

County: Island
Grant No: SEANWS-2016-IsCoPH-00005

PROJECT TITLE: Island County Marine Resources Committee Operations and Projects

TASK NUMBER: 3 – Education & Outreach

DELIVERABLE: 3.3 – Summary report on outreach

PERIOD COVERED: October 2016-September 2017

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Island County Marine Resources Committee Outreach: 2016-2017

I. Introduction

Outreach is an important aspect of the work of the Island County Marine Resources Committee (MRC). The MRC's purpose statement highlights two key audiences for outreach: Island County agencies and authorities, and the local community. In developing the 2016-2017 workplan, it was noted that these two audiences have distinct needs and that addressing outreach to each audience type should be focused appropriately.

To understand how to approach outreach with county officials and department heads, the MRC conducted a needs assessment, focusing on Island County leadership, to refine outreach goals and identify areas to prioritize. The report from the Outreach Needs Assessment is included in Appendix A. Highlights from that assessment include the following:

Valuable roles and opportunities for the MRC:

- Inform, update county officials on marine issues
- Be bold and persistent as advisors to county officials
- Conduct pre / post monitoring of county projects
- Identify the question(s) to be addressed by every MRC project & the importance of findings
- Provide educational outreach to county staff and the public (see strategies below)

Suggested outreach strategies:

- Prepare white papers on emerging and hot topics
- Schedule time on Commissioners' work sessions as needed
- MRC members meet one-to-one with decision makers
- Invite elected officials, staff and key members of the public to educational MRC meetings
- Organize public forums annually and as needed
- Leverage web-site for outreach

Taking into account these findings for outreach to County leadership, and with the additional goal to promote the MRC and its work within the local community, the MRC decided to focus on the following strategies:

- Identify a topic for a white paper and initiate strategizing for implementation
- Develop signage to place on sandwich boards during monitoring projects
- Participate in appropriate conferences and events to expand awareness of the MRC and its projects, and incorporate feedback from the events into future outreach

Complementary work is also being accomplished through the NWSF MRC Opportunity Fund to create a video that will explain the MRC and its work, and to purchase identifying gear that MRC members and volunteers can wear to promote visibility when working on projects in the field.

II. Strategies and Activities

White Papers

The desire for white papers on current marine environmental topics was a top priority for County leadership identified during the outreach needs assessment, with the 2020 Shoreline Master Program (SMP) update rising to the top of current and upcoming subjects to address. Finfish net pens were selected as a topic on which to complete a white paper, given its importance within the SMP update process and the MRC's ability to research the material.

In 2015, the MRC responded to a request from the Island County Department of Planning and Community Development to provide scientific information regarding finfish net pens to include in their report to the Board of Island County Commissioners during the SMP update process at that time. The MRC now has the opportunity to expand on that research and provide updated information to assist the County Commissioners in 2020 SMP update process.

The MRC has initiated the process by identifying a group of MRC members and technical advisors to lead the efforts on researching the topic. Initial discussions have been held within the MRC, and research material is being gathered. The paper is anticipated to be produced in 2018.

Signage

MRC project leads have noted how monitoring projects tend to draw curious beach-walkers and on-lookers. While some individuals approach the MRC volunteers to ask about the project, others watch from a distance without engaging. For those who do approach MRC volunteers, sometimes the volunteers need to focus on their monitoring and may not be able to readily address questions. This was seen as a great opportunity to address an audience interested in learning more about MRC work.

Signage was developed to be displayed on sandwich boards while completing MRC work in the field. The signs explain more about the project the individual is observing, and also invite the reader to visit the MRC website. The signage is included in Appendix B.

Presentations

SOUND WATER STEWARDS PROJECT FAIR, APRIL 2017

Three MRC members participated to present about MRC monitoring projects and recruit volunteers to participate on the projects.

NORTHWEST STRAITS COMMISSION MEETING, AUGUST 2017

At the invitation of the Northwest Straits Commission, MRC member Barbara Bennett presented on the outreach needs assessment, lessons learned and future plans developed in Island County to date. The discussion following the presentation related to opportunities for outreach in each county and additional outreach that might be applied to the Northwest Straits Initiative's regional projects.

SOUND WATER STEWARDS MEETING, SEPTEMBER 2017

One MRC staff and the MRC Chair presented on the MRC, its background, goals, and current and proposed projects to the monthly Sound Water Stewards (SWS) meeting on Camano Island. The goal of this presentation was to expand awareness of the MRC and its work, and to engage more participation from Camano. Several attendees expressed a greater understanding of what the MRC does and an interest in seeing more projects as well as MRC meetings and workshops involving Camano.

Conferences and Displays

MRC CONFERENCE, NOVEMBER 2016

The Northwest Straits Initiative hosted its annual MRC conference in November. Island County MRC participated in the display session with a trifold poster describing MRC projects and detailing two specific projects: forage fish monitoring and bull kelp monitoring.

SOUND WATERS UNIVERSITY, FEBRUARY 2017

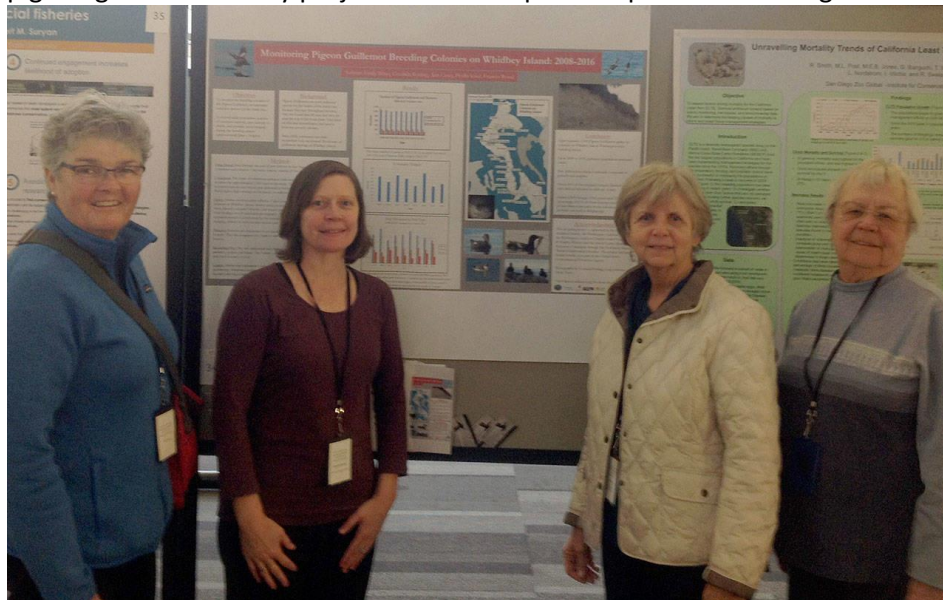
The MRC participated in Sound Waters University, a one-day “university” that drew over 600 attendees. A trifold poster was displayed during the event describing the MRC and its projects.



Barbara Bennett explains MRC projects at Sound Waters University. Photo: Anna Toledo.

PACIFIC SEABIRD CONFERENCE, FEBRUARY 2017

One MRC member participated in the Pacific Seabird Conference in Tacoma. A poster describing the pigeon guillemot survey project was developed and presented during the conference.



Pigeon guillemot survey coordinators at Seabird Conference.

CITIZEN SCIENCE ASSOCIATION CONFERENCE, MAY 2017

One MRC member participated in this international conference on citizen science. A poster was developed to explain the projects of the MRC. Given the wider reach of conference participants, this was a unique opportunity to receive feedback on how to convey the work and purpose of the MRC to those unaware of the organization or of marine issues. These recommendations are detailed in the “Lessons Learned” section.



Barbara Bennett showcases MRC poster at Citizen Science Association Conference.

Events

Members of the community have expressed that while they may have heard of the MRC, they are not sure what the acronym stands for, and are not familiar with the work of the organization. Events present the opportunity to engage the public in a fun environment while promoting a greater understanding of the MRC, its priorities, and its projects.

CORNET BAY PLANTING, APRIL 2017

One MRC member and a volunteer participated with Northwest Straits Foundation at the Cornet Bay Planting event in April. The MRC is planning to help develop a stewardship team to care for the native vegetation at the Cornet Bay restoration project, which will also serve as an opportunity to expand the MRC's reach.

CHILDREN'S DAY, SEPTEMBER 2017

The MRC had a booth at the Children's Day festival on South Whidbey, with a forage fish toss game borrowed from Skagit MRC. This event served as an opportunity to reach children and their parents and share a message on the importance of small forage fish to the health of the larger marine food web, and how actions on the shoreline can make a difference.



Anna Toledo engages youth with forage fish toss game at Island County Children's Day.

III. Lessons Learned

Giving presentations and displaying posters at several events offered the opportunity to receive feedback from the target audience on their understanding of the MRC and its projects based on the materials presented. This feedback has allowed for a better understanding of the gaps and opportunities for improvement in our outreach efforts. Lessons learned included:

- Outreach about MRC work needs to tie together how projects are related to each other and fit into the bigger picture of protecting and restoring the marine environment. Materials should tell a clear story that is consistent throughout the MRC's work.
- The MRC should not assume the local community is knowledgeable about the MRC and its projects, or is aware of the marine issues affecting Island County and Puget Sound.
- The structure of the MRC and the Northwest Straits Initiative was seen as a creative and effective arrangement to address local marine issues. Outreach work should help explain the locally-focused nature of the MRC.
- Educational presentations at MRC meetings are often valuable, but not well-advertised. More effort should be focused on ensuring the public is aware of educational presentations and that they are invited to attend. Hosting an educational forum (annually or more frequently) would also be an effective method of reaching the public on a focused topic.
- With the vast array of issues county leadership needs to address, the MRC should present easily digestible information with a clear, concise take-away message.
- MRC projects have distinct outreach needs. While many monitoring projects provide the opportunity to engage the public on the beach, others are not as well suited for this method. For example, utilizing sandwich boards for the eelgrass monitoring project would not be applicable, as the research boat is not always visible from the point on the beach where the sandwich board would be stationed.

IV. Appendices

A: Needs Assessment Summary

B: Outreach Materials

PROJECT TITLE: Island County Marine Resources Committee Operations and Projects

TASK NUMBER: 3 – Education & Outreach

DELIVERABLE: 3.1 – Outreach needs assessment report

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Island County Marine Resources Committee

Outreach Needs Assessment Summary

February 2017

The mission of Island County Marine Resource Committee (IC MRC) is to investigate, research, and identify local marine resources, and marine resource and habitat issues; recommend remedial actions to Island County agencies and authorities; carry out such recommendations where so approved; and build local awareness of the issues and broad-based community support for the remedies.

Recognizing its primary charge to advise County elected officials and staff regarding marine resources and in anticipation of its 2017-2018 strategic planning and work plan development cycle, the IC MRC decided to conduct a needs assessment focused on County elected officials and staff. The newly formed IC MRC Outreach team, represented by Team Lead Barbara Bennett, was tasked to conduct the assessment in collaboration with Elsa Schwartz, now Chair, and Anna Toledo, Coordinator.

A questionnaire was developed (sample attached, Appendix A) and County Department heads and staff were identified for interviews based on their interface with marine resources. One County Commissioner, assigned to the MRC for 2017, was also interviewed. A total of 11 individuals were interviewed representing 6 County Departments and one Commissioner. Barbara Bennett conducted all interviews and assembled the attached summary of responses. Six interviews were individual interviews, one was conducted with two representatives from the Planning Department, and one with the three staff who work most closely with the MRC from the Department of Natural Resources (DNR). Interviews were conducted January - February 2017.

The Assessment Summary (Appendix B) lists responses to each question. The number to the left of each response indicates the number of times the same point was addressed by different individuals. Responses are listed by frequency under the heading of each question.

This summary will be used to inform the IC MRC's focus for outreach work in 2017, and in the development of the work plan for 2017-2018. While it would be impossible for the IC MRC to address all the recommendations, there are strong themes, and important context within the responses that will help the MRC meet its charge to advise the County and build local awareness regarding marine resources.

Appendix A: Sample Questionnaire

IC MRC Planning Interviews

Date: _____

Name: _____

Introduction and reason for the interview -

IC MRC is an advisory body to County Government established in 1999 to:

- investigate, research & identify local marine issues and resources
- recommend remedial actions,
- carry out approved recommendations,
- build local awareness of issues and broad community support for remedies.

In that capacity, the MRC has done:

- Monitoring work: Ongoing: forage fish, eelgrass, kelp, salmonids, pigeon guillemots, and Did a study on phytoremediation
- Restoration work in Cornet Bay and anticipates future work in
- Outreach work: signage, videos, collaboration on forums
- Advisory work: research re: fin fish net pens for Commissioners' re: SMP update

Provide fact sheet

What trends and issues are pressing for your Department in 2017

What trends and issues do you anticipate looking ahead 3-5 years?

How do marine components interface with these trends and issues?

- Water quality
- Fish, shell fish and wildlife
- New building requests on shorelines
- Derelict structures on shorelines
- Beach Access, Tideland ownership
- Sea Level Rise

Given the MRC's purpose to advise the County re: Marine Resources, how can the MRC support your work? Short term ... and long term?

What issues need to be:

- researched?
-

- remedied?
-

- communicated to County Staff?
-

- communicated to local residents?
-

Appendix A: Sample Questionnaire

What is the best way to communicate with you, County Commissioners and your staff:

- attend Commissioners' work sessions?

- develop white papers?

- provide one page (or less) summaries on topics?

- meet with you and your staff in person?

- provide educational presentations at MRC meetings for staff to attend?

- other?

What are your thoughts on past and future MRC work:

- What do you value most that the MRC has done?

- What comments do you have about other projects?

- What recommendations do you have for future MRC work?

Who else should we interview? (Provided a list of Department Directors and Staff for consideration)

Other County Staff / Officials to interview? The following Departments were represented on the list:

Commissioners
Planning
Emergency Management
Department of Natural Resources and Health Administration
Maintenance Facilities
Public Works
WSU Extension

Final Caveat:

- Thank you very much for your comments and your time. I will report on this interview and others as the MRC works on its strategic plan for the new year.
- The MRC may not be able to do everything you have raised.
- Our goal is to assist leaders and elected officials in their roles as they relate to marine resources
- We assess all new project ideas or requests in relation to the MRC's mission and capacities.

Appendix B: Assessment Summary

IC MRC Needs Assessment 2017 Assessment Summary

What trends and issues are pressing for your Department in 2017?

8	Public Outreach	Sea level rise, armoring options, DNR shoreline regulations
7	Aging infrastructure	Culverts, water systems, tidegates, septic and wells
7	SMP 2020 Update	Net pen task force & anticipate no net loss with update
6	Drainage	Stormwater runoff and beyond
6	Sea Level Rise	Runoff, road flooding, septic flooding
5	EPA Requirements and Funding	Shoreline, LIO, MRC, funding changes, fresh water projects
5	Fresh Water	Water quality, EPA fresh water projects, ground water contamination
5	Monitoring	Inventory, pre/post project monitoring & reporting outcomes
5	Planning by Drift Cell for shoreline permits	Shoreline studies per drift cells for property guidance re: options in building and to streamline permitting process
4	Marine Water Quality	Ocean acidification
2	Streamline permitting in Planning Dept.	Make permitting more efficient - anticipate options for location types and pre-evaluate shoreline sections (drift cells) to whole blocks vs. site by site
1	Articulate environmental constraints and allowances for natural systems to function in all County initiatives	Incorporate a message of the importance of natural systems and allow for natural constraints in planning & project descriptions
1	Coordinate shoreline information with Public Works	Permitting interface for example w/forage fish for road and culvert work e.g. Maple grove
1	Emergency preparedness	Community engagement and education, anticipate oil spill response, prepare for marine rescue, and identify bluff landslide warning signs
1	Integration of mental health and chemical dependency needs	

What trends and issues do you anticipate looking ahead 3-5 years?

8	SMP update 2020	No net loss discussion, net pen discussion, anticipate other issues
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Appendix B: Assessment Summary

7	Aging infrastructure	Wells, water systems and tidegates
6	Drainage and stormwater	Maintenance of aging infrastructure, compliance with new requirements, and dealing with littoral drift
5	Coordinated Water SP (CWSP)	WRAC priority
3	Littoral drift	Flooding and impact on septic systems, roads, culverts
3	Planning, standardize permitting	Make permitting more efficient
3	Shoreline studies	Make permitting more efficient - anticipate options for location types and pre-evaluate shoreline sections (drift cells) into whole units vs. site by site
2	Extreme storms	Storm surge
1	Anticipate fish friendly culverts	IC Public Works is being proactive to meet this criteria as maintenance and replacements present opportunities in case this is eventually required
1	Environmental constraints	Incorporate a message of the importance of natural systems and the need to allow for natural constraints in planning & project descriptions
1	Affordable housing	
1	Get smarter on shoreline risks and hazard potential	Survey landslide risk indicators from the water around both islands

How do marine components interface with these trends and issues?

7	Need to look beyond MRC/ not just educating MRC members	Extend outreach opportunities to staff and public
1	Great to have Camano participation	Important to define unique needs of each shoreline and community
1	Identify target audiences	Outreach should be tailored to the audience
1	Interface departmental focus with marine ecological functions	In educational outreach be sure Dept. and MRC both reflect interface between marine functions and various County services

What needs to be researched by the MRC?

6	Pre and Post Monitoring of various County projects	Pre and post project monitoring is very important for awareness and shaping future County projects
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Appendix B: Assessment Summary

5	A comprehensive list of all monitoring in Island County would be helpful	The MRC might be the right entity to collect and maintain a comprehensive list of monitoring projects by all organizations in the County. For example: this could be used to create a basis for "no net loss" discussion with the next SMP cycle
1	Debrief projects	Capture lessons learned and identify new questions to address

How can the MRC strengthen its work?

9	Identify the question to be answered for each project	The credibility and reputation of the MRC can be enhanced by articulating why projects are done, what is learned and practical implications
8	Be bold and persistent as advisors (WRAC example)	
7	Leverage role with decision makers, staff and public	
6	Retire projects as they meet objectives	Create a legacy option, and reduce effort as appropriate
6	Don't be a silo within County and don't silo projects	Articulate how they fit together
2	MRC could serve as a focus group for Planning Dept. to discuss plans with MRC before they go public	
2	The Planning Dept. would appreciate MRC support as Planning initiatives are presented to the public	

What needs to be communicated to County Depts. and staff?

8	Develop white papers on emerging and hot issues	Do not need to make highly technical but describe tensions and anticipate factors for consideration
6	Have more forums and invite staff	Get Dept. and staff input on topics for forums
2	Generate an annual report	Circulate to staff and public
2	Understand the time pressures on staff	

What needs to be communicated to local residents?

7	Host regular forums on educational topics	Possible topics: Armoring Options, Sound IQ, PSEMP
2	Support staff presentations to the public	

Appendix B: Assessment Summary

1 Shoreline and bluff risks

Help property owners anticipate the joys and risks of marine locations; Raise awareness of cause and effect, and the need to identify outcomes desired, and then mold behavior toward that desired outcome

What is the best way to communicate?

Commissioners' work sessions - should MRC make presentations at work sessions?

7 Get on Commissioner's work sessions

Schedule MRC slots during lull periods for work sessions: Jan/Feb/Mar good; Ask to be on agendas with leeway (avoid pairing with controversial topics that may have lengthy public input; only hold space on the agenda if nothing to report. Aim for several times a year

7 Report on milestones

Capture and showcase accomplishments, lessons learned, priorities for new work

2 Meet informally and regularly with each Commissioner

Not only the one Commissioner assigned to the MRC. Seek 1-on-1 conversations and do this frequently enough to build relationships and baseline understanding

Should MRC write and distribute white papers?

8 Short balanced written summaries on projects, topics and issues would be helpful

1 page, vetted for details, reflect scientific approach especially what question addressed and what learned, all aspects, conclusion, recommendations, explain NW Straits role and relationship; anticipate tensions around the topic, anticipate decisions coming up and provide advice: "best guess"

Should the MRC meet with Dept. Directors or Staff - How best for MRC to communicate with Depts.?

5 As needed

Opportunities for dialogue are always open to be initiated by either Dept. or MRC

5 Publicize educational events to staff and distribute white papers and annual reports

1 Engage in staff dialogue

Especially for MRC strategic planning for each coming year

What do you value most that the MRC has done?

6 Advisory role in 2015 to Commissioners and DNR re: Net Pens

5 Cornet Bay role - public outreach, monitoring, finding resources

Appendix B: Assessment Summary

4	Ocean Acidification Forum	
2	Becoming integral to County operations	
1	Active and project driven; Ideas into action	
Recommendations for future MRC work?		
9	Identify the question to be answered for each project	Identify question(s) to be addressed, conduct a literature review in initial planning so don't duplicate what is already known and incorporate lessons already learned, monitor, report what done, learned and recommendations
8	Communicate with Commissioners - formally and informally	
8	Identify, explore, explain and persistently champion issues as MRC identifies priorities	Define a position on an issue and carry it to Commissioners to advise (e.g. Net Pens)
8	Boldly take on role as advisors and champions	As MRC wishes to take this on
7	Organize more public educational forums	OA forum was impressive
7	Engage public in discussions about marine issues	Through forums
5	Monitoring pre and post projects is very helpful if reported solidly	Report on why a project is done, what question(s) it addresses, what was done, what learned and recommendations
1	Seek input on future planning for MRC	Continue periodic needs assessments for strategic planning
1	Focus on the MRC Mission	An important capacity to influence County operations re: marine interests
1	Be proactive	Anticipate issues, talk with candidates before elected, establish dialogue with Commissioners 1-on-1
Other ideas		
6	Don't let projects be the only focus of MRC	Be proactive, identify trends and issues and articulate opinions when it is felt to be appropriate
5	Exercise critical thought and dialogue	The reputation of the MRC hinges on quality of work
5	Break down silos between projects	Present a coherent picture of how all MRC activities connect
3	Reflect MRC mission in synthesis of MRC work	Focus on role to advise the County and educate residents

Appendix B: Assessment Summary

2	Target audiences for education and dialogue	Chambers, Businesses, Schools, etc.
1	WSU may help with literature review	Can allow on individual basis Affiate Status
1	Importance of natural systems	Reinforce importance of natural systems and the need to include an allowance for natural systems to function in planning decisions
1	Connect with HS students	
1	Anticipate elections	Discuss MRC and issues with candidates before elections
1	Begin and end meetings on time	
1	Have fun and sustain member energy	

Departments Interviewed

Commissioner

DNR

Emergency Management

Environmental Health

Planning

Public Health

Public Works

WSU

County: Island
Grant No: SEANWS-2016-IsCoPH-00005

PROJECT TITLE: Island County Marine Resources Committee Operations and Projects

TASK NUMBER: 3 – Education & Outreach

DELIVERABLE: 3.2 – Copies of outreach materials produced

PERIOD COVERED: October 2016-September 2017

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Outreach Materials: 2016-2017

Table of Contents

Poster: Pacific Seabird Conference	1
Poster: Citizen Science Association Conference.....	2
Forage Fish Monitoring Sandwich Board.....	3
Creosote Identification Sandwich Board	4
Bull Kelp Monitoring Sandwich Board.....	5
MRC and Shore Friendly Bookmarks	6-7



Monitoring Pigeon Guillemot Breeding Colonies on Whidbey Island: 2008-2016



Authors: Emily Terao, Govinda Rosling, Ann Casey, Phyllis Kind, Frances Wood

Objectives

To monitor the breeding colonies of the Pigeon Guillemot, an important indicator species for the Salish Sea.

To record adult population, number of occupied burrows, prey delivery to chicks, and possible chick fledging during the breeding season (approximately June – August).

Background

Pigeon Guillemots are good indicator species for the health of the Salish Sea because they nest throughout the area, they are found here all year, and they are near the top of the food chain. They feed on fish and invertebrates, and nest in burrows or rocky cavities.

Since 2008, volunteers and paid researchers have monitored 28 colonies of guillemots nesting on Whidbey Island.

Methods

Time Period: June through the end of prey delivery in late August. Approximately 50 volunteers each observe 1 hr/week. Interns observe 20 hrs/week.

Volunteers: The corps of volunteers arrives at their assigned colony before 8:45 a.m. to monitor the approximately 1,000 birds in the study. They count adult birds, identify occupied burrows and record prey delivered to burrows. They also record disturbances (i.e. Bald Eagles, dogs running on the beach, or walkers).

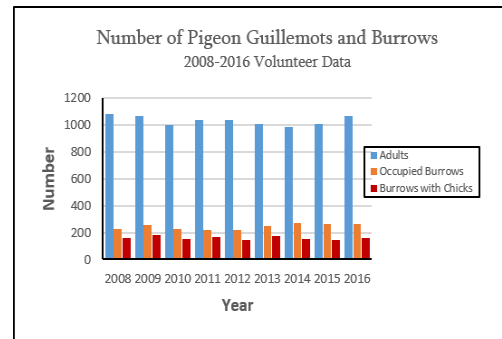
Intern: Interns monitor select colonies 5 days a week. Selected colonies represent different habitats on Whidbey Island. Interns arrive at sunrise and leave after 9 a.m. They count adult birds, identify occupied burrows, and record prey delivered to burrows. They document their findings by still and video photography. They also record disturbances. Due to the extended period of observation by the interns, they are also able to estimate probable chick fledging, defined as burrows that receive prey for at least three consecutive weeks.

Burrows: Burrows are designated as occupied if the researcher observes a bird entering a burrow. They are designated as a burrow with at least one chick if prey is delivered to the burrow.

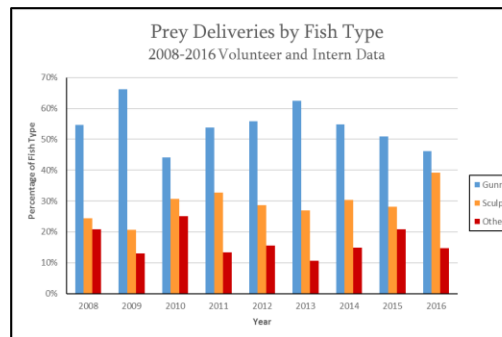
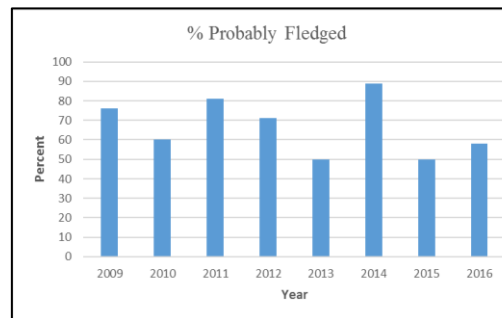
Recording Prey: Prey are categorized into three groups: gunnel/pricklebacks (referred to as gunnels), sculpin, and other. The “other” category includes unidentified prey and other prey such as perch or cod.

Counts: Interns and volunteers count adult birds upon arrival and every 30 minutes while monitoring. Maximum counts for each colony are used for data input because low counts on days with fog or high wind and waves make an average count unreliable.

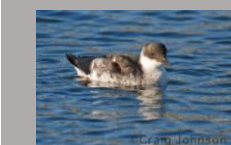
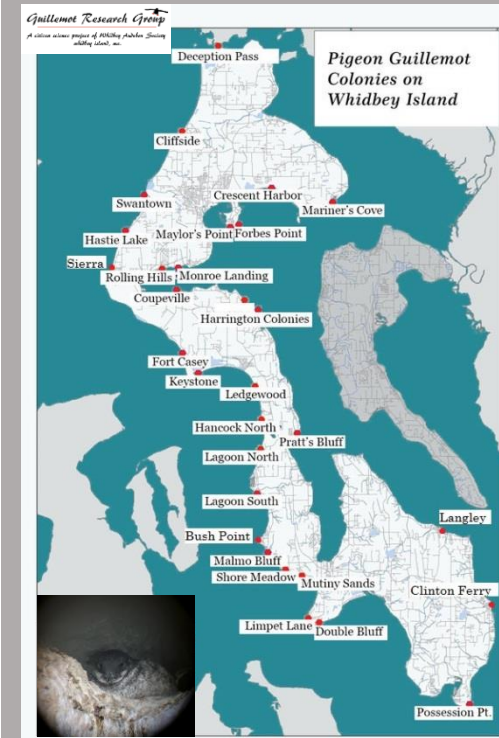
Results



The mean number of adults is 1032 ± 35 , of occupied burrows is 244 ± 21 , and of burrows with chicks is 160 ± 13 .



Over the nine-year observation period, we recorded 4852 gunnels, 2602 sculpin and 1466 other prey delivered. Gunnels are the predominant prey delivered each year. Prey deliveries begin in the middle of June, reach a peak in the middle of July and end around the last week of August.



Conclusion

Approximately 1,000 Pigeon Guillemots gather in colonies on Whidbey Island, Washington each breeding season.

From 2008 to 2016, guillemot populations remained stable.

Prey delivered to chicks is primarily composed of gunnels and sculpins.

About 66% of the occupied burrows hatched at least one chick as indicated by delivery of prey.

Interns (2009 through 2016) monitored 220 burrows. An average of 67% of those burrows received prey for at least three consecutive weeks indicating chicks probably survived to fledging age.

Acknowledgements

This on-going project is supported by the Whidbey Audubon Society, the Washington Audubon through the Washington Audubon Chapter Grant Program, Ott & Murphy Winery, and the Island County Marine Resources Committee through the Northwest Straits Marine Conservation Initiative. This project has been funded wholly or in part by the United States Environmental Protection Agency.

Photography by Govinda Rosling, Craig Johnson, and Emily Terao.

Visit PigeonGuillemot.org for more information.



ISLAND COUNTY MARINE RESOURCES COMMITTEE

ISLAND COUNTY, WASHINGTON, USA

Locally-driven citizen science for regional ecosystem recovery in Puget Sound

Eelgrass Monitoring

Eelgrass surveys rely on aquatic video and aerial photography to gather data on the distribution and health of eelgrass beds along the county's shoreline. Eelgrass provides critical habitat for juvenile salmon and other small marine organisms. Eelgrass provides shelter from predators, and nesting grounds for forage fish. Launched in Island County and now operated in collaboration with the WA Department of Natural Resources (WA DNR), MRC volunteer teams collect and analyze data which is then submitted back to WA DNR. Teams consult regularly with the University of Washington's Friday Harbor Laboratories, and experiment with new technologies. The MRC's pilot volunteer also provides aerial photography of eelgrass beds to other counties across the region.



Forage Fish Spawn Surveys

Island County's forage fish surveys are done at multiple sites in Island County. These surveys contribute to a regional effort to track the health of Pacific Herring, Sand Lance, and Surf Smelt populations in Puget Sound and identify beaches used as spawning areas. These fish are a crucial link in the marine food web supporting predator species such as salmon, rockfish, shore birds, and various mammals. The maintenance of these populations is critical to the health of the Sound.

Launched in 1999, these surveys grew into a comprehensive, multi-year, nearshore project that evolved into regional forage fish spawning habitat surveys. All seven MRCs began forage fish monitoring and the program was recognized by the Salmon Recovery Funding Board, NWSC, the National Oceanographic and Atmospheric Administration, and the National Fish and Wildlife Foundation. Upon completion, the forage fish component of the MRC's larger nearshore project established a baseline for future monitoring and provided valuable information for county shoreline users, planners, developers and property owners.



Bull Kelp Monitoring

Using boat-based fieldwork along with aerial imaging, bull kelp surveys seek to identify and monitor kelp bed health at various sites along Island County's more than 200-mile coastline. Floating bull kelp is important habitat for marine invertebrates, forage fish, Dungeness crab, marine birds, and in some waters, it hosts Pinto Abalone and the endangered Boccaccio Rockfish. Island County volunteers access local beds by kayak to plot the perimeter of beds with hand-held GPS units, take temperature, and estimate depth. As a newer citizen science project sponsored by NWSC, MRC volunteers collaborate with staff to refine protocol design and to expand the project.



Puget Sound is a massive and highly productive estuary under stress from 150 years of heavy human uses. Declining ecosystem health is evident in the loss of various types of habitats and decline of key species. Citizen science supports research on the scope and scale needed to address recovery of this complex estuarine ecosystem.

Island County's Marine Resources Committee (MRC) is one of seven county-level advisory committees made up of volunteers appointed by local elected officials. These MRCs are coordinated through the Northwest Straits Commission (NWSC) to support the recovery roadmap of the Puget Sound Partnership.

All seven MRCs focus on local priorities, coordinate with sister committees in northern Puget Sound, collaborate with the scientific community, conduct a range of citizen science projects, and are positioned to provide credible educational outreach to elected officials, county decision makers and staff, and the general public.

Island County's MRC citizen science portfolio includes monitoring the status of eelgrass and bull kelp, forage fish spawning, pigeon guillemot (a sea bird) foraging and nesting, feeder bluff changes, and shoreline armoring. Projects have also included supporting major shoreline restoration projects, seining for salmon at restoration sites, and experimentation with phytoremediation to address water quality.

Citizen science through Island County's MRC is an example of locally-driven and coordinated citizen science as a component of a regional ecosystem recovery effort.

Juvenile Salmon Seining

MRC volunteers examine juvenile salmon use of pocket estuaries and adjacent shoreline areas of Whidbey and Camano Islands for the salmon seining project. These estuaries provide shelter and food for juvenile salmon as they exit fresh water river spawning sites and prepare to enter the ocean. Island County is opposite the delta of the Skagit River, a major salmon spawning river.

Volunteer teams are trained by NOAA scientists to conduct the research for this project. Using nets cast from shore, the teams seine juvenile salmon and other fish and also collect data on water conditions at each site. Each fish is measured, identified, and then released back into the water. The teams work in collaboration with the Skagit River Systems Cooperative, the Wild Fish Conservancy on Whidbey Island, as well as the Cypress Island Aquatic Reserve in Skagit County. The salmon seining data analysis helps support a variety of restoration projects throughout Island County by further understanding fish usage and connectivity to the broader landscape of these areas.



Pigeon Guillemot Surveys

The Pigeon Guillemot surveys of Island County examine the main factors that determine breeding success in Guillemot populations, a sea bird that nests in cavities in the bluffs of Puget Sound. The surveys look at prey type delivered to young birds in the burrows, human and natural disturbances, and geographic factors of burrow location. Citizen Science volunteers and a paid project intern monitor the approximately 1,000 Pigeon Guillemots that breed in 26 colonies in the bluffs of Whidbey Island. With the collected data, the surveys determine breeding success and pressures affecting the population.

Pigeon Guillemots are considered an indicator species of the health of Puget Sound. The study allows researchers and scientists to observe availability of fish prey. In addition, the outreach aspects of the project educate Island County citizens about maintaining respect for local wildlife and the need for a healthy near shore environment. The study has recently formed partnerships with the Whidbey Island and Olympic Peninsula Audubon Societies to create a new cross-county aspect of the program.



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Island County Marine Resources Committee

Forage Fish Survey in Progress

Did you know?

Island County's citizen scientists track the health of Pacific sand lance and surf smelt populations in Puget Sound and identify beaches used as spawning areas. These small fish, known as forage fish, are a crucial link in the marine food web supporting much larger, predator species. The maintenance of these populations is critical to the health of the Sound.

The Marine Food Web

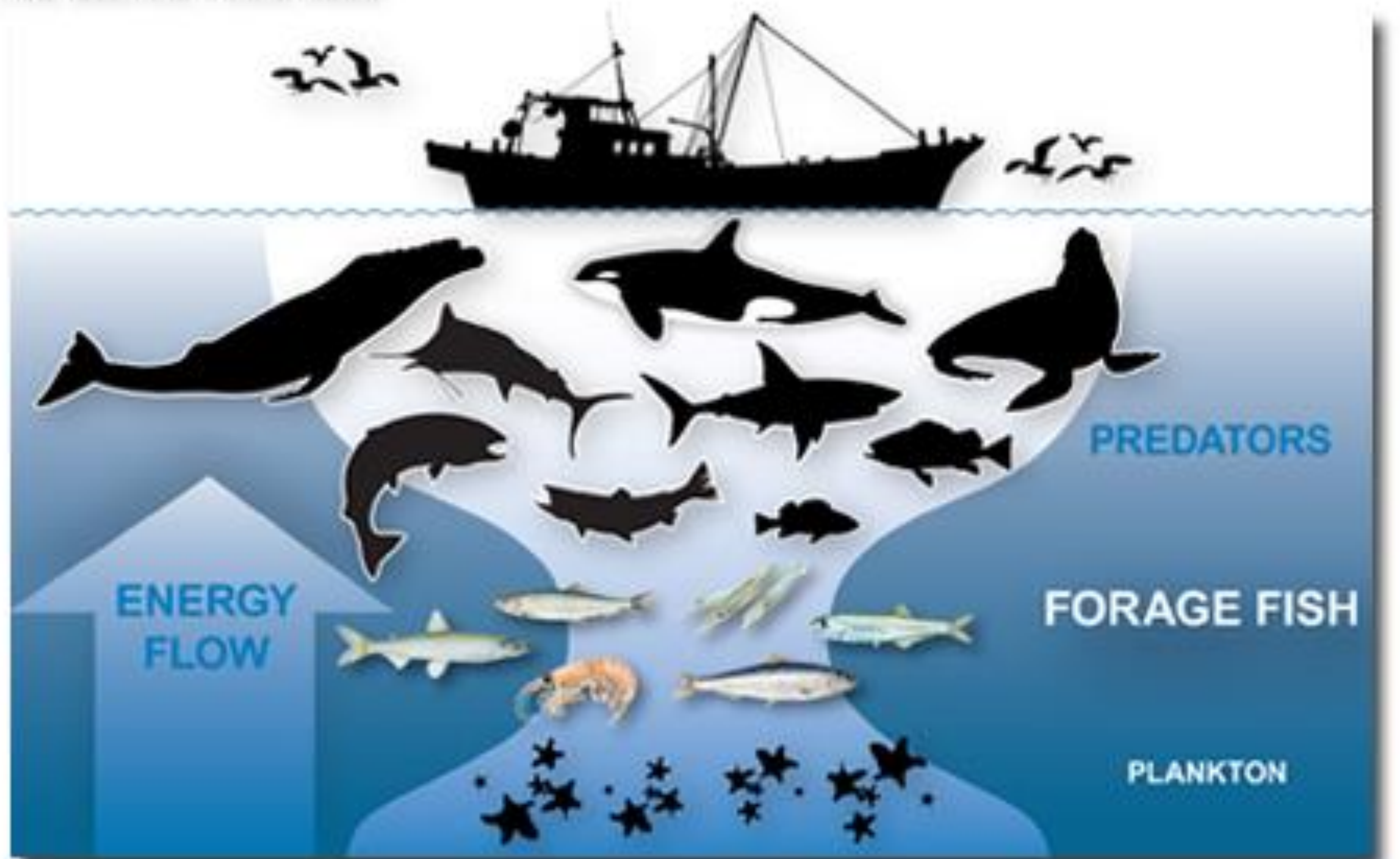


Chart: Pew Environment Group



MRC member Lois Farrington conducting a forage fish survey. Photo credit: Ruth Richards



Citizen scientist collecting sediment to test for forage fish eggs. Photo credit: Northwest Straits Initiative

Important Facts

- Forage fish rely on aquatic plants like eelgrass for habitat.
- Pacific sand lance and surf smelt spawn on sandy-gravelly beaches while herring lay their eggs in eelgrass beds.
- Depleted forage fish populations are linked to failed salmon runs, sea lion pup starvation, and shorebird population decrease.

What You Can Do

- ✓ Forage fish need sandy-gravelly beaches to spawn, an area often covered by shoreline armoring. Removing your bulkhead and leaving your beach natural can provide habitat for these important fish.
- ✓ Know your beach – learn how to identify a spawning area.
- ✓ Plant native vegetation along your shore. This provides cool shady areas which protect forage fish eggs as they develop.
- ✓ Pick up trash you find on the beach.

Want more info? Visit us online! www.islandcountymrc.org



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Island County Marine Resources Committee

Creosote Identification in Progress

Did you know?

Citizen scientists are currently surveying this shoreline and many more around Island County to identify creosote-treated debris and derelict gear for removal. Creosoted materials leach chemicals into the environment, creating toxic conditions for the organisms in the surrounding area. Debris and other structures disrupt conditions needed for forage fish spawning and eelgrass growth.

In order to improve the health of nearshore habitats, we are partnering with Washington State Department of Natural Resources (WA DNR) and their Restoration Program. By identifying and reporting creosote debris and derelict gear, WA DNR is able to map and prioritize areas for debris removal, leading to a healthier shoreline for all.



Creosoted bulkhead. Photo courtesy of the Northwest Straits Initiative.



Creosoted log. Photo courtesy of the Northwest Straits Initiative.



Creosoted piling. Photo courtesy of the Northwest Straits Initiative.

Important Facts

- ✓ Creosote is comprised of over 200 chemicals.
- ✓ The chemicals in creosote can alter the growth and immune function of salmon and other marine animals.
- ✓ More than 15,000 tons of creosote debris has been removed from Puget Sound since 2004. And there is still more to go!
- ✓ You can help restore Island County's shoreline. See how you can get involved down below!

What You Can Do

- See some creosote or derelict gear along the beach? Report it to Washington DNR! Call (360) 854-2808.
- Creosote is dangerous to humans as well toxic to the environment. Do not touch creosoted materials!
- Consider removing your creosote bulkhead. You may be able to replace it with a soft shore protection or just leave your beach natural.

Want more info? Visit us online! www.islandcountymrc.org



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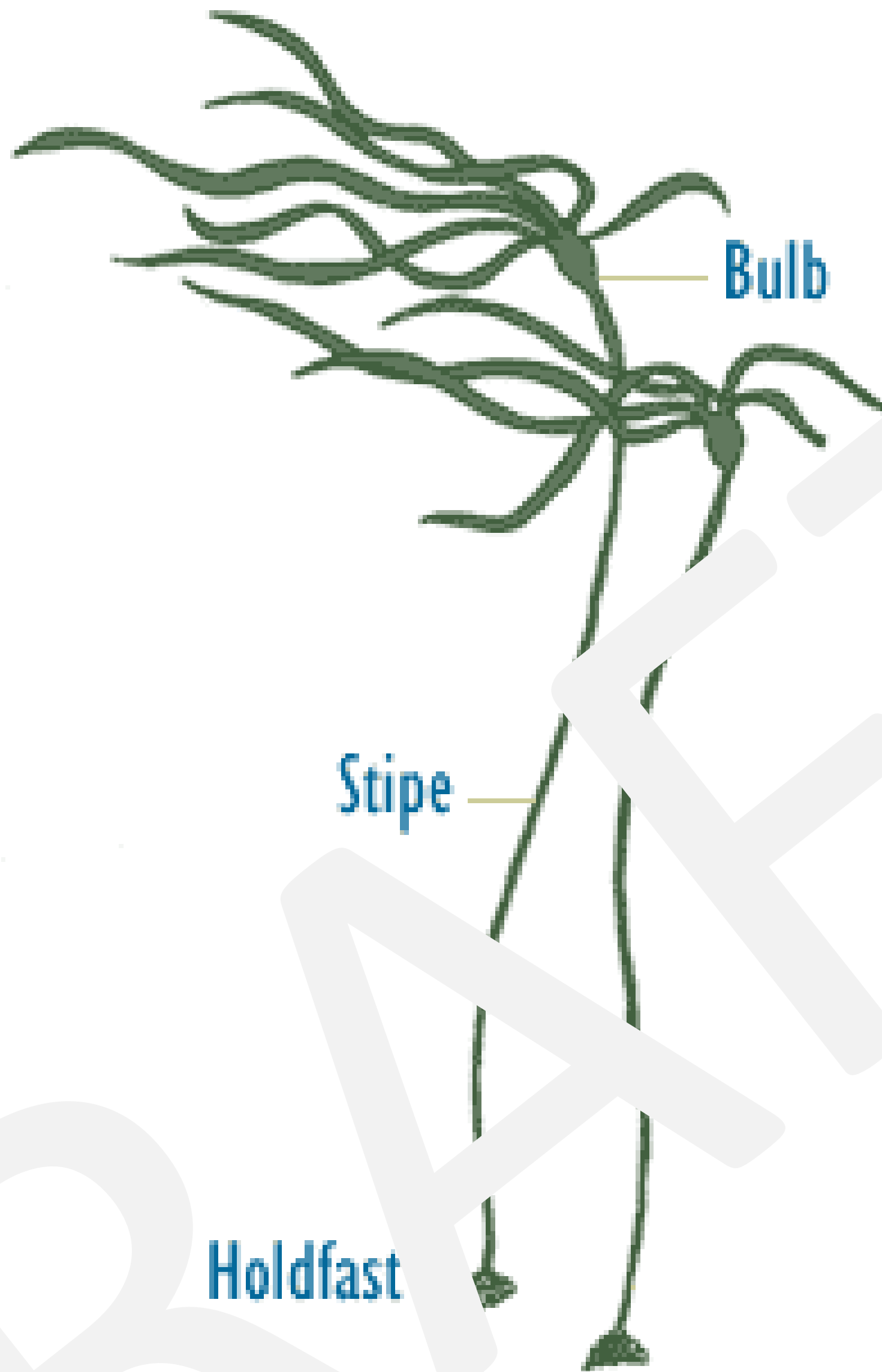
Island County Marine Resources Committee

Bull Kelp Monitoring In Progress

Take a look!

If you glance out onto the water, you may notice some sea kayakers paddling along beds of kelp. Bull kelp surveys seek to identify and monitor kelp bed health at various sites around Island County. Floating bull kelp is important habitat for marine invertebrates, as well as many fish, Dungeness crab, and marine birds.

Island County volunteers use kayaks to access the beds, collect temperature depth estimates, and plot the perimeter of beds with hand-held GPS units. Volunteers have been surveying five nearshore kelp sites for seasonal changes in bed area and conditions.



Citizen scientists conducting boat-based field work, monitoring bull kelp beds. Photo courtesy of the Northwest Straits Initiative.



Underwater view of a bull kelp forest, providing sanctuary to a plethora of marine species. Photo credit: Florian Graner



Jellyfish in bull kelp. Photo credit: Linda Rhodes

Important Facts

- Bull kelp forests are so versatile! Not only do they provide food and shelter to hundreds of species, but they also help dissipate wave energy to protect our shorelines from erosion.
- Bull kelp provides economic benefits through recreational enjoyment, commercial harvesting, and uses in the food and pharmaceutical industries.

What You Can Do

- ✓ Become a citizen scientist! Help the Island County MRC record sightings of bull kelp locations around our shorelines. It's quick and easy! More info at: www.islandcountymrc.org
- ✓ Do you like to harvest kelp? Be sure to follow Washington State Department of Natural Resources' guidelines on sustainable kelp harvest to ensure future generations can enjoy this wondrous plant.

Want more info? Visit us online! www.islandcountymrc.org



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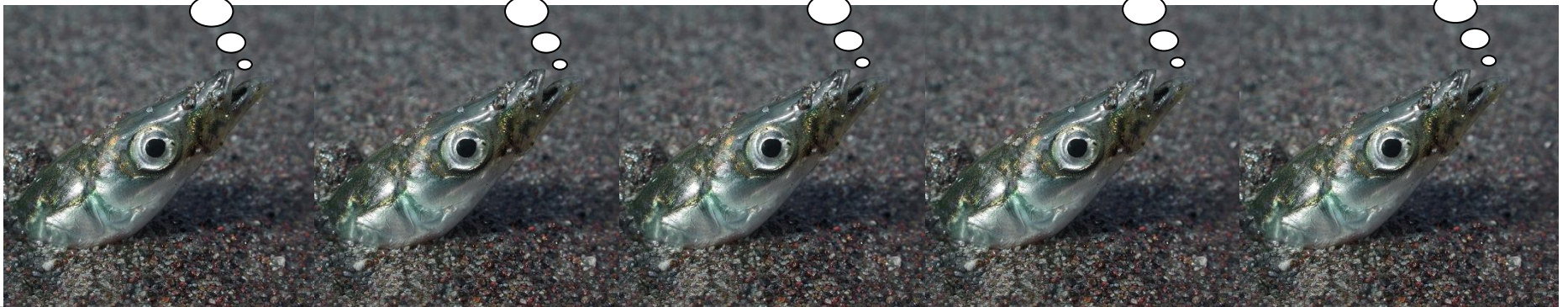
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