

Atlantic Coast Piping Plover Strategic Communications Plan: *Reducing Human Disturbance*



June 2017

Atlantic Coast Piping Plover
Strategic Communications Plan:
Reducing Human Disturbance

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Piping plover protection and monitoring, Adrianna Zito-Livingston

Observing from a distance, Jan van de Kam

Stakes arrive at Stratford Point in Stratford, CT, Audubon CT

Children-designed sign, Scott Kruitbosch

Atlantic Coast Piping Plover Strategic Communications Plan

Reducing Human Disturbance

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SUMMARY OF THE STRATEGIC COMMUNICATIONS PLAN

This plan is intended for use by people engaged in Atlantic Coast piping plover conservation, including biologists, enforcement officers, managers and outreach specialists, as a resource for community and media relations. The *Atlantic Coast Piping Plover Strategic Communications Plan* is a reference for those who communicate with audiences whose knowledge, attitudes and behaviors can influence the recovery of the threatened Atlantic Coast piping plover. The core of the plan is the messages, tools and strategies for various audiences, which have been summarized in the plan and offered in full context in *banks*¹ (Appendices G - I).

Partner feedback and implementation of the plan is critical in the restoration of piping plovers, as no one local, state or federal organization has the reach necessary to single-handedly complete the job. A communications team identified and outlined next steps (see pg. 4) that will support the implementation of this plan. Interested collaborators are invited to contact the communication team, listed on page 7.

This plan focuses on making outreach-related recommendations to reduce human-related disturbance of piping plovers. While many Atlantic Coast piping plover populations have benefitted from intensive protection over the last 30 years, some are still below population goals and many lack long-term conservation plans to support their recovery. The piping plover relies on limited beach habitat, and its needs sometimes conflict with human uses and values. This conflict manifests itself in a particularly challenging aspect of piping plover recovery: the threat of disturbance by human activity. Disturbance can include active and passive recreation activities, off-road/highway vehicles, dogs, fireworks, beach raking, and monitoring for other species. While disturbance is often unintended, it can lead to serious challenges for plovers. Foot and vehicle traffic may crush nests and chicks. Excessive disturbance may cause piping plover parents to desert the nest, exposing eggs or chicks to the summer sun and predators. Juvenile piping plovers, all of which forage on their own for food, may be interrupted repeatedly causing stress and slowing their development. Beachgoers may be unaware of guidance or reluctant to follow it, and in some areas, there is inadequate protection and/or management.

The issue of human disturbance is recognized in shorebird conservation and recovery plans (Brown, Hickey, Harrington, & Gill, 2001; Niles, Sitters, Dey, & Red Knot Status Assessment Group, 2010; USFWS, 1996; USFWS 2009) and numerous published studies (Smit & Vasser, 1993; Yasue, 2005; see Borgmann, 2011), and is a focus of the 2015 Atlantic Flyway Shorebird Initiative (AFSI) business plan (Winn et al., 2015). The AFSI business plan identifies outreach and communication as key tools to address human disturbance, and recommends the development of best management practices and beach stewardship programs, increased awareness of shorebirds to build shorebird conservation constituencies, and strengthened conservation regulations and policies. Through this strategic communications plan, we have provided approaches to further develop and foster shorebird conservation constituencies that support long-term recovery and reduce human disturbance.

The scope and scale of this plan reflect the expertise of the small group that invested a significant amount of volunteer time to delivering a broadly useful tool. For example, many team members work primarily in the piping plover's breeding range, but we aimed to make our efforts relevant to the entire range. Our limited capacity led to much prioritization throughout the process. Nonetheless, our reflections and ideas for additional needs are available in the appendices. Additionally, the strategy section includes ideas that can be implemented at the state, local or site levels. Our next steps focus on strategies and tools that would benefit from broad engagement in development and in use. It is critical that we obtain more resources and team members in order to move forward in these rangewide next steps.

¹ Bank is used in the sense of *a stock of something available for use when required*.

The plan was developed using a formula for strategic communications planning. This plan was prepared with the input of more than 100 experts in all facets of the science and communication pertinent to the piping plover. It is the culmination of study and teamwork that started in spring 2016. Our work included conversations with biologists and outreach experts from state, federal and non-governmental organizations, and a communication needs assessment of volunteers and staff working directly with piping plovers and beach users. We closely followed Marston's (1979) *Research, Action, Communication, Evaluation* (RACE) formula for developing a communication plan, with an additional *Stewardship* step as described by Kelly (2001). We also incorporated components from the planning process used by the Atlantic Coast Joint Venture for their 2014-2018 Strategic Communication Plan (Dayer, 2014).

Table 1. Brief synopsis of the strategic communications plan.

| Brief synopsis of the strategic communications plan |
|--|
| <u>Goal:</u> Reduce human-related disturbance of piping plovers. |
| <u>Expected outcomes:</u> The team will develop consistent communication tools for use by the piping conservation plover network, defined currently as the email network maintained by the Atlantic Coast piping plover recovery coordinator. Target audiences will: modify beach use to reduce disturbance, provide supportive perspectives on piping plover conservation, demonstrate stewardship, and comply with conservation guidelines. |
| <u>Priority audiences:</u> General beachgoers, beach and land managers, municipal and other on-beach staff, residential audiences and dog owners/walkers |
| <u>Piping plover messaging 101:</u> <ol style="list-style-type: none"> 1. With ever-growing demands on our beaches, there are fewer places for piping plovers that depend on Atlantic Coast beaches year-round to raise families, feed, and rest. 2. Everyday activities on the beach can unintentionally harm piping plovers. 3. By following some specific steps, we can share the beach with piping plover adults and chicks to help them survive. 4. The piping plover is making a comeback in the U.S.! Help make sure this shorebird is around for future generations. |
| <u>Strategies to promote bird-friendly behavior:</u> <ul style="list-style-type: none"> ● Enable audiences by providing clear, consistent information on needed behaviors in person and online from trusted sources, and remove barriers to those behaviors. ● Encourage audiences by providing updates on progress and rewards for behaviors through online, third party and in-person communication. ● Engage audiences by providing opportunities for education and involvement in piping plover conservation. ● Exemplify behaviors for audiences by demonstrating positive attitudes and behaviors. <p><i>This follows the U.K. Department for Environment, Food and Rural Affairs (2011) framework for sustainable lifestyles.</i></p> |

Top 7 next steps and future efforts for the communication team:

1. [Continue periodic meetings](#) of and continued involvement by the authors of this plan – the Atlantic Coast Piping Plover Human Disturbance Communications Team – and engage more local, state, federal, governmental and non-governmental partners in piping plover conservation communication. The team recommends other piping plover recovery challenges be addressed in the coming years, such as encouraging best practices for coastal engineering, managing predators, and fostering dynamic beach systems.
2. [Develop signage recommendations](#) with guidance and a series of downloadable templates for interpretive signs and posting for use on the Atlantic Flyway. Themes include beach as habitat, impact of people and dogs, importance of wrack, and recreation.
3. [Compile downloadable educational materials](#) for use such as brochures, brochure templates, posters or booklets in an online library. Some items, particularly templates, may need to be created.
4. [Support and/or develop citizen involvement programs](#) such as Audubon New York's [Be a Good Egg program](#), [Bridgeport Wildlife Guards](#) and Goldenrod Foundation's Beach Ambassador program. These programs should incorporate the "Bird friendly beaches" campaign elements aimed at engaging dog owners/walkers, and the team should consider whether a separate program is needed for this audience. Encourage work to make these and other such programs replicable in other locations.
5. [Improve online piping plover information for beachgoers](#), such as park or tourism websites. Websites should have the latest information on piping plover recovery and foster involvement.
6. [Develop a social media campaign](#) on Twitter, Facebook, Snapchat, Instagram, or other platform, such as specific posts and guidance that can be incorporated across partner accounts. Suggest social media implementers follow individual piping plovers or families.
7. [Provide partners with communication opportunities](#) through updates on the status of piping plover populations and productivity, additional positive messaging, and guidance for working with the news media.

Evaluation

The team recommends the following approaches to monitor success toward expected outcomes:

- Formally and informally survey the piping plover conservation network
- Gather stewardship indicators at pilot piping plover sites
- Coordinate with AFSI, which will be launching a project to track shorebird efforts

While this plan does not address all impacts to piping plovers, it aims to support broad shorebird

communication needs. Piping plover recovery is a complex undertaking. Not only is the geographic area large, ranging from Canada to the Caribbean, but the list of impacts on piping plover populations is long. From predator management to habitat loss, there is much room to make a difference in the population outcomes for Atlantic Coast piping plovers. This team recommends these issues be addressed in future efforts.

Our work aims to be a foundational resource for communications efforts at local through flyway levels. Through our focus on piping plovers and human disturbance, our expectation is that messaging, tools and projects will support communication needs for other shorebirds and for conserving sandy beach habitat in general. The piping plover's habitat needs and management responses are similar to other bird species using dynamic Atlantic Coast beaches, such as the least tern and the American oystercatcher. Conservation planning and actions for the piping plover address many of those species' needs, as well. Additionally, Endangered Species Act

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listing has fostered a distinct piping plover conservation community and long-term monitoring and management that provide a mechanism and content for communications delivery.

Get involved. There is power in numbers. That is true in the recovery of wildlife populations as well as in communication efforts. Previous outreach efforts have increased awareness and developed pockets of supportive constituencies that act in positive ways and reduce human disturbance. Bringing aspects of these diverse efforts together through the communication planning process has helped create a vision of what could be accomplished for piping plover recovery. We invite potential collaborators to unify efforts and help develop, use or adapt the same messages and tools all along the Atlantic Coast. Interested partners are invited to contact members of the communication team, listed on the next page.

Atlantic Coast Piping Plover Communication Planning Team

- Sue Abbott, Bird Studies Canada
- Melissa Bimbi, U.S. Fish and Wildlife Service
- Kathy Herz, Connecticut DEEP Wildlife Division
- Luanne Johnson, BiodiversityWorks
- Ryan Kleinert, U.S. Fish and Wildlife Service
- Jennifer Koches, U.S. Fish and Wildlife Service
- Jillian Liner, Audubon New York
- Amanda Pachomski, Audubon New York
- Nancy Pau, U.S. Fish and Wildlife Service
- Karen Potter, Environment and Climate Change Canada
- Todd Pover, Conserve Wildlife Foundation of New Jersey
- Meagan Racey, U.S. Fish and Wildlife Service
- Debra Reynolds, U.S. Fish and Wildlife Service
- Dorie Stolley, Consultant, Three Birds Consulting
- Jeremy Tarwater, Virginia Department of Game and Inland Fisheries
- Judy Stokes, Consultant, APR

PRIMARY CONTACTS

Please join the team and add your knowledge and effort to ongoing communications efforts. Contact the subject lead for your area of expertise.

- General comments/information: Meagan Racey, meagan_racey@fws.gov
- Signage: Debra Reynolds, debra_reynolds@fws.gov; Luanne Johnson, luannej@biodiversityworksmv.org
- Educational materials: Debra Reynolds, debra_reynolds@fws.gov; Meagan Racey, meagan_racey@fws.gov
- Citizen involvement programs: Amanda Pachomski, apachomski@audubon.org
- Updating and linking online information: TBD
- Social media: Megan Racey, meagan_racey@fws.gov
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THE PLANNING PROCESS: *Determining who, why, what, how, and when?*

RESEARCHING AND DEFINING THE EFFORT

The communications team came together to address an acknowledged challenge to piping plover recovery, human disturbance, and the need to reduce it and increase support for beach shorebird conservation. Research – a survey and a literature review – was conducted to inform the plan. The survey (see Appendix D) addressed communication needs of people involved in piping plover conservation – those who directly address the audiences listed in the [Action](#) section and who helped us define tools and tactics, as well as messaging. The literature review helped us formulate our messages and strategies.

We examined six peer-reviewed journal articles to find information and results relevant to this plan. The articles covered six topics of concern:

1. Media portrayal of the piping plover (Dayer, Williams, Cosbar & Racey, 2017)
2. Signage preferences (Rimmer, Maguire & Weston, 2013)
3. Effects of education about beach-nesting birds (Ormsby & Forsy, 2010)
4. Perceptions of endangered species (Maguire, Rimmer & Weston, 2013)
5. Recreationists' awareness of and attitudes toward piping plovers (Jorgensen & Bomberger Brown, 2015)
6. Public perceptions of beach-nesting shorebirds and habitat management (Hamilton, 2014)

A summary of each article and the results and recommendations we applied to the plan may be found in Appendix E. A thorough literature review could be conducted to further refine messages and inform strategies.

The articles presented or reinforced the idea that *communication strategies should be tailored to individual audiences and should take into account variations in awareness, attitude, and beachgoer values*. This is what the team did by identifying audiences and developing strategies, tools, and tactics for each based on changes in knowledge, attitudes, and desired behavior. Outreach implementers are encouraged to further tailor their efforts based on knowledge of local audiences.

Other specific research findings that helped us design this plan included:

- Dog walkers/owners are a distinct audience with different perceptions and attitudes than other beach-users.
- Education about beach-nesting birds can change the behavior of beachgoers.
- Signs can be an effective way of influencing behavior.
- Signs should have positive and simple messaging, and incorporate colorful graphics, including images of the species addressed.
- The media plays an important role in communication about piping plovers. Relationships with media representatives should be sought after and nurtured.
- Some beach-goers believe incorrect information that affects their perceptions and behavior.

:: Problem Statement

The team focused on how communications can reduce human disturbance:

While the Atlantic Coast piping plover population has increased in the U.S. in response to recovery efforts, human disturbance continues to prevent birds from using habitats throughout the range for courting, nesting, raising young, feeding, migrating and wintering.

:: Goal

The communication team identified an overarching goal of reducing human-related disturbance to Atlantic Coast piping plovers.

:: Expected Outcomes

The communication team identified six expected outcomes for our communications work. To achieve these expected outcomes, the plan presents consistent messages and tools to use throughout the range and recommends ways of developing shorebird conservation constituencies.

The expected outcomes of this strategic plan are:

1. Voluntary compliance with regulations, rules, and signage will increase.
2. Beach and piping plover stewardship activities by volunteers and employees will increase.
3. A suite of communication tools for piping plover conservation partners to use will be developed and made available by the Atlantic Coast Piping Plover Human Disturbance Communications Team.
4. Members of the Atlantic Coast piping plover conservation community will use material developed through the communications effort, thus making outreach more consistent throughout the range.
5. Supportive or balanced perspectives will be provided to the media, elected officials, and beach-going constituencies.

:: Priority Audiences

Based on our survey and literature review, and with input from team members, we described and prioritized the audiences that must be reached through outreach to reduce human disturbance of piping plovers. We selected audiences based on their potential to address the issue of human disturbance, and then we assessed what each audience would need to know, feel and be able to do to help us achieve our goal (see Appendix J).

There are more audiences that influence disturbance of plovers. See Appendices F to J for these and suggested messaging, strategies and tools.

The communication team initially identified a total of 15 audience groups, which were ranked based on our team's perceptions of their ability to reduce disturbance to piping plovers. The five most highly ranked audiences became the *priority audiences* described below. Communication directed at the priority audiences is likely to reach additional audiences as well. Some communicators may wish to target those other audiences specifically. While the main body of this plan is aimed toward communicating with the priority

audiences, readers will find helpful guidance in the Appendices for communicating with other audiences.

Table 2. Describes the five priority audiences for the Atlantic Coast Piping Plover Communication Strategic Plan. Additional audiences and suggestions to reach those audiences are in Appendices F-J.

| Audience Name | Description |
|---------------------------|--|
| <i>Residents</i> | Those who live in a community with a beach that is used by piping plovers, such as coastal homeowners, beach association members, summer beach residents or repeat renters. |
| <i>Dog owners/walkers</i> | Anyone who visits a piping plover beach with a dog(s), particularly while plovers are present (nesting, migrating, wintering). Research indicates that different types of messaging than used for other audiences may be more effective. |

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| <i>General beachgoers</i> | Individuals, families and groups that use the beach for recreational purposes. Some of these users will fit into other categories, as well. Beachgoers impact the piping plover life cycle and may be unaware of guidance or reluctant to follow it, and in some areas, there is inadequate protection and/or management. |
| <i>Municipal on-beach staff</i> | Municipal employees and contractors whose responsibilities bring them to the beach. Group includes lifeguards, trash collectors, road maintenance, municipal planners, public works departments, permitting staff, concessionaires, divisions of marine and/or environmental affairs, recreation departments, conservation commissions, natural resources/beach/environmental committees. |
| <i>Beach and land managers</i> | People who work as managers of piping plover beaches, overseeing staff on the beach, setting policy, and/or implementing management plans. This includes managers of town, county, and state property, national wildlife refuges, national parks, conservation nonprofits and town recreation offices. |

ACTION PLANNING

To work toward the expected outcomes listed in the previous section, the team identified messaging to inform those audiences, and the channels (strategies and tactics) through which to share messages and additional information.

:: Messages

Make it your own! Use these to develop your personal story for plover conservation.

We developed the following messages to assist the piping plover conservation community with their communications and outreach efforts. Designed to resonate with specific audiences both logically and emotionally, these messages represent a culmination of research and first-hand experiences working with our target audiences, as provided by the communications team. Consult these messages to ensure that what you say is consistent with what others are saying across the range.

Piping Plover Talk 101: Have just a minute to get your points across? Start with these.

With ever-growing demands on our beaches, there are fewer places for piping plovers that depend on Atlantic Coast beaches year-round to raise families, feed, and rest.

- Beaches are irreplaceable homes for shorebirds and other animals. Piping plovers and other shorebirds have thrived for centuries on coastal beaches that are constantly shifting in response to storms and wave action.
- With fewer than 4,000 piping plovers on the Atlantic coast, each one makes a difference.

Everyday activities on the beach can unintentionally harm piping plovers.

- Nests, and even piping plovers, are really hard to see.
- When you get too close to birds, they *flush* (fly off of their nest or move away from feeding areas). While it might seem minor, this drives them away from what they need to survive - food and a resting place. Imagine if you were hungry and tired, and forces beyond your control kept you away from food all day, and no place felt safe to rest.

By following some specific steps, we can share the beach with piping plover adults and chicks and help them survive.

- Follow the guidance on signs and respect all areas fenced or posted for protection of wildlife. Your actions can benefit sea turtles, terns, American oystercatchers, and black skimmers, among other animals.
- Watch these entertaining birds from a distance.
- If pets are permitted on beaches, keep them leashed and away from birds.
- Remove trash and food scraps, which attract animals that might eat piping plovers and their eggs.
- Do not feed animals on or near the beach. Keep your cats indoors.
- Volunteer as a piping plover monitor, ambassador, or educator on your local beach. Tell your friends and family how to help.

The piping plover is making a comeback in the U.S.! Help make sure this shorebird is around for future generations.

- Decades of efforts by landowners, organizations, and government agencies are paying off. The piping plover has more than doubled its population along the Atlantic Coast since it was listed as threatened under the Endangered Species Act in 1986.
- Progress has been made, but our work is not done. Help the piping plover population reach full recovery!
- Beaches managed for wildlife need your support. They provide critical, dependable space for shorebirds raising families or migrating from one beach to another.

Additional Messages for Priority Audiences

Table 3. Includes audience-specific messages for five priority audiences for reducing human disturbance. Basic messages are on pages 10-11. Messages for other audiences are in the appendices.

Looking for messages for other audiences? See Appendix G.

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| Residents | <ol style="list-style-type: none"> 1. People and wildlife can share the beach! As long as you keep your distance, you can walk, fish, kayak, read, relax, beachcomb, take photos, splash in the waves, search for sea glass, sunbathe, bike, and watch birds without disturbing them. Check each beach for allowed activities. 2. Pets (cats/dogs) may chase piping plovers, injuring or killing them, or causing them to abandon their nests. It is important to keep cats indoors and, if allowed, dogs leashed on the beach. 3. You can help beach-nesting birds by reducing the food and shelter around your home that attract predators of piping plovers (crows, skunks, racoon, fox, rats, etc.). Secure your trash and use fencing around your foundation or decks to prevent animals from denning there. 4. You are a partner in piping plover recovery and play a critical role in supporting wildlife conservation. You can encourage your neighbors/members to become wildlife-friendly/bird-friendly beachgoers. 5. You can support piping plover conservation by donating to conservation organizations, providing balanced or supportive perspective to the media and local officials, and by volunteering. 6. Beaches are dynamic and move with the storms, which naturally maintains great habitat for wildlife and, over time, can be our best protection against more frequent and stronger storms. |
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| | <p>7. (This message is geared towards beach-front landowners) By allowing protective fencing to be placed around any piping plover nests on your property, you are contributing to the conservation of a threatened species.</p> |
| Dog owner/walker | <ol style="list-style-type: none"> 1. It's not just about the birds. Beach owners and managers prohibit dogs or request leashing in some areas for a variety of reasons, often for the safety and health of beachgoers, and sometimes to provide safe havens for wildlife. 2. You can be a responsible dog owner/walker by taking the BARK pledge: Bag waste, Always put a leash on your dog, Respect wildlife, Know which beaches permit dogs. (via National Park Service) 3. We're fortunate to have access to areas that allow dogs on a leash. If dogs are allowed, remember to leash them and walk them far from nests and chicks. 4. Piping plovers see ALL dogs as predators and panic when a dog approaches their nest or chicks. Every dog is perceived as a threat, no matter its size or age. Dogs can cause piping plovers to leave their eggs, stop feeding, and waste precious time and energy on distraction displays. 5. Your dog might not chase birds, but it might step on an egg or a tiny chick by accident. 6. You can avoid fines or tickets by following leash laws. 7. Don't like seeing other dogs off leash when you follow the rules? Let the beach manager know. <p>Some alternative word choices to consider for creative design: "Plovers on the beach? Put me on a leash!" or "Bird-friendly beaches have dogs on leashes!"</p> |
| General beachgoers | <ol style="list-style-type: none"> 1. People and wildlife can share the beach! As long as you keep your distance, you can walk, fish, kayak, read, relax, beachcomb, take photos, splash in the waves, search for sea glass, sunbathe, bike, and watch birds without disturbing them. Check each beach for allowed activities. |
| Municipal or other on-beach staff | <ol style="list-style-type: none"> 1. Many of the people who visit the beach care about wildlife. 2. Set a good example for beach visitors by following all beach guidelines. 3. Aspects of your job are critical to protecting piping plovers. These include picking up trash, maintaining beaches, ensuring dog laws are followed, informing visitors of the regulations, not disturbing birds, and much more. 4. Removing trash daily before nightfall reduces food available for scavenging animals such as raccoons, foxes, and coyotes. When lured to the beach, they will eat piping plover eggs and chicks. Evening trash removal also eliminates the need to clean up garbage scattered by the animals. 5. Being informed about piping plovers and their conservation can help beachgoers understand why you do what you do. |
| | <ol style="list-style-type: none"> 1. Your partnership has fueled progress in piping plover recovery, and you can help conservation partners reach and maintain recovery goals. 2. Your staff's activities on the beach can help or hinder piping plovers' efforts to survive and raise families. You play a critical role in piping plover conservation by |

| | |
|---------------------------------------|--|
| <p>Beach and land managers</p> | <p>carefully managing beaches that plovers need and that are in high demand by people</p> <ol style="list-style-type: none"> 3. Your policies make a difference to piping plovers and often have other benefits. For example, requiring “carry in, carry out” behaviors or removing trash daily before nightfall reduces food available for scavenging animals such as raccoons, foxes, and coyotes. When lured to the beach, they will eat piping plover eggs and chicks. These behaviors also eliminate the need to clean up garbage scattered by the animals. 4. Closing beaches to dogs during the nesting season prevents disturbance to piping plovers, but some managers restrict dogs to prevent pet waste from soiling recreational areas and to eliminate dog-on-dog and dog-on-human aggression. 5. You can help create a culture of wildlife stewardship with staff and make it a standard component of activities and policies. 6. Following guidance about recreation on piping plover beaches helps you avoid legal consequences if actions should disturb or harm protected birds. If there are challenges in implementing conservation or management practices, work with your agency or conservation partner contacts. 7. Meeting or exceeding recovery goals can lead to more flexibility in beach management. For example, in Massachusetts the increase of piping plover nesting pairs allowed the U.S. Fish and Wildlife Service and MassWildlife to work with beach owners and managers to provide flexible beach management under both federal and state endangered species laws. |
|---------------------------------------|--|

Understand your audience. Ask questions and observe them to choose the most effective communications approach.

:: Strategies, Tools and Tactics

Strategies are broad descriptions of actions that describe how to deliver key messages to target audiences. Tools and tactics are specific actions or products that fall under these categories. Tactics form the basis of our action plan, and are implemented in the following phases:

- Phase I – Preparation. Begin compilation of existing and development of new communication materials.
- Phase II – Awareness and Relationship Building. Get the attention of key players within each target audience, build awareness and interest, and establish relationships with partners and target audience leaders.
- Phase III – Action. Encourage each target audience to act, whether that means land managers creating a culture of stewardship with their on-beach staff or beach goers removing their trash from the beach.

This section focuses on the top five priority target audiences. Please refer to Appendix C for a *Strategies Bank* - a collection of suggested strategies for every audience.

Strategies:

We used a model from the U.K. Department of Environment, Food, and Rural Affairs (DEFRA, 2011) to develop diverse strategies. DEFRA recognized that behavior, especially pro-environmental behavior, is influenced by a number of factors, which often act in combination to produce the desired outcome. To ensure a variety of approaches, DEFRA recommended developing strategies that fit into one or more of the following categories:

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Enable, Encourage, Engage, and Exemplify. Partners looking for additional approaches could also reference Rare's *The Principles of Pride* (Butler, Green, & Galvin, 2013).

Enable: provide information and tools, remove barriers, and provide alternatives

- Use clear, positive and consistent messaging
- Provide information about piping plovers and the rules and regulations to protect them
- Educate and inform audiences before they get to and on the beach by people they consider experts or hold in high esteem and in the locations they are likely to visit

Encourage: provide positive reinforcement for appropriate behavior and provide disincentives for inappropriate behavior, including enforcement of rules and regulations

- Encourage piping plover-friendly management policies such as trash removal and dog leashing
- Distribute rewards for appropriate behavior
- Recognize champions in minimizing piping plover disturbance
- Enforce rules and regulations, including issuing tickets or collecting fines, when appropriate

Engage: get individuals or groups involved, either emotionally, intellectually, ethically, artistically, or physically

- Use a variety of methods to distribute updates and encourage engagement
- Enhance relationships through regular communication and personal interactions
- Recruit beachgoers to become stewards of the beach
- Give people opportunities to observe piping plovers
- Involve audiences in piping plover conservation, management, and education

Exemplify: provide examples of correct behavior

- Use peer-to-peer education. For instance, create a volunteer cadre of local residents who might be called *shorebird champions* or wildlife-friendly *beach ambassadors* to educate their peers
- Ensure that those who work on the beach know and follow rules and regulations

Tools and Tactics for Priority Audiences

As explained above, tools and tactics are specific actions or products that fall under the strategies. A subset of these will be underway by the communications team. If you are interested or have resources to share, please contact a team member (Contact information is on page 7).

Table 4: Tools and tactics for priority audiences. More ideas are in Appendix H and I.

| Audience | Tools and Tactics |
|----------------------|--|
| <i>All Audiences</i> | <ul style="list-style-type: none">● Incorporate the simple ways everyone can help piping plovers into as many existing communication outlets as possible.● Develop an elevator pitch (a 20-60 second speech) that articulates why your audience should adopt suggested behaviors to protect piping plovers. Tailor it to your audience taking into consideration what is in it for them.● Add piping plover information to municipal and other pertinent websites. Add URL to other communications materials.● Use downloadable targeted educational or informational materials such as brochures, posters, a pocket guide to beach birds, and video. If you create any, share them online.● Develop an informational brochure or flyer to give out with permits, rental properties and equipment, and passes associated with piping plover beaches (e.g., 4WD permit, day pass, parking pass), and/or create smaller reminders, such as a bookmark, card, |

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| | <p>or sticker.</p> <ul style="list-style-type: none"> • Use standard sign design templates when designing and ordering new signs. Place informational signs in heavily frequented areas - at trash bins and in bathroom stalls/on mirrors. • Use press events (such as installing signs created by schoolchildren) to highlight what managers/staff do and gain internal, community and political support. • Take reporters out to sites to see birds firsthand; write news releases and seek local print and digital coverage of what is happening with piping plovers and staff, volunteers, and others on the beach. • Develop a social media campaign around piping plover-related communication or add piping plover-related communication to your present social media outlets. Consider coordinating on posts for specific beach pages, town, state, etc. • Provide regular updates to local news media and online communities. For example, follow one piping plover family through the season. These could be via email, newsletter or social media. • Sponsor Beach Discovery Backpacks targeted to piping plover beaches and give them to local bird groups and libraries. Incorporate piping plover messages. • Develop and present a presentation about piping plovers for local residents, visitors, community, and recreational organizations. • Find a champion – such as a volunteer coordinator or a Friends group - to combine forces with. An example is Friends of Ellisville Marsh. Initiate a resident volunteer program for piping plover stewardship, education and/or citizen science. Examples include Bridgeport Wildlife Guards and Shorebird Stewards. • Encourage people to take the Be A Good Egg pledge or develop a local pledge. • Figure out which camps go on the beach, and train counselors or align programs with their schedules. • Target schools serving coastal populations for programs in school or on the beach during the early season. Explore use of school digital communication networks – email, Twitter, text messaging – for updates, educational events, and general announcements. • Create a print or online list of local wildlife that are commonly observed to encourage observation. Consider presenting it as a scorecard or bingo game to engage people. • Record a public service announcement or a slide deck for community television. |
| Additional strategies for <i>Dog Owners/Walkers</i> | <ul style="list-style-type: none"> • For areas popular with dog owners/walkers, list alternative local dog-walking sites and dog parks. • Distribute informational materials (e.g., brochures or posters about dog restrictions, dog-friendly areas, dog parks) to dog-oriented businesses, such as veterinarians' offices and pet shops, and to local dog events (e.g., dog shows, pet adoption fairs). • Use rewards for leashing, such as dog bandanas or biscuits. • Develop an app to encourage responsible dog/owner behavior on piping plover beaches. • Initiate a dog stewards program involving responsible local dog owners/walkers (<i>dog champions</i>) to patrol beaches and encourage other dog owners/walkers to leash dogs and follow regulations OR engage volunteers to patrol beaches to inform visitors of dog regulations. Either is especially needed at dawn and dusk when dog walkers are more active. Volunteers might carry a spotting scope to show people the birds or leashes to hand out. |
| Additional strategies for <i>Beach and Land Managers, and</i> | <ul style="list-style-type: none"> • Schedule meetings with land/beach managers and supervisors. Share basic information and goals, and learn about their needs and challenges. • Offer support to implement conservation for the species, such as volunteers for |

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| Municipal or Other On-Beach Staff | <p>evening trash disposal. Encourage daily trash collection or a carry-in carry-out policy. Ensure that all trash receptacles have covers or lids. Wrap trash barrels with information about piping plovers.</p> <ul style="list-style-type: none"> • See if permitting processes for visitors and others can include messaging or pledges. • Support a culture of beach stewardship, including, but not limited to, piping plover-friendly behavior, such as staying away from fenced areas, watching birds from a distance, and following rules and regulations. • Take, or have volunteers take, reporters and VIPs (e.g., county commissioners, conservation commission members, town selectmen, beach managers) out to sites to see birds firsthand and learn what the staff is doing to manage and protect them. • Ensure staff knows the rules and follows them to set good examples for the public. Offer trainings to their staff, such as lifeguards. • Meet operational staff to better understand why they do what they do, and if there is room to modify. For example, are there places you don't have to rake? Show partners that have done this effectively and offer to connect them as a resource. Offer communication tools if they are concerned about their visitors (trash wrapping, wrack signage and posters). • Provide contact information and make connections between this audience and people who can assist during incidents. Establish lines of communication with enforcement so staff know there will be someone who can follow up. • Maintain relationships throughout the season (in addition to before/end-of-season meetings) by passing along updates, and even good stories/concerns from other sites as examples (how is their site doing versus others? Any unforeseen events occurring nearby?). Was the training useful? What else do you need? |
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COMMUNICATION TIMELINE

This table outlines the necessary steps and responsible parties in the development of the priority tools and tactics described in this strategy. It not only explains how the top priority tools will be developed, but also how to initially promote the plan within the piping plover conservation community.

Table 5: Timeline of next steps for the communications team.

| Future Efforts | Steps and Notes | Lead | Timeline |
|--|--|--|--|
| 1. Continue periodic meetings of and continued involvement by the authors of this plan and engage more local, state, federal, governmental and non-governmental partners in piping plover conservation communication. | Share strategic communications plan (version 1.0) for broad piping plover community use and targeted feedback | Meagan Racey and communications team | Summer 2017 |
| | Continue the conference calls and invite other people to join | | Quarterly calls beginning in fall 2017 |
| | Create subteams to address specific projects as needed Ask workshop attendees to sign up to pilot some part of this plan (however big or small) | | Request volunteers when version 1.0 is shared for review January 2018 biennial Piping Plover Workshop |
| 2. Develop signage recommendations with guidance and a series of downloadable templates for interpretive signs and posting for use on the Atlantic Flyway. Themes include beach as | Coordinate with AFSI human disturbance working group via Debra Reynolds | Deb Reynolds and Luanne Johnson, and communications team | Begin coordination with AFSI in fall 2017 |

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| habitat, impact of people and dogs, importance of wrack, and the use of off-roadway vehicles (ORVs). | Evaluate and Analyze (potential student project): <ul style="list-style-type: none"> - Could include a brief evaluation of sample signs in current use (interpretive and posting) - Recommend a quick literature search to identify whether there is additional research on effective signage - Review the Canadian Wildlife Services signage strategy and adopt as much as possible | | Fall 2017 |
| | Create Draft: <ul style="list-style-type: none"> - Review messaging from the plan for content ideas - Select baseline sign(s) - Draft document should include descriptions of signage placement and templates of sign (and evaluation of current signs if done) - Templates should include space for whatever content that is unique for particular sites, logos, images, dates, etc. signage recommendation - Consider symbol that can tie signs together - Offer recommendations for posting sites and for interpretive signage, as well as guidance for local handmade signs for community engagement | | Winter 2018 to test for 2018 season |
| 3. Compile downloadable educational materials for use such as brochures, brochure templates, posters or booklets in an online library. Some items, particularly templates, may need to be created. | Compile and Evaluate (potential student project) <ul style="list-style-type: none"> - Coordinate with AFSI Human Disturbance team for student project - Compile and organize resources gathered by communications team - Develop criteria to help rank materials, and help prioritize what should be offered online - Post these on a library to be developed on AFSI website - Recommend if any should be adapted into downloadable templates - Recommend if there is certain material in need of development (review strategic communications plan for ideas) | Deb Reynolds, Meagan Racey and communications team | Begin AFSI coordination and student project March 2017 |
| 4. Support and/or develop citizen involvement programs such as Audubon New York's Be a Good Egg program , Bridgeport Wildlife Guards and Goldenrod Foundation's Beach Ambassador program. These programs should incorporate the "Bird friendly beaches" campaign elements aimed at engaging dog owners/walkers (suggest considering whether a separate program is needed). Encourage work to make these and other such programs | <ul style="list-style-type: none"> - Evaluation of Be a Good Egg is underway - Review Canadian Wildlife Services' volunteer guide. - Recommend best approach for duplicating/making these programs more broadly available. - Explore funding options for expansion of Be a Good Egg and Beach Ambassadors programs - Research other campaigns and see if owners/creators would share. - May include designing take-away items | Amanda Pachomski and communications team. Suggest involving AFSI human disturbance working group. | TBD |

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| replicable in other locations. | and incentives, including dog-related items reinforcing conservation messages | | |
| 5. Improve piping plover information on online resources for beachgoers, such as park or tourism websites. Websites should have the latest information on piping plover recovery and foster involvement. | Start with a pilot effort. Select a sample of sites (such as BringFido.com, a state park, town beach, Travelocity (top beaches) etc.) and evaluate presence/accuracy/tone of piping plover information. Reach out to sites and offer (or upload) resources/messaging Based on pilot effort make recommendations for how to do this more broadly | Looking for a volunteer | |
| 6. Develop a social media campaign on Twitter, Facebook, Snapchat, Instagram, or other platform, such as specific posts and guidance that can be incorporated across partner accounts. Suggest strategy to follow individual piping plovers or families. | Draft social media campaign | Leah Hawthorn (2017 plan available as Appendix) | Summer 2017 |
| 7. Provide partners with communication opportunities through updates on the status of piping plover populations and productivity, additional positive messaging, and guidance for working with the news media. | Coordinate prompt distribution of preliminary end-of-season figures by state Compile contact grid or landownership grid for piping plover sites (working toward network of beach and land managers) | Anne Hecht and State Coordinators Deb Reynolds | TBD |
| | Prepare end-of-season announcement on progress of population | Meagan Racey | Winter 2017 |
| | Prepare toolkit with news media guidance, sample news releases, powerpoint, other items | Meagan Racey and communications team | Fall 2017 |

EVALUATION

Progress toward expected outcomes will be monitored using *SMART Objectives*. *SMART* stands for:

- **Specific** (simple, sensible, significant).
- **Measurable** (meaningful, motivating).
- **Achievable** (agreed upon, attainable).
- **Relevant** (reasonable, realistic and resourced, results-based).
- **Time bound** (time-based, time limited, time/cost limited, timely, time-sensitive).

Table 6: Matching expected outcomes with objectives to monitor progress.

| <i>Expected Outcome</i> | <i>SMART Objective</i> |
|--|---|
| Voluntary compliance with regulations, rules and signage will increase. | <p><i>By May 2018, at least two sites will commit to trialing the stewardship indicators currently used by Bird Studies Canada to monitor and track human disturbance. By September 2019, initial results will show an increase in stewardship indices.</i></p> <p><i>By February 2018, the Atlantic Flyway Shorebird Initiative will provide an update on its tool to track conservation projects and progress toward goals to reduce disturbance at the flyway level.</i></p> <p><i>By September 1, 2019, an informal query of the piping plover conservation community will report greater understanding of the value of beaches as habitat and fewer occurrences of human activities that disturb piping plovers on beaches and migration areas.</i></p> |
| Beach and piping plover stewardship activities by volunteers and employees will increase. | <p><i>By March 2018, determine a solution to track and compile information on volunteers (tracking numbers of volunteers and their activities, beach cleanup data and hours of outreach provided). This may be a survey of organizations that engage volunteers.</i></p> <p><i>By September 1, 2019, complete review of the Be a Good Egg Program.</i></p> <p><i>By September 1, 2019, citizen involvement programs will expand to 5 new sites.</i></p> |
| A suite of communication tools for piping plover conservation partners to use will be developed and made available by the Piping Plover Human Disturbance Communications Team. | <p><i>By June 2017, messages for priority audiences will be distributed to partners for use in the 2017 nesting season, as part of the distribution of this document.</i></p> <p><i>By September 2017, downloadable educational materials will be compiled online and made available to the piping plover conservation community.</i></p> <p><i>By February 2018, draft signage recommendations will be shared for feedback at the biennial piping plover meeting at the National Conservation Training Center. At the meeting, 75% of attendees will report they are aware of the plan and 50% will report usage.</i></p> <p><i>By September 2018, survey will be designed and disseminated to identify users of the plan and associated AFSI web page as well as to collect results and feedback.</i></p> |

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| Members of the Atlantic Flyway piping plover conservation community will use messages from this document in new or updated materials about piping plover, thus making messages more consistent throughout the Flyway. | <i>By the end of 2017 breeding season, the communications team will have access to email/contact list of beach and land managers for at least the breeding range.</i> <i>By the end of the 2018 breeding season, an email survey to managers will reveal 50% of respondents are incorporating consistent messages and tools online and in person to build support for piping plover conservation.</i> |
| Supportive or balanced perspectives will be provided to the media, elected officials, and beach-going constituencies. | <i>At the February 2018 biennial piping plover meeting, baseline informal information will be obtained on how pervasive this issue is, with the follow-up 2020 meeting demonstrating an improvement in perceptions.</i> <i>In 2020, conduct a repeat of the 2015 media analysis to examine "balance" in media stories, if possible.</i> |

If the opportunity arose, the team would recommend the development of a standardized survey protocol to gather information from the public regarding awareness, understanding, skill and behaviors as soon as possible, then, repeat after three to four years to examine changes. A third survey after several more years would be needed to examine trends.

Additionally, the team may consider whether results chains (demonstrating how proposed actions support expected outcomes) would be a helpful addition for version 2 of this plan.

STEWARDSHIP

Stewardship is the final element of the 5-step RACES process. Natural resource professionals understand this word in the context of conserving lands, populations of wildlife, clean air and clean water. In the context of communication, stewardship has a different meaning and ensures the communication effort's sustainability and long-term success through such actions as recognition of those involved.

This team suggests that we include stewardship activities for the desired outcomes. How will we reinforce the desired outcome in those who have responded already and at the same time work to achieve our expected outcomes in the remaining members of the target audience?

The following actions carry out stewardship responsibilities.

Review and update materials to ensure the communication effort maintains momentum, addresses the latest needs and incorporates new information.

Action Items: Review this plan at each biennial plover workshop and at wintering meetings.

Reciprocity is the demonstration of gratitude for supportive behaviors. Show appreciation by saying thank you and recognizing the supportive behavior. You might consider plaques, invitations to special

events and personalized communication between the agency and these supportive publics.

Action Items: A decal or sticker that contains a basic piping plover message and an image of a piping plover to assist in identification. This could be part of the “downloadable publications” in the next steps list. Our experience is that these are highly desired and lend themselves to wide branding at an affordable cost.

Responsibility requires the agency or organization in this project to interact in a socially responsible manner with the targeted audiences who have exhibited the supportive outcomes we are seeking. In the most elemental way, we must keep our promises and do what we say we will do.

Action Items: Organizations must be prompt in removing beach restrictions, if promised, when the season is over.

Reporting means that we must communicate regularly with the groups of people who have done what we recommended to keep them informed. In fact, effective communication and mutual exchange of information is critical for stakeholders to achieve the expected outcomes of this plan. This serves to reinforce public confidence in the integrity and effectiveness of our work and their role in a successful program. This is just as important for government and non-governmental organizations as it is for business.

Action Items: Regular media contact and site visits, progress reports on restoration, and interesting activities on beaches that the reporter’s audience would want to know about.

Relationship nurturing will demonstrate that the organization(s) cares, respects, appreciates and continues to involve the people who support the piping plover mission. The people executing the communication plan will keep these important folks “top of mind,” maintain regular contact, share information and seek their continued involvement and potential role as good ambassadors for the effort.

Action Items: Start of season meetings or end of season celebrations with the local people who have helped on the beach – beach cleaners, enforcement officers, ticket sellers, lifeguards and piping plover volunteers. See the Maine Audubon newsletter for examples of how to highlight supporters in organizational materials.

LITERATURE CITED

- Borgmann, K. L., (2011). A review of human disturbance impacts on shorebirds. Unpublished report submitted to the San Francisco Bay Joint Venture. Retrieved from <http://www.audubon.org/sites/default/files/documents/humandisturbanceimpactsreportfinal.pdf>
- Brown, S. C., Hickey, C., Harrington, B., & Gill R., (Eds.). (2001). *The U.S. shorebird conservation plan*, (2nd ed.) Manomet, MA: Manomet Center for Conservation Sciences.
- Butler, P., Green, K., & Galvin, D. (2013). *The principles of pride: The science behind the mascots*. Arlington, VA: Rare. Retrieved from <https://www.rare.org/sites/default/files/Principles%2520of%2520Pride%25202013%2520lo%2520res.pdf>
- Dayer, A. A. (2014). *Atlantic Coast Joint Venture strategic communications plan 2014-2018*. Communications Report 2014-01. Locke, NY: Ashley Dayer Consulting. Retrieved from <http://acjv.org/resources/>
- Dayer, A. A., Williams, A., Cosbar, E., & Racey, M. (In review). Endangered species being blamed: Media portrayal of human wildlife conflict. *Oryx*.
- Hamilton, M. (2014). *Understanding public perceptions about beach nesting shorebirds and habitat management on Cape Cod, Massachusetts*. All Dissertations. Paper 1434. Retrieved from http://tigerprints.clemson.edu/cgi/viewcontent.cgi?article=2435&context=all_dissertations
- Jorgensen, J. G., & Bomberger Brown, M. (2015). Evaluating recreationists' awareness and attitudes toward piping plovers (*Charadrius melodus*) at Lake McConaughy, Nebraska, USA. *Human dimensions of wildlife*, 20: 367-380. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/10871209.2015.1020579?journalCode=uhdw20&#.Vxp7u5MrJBx>
- Kelly, K. S. (2001). Stewardship: The fifth step in public relations. In R. Heath, (Ed.), *Handbook of public relations* (pp. 279-289). Thousand Oaks, CA: Sage Publications.
- Maguire, G. S., Rimmer, J. M. & Weston, M. A. (2014). Stakeholder knowledge of threatened coastal species; the case of beach-goers and the Hooded Plover *Thinornis rubricollis*, *Journal of Coastal Conservation*, vol. 19, pp. 73-77, doi: 10.1007/s11852-014-0361-9.
- Maguire, G. S., Rimmer, J. M. & Weston, M. A., (2013). Stakeholder perceptions of threatened species and their management on urban beaches. *Animals*, 3: 1002-1020; doi:[10.3390/ani3041002](https://doi.org/10.3390/ani3041002)
- Marston, J. E. (1979). *Modern public relations*. New York, NY: McGraw Hill.
- Niles, L., Sitters H., Dey A., & Red Knot Status Assessment Group, (2010). *Red Knot conservation plan for the western hemisphere (Calidris canutus)*, Version 1.1. Manomet, MA: Manomet Center for Conservation Sciences.
- Ormsby, A. A. & Forsy E. A. (2010). The effects of an education campaign on beach user

perceptions of beach-nesting birds in Pinellas County, Florida. *Human dimensions of wildlife*, 15:119-128.

Rimmer, J. M., Maguire G. S., & Weston, M. A. (2013.) Perceptions of effectiveness and preferences for design and position of signage on Victorian beaches for the management of Hooded Plovers *Thinornis rubricollis*. *The Victorian Naturalist*; 130: 75–80.

Smit, C. J. & Visser, G. J. M. (1993). Effects of disturbance on shorebirds: a summary of existing knowledge from the Dutch Wadden Sea and Delta area. *Wader Study Group Bulletin*, 68: 6-19.

U.S. Fish and Wildlife Service. (1996). *Piping Plover (Charadrius melodus), Atlantic Coast population, revised recovery plan*. Hadley, MA: USFWS.

U.S. Fish and Wildlife Service. (2009). *Piping Plover (Charadrius melodus), 5-year review: Summary and evaluation*. Hadley, MA: USFWS.

U.S. Fish and Wildlife Service. (2015). *Biological opinion and conference opinion: Fire Island Inlet to Moriches Inlet, Fire Island stabilization project Suffolk County, New York*. Hadley, MA: USFWS.

U.K. Department for Environment, Food and Rural Affairs, Centre of Expertise on Influencing Behavior. (2011). *Framework for sustainable lifestyles*. Retrieved from <http://webarchive.nationalarchives.gov.uk/20130402151656/http://archive.defra.gov.uk/environment/economy/documents/sustainable-life-framework.pdf>

Winn, B., Brown, S., Spiegel, C., Reynolds, D. & Johnston, S. (2013). Atlantic Flyway shorebird conservation business strategy phase I. Manomet, MA: Manomet Center for Conservation Sciences and Hadley, MA: U.S. Fish and Wildlife Service.

Yasue, M. (2005). The effects of human presence, flock size and prey density on shorebird foraging rates. *Journal of Ethology*, 23:199-204.