

Achieving a Sustainable Shorebird Harvest in the Caribbean and Northern South America – Progress Report, 2011-2017

Atlantic Flyway Shorebird Initiative Harvest Working Group

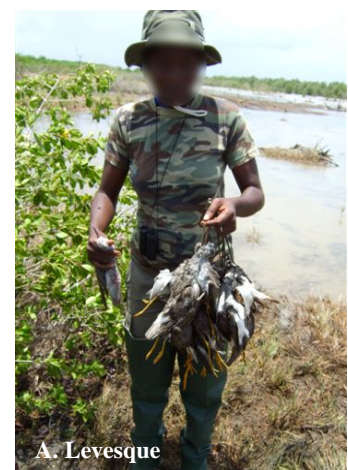
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Background

Shorebird hunting by European colonists has a long history in the Caribbean and northern South America, and shorebirds were historically hunted for commercial and personal purposes in Canada and the United States. Although modern hunting pressure on shorebirds throughout the Western Atlantic Flyway (hereafter, Flyway) is incompletely known, annual harvest has emerged as a potential population-level constraint for some species or populations. Shorebird hunting in the Caribbean has periodically gained the attention of bird conservation groups over the last 50 years, but there has been no previous systematic effort to assess the magnitude and scope of shorebird hunting in the Flyway or to determine if hunting could be limiting positive growth of any shorebird population.

In the Flyway, shorebirds are most often harvested for cultural-recreational reasons and subsistence uses. Regardless of the motivation or whether the harvest is legal or illegal, virtually all shorebirds are consumed, mostly by hunters. In some areas, a portion of the harvest is shared or bartered with non-hunters or is sold in markets as bushmeat. It is rare for shorebirds to be harvested for the purpose of a primary source of nutrition. Most shorebirds are harvested with firearms, although other methods such as netting and choking (“shocking”) wires (Trull 1983, Bayney ND) are used. Besides the direct harvesting and consumption of shorebirds, some lethal take, often in conjunction with sub-lethal hazing, is associated with agricultural and aquaculture operations.

A concerted effort to address the sustainability of shorebird harvest began in 2011, when partners in BirdsCaribbean developed a SurveyMonkey® questionnaire on shorebird hunting that was distributed to members throughout the Caribbean. Preliminary results were discussed at the BirdsCaribbean annual meeting in July, 2011 and were presented and discussed further at the Western Hemisphere Shorebird Group meeting in Vancouver in August, 2011. From this survey, shorebird hunting was perceived as a potential conservation challenge in Barbados, Guadeloupe, Martinique, Puerto Rico, and Trinidad & Tobago, with additional information indicating a substantial harvest in French Guiana and Suriname and some level of harvest in



northern Brazil, Canada, and Guyana (Andres 2011). Subsequent information was also gathered at the BirdsCaribbean meeting in July, 2013, which helped to refine focus areas.

In September 2011, two satellite-tagged Whimbrels (*Numenius phaeopus*), Machi and Goshen, were shot in Guadeloupe, and their story of navigating a hurricane only to meet their demise after reaching landfall catalyzed action in the Caribbean. The shooting deaths of Machi and Goshen sensitized the hunting community to the international attention now focused on their practice. This incident and subsequent attention prompted the formation of the Harvest Working Group, under the umbrella of the developing Atlantic Flyway Shorebird Initiative (AFSI), to collectively address the sustainability of shorebird hunting.

In 2015, the National Fish and Wildlife Foundation developed a parent Business Plan for the AFSI (National Fish and Wildlife Foundation 2015). In that plan, shorebird harvest was identified as a major potential threat to shorebird populations in the Flyway. Reliable information on shorebird population sizes and demographic parameters have generally limited the development of robust harvest models, and lack of information on species-specific harvest rates throughout the Flyway is a major impediment to obtaining sustainable management for hunting shorebirds. Outreach to and involvement of all stakeholders is vital to achieve a sustainable shorebird harvest in the region. In response to these needs, the AFSI Harvest Working Group (2016) developed *A Plan to Address the Sustainability of Shorebird Harvest in the Western Atlantic Flyway*, as a step-down set of objectives from the AFSI Business Plan. The overall goal of the plan is to achieve a sustainable shorebird harvest, while meeting the cultural and subsistence needs of people who use the shorebird resource.

Preliminary information indicates that the main harvested shorebird species include: American Golden-Plover (*Pluvialis dominica*), Whimbrel, Stilt Sandpiper (*Calidris himantopus*), Pectoral Sandpiper (*Calidris melanotos*), Semipalmated Sandpiper (*Calidris pusilla*), Short-billed Dowitcher (*Limnodromus griseus*), Lesser Yellowlegs (*Tringa flavipes*), Willet (*Tringa semipalmata*), and Greater Yellowlegs (*Tringa melanoleuca*); all but Short-billed Dowitcher and Willet are AFSI focal species.



Based on the results obtained from the initial shorebird hunting assessment (Andres 2011) and subsequent information, we identified primary and secondary focal areas for plan implementation (Figure 1), which included Barbados; Brazil; eastern Canada; France's Overseas Departments of French Guiana, Guadeloupe, and Martinique and Overseas Territories of Miquelon, Saint Barthélemy, Saint Martin, and Saint Pierre; Guyana; Suriname; and Trinidad and Tobago. There is a small (<1,000 individuals) incidental take of shorebirds in eastern Canada and the USA during legal seasons for American Woodcock (*Scolopax minor*), Wilson's Snipe (*Gallinago delicata*) and rails (*Porzana carolina*, *Rallus* spp.; P. Padding, pers. comm.).



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

This document presents the activities and outcomes accomplished by AFSI Harvest Working Group, and its associated partners, since its inception in 2011. Projects are grouped by the key actions identified in the 2016 Plan, where the status, additional actions, outcomes, and reference are presented for each project or action. References are posted on the Working Group’s Basecamp™ project site and provide additional details on the projects or actions. Partners have actively worked with key hunter federations, associations, and individuals in ensure acceptance and success of the proposed actions, and the importance of their contribution cannot be overstated. An overall scorecard of progress toward achieving specific objectives of the Plan is also presented, as is an attempt to assess population-level response. Lastly, current Working Group participants and contacts are acknowledged. Questions or comments should be directed to the Working Group contacts.

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. Although some initial assessments have been completed, a more comprehensive effort is needed in all countries/departments where shorebirds are harvested.

Project/Action	Status/Additional Action/Outcome	Reference
<i>Estimating sustainable mortality limits for shorebirds using the <u>Western Atlantic Flyway</u></i>	Completed. Results will be used to evaluate population-level effects of harvest as assessments are completed throughout the region.	Watts <i>et al.</i> (2015)
<i>Assessing hunting policies for migratory shorebirds throughout the <u>Western Hemisphere</u></i>	Completed. Results will help determine effective mechanisms to achieve sustainable shorebird harvest in specific jurisdictions.	Watts and Turrin (2016)
<i>Evaluation of the <u>Barbados</u> shorebird harvest between 1988 and 2010</i>	Completed. Assessment used to determine sustainability and as the basis for setting shooting swamp restrictions.	Reed (2012)
<i>Assessment of shorebird hunting in northern <u>Brazil</u></i>	On-going. To be initiated 2017-2019.	SAVE Brasil
<i>Habitat use, diet and behavior of migratory Whimbrel in blueberry fields of New Brunswick, <u>Canada</u></i>	Completed. Examined diet, field use, effect of disturbance by blueberry growers and estimated blueberry consumption by Whimbrel.	Nagy-MacArthur (2016)
<i>Hunter surveys in the Mana rice fields, <u>French Guiana</u></i>	Completed. Human dimension results will inform local education efforts and management actions.	Taylor (2017)
<i>Hunting pressure assessments in the Port Louis Marshes, <u>Guadeloupe</u></i>	On-going. Field counts of shots, bag checks, and numbers of hunters. Plans for analysis to determine harvest rate, 2014-2017.	ONCFS (2017)
<i>Assessing the current hunting pressure along the coast of <u>Guyana</u></i>	On-going. Funding for assessments 2017-2018. Will be compared to previous results (2000s). Will help complete regional perspective of hunting threat.	USFWS
<i>The state of waterbird hunting on <u>Martinique</u></i>	Completed. Initial description of hunting characteristics will help determine most effective approaches to sustainability.	Levesque (2016)
<i>Assessing hunting magnitude in <u>Suriname</u></i>	Completed. Human dimension results will inform local education efforts and management actions. Plans to use results to determine magnitude of harvest and compare to 2006 results.	New Jersey Audubon (2017)

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.

Project/Action	Status/Additional Action/Outcome	Reference
<i>Voluntary regulations recommended by the <u>Barbados</u> Wildfowlers Association</i>	Enacted, on-going. Starting in 2012, a series of restrictions on bag limits, species, and gun operations were recommended.	Wege <i>et al.</i> (2014)
<i>Species closures in <u>French Guiana</u></i>	Enacted. Starting in 2014, the Red Knot (<i>Calidris canutus</i>) and 27 additional species afforded national protection from hunting (nine species have allowable harvest).	Andres (2017)
<i>Requirement to possess a license to hunt in <u>French Guiana</u></i>	Enacted. By 2020, no one can practice hunting in French Guiana if they do not hold a valid hunting license, which requires an examination. Implementation will take a concerted outreach effort.	Andres (2017)
<i>Harvest management in <u>Guadeloupe</u></i>	Enacted, on-going. By 2013, species closures, daily bag limits, reductions in hunting days during the season and season length were put in place.	Andres (2017)
<i>Harvest management in <u>Martinique</u></i>	Modified. Initial three-year moratorium on the shooting of Hudsonian Godwits (<i>Limosa haemastica</i>) and Whimbrels in place in 2013 was modified to a bag limit of five birds per season per hunter. No other restrictions.	Andres (2017)
<i>Management on <u>Saint Pierre and Miquelon</u></i>	Stalled. No action on Conservatoire du Littoral's work with stakeholders to produce a management plan for the Miquelon-Langlade Isthmus.	Andres (2017)
<i>Harvest management on <u>Saint-Martin</u></i>	Enacted, on-going. In 2013, adopted same restrictions as Guadeloupe.	Andres (2017)
<i>Tri-national agreement among <u>Canada (CWS)</u>, <u>France (ONCFS)</u> and the <u>USA (USFWS)</u></i>	Enacted. Provisions for information sharing and collaboration among the three wildlife management agencies to promote sustainable populations of shorebirds in the Western Atlantic Flyway.	Andres (2017)

Project/Action	Status/Additional Action/Outcome	Reference
<i><u>Convention on Migratory Species</u></i>	Enacted. Adopted a resolution to ensure that impacts of fisheries and hunting are within safe ecological limits. Elevated Semipalmated Sandpiper to Appendix I.	Andres (2017)

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.

Project/Action	Status/Additional Action/Outcome	Reference
<i>Compliance of voluntary regulations recommended by the <u>Barbados</u> Wildfowlers Association</i>	Monitored. Shorebird harvest in the current decade is only 37–60% of the harvest of the last decade. Active shooting swamps contribute data annually.	Burke in Andres (2017)
<i>Bag checks in Port Louis Swamp, <u>Guadeloupe</u></i>	On-going. Since 2015, ONCFS agents have made regular bag checks as hunters leave the marsh. Increased law enforcement presence.	ONCFS (2017)
<i>Facilitating hunting control in <u>Suriname</u></i>	Completed. Increased law enforcement activities in the Nickerie, Saramacca and Commewijne Districts. Funding 2017-2019 to continue efforts.	New Jersey Audubon (2017)

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.

Project/Action	Status/Additional Action/Outcome	Reference
<i>Atlantic Flyway shorebird harvest workshop: Towards a <u>region-wide</u> sustainable harvest of migratory shorebirds</i>	Completed. Multi-stakeholder workshop held in Barbados, March 2016. Key messages, outputs, and follow-up actions were identified. Many actions addressed, some items need follow-up	BirdLife International (2016)
<i>Maintenance of <u>AFSI</u> Shorebird Harvest Working Group</i>	On-going. Continued communication among partners. Development of plan. Posting of documents on Basecamp.	Working Group
<i>Migratory shorebirds in <u>Barbados</u>: Hunting, management, and conservation</i>	Completed. Case study of harvest history, actions taken for sustainability, wetland conservation as a model for other regions.	Wege <i>et al.</i> (2014)
<i>Outreach to blueberry producers in eastern <u>Canada</u> regarding Whimbrel crop damage</i>	On-going. Based results of the inefficiency of Whimbrel hazing, outreach has been positive with blueberry growers and some are taking a more Whimbrel-friendly approach to blueberry cultivation; also outreach to local communities	Université de Moncton, Verts Rivages
<i>Outreach to youth and adult hunters on Newfoundland's northern peninsula, <u>Canada</u></i>	On-going. Youth and adults are reached through presentations at hunter's education classes.	Intervale & Assocs.
<i>Le Bécasseau maubèche <u>Calidris canutus rufa</u> aux <u>Petites Antilles</u> en voie de disparition!</i>	Completed. Distributed to all hunters on Guadeloupe and Martinique to inform them on Red Knot ecology and conservation status.	Levesque/ ONCFS (2013)
<i>Le Courlis corlieu <u>Numenius phaeopus</u> en <u>Guadeloupe</u> une espèce à préserver!</i>	Completed. Distributed to all hunters on Guadeloupe to inform them on Whimbrel ecology and conservation status.	Levesque/ ONCFS (2015)
<i>Le Petit Chevalier <u>Tringa flavipes</u> en <u>Guadeloupe</u> une espèce à sauvegarder!</i>	Completed. Distributed to all hunters on Guadeloupe to inform them on Lesser Yellowlegs ecology and conservation.	Levesque/ ONCFS (2015)
<i>Le Chevalier solitaire <u>Tringa solitaria</u> en <u>Guadeloupe</u> une espèce à protéger!</i>	Completed. Distributed to all hunters on Guadeloupe to inform them on Solitary Sandpiper ecology and conservation.	Levesque/ ONCFS (2014)
<i>Le Tournepierre à collier <u>Arenaria interpres</u> en <u>Guadeloupe</u> une espèce à préserver!</i>	Completed. Distributed to all hunters on Guadeloupe to inform them on Ruddy Turnstone ecology and conservation status.	Levesque/ ONCFS (2017)
<i>Limicoles chassables en <u>Martinique</u>; Canards chassables en <u>Martinique</u></i>	Completed. Distributed to all hunters on Martinique to help identify shorebirds and waterfowl that can be legally hunted.	Levesque/ ONCFS (2014)
<i>Development of a hunter education program in <u>Suriname</u></i>	On-going. Uses hunter assessment survey results to develop and implement a pilot hunter education and outreach program, 2017-2019.	New Jersey Audubon

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.

Project/Action	Status/Additional Action/Outcome	Reference
<i>Maintenance and improvements for Woodbourne Shorebird Refuge, <u>Barbados</u></i>	On-going. Since 2012, funds for maintenance and some additional improvements. Funding for 2017-2019 with additional opportunities for more consistent water delivery to enhance use.	See Burke (2009), Wege <i>et al.</i> (2014)
<i>Congo Road (No) Shooting Swamp, <u>Barbados</u></i>	On-going. Since 2015, privately-funded management as no-shooting reserve.	Andres (2017)
<i>Graeme Hall recommendation for wetland restoration and water management, <u>Barbados</u></i>	No action. In 2016, letters sent to the Ministry of Environment and Drainage about restoration of east side of Graeme Hall swamp and water management	BirdLife Internl.
<i>Workshop on the conservation and management of West Atlantic Flyway's shorebirds (<u>French Guiana</u>)</i>	Completed. Local workshop to discuss management options for the Amana Nature Reserve and potential rice field reserve.	Iglecia <i>et al.</i> (2016)
<i>Mana rice fields shorebird refuge, <u>French Guiana</u></i>	Stalled. Conservatoire du Littoral process of purchasing the property, which will be managed as a shorebird reserve by GEPOG, is stalled by the owner.	GEPOG
<i>Coastal management in <u>Guadeloupe</u></i>	On-going. Starting in 2015, a census was initiated to map hunting lots in the Coastal Public Domain to determine if hunting activities are in compliance with the law on these areas.	ONCFS (2017)

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.

No projects have been initiated yet to address this action. Dependent on results of assessment surveys.

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.

Project/Action	Status/Additional Action/Outcome	Reference
<i>Annual survival of Whimbrels in the <u>Western Atlantic Flyway</u></i>	On-going. Remote tag data extracted for all Whimbrels from 2008 to analyze survivorship in relation to the breeding season, spring and fall migration, and the wintering grounds. Expected fall 2017.	College of William & Mary
<i>Linking the harvest in <u>Barbados</u> with sources of production and migratory subpopulations.</i>	Completed. Stable isotope analysis of origins of adult and juvenile American Golden-Plovers, Lesser Yellowlegs, Short-billed Dowitchers and Stilt Sandpipers.	Reed et al. (submitted)
<i>Population monitoring of shorebirds along the coasts of <u>Brazil</u> and <u>the Guianas</u></i>	On-going. Aerial survey to track changes in populations of shorebirds along the coasts of Brazil, French Guiana, Suriname and Guyana.	New Jersey Audubon
<i>Surveys and habitat use of Whimbrels during fall migration along the <u>Acadian Peninsula, Canada</u></i>	Completed. Aerial and ground surveys show high use of harvest-stage blueberry fields by fall-migrant Whimbrels. On-going work to address conflict with growers.	Smith and Watts (2015)
<i>Biological assessment of the <u>Mana rice fields</u> for development of a management plan, <u>French Guiana</u></i>	Completed. Characterization of the environment and the flora and fauna in 2016. Will be used as basis for shorebird reserve management plan.	Pelletier et al. (2017)
<i>Status of migratory shorebirds in <u>French Guiana</u> and <u>Guadeloupe</u>, especially Red Knots and Ruddy Turnstones</i>	Completed. Site visits in 2012 to scope hunting pressure and management for shorebirds. Summary of flag re-sightings and abundance surveys.	Niles et al. (2013)
<i>Origin and composition of migrant shorebirds on <u>Guadeloupe</u></i>	On-going. Shorebird wings collected during bag checks will be used to determine phenology and migration strategies of hunted species.	University of La Rochelle
<i>Le suivi des limicoles sur les <u>Marais de Port Louis, Guadeloupe</u> (juillet-octobre)</i>	On-going. Surveys in the Port Louis swamps to determine the populations of shorebirds exposed to hunting pressure.	Levesque et al. (2016)

Project/Action	Status/Additional Action/Outcome	Reference
<i>Le Pluvier bronze</i> <i>Pluvialis dominica en Guadeloupe</i>	Completed. Assessment to determine the potential habitat for plovers and hunter use. Follow-up will be to assess harvest in the identified habitat (weather-dependent).	Levesque and Lemoine (2015)
<i>Surveys for Whimbrels during fall migration along the coast of Maine, USA.</i>	On-going. Aerial surveys to determine distribution of Whimbrels and potential for conflicts with blueberry growers.	MDIFW

Summary of Progress

Overall, a substantial amount of progress has been made on most of the key actions identified to increase the sustainability of the shorebird harvest in the Caribbean and northern South America. The table below gauges the progress by specific objectives of the plan, and indicates the qualitative level of progress, as assessed by the Working Group, to achieve the objective by the specified date as: on-track, some, little, none, or started.

Actions and Objectives	Progress
<i>Action 1 - Assess Biological and Social Aspects of Harvest</i>	
Obj. 1.1 - By 2020, a robust assessment of shorebird harvest is completed for Barbados, French Guiana, Guadeloupe, Martinique, and Suriname.	some
Obj. 1.2 - By 2025, a robust assessment is completed for northern Brazil, Guyana, Trinidad and any other jurisdiction where shorebirds are harvested.	started
<i>Action 2 - Develop Policies and Regulations</i>	
Obj. 2.1 - By 2020, one positive policy change has occurred in each of four countries/departments.	on-track
Obj. 2.2 - By 2025, policies and regulations are developed in all countries/departments where shorebirds are harvested.	little
<i>Action 3 - Strengthen Law Enforcement and Monitor Compliance</i>	
Obj. 3.1 - By 2020, law enforcement capacity is increased by 50% in Suriname.	some
Obj. 3.2 - By 2020, voluntary compliance is monitored annually on Barbados.	on-track
Obj. 3.3 - By 2020, annual regulations and restrictions are adequately enforced on Guadeloupe, Martinique, and French Guiana.	little
Obj. 3.4 - By 2025, law enforcement capacity and regulation compliance is occurring in all other countries/departments where shorebirds are harvested.	started

<i>Action 4 - Improve Outreach and Communication</i>		
	Obj. 4.1 - By 2020, produce three informational brochures to distribute to licensed hunters in Guadeloupe and Martinique.	on-track
	Obj. 4.2 - By 2016, convene a stakeholder workshop on shorebird harvest for Caribbean and northern South American participants.	on-track
	Obj. 4.3 - By 2025, actively engage hunter groups in process of developing policies for sustainable harvest.	some
	Obj. 4.4 - By 2020, have an effective working group established to implement actions identified in this plan.	on-track
<i>Action 5 - Establish and Maintain No-Shooting Reserves</i>		
	Obj. 5.1 - Through 2025, Woodbourne Shorebird Refuge is consistently maintained to benefit shorebirds.	some
	Obj. 5.2 - By 2025, three additional non-shooting shorebird reserves are established and maintained.	some
<i>Action 6 - Develop Incentives to Not Hunt</i>		
	Obj. 6.1 - By 2020, develop one initiative that promotes economic alternatives to shorebird harvest.	none
	Obj. 6.2 - By 2025, develop one initiative that identifies substitute nutritional sources to shorebird consumption.	none
<i>Action 7 - Conduct Basic Shorebird Research and Monitoring</i>		
	Obj. 7.1 - By 2020, gain a greater knowledge of shorebird population status and their connectivity throughout the region.	some
	Obj. 7.2 - By 2025, monitoring systems are in place to evaluate shorebird response to implemented actions.	some

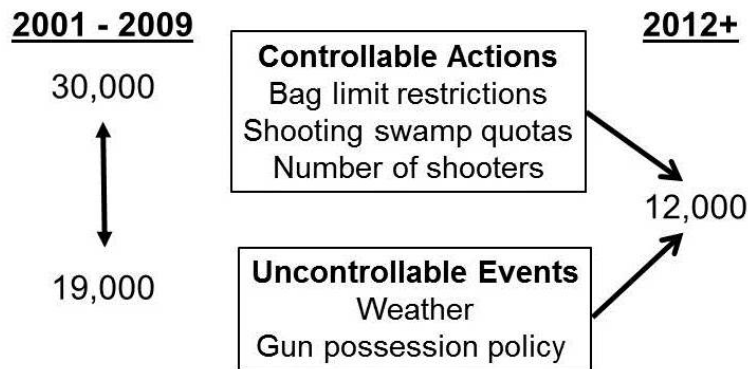
Population-level Outcomes

The overall shorebird hunting project is still relatively new, and we are only now accumulating information on population level effects. More detailed analyses should provide more robust results in the next 2-3 years. However, there are some indicators that shorebird harvest is moving toward more sustainable levels.

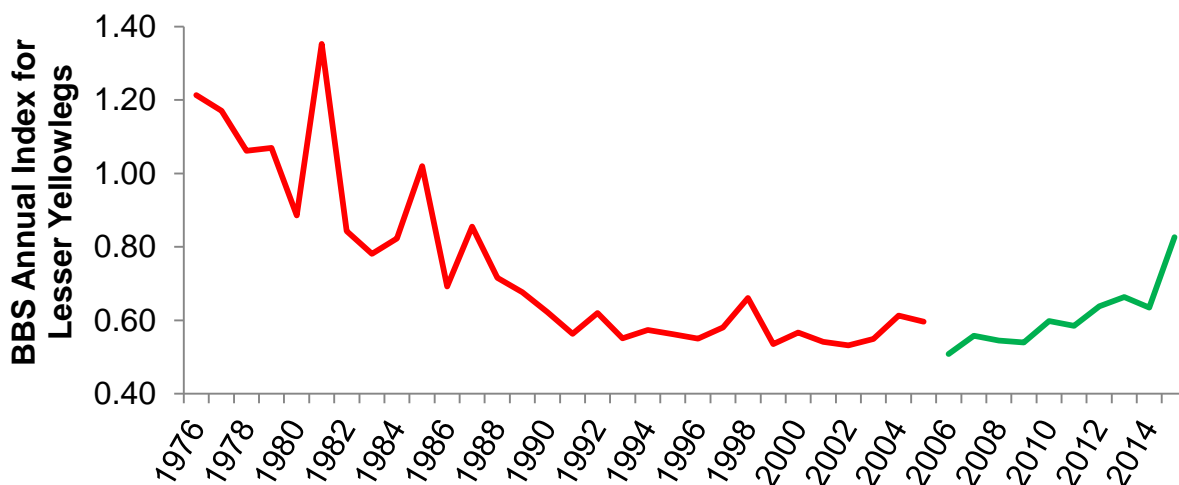
1. Bag limits and a reduced number of hunting days on Guadeloupe will likely result in a lower annual shorebird harvest.
2. Through interviews in Suriname, 78% of hunters indicated they hunted less now than 10 years ago, due to increased law-enforcement activities, a perception of lower shorebird populations, and physical limitations (indicating an aging hunting population).

3. Outreach to growers in eastern Canada has rapidly changed attitudes toward the lethal and non-lethal control of Whimbrels using blueberry fields.

4. After a series of voluntary bag limits, annual quotas, and other measures, recommended by the Barbados Wildfowlers Association in 2012, shorebird harvest on Barbados is now 37 – 60% lower than it was during the last decade. Uncontrollable events such as weather, increasing maintenance costs and stricter gun control have also contributed to the reduction in harvest.

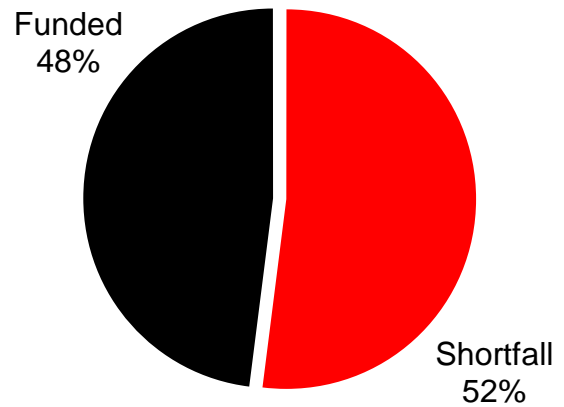


5. Annual indices from the North American Breeding Bird Survey indicate a more stabilizing to increasing trend in Lesser Yellowlegs the last decade (2006-2015) relative to the previous three (1976-2005). Although these indices are highly variable, the directional change is positive signal (see Figure 2 of the plan).



Investment

The AFSI Harvest Working Group (2016) suggested an annual budget of \$US 530,000 to address sustainable shorebird harvest. Although there has been increased investment to address shorebird harvest, we have fallen short of the annual target. Major funders to date have included the National Fish and Wildlife Service, U.S. Fish and Wildlife Service and Canadian Wildlife Service.



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Background

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Stakeholders and Investors

National/Provincial Governments and Responsible Agencies

Barbados Ministry of Environment and Drainage
Canadian Wildlife Service
Office National de la Chasse et de la Faune Sauvage (ONCFS; Paris,
Guadeloupe, Martinique, French Guiana, Miquelon, St. Pierre)
Ministère de l'Environnement (Paris)
Réserves Naturelles de France
Agence Territoriale de l'Environnement (ATE) de Saint-Barthélemy
Conservatoire du Littoral, France
La Direction de l'Environnement, de l'Aménagement et du Logement (DEAL) –
Guadeloupe
Nature Conservation Division, Suriname Forest Service
U.S. Fish and Wildlife Service

Hunting Associations and Federations

Barbados Wildfowlers Association
Congo Road Swamp (Barbados)
Fédération Départementale des Chasseurs de la Guadeloupe
Fédération Départementale des Chasseurs de la Martinique
Mana (French Guiana) hunting organization
Other in-country hunters and associations

Non-governmental Conservation and Donor Organizations

AMAZONA (Guadeloupe)
Bird Studies Canada
Birdlife International
BirdsCaribbean
Bobolink Foundation (USA)
Conserve Wildlife Foundation of New Jersey
Friends for Suriname Nature Conservation
Groupe d'Etude et de Protection des Oiseaux en Guyane (GEPOG)
Intervale Associates (Canada)
Levesque Birding Enterprise
National Audubon Society (USA)
National Fish and Wildlife Foundation (USA)
New Jersey Audubon Society (USA)
Shorebird Conservation Trust (Barbados)
Stichting Natuurbehoud in Suriname (STINASU)
Verts Rivages (Canada)

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, Shippagan campus (Canada)
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