect specific ecosystems such as wetlands. These elements have been reflected in further treaties such as the 1995 Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin, and the 1995 Protocol on Shared Watercourse Systems in the Southern African Development Community.

In addition, the 1997 U.N. Watercourses Convention provides for prevention, reduction and control of pollution of an international watercourse in any “detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct.” This provision is essential to avoid the detriment of wetlands that can cause serious damage due to the lack of services such as natural filtration of nutrients and sediments that wetlands provide. Article 24 applies management guidelines in particular to: “(a) Planning the sustainable development of an international watercourse and providing for the implementation of any plans adopted; and (b) otherwise promoting the rational and optimal utilization, protection and control of the watercourse” (U.N. 1997). The management techniques proposed in the 1997 U.N. Watercourse Convention are based on the principle of sustainable development and encourage cooperation among countries in order to arrive “at mutually agreeable measures and method” such as establishing joint water quality objectives and criteria in international watercourses (U.N. 1997). This management approach establishes the guidelines to protect and preserve wetlands around the world. The implementation of the 1997 U.N. Watercourse Convention has the potential to guarantee the conservation of wetlands for future generations. Therefore, it is incumbent upon countries to develop national, bilateral and multilateral agreements to protect their watercourses based on the provisions and principles established by the Convention.

Conclusion

International law provides instruments and tools that can protect, preserve, and conserve wetlands. The Ramsar Convention provides for the management of wetlands through local and national actions and through international cooperation as a way to achieve sustainable development throughout the world. This important approach will contribute to the integration of the same rules and practices at the local and international levels in order to establish

harmonized criteria to manage wetlands. The 1997 U.N. Watercourse Convention is an essential legal instrument that applies the principles of cooperation, equitable and reasonable use and no harm to international watercourses. When the watercourse is addressed as a unitary whole the protection, preservation and management of wetlands is ensured by all the riparian countries upstream and downstream while providing enough water to maintain the ecological systems. These principles will effectively protect all wetlands around the world. Further research can provide an analysis of the law protecting wetlands at the local level through a comparative analysis.

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Colorado Flooding Brings Flood Of Attention To Vital Regulatory Permitting Program

By Eileen Williamson, Omaha District Public Affairs Specialist

In mid September, a wet monsoonal pattern stalled along the Front Range of the Rocky Mountains bringing heavy rains to the foothills west of Boulder. The resulting flooding impacted roads, bridges and other infrastructure, with rivers carving new channels and eroding riverbanks. Major roadways in the Estes Park area sustained severe damages with limited alternatives to access these areas for repairs.

The U.S. Army Corps of Engineers, Omaha District activated its Emergency Operations Center Sept. 12, in preparation for the anticipated requests for assistance during and following the resulting flooding.

Calls also began to flood the Omaha District's Denver Regulatory office located on Chatfield Dam near Littleton, Colo.

"Callers wanted to know what they could and couldn't do to protect or repair their properties related to the flooding," said Kiel Downing, with the Denver Regulatory Field Office, who was only weeks into his newly promoted position of State Regulatory Program Manager.

Even during a flood emergency, landowners must obtain a Section 404 permit when one is required, for work associated with protecting and repairing flood-damaged areas. Regulatory personnel have been working non-stop to make sure emergency and nonemergency flood-damage repair-work can be given the green light. Any time material is added to or removed from a Waterway of the U.S. landowners should work with the Corps.

During an emergency like the flooding, we ask landowners to contact us so we can work with them to determine what type of permit might be required, said Downing. "We have to ensure that in the race to protect, repair and rebuild, we do not compromise the waterways which make Colorado the beautiful state it is," he added.

"We used streamlined permitting authorities enabling us to respond to the high volume of permitting requests, with an average of least 65 percent of the issued

permits authorized either the same or following day. Much of the authorized work involved flood-related activities to repair and reconstruct existing roads, bridge embankments, or to protect or repair utility structures, protect and stabilize stream banks and protect and restore intake structures,” said Downing. “The permits still require the Corps to review each project but helps by avoiding the need to go through the lengthy public hearing process.”

According to the State of Colorado, 17 counties were declared disaster areas with property damage estimates exceeding \$1.36 billion. Anticipating the increase in requests and the need to provide public support, led the District to augment its existing regulatory staff with personnel from other regulatory field offices located in Colorado and through reach-back support from regulatory project managers across the Omaha District and the Northwestern Division.

Additional concerns from the public and the state were related to the lapse in appropriations caused by the government shutdown, which began Oct. 1.

“To meet the needs of FEMA, the State and other resource agencies, we received a mission assignment from FEMA for a liaison to serve as a regulatory project manager within their Joint Field Office, which was established to support the State’s requests for recovery assistance,” said Martha Chieply, Chief of Regulatory Programs for the Omaha District. “Additionally, we worked through our Division and Headquarters to ensure we were able to remain open to provide support to the public.”

By Oct. 18, state regulatory personnel had authorized more than 170 flood-related projects primarily via Nationwide Permits and Emergency General Permits.

“Once people were connected with the Denver Regulatory Office, they were able to get the information they needed to make sure they were getting their work properly permitted so they could proceed. We appreciate the regulatory office personnel’s commitment to working with the public through this event,” said Dave Hard with Director of the office of Emergency Management for the State of Colorado.

Among those permits, are permits with the Colorado Dept. of Transportation to repair and restore the 50 bridges and more than 200 miles of highways damaged or lost to the flooding. Colorado Gov. John Hickenlooper has established Dec. 1, as a target date completing these repairs.



Col. Joel R. Cross, Omaha District Commander, applauded the collaborative efforts and hard work put forth by Corps personnel and the responding agencies, adding that state-wide, their initiative and innovation has not gone unnoticed.

“These are dedicated individuals who demonstrate a commitment to duty and selfless service,” said Cross. “They are working together with a common goal to contribute to Colorado’s recovery.”

Chieply emphasized the effective coordination among agencies. To help streamline interagency coordination procedures, Denver Regulatory Office personnel developed a programmatic agreement, in coordination with the Colorado State Historic Preservation Officer and Advisory Council on Historic Preservation, for flood-related repair work. Additionally, emergency Endangered Species Act consultation procedures were used to improve coordination times with the U.S. Fish and Wildlife Service.

“Interagency state and Federal resource agencies came together quickly to address these proposed dredging operations and emergency authorizations. There was a ‘win-win’ situation where impacted waterways clogged with flood sediments would be restored with the sediment removal providing needed fill material,” said Chieply. “Many thanks go to our State and Federal partners for their prompt response and comments for these tough emergency permits and programmatic agreements that provided emergency response and protected important aquatic and cultural resources.”

Steve Moore from the Sacramento District’s, Grand Junction Regulatory Office, and later Joe McMahon from the Omaha District Regulatory Branch, deployed to serve as a regulatory liaison within FEMA’s Joint Field Office. They served as part of the USACE technical team supporting the Joint Field Office mission and activities. As liaisons, they have provided regulatory permitting guidance and at times, acted as a “conduit” between the Denver Regulatory Office and the FEMA JFO. To assist the USACE technical team, they have participated in public meetings to communicate a regulatory perspective, provide general permit information with regard to Section 404 regulatory permitting and to field general questions concerning the types of permitting that may be required in response to flood repairs. Among FEMA’s response, repair and recovery projects supported by the District’s regulatory liaisons, a majority of work involves stream restoration, road repairs, utility line activities and watershed protection to name a few.

“Within each request, we determined whether to assemble teams to review the potential project and ensure impacted waterways are restored or potentially improved through restoration and repairs,” said Chieply.

Additional efforts were made to help improve the processes for ensuring permits and requests for information received a timely response. Alternate (Emergency) Permit processing procedures were developed with approval delegated from Northwestern Division Commander to Omaha District Commander Colonel Cross. These procedures were later modified to include dredging operations to obtain fill material for roadways and infrastructure repairs during the flood event. These procedures also included authorities to respond to potential downstream flooding impacts in Nebraska along the South Platte and into the Platte rivers.

Among the authorizations issued, one allows the removal of Idylwilde Dam in the Big Thompson Canyon to support reconstructing U.S. Highway 34, which was severely damaged by flooding. Idylwilde Dam was rebuilt following the flooding in 1976 and its demolition will provide silt, sand, rock and boulders for up to 100,000 cubic yards of project material. Other permits and notifications include a request to dredge Longmont Reservoir to help restore a major component of the City of Longmont's water supply, requests to perform bridge and culvert repairs in Rocky Mountain National Park, Estes Park and along North Turkey Creek and several projects to remove sediment and debris in Weld, Boulder and Larimer counties.

For nearly 600 residential road crossings in Boulder and Jefferson counties impacted by the flooding, regulatory staff has been assisting with determining permitting needs to repair and replace those crossings.

The Department of the Army Regulatory Program is one of the oldest in the Federal Government. The program is complex in its breadth, complexity and authority. The Corps evaluates permit applications for essentially all construction activities in the Nation's waters, including wetlands. The USACE Regulatory Program is committed to protecting the Nation's aquatic resources, while allowing reasonable development through fair, flexible and balanced permit decisions.





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