

Identifying and Addressing Impacts of Marine Debris on Birds in the Gulf of Maine and Northeastern U.S.

Webinar Series:

Webinar #2, Implementation Framework Discussion - Filling Information Gaps

Background, Agenda, and Meeting Notes

March 18, 2021, 1:00 - 3:00pm

Background: In spring 2020, University of Rhode Island Graduate Student, Michael Andranovich, in partnership with US Fish and Wildlife Service Migratory Birds Program, and the NOAA Marine Debris Program initiated a project on impacts of marine debris on birds in the Gulf of Maine Region. The work directly supports Strategy 2.1 in the [Gulf of Maine Marine Debris Action Plan](#).

“Phases I and II” of the project focused on compiling available information and generating a draft report about what is currently known about the subject. Phase III aims to step down information gaps and impact reduction strategies identified in Phases I & II into actions that could be implemented by a network of interested partners.

Phase III focuses on development of an **implementation framework (“framework”)** that will identify objectives, stakeholders and potential partners, and a clear set of first steps that could help partners initiate projects for a subset of priority issues selected with input from stakeholders. Phase III kicked off on February 10, 2021 with an introductory webinar (click [HERE](#) for a webinar recording, agenda, and notes), involving over 50 participants -- including several of you!

Two discussion-based webinars (March 18 and April 1) will bring together interested partners to begin to flesh out the framework. Follow-up work to complete the framework may consist of additional e-mail-based inquiry, smaller targeted group calls, and/or one-on-one discussions. The framework will be finalized in May and included in a final version of the report anticipated to be released in early summer 2021, and widely circulated. Ideally, this report and framework will lead to collaborative projects to fill research and conservation needs for birds in the Gulf of Maine region.

Webinar Objectives:

- Bring together professionals with an interest/expertise in marine debris and/or birds that may not regularly interact to finalize a set of **priority information gaps** that will be included in the framework.
- Step down recommendations in the Phase I/II report into concrete actions for inclusion in the framework that could lead to projects.
- Begin to develop partnerships that could undertake actions identified in the framework.

Agenda & Notes (including questions, answers, and comments from the 'chat'):

I) Webinar Background & Objectives; Meeting Logistics [Caleb Spiegel, USFWS]

II) Brief Introductions [All]

- *See Participants List* -- End of notes
- General comments/ participant interest:
 - o Maine Coastal Island Refuge - manages 75 islands - lobster pots/gear issues & microplastics
 - o Machias Seal Island - interested in collaboration (H. Major)
 - o Need to increase interest in linking microplastics to contaminants or pathology -- necropsies: Informal group of veterinarians, pathologists, biologists have formed w/ interest in the issue (M. Pokras)
 - o Increased funding needed to implement cleanups of derelict fishing gear -- Tens of tons in Gulf of Maine
 - o Work underway at U Maine (M. Lewis) using aerial imagery to count seabirds and document (quantify?) marine debris
 - o Need to try to better understand sources and decrease/prevent loss of fishing gear or reduce other sources of marine debris (consumer)
 - o Need to increase outreach on the significance of the marine debris issue - public & managers
 - o Need to better understand cumulative impacts of debris on birds - not well understood in Gulf of Maine or Atlantic Canada
 - o Oyster aquaculture activities picking up in S. Maine coast -- finding lots of associated debris (K. O'Brien)

III) Finalizing Priorities for Filling Information Gaps [Michael Andranovich, Univ. of Rhode Island]

a) Summary of Inquiry Results

- Inquiry sent out to all invitees of first webinar; collected responses for 2½ weeks
- Responses from 27 partners, with representation from federal (US and Canada) and state agencies, NGOs, and university partners
- Produced one write-in response, which focused on microplastics and their relationship to plankton, transportation, and concentration in the water column.

b) Top Priorities (based on inquiry results)

- (1) [55.6%] Ingestion - Population and community level impacts on seabirds from ingestion & chemical toxicity
- (2) [40.7%] Habitat - Significance of plastic pollution as a population-level threat (spp/pops most vulnerable)
- (3, tie) [37%] Habitat - Sources of marine debris (both on land and at-sea)
- (3, tie) [37%] Entanglement - Cumulative effects of entanglement mortality

c) Questions, Discussion, & Input on Top Priorities [All]

- All participants agreed on a few statements: Need to try to decrease loss of fishing gear or reduce initial source of marine debris (consumer), Increase outreach on the significance of the marine debris issue, and better understand cumulative impacts on birds
- Group discussion about foraging strategies of seabirds that might increase their risk of exposure to microplastics:
 - o Plastics and vegetation accumulate along fronts, and seabirds are often observed foraging in the fronts.
 - o Fronts are clearly identifiable by the accumulation of plant material and floating debris.
 - o Forage fish may bioaccumulate plastics along these fronts where birds are foraging
- d) Finalized Priorities for Inclusion in Framework [All]
 - Group supported final changes made to 2nd priority's scope/wording: *"Habitat: Significance and sources of plastic pollution and derelict fishing gear on seabird colonies"*
 - o Added scope of "seabird colonies" to make more specific
 - o Incorporated 3rd priority on the list -- 'Sources of Marine Debris' into the priority, rather than keeping separate
 - **FINAL PRIORITY TOPICS LIST:**
 - 1) Ingestion: Population & Community Level Impacts on Seabirds (including toxicity)**
 - 2) Habitat: Significance and sources of plastic pollution and derelict fishing gear on seabird colonies**
 - 3) Entanglement: cumulative effects of entanglement mortality**
 - o Agreed to discuss topics 1 & 2 during brainstorm discussion (see below), but no time to cover topic 3.

Q & A Period & Additional Discussion:

Comment (C): Russell-Mercier, Jake (ECCC) (Guest): FYI: a paper that is relevant to the sample collection questions: <https://www.facetsjournal.com/doi/10.1139/facets-2018-0043>

Question (Q): vonOettingen, Susi (Guest): Is it important to categorize the source of the plastic debris?

IV) Brief Review of Background Information for Top Priority [Michael]

- a) Summary of available information compiled during project Phase I & II -- from literature, reports, prior questionnaire
 - Ingestion: Population & Community Level Impacts on Seabirds (including toxicity)
 - o Gap exists because birds spend little time on land, most mortalities occur at sea (unknown death), and very little research has been done on health parameters.
 - o [Worldwide] Lavers, J.L., Hutton, I., and A.L. Bond (2019): investigated the sublethal effects of ingested plastics in flesh-footed shearwaters; used blood chemistry parameters as measure of health rather than obvious direct impacts.
 - o [Gulf of Maine] Caldwell, A., Seavey, J., and Craig, E. (2019): investigated samples from mixed-species gull colony; looked at the diets of herring gulls and great black-backed gulls (which foraging strategy resulted in more ingested plastic).

- [Gulf of Maine] Robuck, Anna (in press): conducted research on deceased great shearwaters in the Gulf of Maine; on average, 8 to 10 pieces of plastic were found in each seabird.

V) Review of Implementation Framework Components [Caleb]

VI) Framework Development - Brainstorm [facilitated discussion - Caleb, Michael & All]

-- Keep in mind, this is a *brainstorming session*. These do not have to be perfect. We just want to get everyone's ideas down on paper. They will be refined later.

Q & A Period & Additional Discussion

Ways to Identify Plastic Exposure from Birds:

C: Mark Pokras, and others

- Fecal material - live & dead birds
- Uropygial glands?
- Bycaught carcass: birds in healthy condition (a source of bycaught carcasses = Gina Shield - NOAA Observer Program, NE)
- Beached carcass: birds in sick condition - potentially affected by plastics

C: John Stanton: SEANET (<https://www.anecdata.org/projects/view/462>) - Citizen Science effort to collect data/photos on beached birds.

- Mid 2000s = peak activity
- Current efforts include CT, MA, ME, but expanding effort would require promotion

Identifying Impacted Islands:

C: Important to know where debris is accumulating to be able to quantify exceptional costs of cleanup, loss of nesting habitat & identify sources that break down and lead to plastics waste

C: Need to develop better consistent methods and metrics for tracking clean up need, effort, and results (quantity of debris removed) -- Best Practices? Include best timing for clean-up (weather, reduce disturbances to birds, etc.), ways to collect data on where debris is accumulating, who is doing the clean ups, etc.

C: Michael Andranovich: Would it be helpful/practical to identify the most impacted islands in terms of debris build-up. The grad projects that UMaine/Unity are doing is going to be great... But in the shorter term, is it worth boating around and surveying?

C: Logan R Kline (Guest): We also have a list of islands from 2019 aerial survey data that we assessed to have high trash levels - could be useful for targeting future surveys.

C: Michael Andranovich: I'll note that and make sure to put it in my outreach! Plenty of data to collect after this webinar.

Q: Mark Pokras: Any way to identify plastics on colonies/at sea using different visual wavelengths?

A: Logan Kline: Spectral signatures are being examined. Looking to use Artificial Intelligence/Learning to review footage

C: Drones are also a possible way to survey islands for birds and debris. Being used for U Maine study and by Buzz Scott (Oceanswide)

C: Logan R Kline (Guest): And I think Aly McKnight's class may actually be doing a GIS analysis or at least a map of where the islands are that we classified as having high levels of trash

C: Michael Andranovich: NOAA/University of Georgia Marine Debris Tracker: <https://marinedebris.noaa.gov/partnerships/marine-debris-tracker>. I mention promoting this app in my report, but figured it was worth mentioning here again.

C: Welch, Linda (Guest): Have also used Ocean Conservancy record keeping -- "report card" & online portal to track debris encountered/cleaned up

C: OBrien, Kate: documenting the volume of debris under water would be of interest, I am sure what is on land is a tiny fraction

C: Terry Towne: [Rozalia Project](#) mentioned -- cleaning up debris at sea and along shore. Interns -- documenting debris along coast... Very labor intensive. Takes a long time to inventory a small amount of beach

C: Terry, Iain, Linda: Root of issue: Lack of industry involvement (particularly lobster) in monitoring and clean up -- Need data to quantify and show industry how bad the issue is

VII) Funding Opportunities [Michael]

- a) Review Draft Table of Funding Opportunities
 - Final funding table will include: name of funding opportunity, source of funding, proposal deadline and frequency, total award amount, match requirements, stated objectives, etc.
 - Example: NFWF Fishing for Energy grant program
- b) Identify additional components to add to table that could meet specific needs identified in framework + Feedback
- c) Identify critical funding resources to add
- d) Funding table will be made available for all partners after additional information is collected from partners.

VIII) Next steps & Wrap-up [Caleb]

- a) Michael & Caleb will compile notes & comments and draft Implementation Framework, then circulate it to all webinar invitees (by mid-April)
- b) Webinar recording & notes will be posted on Atlantic Marine Bird Cooperative website (mid-April)
- c) Michael & Caleb may schedule follow-up meetings w/ individuals for additional input (April)
- d) Michael asked for more photos of debris, birds (living or deceased), research, or clean-ups (ongoing)
- e) Final report (including implementation table) finalized and published (Summer 2021)
- f) USFWS & NOAA can help facilitate future actions and implementations (ongoing)

WEBINAR PARTICIPANTS (18):

First name	Last name	Affiliation
Michael	Andranovich	University of Rhode Island
Demi	Fox	NOAA Marine Debris Program
Scott	Johnston	USFWS - Migratory Birds
Christy	Kehoe	NOAA Marine Debris Program
Logan	Kline	University of Maine
Meredith	Lewis	University of Maine
Heather	Major	University of New Brunswick
Mark	McCullough	USFWS - Ecological Services
Kate	O'Brien	USFWS - Rachel Carson NWR
Mark	Pokras	Tufts University
Jake	Russell-Mercier	Canadian Wildlife Service
Paula	Shannon	National Audubon
Caleb	Spiegel	USFWS - Migratory Birds
John	Stanton	USFWS - Migratory Birds
Iain	Stenhouse	Biodiversity Research Institute
Terry	Towne	Maine Coast Heritage Trust
Susi	vonOettengen	USFWS - Ecological Services (New England FO)
Linda	Welch	USFWS - Maine Coastal Islands Refuge