A Plan to Address the Sustainability of Shorebird Harvest in the Western Atlantic Flyway



Atlantic Flyway Shorebird Initiative Harvest Working Group May 2016

Based on the National Fish and Wildlife Foundation's 2015 Parent Business Plan

Problem Statement

Shorebird hunting has a long history in the Caribbean region, where it was originally practiced by English, French, and Dutch colonists, and hunting of shorebirds by indigenous peoples has an even longer history throughout the Western Atlantic Flyway (i.e. the Atlantic coastline of countries in the Western Hemisphere, hereafter Flyway). Historically, shorebird hunting was actively pursued for commercial and personal purposes in Canada

and the United States. Although modern hunting pressure on shorebirds within the Flyway is incompletely known, annual harvest is emerging as a potential populationlevel constraint for some species or distinct populations.

Shorebirds are harvested for a variety of reasons. They are taken for recreational hunting, sometimes with



a long-standing cultural practice, and may supplement nutritional needs of rural hunters or be ancillary to human nutritional needs. In a few areas, shorebirds are harvested primarily for sale in restaurants and markets. It is rare for shorebirds to be harvested as main nutritional source. Most shorebird harvest occurs through shooting, but other methods such as netting and choking wires (Trull 1983) have been used. In our definition of harvest, we also include illegal take associated with agricultural and aquacultural operations and illegal take incidental to legal hunting seasons. Thus, the plan focuses on the direct, human-caused mortality of shorebirds.

Current information indicates that considerable hunting pressure exists in Barbados, Guadeloupe, Martinique, Suriname, and French Guiana, and some level of harvest likely occurs in northern Brazil, Canada, Guyana, and Trinidad (Andres 2011). Recent analysis of data from Barbados shows an annual gun harvest of 12,200 to 34,570 shorebirds (Reed 2012). Guadeloupe has 3,000 licensed hunters and Martinique 1,400 licensed hunters. In Suriname, a preliminary survey conducted from 2006 to 2009 revealed that a wide variety of protected waterbirds were killed and sold illegally each year, among which were at least "several tens of thousands" of shorebirds (Ottema and Spaans 2008). Guyana has a history of capturing substantial numbers of shorebirds for food (Bayney and Da Silva 2005), but recent information is lacking. Some level of subsistence harvest occurs in Canada, and shorebirds are actively deterred or killed from commercial blueberry fields (and perhaps in the northeastern USA). Across the region, unsustainable legal harvest and illegal harvest have the potential to limit positive growth of shorebird populations.

In 2015, the National Fish and Wildlife Foundation developed a parent Business Plan for the Atlantic Flyway Shorebird Initiative (National Fish and Wildlife Foundation 2015), hereafter parent Business Plan. In that plan, shorebird harvest was identified as one of four major threats to shorebird survival in the Flyway. Reliable, species-specific

information on population size and demographic parameters have limited the development of robust harvest models, and lack of information on species-specific harvest rates throughout the Flyway are major impediments to developing sustainable hunting practices. Outreach to all stakeholders is vital to achieve a sustainable shorebird harvest in the region. The plan presented here builds on the key actions identified to address the sustainability of shorebird harvest in the parent Business Plan and provides an outline to



evaluate success. The parent Business Plan followed the *Open Standards for the Practice of Conservation* (Conservation Measures Partnership 2013), including the use of the companion Miradi® software. We view this plan as an initial step in providing a framework to address the sustainability of shorebird hunting. Projects, accomplishments, and adaptations to the plan will be tracked within Miradi®.

Vision

Shorebird hunting is sustainable throughout the Western Atlantic Flyway.

Overall Goals

Flyway Biological Goal

Remove the direct threat of harvest as a factor limiting shorebird population growth in the Western Atlantic Flyway by implementing a sustainable shorebird harvest. By 2025, reduce harvest pressure by at least 30%.

Human Wellbeing Goal

Meet the cultural and subsistence needs of people in the Western Atlantic Flyway who harvest shorebirds, while achieving a sustainable shorebird harvest. By 2025, stakeholders agree to a 30% harvest reduction.

Geographic Scope

Within the Western Atlantic Flyway, initial efforts will focus on the following geographic areas within Canada, the Caribbean and the northern coast of South America. Work is currently underway in all initial focus areas. Efforts in secondary focus areas will be addressed as funding and capacity dictates. Initial focus areas include Barbados, eastern Canada, French Guiana, Guadeloupe, Martinique, and Suriname, while secondary areas include northern Brazil, Guyana, and Trinidad and Tobago (Figure 1).



Figure 1. Initial (red) and secondary (yellow) focus areas in the Western Atlantic Flyway to address sustainability of the shorebird harvest.

Legal Framework

Because of the large number of independent states, dependencies, and areas of special sovereignty within the Western Atlantic Flyway, addressing the issue of unsustainable shorebird harvest is complex and requires a variety of strategies (Watts and Turrin 2016). Implementation of specific actions will depend on the legal frameworks, cultural practices, magnitude of harvest, and capacity within each jurisdiction. Below is a brief summary of legal standing and harvest restrictions in the focal jurisdictions (based on Watts and Turrin 2016, who provided greater details).



Table 1. Shorebird protection and harvest restrictions in shorebird harvest focal areas in the Western Atlantic Flyway (see Watts and Turrin 2016). Protection is either not authorized (fully) or with some species restrictions (partially). For partially (or not) protected shorebirds, the season is either restricted sometime during the year (yes) or open year-round (no). Bag limits indicate a set number of shorebirds allowed per day (yes) or no daily/seasonal restrictions (no).

	Legal Pr	otection		Bag			
Jurisdiction	Full	Partial	Season	limits	Comments		
Barbados	Some	Most	Yes	Yes	Recommendations on restrictions provided by hunting association.		
Brazil	All						
Canada	Most	Some	Yes	Yes	Subsistence hunting by native people.		
French Overseas Departments					Restrictions recommended		
French Guiana	Most	Some	No	Yes	to regulatory agency by local hunting federations.		
Guadeloupe	Half	Half	Yes	Yes	Legalized by either		
Martinique	Half	Half	Yes	No	ministerial decree.		
Guyana	None	None	No	Yes	Limits determined during permitting.		
Suriname	All						
Trinidad and Tobago	None	None	Yes	No	Two-year hunting ban lifted October 2015.		

Stakeholders

To address the complexities of shorebird harvest in the Western Atlantic Flyway, a broad range of stakeholders need to be engaged in plan implementation (Table 2). As we implement the plan, the stakeholder pool will likely be expanded.

Table 2. Stakeholders concerned with sustainable shorebird harvest in the Atlantic Flyway.

National/Provincial Governments and Responsible Agencies

Barbados Ministry of Environment and Drainage Office National de la Chasse et de la Faune Sauvage (ONCFS – Paris, Guadeloupe, Martinique, French Guiana, Miquelon, St. Pierre) Ministère de l'Environnement (Paris) Nature Conservation Division, Suriname Forest Service Canadian Wildlife Service U.S. Fish and Wildlife Service

Hunting Associations and Federations and Local Communities

Barbados Wildfowlers Association Fédération Départementale des Chasseurs de la Guadeloupe Fédération Départementale des Chasseurs de la Martinique Other in-country hunters and associations Local communities relying on shorebirds as a food source

Non-governmental Conservation and Donor Organizations

AMAZONA (Guadeloupe) Birdlife International BirdsCaribbean Groupe d'Etude et de Protection des Oiseaux en Guyane (GEPOG) Intervale Associates (Canada) National Audubon Society (USA) National Fish and Wildlife Foundation (USA) New Jersey Audubon Society (USA) Shorebird Conservation Trust (Barbados) Stichting Natuurbehoud in Suriname (STINASU)

Colleges and Universities

College of William and Mary (USA) Mount Allison University (Canada) University of Alaska Anchorage (USA) Université de La Rochelle (France) Université de Moncton (Canada) University of the West Indies (Barbados)

Working Group

A number of stakeholder organizations are represented on the initial working group established to implement the plan. Additional stakeholders will be added to the Working Group as the plan progresses and they agree with the vision and overall goals of the plan. Current members have contributed to the development of proposals sent to the National Fish and Wildlife Foundation.

Current Western Atlantic Flyway Shorebird Harvest Working Group Members

Andres, Brad; U.S. Fish and Wildlife Service Aubry, Yves; Canadian Wildlife Service Blandine, Guillemot; ONCFS (Guadeloupe/Martinique) Bocher, Pierrick; Université de La Rochelle Burke, Wayne; Shorebird Conservation Trust de Pracontal, Nyls; GEPOG Korvsko, Francois: ONCFS (French Guiana) Levesque, Anthony; BirdsCaribbean Mizrahi, David; New Jersey Audubon Padding, Paul; U.S. Fish and Wildlife Service Paquet, Julie; Canadian Wildlife Service Pekarik, Cynthia; Canadian Wildlife Service Reed, Eric; Canadian Wildlife Service Roy, Christian: Canadian Wildlife Service Rozet, David; ONCFS (French DOMs/TOMs) Taylor, Audrey; University of Alaska Anchorage Watts, Bryan; College of William and Mary Wege, David; Birdlife International Zimmerling, Ryan; Canadian Wildlife Service

Working Group Contacts

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Shorebird Conservation Targets

Several focal species in the parent Business Plan are harvested commonly and include the American Golden-Plover, Lesser and Greater Yellowlegs, Whimbrel, and Semipalmated Sandpiper; other regularly harvested species include the Willet, Pectoral Sandpiper, and Short-billed Dowitcher. Key ecological attributes of these shorebirds are provided in Table 3, including recent estimates of sustainable mortality limits (Watts *et al.* 2015).

	Spacios Subapacios/	Total Elympotre Dange		Population Trend ¹		Cumont	Sustainable Montality
Common name	Population	Population ^{1,2}	for PBR ³	30-yea	r 10-year	Status ⁴	Limits ³
American Golden- Plover	Pluvialis dominica	500,000	102,283 - 314,857	Ļ	↓↑?	Fair	9,230 – 27,719
Greater Yellowlegs	Tringa melanoleuca	117,000	102,750 – 205,500	1	↓↑	Good	6,780 - 14,042
Willet	Tringa semipalmatus semipalmatus	90,000	67,500 - 135,000	Ļ	↓↑	Fair	3,157 - 7,472
Lesser Yellowlegs	Tringa flavipes	644,000	495,000 - 990,000	↓↓	$\downarrow\downarrow$	Fair	49,522 - 117,114
Whimbrel	Numenius phaeopus ⁵	40,000	30,000 - 60,000	t	Ļ	Poor	783 - 1,718
Hudsonian Godwit	Limosa haemastica	77,000	42,000 - 84,000	↓	Ļ	Fair	1,056 - 2,944
Red Knot	Calidris canutus rufa	39,000	34,500 - 63,000	$\downarrow\downarrow$	$\downarrow\downarrow$	Poor	261 - 517
Stilt Sandpiper	Calidris himantopus	1,243,700	418,761 - 2,068,645	↓	↓↑	Fair	40,796 - 148,800
Pectoral Sandpiper	Calidris melanotos	1,600,000	181,761 - 683,773	↓↓	↓↓	Fair	26,289 - 78,464
Semipalmated Sandpiper	Calidris pusilla (Eastern/Central)	810,000	469,928 - 1,115,072	↓ ↓	Ť	Poor	44,628 - 92,074
Short-billed Dowitcher	Limnodromus griseus griseus/hendersoni	78,000	58,500 - 117,000	Ļ	↓↑	Fair	3,038 - 7,171

Table 3. Population size, status, and sustainable mortality limits for shorebirds harvested in the Western Atlantic Flyway.

¹ Andres et al. 2012.

² Andres unpublished analysis.

³ Watts et al. 2015; PBR = Potential Biological Removal model output.

⁴ Andres Target Viability analysis in Miradi.

⁵ includes eastern Canada and Mackenzie River Delta breeders.

Key Actions and Indicators

Six key actions were identified in the parent Business Plan and are expanded on here. We added an additional key action, research and monitoring, which was addressed across all threats in the parent Business Plan. By 2025, the overall objective is to reduce harvest pressure by at least 30%.

Action 1: Assess Biological and Social Aspects of Harvest. A robust assessment of the biological and social components of shorebird harvest is a critical first step in determining if other strategies should be implemented, such as strengthening law enforcement or developing hunting policies. Engaging social scientists to work on human dimension aspects with stakeholders would be beneficial. Although some initial assessments have been completed, a more comprehensive effort is needed in all countries/departments where shorebirds are harvested.

Objective 1: By 2020, a robust assessment of shorebird harvest is completed for Barbados, French Guiana, Guadeloupe, Martinique, and Suriname.

Indicator 1a: number of assessments completed for initial focus areas.

Objective 2: By 2025, a robust assessment is completed for northern Brazil, Guyana, Trinidad and any other countries/departments where shorebirds are harvested.

Indicator 2a: number of assessments completed for secondary focus areas.

Action 2: Develop Policies and Regulations. Based on assessment results from areas where shorebird harvest is legal, regulations and policies addressing harvest management components, such as the number of licensed hunters, daily and seasonal bag limits, and season timing and duration, may need to be developed to ensure a sustainable harvest. Harvest of shorebirds of conservation concern may also be restricted through enactment of policies, regulations, domestic legislation, or international agreements.

Objective 1: By 2020, one positive policy change has occurred in each of four countries/departments.

Indicator 1a: number of countries/departments with policy changes. Indicator 1b: number of policy changes made in each country/department.

Objective 2: By 2025, policies and regulations are developed in all countries/departments where shorebirds are harvested.

Indicator 2a: number of countries/departments with policy changes.

Action 3: Strengthen Law Enforcement and Monitor Compliance. Providing sufficient salary, equipment, travel, capacity, and training is needed to effectively enforce existing laws and policies where shorebird harvest is illegal. Increased capacity for law enforcement, coupled with hunter education, will deter the desire to hunt illegally. Where harvest is legal, enforcing seasonal regulations and monitoring voluntary compliance is required to determine the sustainability of the shorebird harvest. Increased law enforcement should initially focus on priority sites designated by the Western Hemisphere Shorebird Reserve Network, recognized under the Ramsar Convention, or identified as Important Bird Areas, or created as governmentally protected areas.

Objective 1: By 2020, law enforcement capacity is increased by 50% in Suriname.

Indicator 1a: number of patrols conducted.

Objective 2: By 2020, voluntary compliance is monitored annually on Barbados.

Indicator 2a: number of shooting swamps reporting harvest.

Objective 3: By 2020, annual regulations and restrictions are adequately enforced on Guadeloupe, Martinique, and French Guiana.

Indicator 3a: number of enforcement patrols.

Objective 4: By 2025, law enforcement capacity and regulation compliance is occurring in all other countries/departments where shorebirds are harvested.

Indicator 4a: number of enforcement trips.

Action 4: Improve Outreach and Communication. Education and outreach are crucial for convincing hunters and other stakeholders that a sustainable shorebird harvest is in their best long-term interest. Increasing communication among stakeholder organizations and agencies will contribute to a regional approach to managing shorebird harvest. Various methods should be implemented and evaluated to determine the most effective approaches. Building an effective alliance will be the most efficient and effective way to address shorebird harvest at a flyway scale. A functional Working Group is crucial to move sustainable harvest actions forward.

Objective 1: By 2020, produce three informational brochures to distribute to licensed hunters in Guadeloupe and Martinique.

Indicator 1a: number of informational brochures produced and distributed.

Objective 2: By 2016, convene a stakeholder workshop on shorebird harvest for Caribbean and northern South American participants.

Indicator 2a: workshop occurred and results communicated.

Objective 3: By 2025, actively engage hunter groups in process of developing policies for sustainable harvest.

Indicator 3a: number of hunting associations/hunter groups engaged in sustainable harvest policy development.

Objective 4: By 2020, have an effective working group established to implement actions identified in this plan.

Indicator 4a: number of regular communications made. Indicator 4b: percent of focus areas with working group members.

Action 5: Establish and Maintain No-Shooting Reserves. Providing shooting-free reserves in areas where shorebird harvest occurs is a viable strategy to reduce mortality. This will be accomplished by purchasing and restoring defunct shooting swamps on Barbados and private wetlands on other islands or by establishing no-shooting reserves on public lands. Beyond fee-title acquisitions, easements, or designations, there is a critical need to support the long-term maintenance of reserves.

Objective 1: Through 2025, Woodbourne Shorebird Refuge is consistently maintained to benefit shorebirds.

Indicator 1a: number of shorebirds using Woodbourne.

Objective 2: By 2025, three additional non-shooting shorebird reserves are established and maintained.

Indicator 2a: number of no-shooting reserves established. Indicator 2b: number of established no-shooting reserves with adequate management.

Action 6: Develop Incentives to Not Hunt. Biological and social harvest assessments will provide information to develop potential incentive schemes to reduce hunting, where appropriate, through promoting economic alternatives or identifying substitute food sources. Both approaches have been used successfully to reduce hunting pressure in other parts of the world.

Objective 1: By 2020, develop one initiative that promotes economic alternatives to shorebird harvest.

Indicator 1a: number of initiatives developed.

Objective 2: By 2025, develop one initiative that identifies substitute nutritional sources to shorebird consumption.

Indicator 1a: number of initiatives developed.

Action 7: Conduct Basic Shorebird Research and Monitoring. Basic research and monitoring is needed to determine shorebird populations exposed to harvest pressure and their status; ascertain connectivity among breeding, migration, and nonbreeding sites; and to evaluate effectiveness of implemented actions.

Objective 1: By 2020, gain a greater knowledge of shorebird population status and their connectivity throughout the region.

Indicator 1a: number of harvested shorebird species with improved information.

Objective 2: By 2025, monitoring systems are in place to evaluate shorebird response to implemented actions.

Indicator 2a: number of sites monitored where actions have been implemented.

Indicator 2b: the Lesser Yellowlegs population increases 20% in the Breeding Bird Survey and International Shorebird Survey (Figure 2).

Indicator 2c: All harvest does not exceed 50% of the maximum sustainable mortality limits of shorebird populations exposed to hunting.

Evaluation

The project templates developed for the Atlantic Flyway Shorebird Initiative have been modified to track projects addressing sustainable shorebird harvest and to report accomplishments. Many of the indicators identified above will be reported on annually, and a narrative description will be produced. Products will be uploaded into the Basecamp[®] site created for the Atlantic Flyway Shorebird Initiative.



Figure 2. Example of change in the Breeding bird Survey annual index for Lesser Yellowlegs if harvest is reduced by 30% by 2025 and there is a corresponding increase of 20% in the population. Similar response in International Shorebird Survey would indicate success.

Risks to Success

Implementation of some of the actions identified above directly addresses the regulatory risks (strengthen law enforcement and develop policies) and scientific risks (assess the harvest) to achieving a sustainable shorebird harvest. Some of the institutional risks have also been addressed by providing funding for capacity building within specific actions, but this remains a large-scale issue throughout the Caribbean and northern South America. There is certainly social risk associated with persuading individual hunters, hunting associations, and regulatory agencies that a sustainable shorebird harvest is in their best interest, for which the education and communication strategy should help address.



Funding

New revenue streams are needed to meet the goals and objectives outlined in this and the parent plan (Table 4). Progress toward funding the actions presented here will be included the evaluation of the success of this plan.

Table 4. Annual and ten-year costs to implement actions to achieve a sustainable shorebird harvest as part of the Atlantic Flyway Shorebird Initiative (AFSI).

	AFSI	AFSI Costs (\$US)		
Key Action	Tier	Annual	2015-25	
1. Assess Biological & Social Aspects of Harvest	1	80,000	800,000	
2. Strengthen Law Enforcement & Monitor Compliance	1	150,000	1,500,000	
3. Develop Policies & Regulations	1	30,000	300,000	
4. Improve Outreach & Communication	2	40,000	400,000	
5. Maintain No-shooting Reserves	1	120,000	1,200,000	
5. Establish No-shooting Reserves	2	variable	250,000	
6. Develop Incentives to Not Hunt	2	30,000	300,000	
7. Conduct Basic Shorebird Research & Monitoring	1	80,000	800,000	
Total		530,000	5,550,000	

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Short-billed Dowitchers at Woodbourne Shorebird Refuge (Edward Massiah)



Figure 3. Conceptual model for addressing illegal or unsustainable shorebird harvest (based on the Atlantic Flyway Shorebird Initiative parent Business Plan). Gold boxes indicate contributing factors or indirect threats that influence the overall threat of illegal or unsustainable hunting (pink box). Nonbreeding shorebird conservation targets are grouped by initial and (secondary) focal areas.



Figure 4. Results chain for the strategy of reducing hunting pressure (based on the Atlantic Flyway Shorebird Initiative parent Business Plan). Yellow boxes indicate actions taken to produce intermediate outcomes (blue) on the way to reducing harvest pressure on shorebirds. Nonbreeding shorebird conservation targets are grouped by initial and (secondary) focal areas.