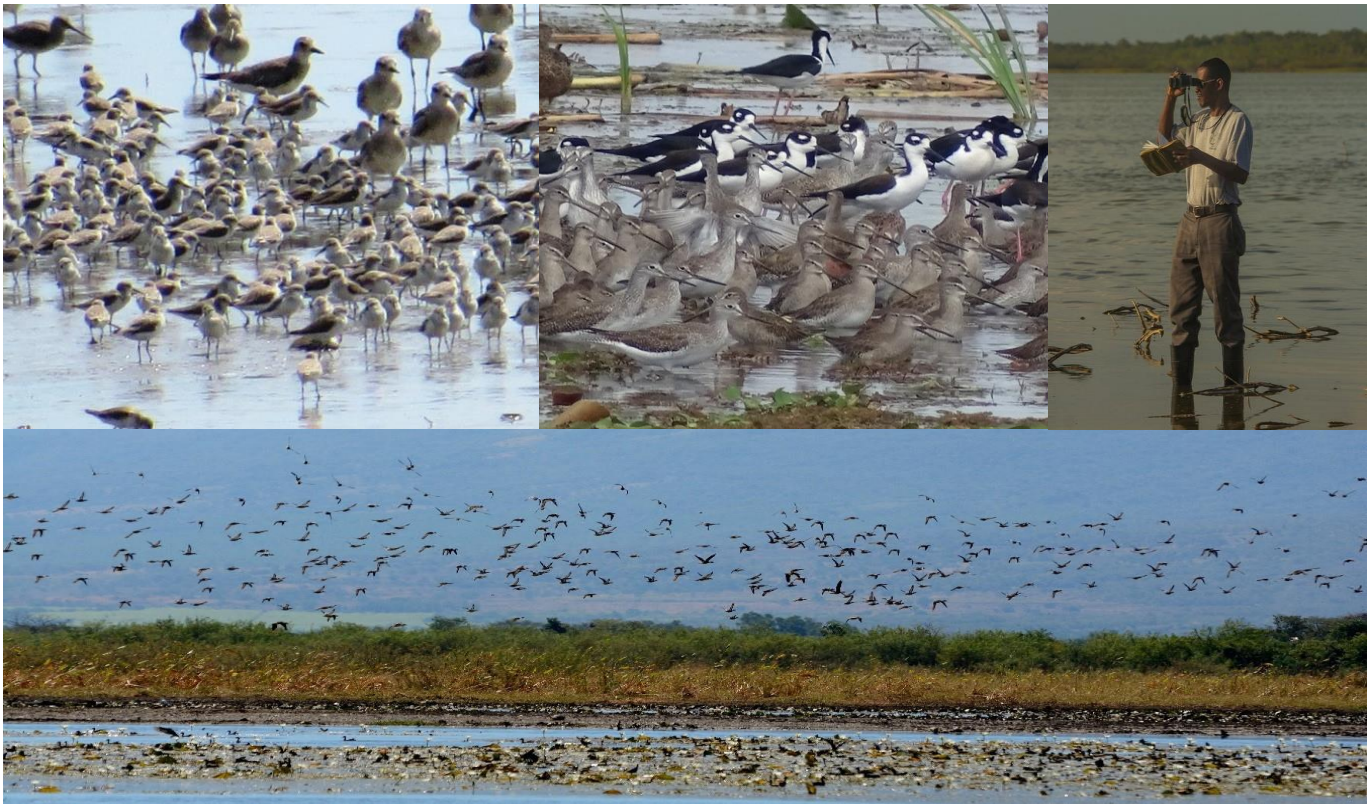

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Quetzalli S.A.

Asociación Ornitológica de Costa Rica

Audubon Panamá

2015 CENTRAL AMERICAN WATERBIRD CENSUS
FINAL REPORT - 31/03/2015

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1 Some collaborators just included their e-mails, which are not included here. Any omission or error is involuntary.

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1. INTRODUCTION

The Central American Waterbird Census is an initiative of BirdLife International, the Waterbird Conservation Council and Wetlands International, supported the first time in 2012 by the Canadian Wildlife Service, and in 2015 by Environment Canada.

The Central American Waterbird Census forms part of the International Waterbird Census (IWC). The IWC is a program of Wetlands International first established in Europe in 1967, which since the 1990s has also covered Africa, Asia and South America. The goals of the IWC are to monitor changes in waterbird numbers and distribution, to improve knowledge of little-known waterbird species and wetland sites, to identify and monitor sites that qualify as Wetlands of International Importance under the Ramsar Convention on Wetlands, to provide information on the conservation status of waterbird species, and to increase awareness of the importance of waterbirds and their wetland habitats at local, national and international levels.

In Latin America and the Caribbean, the IWC has been implemented in South America since 1990, as the Neotropical Waterbird Census (NWC), coordinated by Wetlands International. In 2008, the Society for the Conservation and Study of Caribbean Birds initiated the development of a Caribbean Waterbird Census (CWC), partly based on the NWC, and in February 2011 launched the first region-wide CWC. During 2000 to 2007, Ducks Unlimited organized bi-annual waterfowl surveys in Central America, the Caribbean and northern South America, but there have been no regionally-coordinated waterbird surveys since 2007.

Recognizing this significant geographic gap, the Waterbird Conservation Council approached both Wetlands International and BirdLife International to initiate steps towards establishing a waterbird census in Central America. An initial trial was held in Jul 2011 with support from the National Museum of Costa Rica, Panama Audubon Society and Fundación Natura (Panama), and the subsequent 2012 census mentioned above. Since then, some Central American institutions have carried out national waterbird census in different wetlands in their respective countries. Finally, thanks to the support of Environment Canada and with the coordination of BirdLife International, all seven Central American countries have participated in the 2015 Central American Waterbird Census (CAWC), the results of which are being presented in this report by BirdLife on their behalf.

2. THE CAWC IN 2015

The main goal of the 2015 census (and previous) is to generate interest in, and raise awareness of the importance of monitoring waterbirds. Both are seen as key components in building a regular, primarily voluntary, Waterbird Census in Central America.

In particular, the CAWC is intended to provide information of Canadian waterbird species during the non-nesting season to allow Environment Canada to deliver implementation of Canadian BCR Strategies – in particular information on areas used by these species in Central America.

2.1 Methodology

BirdLife International, with the support of the U.S. Fish and Wildlife Service's (USFWS) Division of Migratory Bird Management, organized a Central American Waterbird Census Workshop in March 2014 in San Salvador, el Salvador. The objective of the meeting was to share experiences, revise the existing methodologies and protocols for waterbird census and familiarize the participants with e-bird.

As one of the results of that meeting, the CAWC was undertaken following an adaptation of the methodology of the Neotropical Waterbird Census (see Annex 1, How to participate in the Central American Waterbird Census, Annex 2 Site form, and Anex 3 – Data Form; note that all these annexes are available in Spanish only).

Two forms -site and data- were completed for each locality, under the following instructions:

1. Definition of the point count: in case the wetland is too big, the area to be surveyed has to be defined so the census can be repeated in the following years.
2. All sites must be surveyed every year.
3. Name of each site must be maintained.
4. The census must be realized in recognized important areas for waterbirds, such as Important Bird Areas (IBAs), Ramsar sites or WSHRN sites.
5. Census must be concentrated at the same time of the day every year.
6. Count all waterbird species at the site, provided detailed population numbers and avoiding duplicate records.
7. Juveniles must be included in the total number of the species, chicks must be recorded separately.
8. If the number of birds is lower than the usual for the site, the reasons must be detailed in the wetlands status section.
9. If the absence of any species recorded regularly is noted, it must be mentioned in the general comments section.
10. Avoid duplicated surveys. If there are several counts for a site, all data must be reported in a single form.
11. For the purposes of the CAWC, the species within the next families are considered waterbirds: Anatidae, Phalacrocoracidae, Eurypygidae, Podicipedidae, Anhingidae, Charadriidae, Phoenicopteridae, Fregatidae, Haematopodidae, Diomedeidae, Ardeidae, Recurvirostridae, Procellariidae, Threskiornithidae, Burhinidae, Hydrobatidae, Ciconiidae, Scolopacidae, Phaethontidae, Aramidae, Jacanidae, Pelecanidae, Rallidae, Stercorariidae, Sulidae, Heliornithidae and Laridae.

Lead organizations in each Central American country, with which BirdLife have worked in the past and have worked previously on the 2012 Census or similar projects, were contracted to coordinate

and undertake the census (see Terms of Reference in Annex 4), and were asked to define key sites for the census and encourage census participants to undertake at least one waterbird census at a key wetland site as required, and taking into account the wetlands surveyed by Ducks Unlimited in the region between 2000 and 2007.

***Table 1**: List of institutions coordinating the 2015 CAWC.*

Country	Institution
Belize	Belize Audubon Society*
Costa Rica	Asociación Ornitológica de Costa Rica
El Salvador	Salvanatura*
Guatemala	Organización Nacional para la Conservación del Ambiente - ONCA
Honduras	Asociación Hondureña de Ornitología
Nicaragua	Quetzalli Nicaragua
Panamá	Sociedad Audubón de Panamá*

* Belize Audubon Society and Sociedad Audubón de Panama are BirdLife Partners; Salvanatura is a BirdLife Affiliate.

The census at national level was planned to be realized between January and March - the same period as the 2012 census and the 2011 trial - with the support of volunteers whenever it was possible. In 2015, the census was carried out between 21st January and 8th March.

Three options were provided for submitting the data: via the national coordinating organizations, to the e-mail address censo.avesacuaticas.ca@gmail.com, or via eBird http://ebird.org/content/ebird (in which case participants were asked to add "Central American Waterbird Census" to the note section).

Once the data was received by BirdLife International, all data was standardized into a single Excel file, where the taxonomy was revised and updated according to the last version of BirdLife International[2]. Some bird species, associated with wetlands but not waterbirds -i.e. Osprey, Snail Kite, several species of Kingsfisher-, were also removed from the final species list. For waterbird species, and based in the distributions maps available at BirdLife International Data Zone, the main migratory status in Central America was assigned to each species, and Canadian migrants were identified.

Some wetlands have been censused totally or partially from different locations because of their size or habitat considerations. Due to errors in the geographical coordinates given and the use of different names with no relationship between them for these localities, data have not been summarized by wetlands. Therefore, the information presented here is reported as it was sent by national coordinators. Data from localities are separated and recorded during the same days, so there is no risk of duplicate records. In the cases where more than one team surveyed the same area in the same or different dates, the highest counts for each species were selected.

2 BirdLife International (2015) IUCN Red List for birds. Downloaded from http://www.birdlife.org. In the case of North American birds, BirdLife follows AOU with very few exceptions (i.e. Grey Plover instead of Black-bellied Plover, or *Larus smithsonianus* instead of *Larus argentatus*). Details on these differences can be found in the detailes species accounts available at: http://www.birdlife.org/datazone

2.2 2015 CAWC Results

A total of **100 collaborators and volunteers** participated in the 2015 CAWC, in **73 localities** from all seven Central American countries (see table 2). A total of **102 species and 114,767 individuals** have been reported from these localities (see table 2 and 3).

Table 2: Summary of results reported in 2015 (2012 results shown as reference).

Country	# sites 2012	# localities 2015	# Sp 2012	# Sp 2015	# Ind. 2012	# Ind. 2015
Belize	1	**1**	30	**25**	904	**898**
Costa Rica	3	**23**	51	**68**	5,697	**43583**
El Salvador	12	**19**	52	**76**	5,177	**27,993**
Guatemala	0	**7**	0	**40**	0	**7,100**
Honduras	1	**8**	35	**55**	255	**9,529**
Nicaragua	0	**12**	0	**59**	0	**14,496**
Panamá	4	**3**	43	**46**	4,883	**11,168**
Total Result	**22**	**73**	**78**	**102**	**16,916**	**114,816**

Costa Rica and El Salvador, had the highest number of sites surveyed, and have the highest number of individuals recorded for the region in this 2015 census - as they did in 2012 -, followed by Nicaragua and Panama.

Despite the notable increase of the number of wetlands surveyed and species and total number of individuals, it must be noted that the conditions of several wetlands were not optimal (flooded, dry, out of the migration peaks). Details on the status of each wetland can be found in the forms and the Excel file.

The localities with higher number of individuals recorded in 2015 are Laguna de Palo Verde (CR), Palenque, Liberia (CR), Embalse Cerrón Grande (SV) and Costa del Este (PA). Other relevant sites inlcude Reserva Natural de Usos Múltiples Monterrico (GT), El Guayabo Humedal (NI) and Laguna el Jocotal (SV). Table 3 shows the total number of species and individuals per locality.

Table 3: List of sites surveyed in 2015 by country with total numbers of species and individuals.

Country	Locality	# spp.	# ind.
Belize	**Crooked Tree Wildlife Sanctuary**	**25**	**898**
Costa Rica	Aguas Negras (Parque Nacional Tortuguero)	9	90
	Caño California (Parque Nacional Tortuguero)	8	73
	Caño Negro	3	8
	Embalse Dulce Nombre	6	42
	Esterillos Oeste, Punta Judas	15	124
	Estero de Puntarenas	19	558
	Golfo de Nicoya	9	1110
	Granja Camaronera Cosechas Marinas	17	575
	Humedal Caño Negro	22	379
	Humedal Nacional Térraba-Sierpe	36	319
	Isla de Pájaros	5	89

Country	Locality	# spp.	# ind.
	Jalova beach and Estuary	18	119
	La Espuela- Parque Nacional de Palo Verde	5	17
	Lago de Arenal	10	72
	Laguna de Palo Verde	**22**	**19366**
	Laguna de Palo Verde, punto específico entre Laguna Pochotal y Laguna la guinea	1	75
	Orilla Lago Arenal, Reserva de las Aves El Congal	7	36
	Palenque, Liberia	**12**	**18927**
	Río Colorado	27	575
	Rio Sierpe (1)	23	376
	Rio Sierpe (2)	7	26
	Río Tempisque (trasnsecta Bolson a Pto Humo)	11	116
	Sector Catalina- Torre	22	511
El Salvador	Bahía de Jiquilisco	24	845
	Barra de Santiago	33	677
	Barra de Santiago Bocana El Zapote	11	675
	Bocana del Río Jiboa	38	792
	Bocana el Saite	9	20
	Camaronera Cooperativa Playa Dorada	13	218
	Embalse Cerrón Grande	**30**	**12424**
	Estero Bocanitas	18	160
	Estero de Jaltepeque	22	466
	Estero Los Pinos	26	263
	Estero Toluca	23	480
	Garita Palmera	17	323
	Lago de Ilopango	19	2496
	Laguna de Guija	18	1577
	Laguna de Metapan	24	1963
	Laguna el Jocotal	**45**	**3048**
	Laguna Nahualapa	14	131
	Los Pinos / Boca Poza / Cangrejera	24	251
	Salinera Hándal	30	1184
Guatemala	Área de Protección Especial Manchón-Guamuchal	22	354
	Boca Barra del Río Motagua (Punta de Manabique)	13	92
	La Graciosa (Punta Manabique)	10	136
	Lago de Güija	14	994
	Monterrico embarcadero, Hawai, Boca barra	18	253
	Parque Nacional Rio Dulce	8	253
	Reserva Natural de Usos Múltiples Monterrico	**16**	**5018**
Honduras	Área de Manejo/Especie La Berbería	15	309
	Área Manejo/Especie El Jicarito	20	828

Country	Locality	# spp.	# ind.
	Lago de Yojoa -Sector Honduyate Marina	26	2569
	Lago de Yojoa – Sector Los Naranjos	18	262
	Lago de Yojoa – Sector NE - Las Glorias	23	2616
	Lagunas de oxidación de El Progreso	15	1155
	Parque Nacional Jeanette Kawas (Laguna de los Micos)	18	1020
	Refugio de vida silvestre Cuero y Salado	28	770
Nicaragua	Apanas Canal	7	118
	Bocana de las Peñitas	9	624
	El Guayabo (Orillas del Lago Cocibolca)	15	990
	El Guayabo Humedal	**33**	**3039**
	Humedal Istiam	21	803
	La Palizada	19	2224
	Laguna de Pueblo Nuevo	21	1601
	Laguna de Tisma	20	1618
	Laguna Piquin Guerrero	16	424
	Llanos de Apacunca	19	1419
	Palermo	17	489
	Potosi	12	1147
Panamá	Área de Uso Multiple Cienaga de las Macanas	27	1330
	Costa del Este	**21**	**8116**
	Reserva Marino Costera los Manglares de Panamá Viejo	29	1722
Total Result		**1327**	**114767**

2.2.1 Details on the species recorded.

From the 102 species recorded, 38 are mainly resident in Central America and 65 are Neartic-Neotropical migratory species (non breeding in Central America). Of these, 55 species have breeding populations in Canada (highlighed in Table 4). Canadian breeding species with higher numbers include the Blue-winged Teal, Lesser Scaup, American Coot and Least Sandpiper. One Vulnerable species (Agami Heron) and 4 Near Threatened species (Reddish Egret, Snowy Plover, Semipalmated Sandpiper and Elegant Tern) have also been recorded during these census.

Table 4: Total counts of waterbird species reported to date.
Note: Taxonomy follows BirdLife; therefore some minor differences could be found between English and Scientific name or taxonomy order.

Legend:
MSCA: Migratory Status of the species in Central América. Thiks status is based in the distribution information and maps of BirdLife available on the Data Zone. For some species, the migratory status in the region is complex. Because of the lack of banding date and detailed analysis of their regional status, the species are presented here according to its major migratory status in the region: **R**: the (majority of the) species population is considered to be all-year resident in Central America; **NB**: the (majority of the) species population is considered as non-breeding in Central America.
CAM: Canadian Migrant, species that have regular breeding populations in Canada that migrates South during the boreal winter.
UICN: Red List Category: LC – Least Concern, NT – Near Threatened, VU – Vulnerable.

Table 4: Total counts of waterbird species reported to date.

Family	Common Name	Scientific Name	MSCA	CAM	UICN	Ind.	Juv	Nests
Anatidae	Northern Pintail	*Anas acuta*	NB	X	LC	3		
	Fulvous Whistling-duck	*Dendrocygna bicolor*	R		LC	2399		
	Black-bellied Whistling-duck	*Dendrocygna autumnalis*	R		LC	22907		
	Muscovy Duck	*Cairina moschata*	R		LC	78		
	American Wigeon	*Mareca americana*	NB	X	LC	291	1	
	Ruddy Duck	*Oxyura jamaicensis*	NB	X	LC	1		
	Blue-winged Teal	***Spatula discors***	**NB**	**X**	**LC**	**31867**		
	Cinnamon Teal	*Spatula cyanoptera*	NB	X	LC	3		
	Northern Shoveler	*Spatula clypeata*	NB	X	LC	1755		
	Common Teal	*Anas crecca*	NB	X	LC	9		
	Ring-necked Duck	*Aythya collaris*	NB	X	LC	27		
	Lesser Scaup	***Aythya affinis***	**NB**	**X**	**LC**	**3556**		
	Redhead	*Aythya americana*	NB	X	LC	12		
	Anas sp.	*Anas sp.*	R		-	45		
Podicipedidae	Least Grebe	*Tachybaptus dominicus*	R		LC	34		
	Pied-billed Grebe	*Podilymbus podiceps*	R	X	LC	34		
Ciconiidae	Wood Stork	*Mycteria americana*	R		LC	1502		
	Jabiru	*Jabiru mycteria*	R		LC	79		
Threskiornithidae	White Ibis	*Eudocimus albus*	R		LC	591	4	
	Glossy Ibis	*Plegadis falcinellus*	NB	X	LC	41		
	Green Ibis	*Mesembrinibis cayennensis*	R		LC	5		
	Roseate Spoonbill	*Platalea ajaja*	NB		LC	106		

Family	Common Name	Scientific Name	MSCA	CAM	UICN	Ind.	Juv	Nests
Ardeidae	Cattle Egret	*Bubulcus ibis*	R		LC	2163		
	Green-backed Heron	*Butorides striata*	R	X	LC	193	3	
	Bare-throated Tiger-heron	*Tigrisoma mexicanum*	R		LC	42	2	
	Agami Heron	***Agamia agami***	**R**		**VU**	**4**		
	Boat-billed Heron	*Cochlearius cochlearius*	R		LC	29		
	Pinnated Bittern	*Botaurus pinnatus*	R		LC	5		
	Black-crowned Night-heron	*Nycticorax nycticorax*	R	X	LC	34		
	Yellow-crowned Night-heron	*Nyctanassa violacea*	R		LC	80	1	
	Great Blue Heron	*Ardea herodias*	NB	X	LC	230	4	
	Cocoi Heron	*Ardea cocoi*	R		LC	3		
	Great White Egret	*Ardea alba*	R	X	LC	1421		
	Reddish Egret	***Egretta rufescens***	**NB**		**NT**	**32**		
	Tricolored Heron	*Egretta tricolor*	NB		LC	307	1	
	Little Blue Heron	*Egretta caerulea*	NB	X	LC	601	3	
	Snowy Egret	*Egretta thula*	NB	X	LC	1225		
Phaethontidae	Red-billed Tropicbird	*Phaethon aethereus*	R		LC	1		
Fregatidae	Magnificent Frigatebird	*Fregata magnificens*	R		LC	466		
Pelecanidae	American White Pelican	*Pelecanus erythrorhynchos*	NB	X	LC	1017		
	Brown Pelican	*Pelecanus occidentalis*	NB		LC	2185		
Sulidae	Brown Booby	*Sula leucogaster*	R		LC	6		
Phalacrocoracidae	Neotropical Cormorant	*Phalacrocorax brasilianus*	R		LC	3177		56
Anhingidae	Anhinga	*Anhinga anhinga*	R		LC	129	1	

Family	Common Name	Scientific Name	MSCA	CAM	UICN	Ind.	Juv	Nests
Rallidae	**American Coot**	***Fulica americana***	**NB**	**X**	**LC**	**7216**		
	Common Gallinule	*Gallinula galeata*	NB	X	LC	140		
	White-throated Crake	*Laterallus albigularis*	R		LC	17		
	Grey-breasted Crake	*Laterallus exilis*	R		LC	1		
	Grey-necked Wood-rail	*Aramides cajaneus*	R		LC	11		
	Purple Gallinule	*Porphyrio martinicus*	R		LC	64	1	
	Ruddy Crake	*Laterallus ruber*	R		LC	2		
Burhinidae	Double-striped Thick-knee	*Burhinus bistriatus*	R		LC	23		
Heliornithidae	Sungrebe	*Heliornis fulica*	R		LC	2		
Aramidae	Limpkin	*Aramus guarauna*	R		LC	86		
Haematopodidae	American Oystercatcher	*Haematopus palliatus*	NB	X	LC	6		
Recurvirostridae	Black-winged Stilt	*Himantopus himantopus*	NB	X	LC	2405		
	American Avocet	*Recurvirostra americana*	NB	X	LC	15		
Charadriidae	Grey Plover	*Pluvialis squatarola*	NB	X	LC	492		
	Semipalmated Plover	*Charadrius semipalmatus*	NB	X	LC	1733		
	Wilson's Plover	*Charadrius wilsonia*	NB		LC	140		
	Killdeer	*Charadrius vociferus*	NB	X	LC	296		
	Collared Plover	*Charadrius collaris*	R		LC	372		
	Snowy Plover	***Charadrius alexandrinus***	**NB**		**NT**	**1**		
	Southern Lapwing	*Vanellus chilensis*	R		LC	96		
Jacanidae	Northern Jacana	*Jacana spinosa*	R		LC	1185	16	
	Wattled Jacana	*Jacana jacana*	R		LC	170		

Family	Common Name	Scientific Name	MSCA	CAM	UICN	Ind.	Juv	Nests
Scolopacidae	Wilson's Snipe	*Gallinago delicata*	NB	X	LC	1		
	Lesser Yellowlegs	*Tringa flavipes*	NB	X	LC	134		
	Short-billed Dowitcher	*Limnodromus griseus*	NB	X	LC	780		
	Long-billed Dowitcher	*Limnodromus scolopaceus*	NB	X	LC	195		
	Hudsonian Godwit	*Limosa haemastica*	NB	X	LC	1		
	Marbled Godwit	*Limosa fedoa*	NB	X	LC	22		
	Whimbrel	*Numenius phaeopus*	NB	X	LC	295		
	Long-billed Curlew	*Numenius americanus*	NB	X	LC	3		
	Greater Yellowlegs	*Tringa melanoleuca*	NB	X	LC	118		
	Solitary Sandpiper	*Tringa solitaria*	NB	X	LC	24		
	Spotted Sandpiper	*Actitis macularius*	NB	X	LC	316		
	Willet	*Tringa semipalmata*	NB	X	LC	632		
	Ruddy Turnstone	*Arenaria interpres*	NB	X	LC	53		
	Red Knot	*Calidris canutus*	NB	X	LC	16		
	Sanderling	*Calidris alba*	NB	X	LC	251		
	Semipalmated Sandpiper	***Calidris pusilla***	**NB**	**X**	**NT**	**110**		
	Western Sandpiper	*Calidris mauri*	NB	X	LC	154		
	Least Sandpiper	***Calidris minutilla***	**NB**	**X**	**LC**	**4210**		
	Stilt Sandpiper	*Calidris himantopus*	NB	X	LC	62		
	Wilson's Phalarope	*Steganopus tricolor*	NB	X	LC	67		
	Red-necked Phalarope	*Phalaropus lobatus*	NB	X	LC	2		
	Unidentifed spp.	*Spp.*	-	-	-	6682		

Family	Common Name	Scientific Name	MSCA	CAM	UICN	Ind.	Juv	Nests
Laridae	Common Gull-billed Tern	*Gelochelidon nilotica*	NB		LC	272		
	Bonaparte's Gull	*Larus philadelphia*	NB	X	LC	5		
	Laughing Gull	*Larus atricilla*	NB	X	LC	2676		
	Franklin's Gull	*Larus pipixcan*	NB	X	LC	34		
	Arctic Herring Gull	*Larus smithsonianus*	NB	X	LC	95		
	Lesser Black-backed Gull	*Larus fuscus*	NB	X	LC	1		
	Caspian Tern	*Hydroprogne caspia*	NB	X	LC	472		
	Royal Tern	*Thalasseus maximus*	NB		LC	2349		
	Elegant Tern	***Thalasseus elegans***	**NB**		**NT**	**238**		
	Sandwich Tern	*Thalasseus sandvicensis*	NB		LC	642		
	Common Tern	*Sterna hirundo*	NB	X	LC	261		
	Forster's Tern	*Sterna forsteri*	NB	X	LC	1		
	Sooty Tern	*Onychoprion fuscatus*	NB	X	LC	14		
	Black Skimmer	*Rynchops niger*	NB	X	LC	410		
Stercorariidae	Arctic Jaeger	*Stercorarius parasiticus*	NB	X	LC	1		
Totals						**114767**	**37**	**56**

2.2.2 Sites with the highest number of non-breeding species

Two sites, Palenque, Liberia in Costa Rica, and Embalse Cerrón Grande in El Salvador, showed the highest number of individuals of any migratory species. Costa del Este, part of Panama Bay, appears in the third place. Reserva Natural de Usos Múltiples Monterrico in Guatemala, and Lake Yojoa in Honduras (censused from different locations) also held good numbers of migratory species.

Table 5: List of sites with the number of migratory species and numbers recorded.

Country	Site	Number of spp.	Individuals
Belize	Crooked Tree Wildlife Sanctuary	9	377
Costa Rica	Laguna de Palo Verde	7	742
	Palenque, Liberia	**6**	**18073**
El Salvador	**Embalse Cerrón Grande**	**19**	**10825**
	Lago de Ilopango	12	2390
Guatemala	Lago de Güija	6	710
	Reserva Natural de Usos Múltiples Monterrico	**7**	**4762**
Honduras	**Lago de Yojoa -Sector Honduyate Marina**	**13**	**2272**
	Lago de Yojoa – Sector NE - Las Glorias	**12**	**2406**
Nicaragua	El Guayabo Humedal	21	2842
	Laguna de Pueblo Nuevo	11	1306
Panamá	**Costa del Este***	**12**	**7829**
	Reserva Marino Costera los Manglares de Panamá Viejo	17	882

2.2.3 Highest counts of Canadian migratory species

Blue-winged Teal
Total number: 31,867
Major counts for the species:

- 15,500 - Palenque, Liberia (Costa Rica)
- 6,114 - Embalse Cerrón Grande (El Salvador)
- 4,494 - Reserva Natural de Usos Múltiples Monterrico (Guatemala)

Lesser Scaup
Total number: 3,556
Major counts for the species:

- 2,550 - Palenque, Liberia (Costa Rica)
- 246 - Lago de Yojoa – Sector NE - Las Glorias (Honduras)
- 227 - Lago de Ilopango (El Salvador)
- 214 - Área de Uso Multiple Cienaga de las Macanas (Panama)

American Coot
Total number: 7,216
Major counts for the species:

- 1970 - Lago de Yojoa -Sector Honduyate Marina

- 1,713 - Lago de Yojoa – Sector NE - Las Glorias (Honduras)
- 1,633 - Lago de Ilopango (El Salvador)
- 567 - Embalse Cerrón Grande (El Salvador)

Least Sandpiper
Total number: 4,210
Major counts for the species:
- *2,145 - Embalse Cerrón Grande (El Salvador)*
- *1,000 – Laguna de Tisma (Nicaragua)*

3. COMMENTS AND RECOMMENDATIONS

Overall, the 2015 CAWC results are impressive. This nationally lead effort ended with the participation of 100 people surveying 73 localities and recording 102 species and more than 114,000 individuals. On the basis of these results, we make the following recommendations to improve the CAWC in the future.

1) Increase the number of sites surveyed in some countries is strongly recommended. As it can be seen in El Salvador and Costa Rica, inclusion of a higher number of sites increases exponentially the number of records. However, it is important that these sites have to be monitored in the long term, so the option of expanding the CAWC to other wetlands must be addressed carefully. It's important to mention that some countries, such as El Salvador, reported safety problems, which means that some sites were not visited. In addition, and due to the limited amount of funds, surveying some sites is not always possible. We suggest here a new regional workshop, where data from previous years (sites, species, numbers) should be analyzed with GIS software and strategic decisions are made to ensure that relevant regions of every country -there are some gaps in the Pacific Coast- and key wetlands are included or at least prioritized for the forthcoming census.

2) This is the first time that this effort is coordinated nationally and some sites included are found to be less important for waterbirds. However, low numbers recorded at some of the sites were due to weather or wetlands conditions. We suggest to carry out an analysis of which wetlands should be monitored after 4 or 5 years of continuous census (i.e. in 2019 or 2020) to asses which of these localities should be prioritized for future work.

3) Bird Banding programs such as MOSI stations and the implementation of the Motus Wildlife Tracking System is strongly recommended in order to allow a better identification of the migratory species and their procedence in Central America. More attention to banding individuals is strongly advised for future census.

4) The reporting system should move gradually to e-Bird. To date, only Honduras has included their data in this database. Training of census teams, collaborators and volunteers in e-bird is needed; therefore, the involvement of Cornell and any national institutions implementing the system in the countries will be necessary.

5) Lack of data and accuracy on some site factsheets (coordinates, quantity of habitat surveyed in each wetland, confusion in how to report sites - as a point count or as the entire wetland) are issues that need to be solved. Therefore, we recommend a revision of the forms utilized and a training workshop by the end of 2015 in order to solve these issues for the 2016 CAWC.

6) Some countries have reported that the dates of the CAWC were not the best to record migratory species on their wetlands (i.e., April or May are the best months for Belize). On the other hand, the census window is long enough to allow the movement of some species from one country to another. The purpose of the CAWC is to allow the calculation of regional populations, so a revision of the best dates to realize the census in the entire region, narrowing the census window, and even doing the census twice per year (as it is done in South America, in February and June) would have to be discussed. Overall weather conditions in these months need to be taken into account to avoid wasting time and resources in wetlands that are not in the best conditions for waterbirds (i.e. floods).

7) Form issues: we suggest to compile information on the census duration to calculate the human effort realized in the census (this data was provided just by Costa Rica and for some wetlands only). It is important also to review and reduce the comments sections in the different forms as the same information is repeated several times in many cases. The description of all wetlands needs to be more detailed, and the relationship between census locations and wetlands clarified. Because the usage of different names of different areas of the same wetlands, calculating the bird populations by wetland is time consuming and could increase the risk of duplicating individuals. These issues are expected to be solved before 2016 CAWC if the training workshop can be organized.

8) Assess the needs of individual countries to carry out the census in the longer term: equipment needed, insurance for volunteers and collaborators, etc.

4. ANNEXES

Please review the separated documents attached to this report.

- Annex 1 How to participate in the Central American Waterbird Census (PDF, Spanish)
- Annex 2 Site form (PDF, Spanish)
- Annex 3 Data Form (PDF, Spanish)
- Annex 4 Terms of Reference for Central American Countries (PDF, Spanish)
- Annex 5 Report of the Central American Waterbird Census -El Salvador, 2014 (Spanish)
- Annex 6 CAWC data (MS Excel file)
- Annex 7 National Reports: Honduras, Nicaragua and Panamá (PDF, Spanish)
- Annex 8 Sites and data factsheets reported by countries.
- Annex 9 Photographies (Belize, Honduras)
- *Annex 10: Maps (to be delivered as an additional product on 15th April)*