12 South Nordic Drive
Petersburg, AK 99833

Petersburg Borough

Meeting Agenda

Borough Assembly
Regular Meeting

Monday, March 21, 2022	6:00 PM	Assembly Chambers

You are invited to a Zoom webinar.
When: Mar 21, 2022 06:00 PM Alaska
Topic: March 21, 2022 Assembly Meeting

Please click the link below to join the webinar:
https://petersburgak-gov.zoom.us/j/88407673703?pwd=YXhPdHc5NzhDT01aV0VyREI5cFJKUT09
Passcode: 498249

Or Telephone: 720-707-2699 or 253-215-8782
Webinar ID: 884 0767 3703
Passcode: 498249

1. **Call To Order/Roll Call**

2. **Voluntary Pledge of Allegiance**

3. **Approval of Minutes**

   A. **March 7, 2022 Assembly Meeting Minutes**

4. **Amendment and Approval of Meeting Agenda**

5. **Public Hearings**

6. **Bid Awards**

   A. **Public Works Culvert Replacement Project Bid Award**

   Utility Director Hagerman, on behalf of Public Works Director Cotta, recommends the award of the Public Works Culvert Replacement Project to Reid Brothers Logging & Construction, Inc. for an amount not to exceed $568,605.

7. **Persons to be Heard Related to Agenda**
   Persons wishing to share their views on any item on today's agenda may do so at this time.

8. **Persons to be Heard Unrelated to Agenda**
   Persons with views on subjects not on today's agenda may share those views at this time.

9. Boards, Commission and Committee Reports

10. Consent Agenda

11. Report of Other Officers

A. Housing Discussion Report

Assembly Member Tremblay will provide a report on a March 10, 2022 meeting to discuss housing in Petersburg.

B. Southeast Sea Otter Stakeholder Working Group Quarterly Meeting Report

Assembly Member Meucci will provide a report on the February 28, 2022 Sea Otter Working Group meeting.

12. Mayor's Report

A. March 21, 2022 Mayor's Report

13. Manager's Report

Manager Giesbrecht is currently out of the office.

14. Unfinished Business

A. Ordinance #2022-03: An Ordinance Amending Petersburg Municipal Code Chapter 14.20, Entitled "Municipal Harbors", to Increase Harbor Fees

Adoption of Ordinance #2022-03 will increase harbor moorage and use fees effective April 1, 2022. Ordinance #2022-03 was unanimously approved in its first and second readings.

15. New Business

A. Ordinance #2022-04: An Ordinance Adjusting the FY 2022 Budget for Known Changes

Ordinance #2022-04, if adopted, will approve fund transfers to provide for: 1) the Electric Department 399 Cat Inframe Overhaul; 2) purchase of a new flatbed/plow truck for the Harbor Department; 3) acceptance of the $1,430,892 DCRA Local Government Lost Revenue Grant; and 4) unexpected rooftop snow removal and electric expenses for the Parks & Recreation Department.

B. Resolution #2022-03: A Resolution Authorizing the Public Sale of Parcel #01-004-320 Located at 700 Sandy Beach Road by Outcry Auction

At the March 7, 2022 meeting, the Assembly voted to sell Borough-owned property located at 700 Sandy Beach Road by outcry auction to be held on May 2, 2022 at 12:00 p.m. Resolution #2022-03 provides for the sale, the date and time of the sale, the minimum bid price ($77,500), and provides the Contract of Sale and Quit Claim Deed documents.

C. Resolution #2022-04: A Resolution Authorizing the Public Sale of Parcel #01-014-180 Located at 1015 Sandy Beach Road by Outcry Auction

At the March 7, 2022 meeting, the Assembly voted to sell Borough-owned property located at 1015 Sandy Beach Road by outcry auction to be held on May 2, 2022 at 12:00 p.m. Resolution #2022-04 provides for the sale, the date and time of the sale, the minimum bid price ($168,800), and provides the Contract of Sale and Quit Claim Deed documents.

D. Fire/EMS Cardiac Monitor Purchase

Fire/EMS Director Dixson requests approval to purchase a new and updated cardiac monitor for the Department at a cost of approximately $40,000. The State of Alaska has added new standard scope of practice skills at all EMT levels related to medications and cardiac care. In order to perform these skills, the Department needs a cardiac monitor with additional features that our current monitors do not possess (one monitor is 15+ years old and the other is 10 years old). The Department has $10,000 in grant money to use toward the purchase.

E. Federal Infrastructure Grant Symposium

Senator Murkowski is hosting a Federal Infrastructure Grant Symposium in Anchorage on April 11, 2022. Manager Giesbrecht requests the Assembly decide if an Assembly Member (or Members) and/or any Borough Staff should attend the event. From a staff perspective, Director Cabrera, Director Tow, or Manager Giesbrecht (who will be in Anchorage for a meeting on April 8) would be good choices if schedules allow.

F. March 23, 2022 Childcare Work Session Agenda

Assembly Member Meucci requests approval of the March 23, 2022 work session agenda on childcare.

16. Communications

A. Correspondence Received Since March 3, 2022

17. Assembly Discussion Items

A. Juneau Economic Development Council Presentation on Childcare in Juneau

Assembly Member Meucci requests a discussion on requesting Brian Holst with the JEDC to provide a one-hour presentation to the Assembly regarding Juneau's childcare issue and how they are handling it, from a economic development prospective.

B. Assembly Member Comments

C. Recognitions

18. Adjourn

Petersburg Borough

12 South Nordic Drive
Petersburg, AK 99833

Meeting Minutes

Borough Assembly Regular Meeting

Monday, March 07, 2022 | **12:00 PM** | **Assembly Chambers**

1. Call To Order/Roll Call

Mayor Jensen called the meeting to order at 12:00 p.m.

PRESENT
Assembly Member Bob Lynn
Assembly Member Chelsea Tremblay
Assembly Member David Kensinger
Vice Mayor Jeigh Stanton Gregor
Assembly Member Jeff Meucci
Mayor Mark Jensen
Assembly Member Thomas Fine-Walsh

2. Voluntary Pledge of Allegiance

The Pledge was recited.

3. Approval of Minutes

A. February 22, 2022 Assembly Meeting Minutes

The February 22, 2022 Assembly meeting minutes were unanimously approved.

Motion made by Vice Mayor Stanton Gregor, Seconded by Assembly Member Meucci.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

4. Amendment and Approval of Meeting Agenda

The agenda was amended to add Public Safety Advisory Board Chair Testoni to agenda item 11, Report of Other Officers, as item C, moving the Police and Dispatch Retention Survey Report to item D; and, to add a discussion item regarding the Vietnam Veteran Welcome Home Ceremony later this month, as agenda item 17C. The Assembly unanimously approved the agenda, as amended.

Motion made by Assembly Member Meucci, Seconded by Assembly Member Tremblay.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

5. Public Hearings

A. Public Hearing for Ordinance #2022-03: An Ordinance Amending Petersburg Municipal Code Chapter 14.20, Entitled "Municipal Harbors", to Increase Harbor Fees

No testimony was given during this public hearing.

6. Bid Awards

There were no bid awards.

7. Persons to be Heard Related to Agenda

Persons wishing to share their views on any item on today's agenda may do so at this time.

Linda Millard introduced herself to the Assembly as the applicant (along with her husband) to purchase Borough-owned property located at 1015 Sandy Beach Road.

8. Persons to be Heard Unrelated to Agenda

Persons with views on subjects not on today's agenda may share those views at this time.

No views were shared.

9. Boards, Commission and Committee Reports

No reports were given.

10. Consent Agenda

A. Beachcomber Lodge LLC Liquor License Renewal Application

The Assembly unanimously supported the liquor license renewal for Beachcomber Lodge LLC.

Motion made by Assembly Member Tremblay, Seconded by Assembly Member Meucci.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

11. Report of Other Officers

A. Petersburg Medical Center Update

PMC CEO Hofstetter gave the Assembly an update on the local COVID situation, Medical Center activities, and the upcoming 2022 Health Fair.

B. SEAPA Update

Assembly and SEAPA Board Member Lynn and Utility Director and Alternate SEAPA Board Member Hagerman updated the Assembly on SEAPA issues and activities.

C. Public Safety Advisory Board

PSAB Chair Testoni reported on activities of the Board.

D. Police and Dispatch Retention Survey Report

Manager Giesbrecht reviewed his Police and Dispatch Retention report and discussed with the Assembly specific department issues; along with suggestions the Assembly could adopt in an attempt to help remedy the issues.

12. Mayor's Report

A. March 7, 2022 Mayor's Report

Mayor Jensen read his report into the record and added that he will be out of town for the March 21 meeting - Vice Mayor Stanton Gregor will chair the meeting.

13. Manager's Report

A. March 7, 2022 Manager's Report

Manager Giesbrecht read his report into the record, a copy of which is attached and made a permanent part of these minutes.

14. Unfinished Business

A. Ordinance #2022-01: An Ordinance Authorizing the Issuance of Electric Utility Revenue Bonds of Petersburg Borough Electric Utility - Third and Final Reading

Ordinance #2022-01 was unanimously approved by roll call vote in its third and final reading.

Motion made by Assembly Member Meucci, Seconded by Assembly Member Tremblay.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

B. Ordinance #2022-03: An Ordinance Amending Petersburg Municipal Code Chapter 14 .20, Entitled "Municipal Harbors", to Increase Harbor Fees

The Assembly unanimously approved Ordinance #2022-03 in its second reading.

Motion made by Assembly Member Meucci, Seconded by Assembly Member Tremblay.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

15. New Business

A. Resolution #2022-02: A Resolution Approving the Distribution of the Local Government Lost Revenue Relief Grant in the Amount of $1,430,892

By unanimous roll call vote, Resolution #2022-02 was approved.

Motion made by Vice Mayor Stanton Gregor, Seconded by Assembly Member Meucci.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

B. Application to Purchase Borough Property - 700 Sandy Beach Road

A motion was made to approve sale of Borough-owned property located at 700 Sandy Beach Road. After some discussion, an amendment to the motion was made to sell the property by public outcry auction.

Motion made by Assembly Member Meucci, Seconded by Assembly Member Lynn.
Voting Yea: Assembly Member Lynn, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh
Voting Nay: Assembly Member Tremblay, Assembly Member Kensinger

A second amendment to the motion was made to hold the outcry auction on May 2, 2022, during the regular Assembly meeting.

Motion made by Assembly Member Tremblay, Seconded by Assembly Member Meucci.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

The original motion to approve the sale of 700 Sandy Beach Road, as amended, passed by unanimous roll call vote.

Motion made by Assembly Member Meucci, Seconded by Assembly Member Lynn.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

C. Sale of Borough Property - 1015 Sandy Beach Road

The sale of Borough-owned property located at 1015 Sandy Beach Road by outcry auction to be held on May 2, 2022, during the noon Assembly meeting was unanimously approved.

Motion made by Vice Mayor Stanton Gregor, Seconded by Assembly Member Meucci.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

D. Road Grader V-Plow Purchase

Purchase of a V-plow for the Streets Department grader from NC Machinery for an amount not to exceed $42,776 was approved by a vote of 6-1.

Motion made by Assembly Member Meucci, Seconded by Vice Mayor Stanton Gregor.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Assembly Member Fine-Walsh
Voting Nay: Mayor Jensen

E. Police Officer and Dispatcher/Corrections Officer Recruitment and Retention

A motion was made to approve Option 2 of the Police and Dispatch Retention Survey Report using FY 2023 general fund reserves. The motion was amended to leave the recruitment and retention incentive payments at the discretion of the Borough Manager. The amendment passed unanimously.

Motion made by Assembly Member Meucci, Seconded by Assembly Member Tremblay.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

A second amendment was made to remove the 457 match increase suggested in Option 2. The amendment passed by a vote of 5-2.

Motion made by Assembly Member Lynn, Seconded by Vice Mayor Stanton Gregor.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Vice Mayor Stanton Gregor, Mayor Jensen, Assembly Member Fine-Walsh
Voting Nay: Assembly Member Kensinger, Assembly Member Meucci

The original motion to approve Option 2 using FY 2023 general fund reserves, as amended, was approved by a vote of 5-2.

Motion made by Assembly Member Meucci, Seconded by Vice Mayor Stanton Gregor.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci

Voting Nay: Mayor Jensen, Assembly Member Fine-Walsh

16. Communications

A. Correspondence Received Since February 17, 2022

17. Assembly Discussion Items

A. Police Department Operations Manual

Assembly Member Meucci wondered the status of the Police Department Operations Manual update. Manager Giesbrecht explained the Manual is a living document and not something that receives a full overhaul often; and doing so is not a priority at this time.

B. Police Department Crime and Motor Vehicle Statistic Report

Assembly Member Meucci has requested an “activity report” with statistics for the last 3 years on motor vehicle stops, DUI stops, domestic violence calls, etc. Chief Kerr would like to provide an Annual Report, but with the current department staffing levels, putting together the report is not currently feasible. Mayor Jensen suggested such a request should be added to an Assembly meeting agenda as an action item for the Assembly as a whole to consider.

C. Vietnam Veteran Welcome Home Ceremony

Vice Mayor Stanton Gregor and Assembly Member Lynn are available to speak at the Vietnam Veteran Welcome Home Ceremony to be held on March 29, 2022.

D. Assembly Member Comments

Assembly Member Tremblay shared the details of a community meeting on Petersburg's housing issue is to be held on Wednesday, March 9 at 10:00 a.m. and encouraged anyone interested to contact her.

Assembly Member Lynn discussed a list of questions being gathered for the March 24 Hospital Board meeting with SEARHC and encouraged Assembly Members to add any questions they may have.

Mayor Jensen discussed a possible Open Meetings Act (OMA) violation by the Harbor Board during a recent tour of the Petro Marine shop site where a quorum of the Advisory Board was present. He cautioned all elected board and commission members to be cognizant of the OMA. Harbor Board Chair Martin has apologized for the oversight and suggests rescheduling the tour of the property with proper prior notice to the public.

E. Recognitions

Mayor Jensen recognized Finance Director Tow for securing $1,430,892 in Local Government Lost Revenue Relief Grant funds for the Borough.

Chief Kerr thanked members of the Police and Fire Departments who took part in a Guns & Hoses chili cookoff at the Elks last weekend. Fun was had, good food was enjoyed, and the event raised over $3,000 to use for specialized equipment for Petersburg's emergency responders.

18. Adjourn

The meeting was adjourned at 2:07 p.m.

Motion made by Vice Mayor Stanton Gregor, Seconded by Assembly Member Tremblay.
Voting Yea: Assembly Member Lynn, Assembly Member Tremblay, Assembly Member Kensinger, Vice Mayor Stanton Gregor, Assembly Member Meucci, Mayor Jensen, Assembly Member Fine-Walsh

PETERSBURG
ALASKA

March 14, 2022

To: **Petersburg Borough Assembly**

From: **Karl Hagerman, Utility Director**

Re: **Petersburg Borough Culvert Replacement Project: Award Recommendation**

Cc: **Steve Giesbrecht, Borough Manager**
Debra Thompson, Borough Clerk
Chris Cotta, Public Works Director
Alan Murph PE, Project Engineer

Please accept this recommendation on behalf of Chris Cotta, Public Works Director, who is on a long planned and much needed vacation.

On March 11, 2022, the Petersburg Borough received and opened sealed bids for the Culvert Replacement project at the Public Works Shop Yard. The bid tabulation form is attached to this recommendation.

Reid Brothers Logging & Construction, Inc. was the apparent low bidder for the bid. After a close review of all bid submittals, Reid Brothers were found to be responsible and responsive to the bid requirements. Project Engineer, Alan Murph, PE, has recommended that Reid Brothers Logging and Construction Inc should receive the bid award. Mr. Murph's recommendation letter is also attached.

Therefore, it will be the recommendation of the Borough Public Works department to award a Construction Contract to Reid Brothers Logging & Construction, Inc. for the no-to-exceed amount of $568,605.00, at the March 21st Borough Assembly meeting.

Upon formal award by the Borough Assembly, the Borough will supply a Notice of Award letter to Reid Brothers with a request for contractual submittals in preparation for execution of the construction Contract. It should be noted that the Public Works department has applied for disaster relief funding through state and federal sources for this work. The Public Works Director has addressed the necessary requirements of this funding and it is anticipated that there will be no impediments to receiving financial assistance for this work.

Thank you for your consideration.

Harai & Associates, Inc.
Consulting Civil Engineers & Land Surveyors

P.O. Box 625 Petersburg, Alaska 99833
Telephone & Fax (907) 772-9216

March 12, 2022

Karl Hagerman
Utility Director
Petersburg Borough
P.O. Box 329
Petersburg, Alaska 99833

Re: Culvert Replacement Project - Public Works Shop Yard
Recommended Bid Award

Karl;

I am writing as the engineer of record for the project; Culvert Replacement Project - Public Works Shop Yard. The bids for this project were publicly opened on March 11th @ 2:00 pm. There were two bidders and both were responsive with all the required documentation. The apparent low bidder is Reid Brothers Logging & Construction, Inc. of Petersburg, Alaska. The low bid was $568,605.00. The engineer's estimate for this project was $589,300.00.

I recommend award of this project to Reid Brothers Logging & Construction, Inc. of Petersburg, Alaska, for the total amount of $568,605.00.

Alan Murph

Alan Murph, PE/LS
Harai & Associates, Inc.

BID TABULATION FORM

JOB Culvert Replacement Project - Public Works Shop Yard

Bid Opening Date March 11, 2022, 2pm AKST

	Contractor A	Contractor B	Contractor C	Contractor D	Contractor E
Company Name	ROCK-N ROAD	REID BROS			
Bid Proposal	✓	✓			
Bid Bond	✓	✓			
Non-Collusion Affidavit	✓	✓			
Addendum 1 Acknowledged	✓	✓			
EEO and DBE Forms	✓ ✓	✓ ✓			
FEMA Required Contract Provisions	✓	✓			
Base Bid	726,110.00	568,605.00			
Modification 1					
Modification 2					
Base Bid, Less Modifications					
Optional Items					
Rock Excavation	2,000.00	5,000.00			
Surplus Material Disposal	8,000.00	3,200.00			

Notes:

Party opening proposals (print & sign) KARL HAGERMAN [signature]

Witness (print & sign) Alan Murph [signature]

Housing Meeting March 10, 2022

Attendees:
Chelsea Tremblay, Assembly Member
Steve Giesbrecht, Borough Manager
Annette Bennett, Humanity in Progress (HIP) Board, Working Against Violence for Everyone (WAVE) Director
Ashley Kawashima, HIP Board, Petersburg Medical Center (PMC) Behavioral Health
Chad Wright, Petersburg Indian Association (PIA) Director
Liz Cabrera, Petersburg Economic Development Council and Director of Community and Economic Development
Becky Turland, PMC Community Wellness Specialist
AJ Ware, WAVE Prevention Coordinator
Erin Michaels, State of Alaska Public Health
Kris Norosz, Petersburg Community Foundation Board

Updates:

- Both Borough Manager and PIA have recently been in touch with the same contact with Tlingit and Haida Housing Authority. T&H are waiting to hear if they have received grants from U.S. Department of Housing and Urban Development (HUD) to build more housing in Petersburg. They have 23 total applications outstanding, two specific to Petersburg. One would be a housing development, a second would be a triplex. This would not necessarily be low income housing, but at least single family units.

- HIP has received funding through Alaska Housing Corporation (AHC) to help people experiencing homelessness. It's flexible funding aimed to help people get stable as soon as possible, so can be used toward rent, move-in supplies, and paying for deposits. It's new, both to AHC and HIP, so they are slowly implementing it just to ensure stability of the process. One person is currently enrolled, up to 25 may be able to be helped, and application is on their website, psghumanity.org, press "Services," to find the online application. The third Sunday of every month, HIP collects and distributes food at their location, 208 Haugen. Will soon be collecting camping supplies (sleeping bags, pads, tents, tarps).

- WAVE has received a grant through Alaska Community Foundation, ultimately ARPA funds, to help people with utility assistance if they have been impacted by COVID. (Taking time off work for quarantine, ex.) in a one time payment of $250. They also have cleaning supply kits available. 907-772-9283

- Vakker Sted apartments are opening at the end of April. Applications are being accepted now, prioritizing those needing ADA services for the three bottom units, but a mix of income levels are included in the building. Fully to non subsidized.

Overview: It will be a "Yes, and" approach to help meet the many varied housing needs of town. What works for one person won't for another. So finding any and all opportunities for providing housing is essential. In addition, the groups meeting needs are stretched thin as is. There are more programs that exist at both state and federal levels, but the work it takes to execute them is extensive and out of reach for the largely volunteer-based work currently happening in Petersburg. Finding a sustainable way to maintain this work needs to be part of ongoing discussion.

Next meeting is tentatively scheduled for May 4.

"On a weekly basis people are deciding between paying utilities and groceries for their kids."

Southeast Sea Otter Stakeholder Working Group Quarterly Meeting
February 28, 2022 9:00 am – 12:00 pm AK
Virtual Meeting

Summary/Notes

This meeting was recorded if anyone would like to see it (note: it is a rather large file)

Participants: Kathy Hansen, Joseph Eisaguirre, Katharine Nalven, Lynn Lee, Jenell Larsen Tempel, Bo L Meredith, Mike Miller, Ben Weitzman, Phil Doherty, Paul Schuette, Mike Jackson, Mandy Migura, Tim Tinker, Ralf Wolfe

Introduction of participants on the meeting platform. Mandy Migura from the Alaska Wildlife Alliance (AWA) gave a presentation on the NGO she represents and asked questions from the group.

Fish and Wildlife Service (FWS) provided an update on the Southeast sea otter population survey. The survey is planned for May/June 2022 and anticipated to have a report to the stakeholders in 2023. FWS asked if there are specific areas that people would like to have the plane fly over to count sea otters. If so, please contact Joe Eisaguirre (joseph_eisaguirre@fws.gov). Additionally, FWS biologist will be in several communities throughout Southeast Alaska and are happy to meet with people or give presentations. If there is an interest, please contact Paul Schuette (paul_schuette@fws.gov).

Key Action Items from the Meeting:

- Homework – POCs are to develop a plan on how to achieve their assigned goals
- Add Group representation – Jen to reach out to tour groups

Topic – Group Workplan Development

Reminder of why this group was initially formed:
Below are some perspectives on why the 2019 Sea Otter Workshop was originally held and why this was group formed as a result. Below are a few perspectives that people shared.

- The 2019 Southeast sea otter workshop was put on as a way to discuss legal management options for the sea otter population to help alleviate the pressure on commercial fishing groups.
- Sea otter recovery is controversial and there was a misunderstanding of how the MMPA was being interpreted. The initial point of the 2019 workshop was to focus on what could be done to promote management of otters within a legal framework.
    - Sitka has shown that increasing the sea otter harvest could be an effective way to manage otters without changing the rules and without wiping out the harvest. They want to promote the concept that you could increase harvest to other areas and see if it has the same impact as what was seen in Sitka Sound.
- Sea otter recovery in the Southeast Alaska has a number of benefits but is also disruptive to an ecosystem where sea otters were absent for nearly 200(?) years. This meant that people had strong opinions on the otter recovery. The 2019 meeting was a way to bring in more voices to help get past the disagreements and get some proactive and productive dialogue. With this group, we need to identify some achievable objectives and goals.
    - One idea is the Sitka example - thoughtful, directed, and legal harvest of sea otters has led to changes in otter abundance and distribution and thus key subsistence resources

  - in inner Sitka Sound. We can learn a lot from this example in regard to sea otter management. Could this be replicated in other areas in Southeast Alaska, maybe Kake?
  - There is no literature specific to Sitka's approach, however it is described in the September 2021 meeting notes, the 2019 Workshop Final Report, and a couple of research papers; Raymond et al. 2019 and Gora et al. 2022 (attached to email)
- Dive fisheries are impacted by sea otter recovery. There are three species that the Dive Fisheries harvest and sea otters prey heavily on all three. The 2019 Workshop was a way to shed light on the economic impact being felt by the Dive Fisheries.
  - ADF&G conducts extensive surveys on these dive fishery species. There is some coordination with industry and the State to locate new harvest areas, but no coordinated surveys with FWS or other sea otter researchers to include otters during the survey.
- Although not a reason for the workshop, one note is that the workshop itself may have been less productive than it could have been because there was a lot of new information for attendees to digest. It is important to keep up with all of the new information to have a more productive meeting.

Planning session:
This part of the meeting was centered on identifying what people would like to get out of these working group meetings and how to achieve that. We discussed group goals and objectives. We also assigned a people to those goals to help develop them further and keep the focus and momentum moving forward. The following is a list of each goal along with who will be responsible for developing the plan. The product from this exercise is a work plan to keep this group focused on achievable tasks that benefit the Southeast Stakeholder Working Group.

Homework – An outline of the goals and key points are included below (in the notes form taken during the meeting). These will likely be the base of the groups workplan, but they are not complete. So, I am asking for the group's help in defining each goal further. If you were identified as the point of contact (POC) for a goal, please work with your group (and others as necessary) to develop a strategy on how to accomplish the goal along with what elements are long- or short-term objectives. You will likely need to meet with your identified groups outside of the stakeholder meeting to develop these. We will use the next quarterly meeting to go over the strategies you developed for each goal, so be prepared to present.

POCs are:
Goal 1: Mandy Migura, Ben Weitzman, Jen Cate
Goal 2: Jen Cate, Jenell Larsen-Tempel
Goal 3: Mike Miller, Mike Jackson, Lynn Lee, Paul Schuette
Goal 4: POC TBD - learning from Case study
Goal 5: Joe Eisaguirre and sea otter working group
*If you want to be added/removed to a group let me know. Groups will change/grow as future tasks are identified.

As an example of what is being asked, I have developed a mock strategic plan for Goal 5. Note, I have not coordinated this with anyone, so it is subject to change. One way to look at it is what steps need to be taken, and in what order or combination, for the goal to be met? You will also want to define how you know when you have met the objective (a success).

- **EXAMPLE - Goal 5: Regular and routine Southeast sea otter population surveys**
  POC – Joe Eisaguirre and Sea Otter Working Group
  - Obj 1. – Finalize Southeast sea otter survey and submit report to stakeholder group (*short-term goal*)
    - Conduct survey in 2022
    - Analyze results and submit report to stakeholder group in 2023
    - *Success: Survey is completely, analyzed and reported to Stakeholders in 2023*
  - Obj 2. – With these data, identify a routine Southeast sea otter population survey schedule (*long-term goal*)
    - *Success: population survey schedule is developed and can be maintained*
  - Obj 3. - Develop localized survey design to be informative (s*hort-term goal*)
    - Develop surveys so that local communities can help inform sea otter population estimates on a regional scale
    - Message this to local Southeast Communities
      - as an example: Utilize the Guardian Program
    - *Success: Localized surveys are being conducted by the local communities and the data are useful to inform* Southeast sea otter *data needs.*
  - Obj 3. Advocate for continued funding to support sea otter surveys on a routine basis (*long-term goal)*
    - Utilize stakeholder group to request and secure funding for routine surveys
    - Amplify any messages to help with this goal
    - *Success: Congress develops a line-item of funding to support these surveys on a routine basis.*

Draft Workplan – Notes taken during the meeting – Use this template to build off

- **Goal 1: Improve information sharing:**
  (POC: Mandy Migura, Ben Weitzman, Jen Cate)
  - Synthesis of background information to help inform new people – Southeast sea otter stakeholder 2019 final report may be a form of this
  - Can we publish the Sitka case study to show how this management strategy could work? (would like to cite it to inform FWS management strategy). Currently the case study is akin to quilt being sewn together.
  - Develop or identify a repository for information – publications, grey literature,
    - Site for data dumping and sharing
    - Perhaps emerging research could be shared regularly with the group and we could offer to host discussions about what that research means for sea otter management
- **Goal 2: Collaboration with other Southeast groups:**
  (POC: Jen Cate, Jenell Larsen-Tempel)
  - ID missing Stakeholders from this group – tourism group (Allen marine tours)
  - Increased collaboration with other Southeast groups or report back on what other groups are focusing on – i.e, The Southeast AK Abalone working group is very interested in Southeast sea otters. Some in that group don't realize that impact. They want to know what they can do for abalone in that area (not a dive species). Phil known this goup.

        - There are also mariculture groups (EVOS) that have a focus on Sea otter activities. FWS can report back, but not add anyone to this group.
        - Linda Shaw may have other ideas
    - Formalized coordinated sharing of lessons learned and strategies between Lynn's Canadian program and the work within this working group
        - Do we want a representative from the Haida Nation in the group?

- **Goal 3: Management case studies** – Sitka and Kake case studies – (POC: Mike Miller, Mike Jackson, Lynn Lee, Paul Schuette)

  Background - Developed on a local group level to manage the impacts they were experiencing. Increased Sitka harvest was a result of increased opportunity to economics. The goal wasn't resource protections, but that was one of the outcomes. They increased harvest and didn't take hour ALL of the otters (which was against the advice at the time). 2 weeks ago they had a meeting at Sealaska Heritage Center – sat with grant writers and presented that they could work with Kake to do a focused harvest again to help with the community. This was not marketed as a predator control initiative.
    - It is important to document what happened in Sitka – maybe a TEK report – Taylor White (NPRB project) research project she is proposing to go back and look at the tagging data in conjunction with the ecosystem. There is also a lot Bodkin and Estes. A group at UCSC is continuing to do those benthic transects – published in Gora et. al. 2019 to monitor the benthic communities.
        - Can we collaborate with sci dive class to support Sitka case study (Jacob Romandi – Kristi Kroecler and Pete Raimondi)
    - Need to set up the wholistic research so it is important for the group.
        - Help get funding, drive the work, focus grad students, etc
    - If the Sitka case study is replicated elsewhere – designed to maintain biodiversity in the ecosystem to have defined research questions in mind
    - Establish a monitoring program for this and work towards developing a local harvest management plan, if communities agree
    - If they do the same thing, they will want to work with others and see if they can document the impacts in the ecosystem.
    - Identify what needs to be looked at and what standards will show an appreciable impact
    - Need to establish those subtidal plots before implement the Kake experiment.
    - Can't have this initiative region-wide, it won't work and will collapse the population. Are there local scale initiatives that can have a positive impact?
    - Try to replicate the Sitka Case Study in a new area.

    - (Kake) Want to continue to keep track of the sea otters (moving north of Kake). Sea otters have eaten all of the sea urchins and are getting into clams and geoduck. Impact of clams and cockles have been big in this community. Stories from ancestors talk about how the sea otters impacted them. Need to find an equitable solution to keep sea otters out of mariculture farms (cockle farming). Need to find a good balance. Mike Jackson is keeping track of sea otters around Kake and they know the behavior of sea otters in the area.

        - Study how much their impact is having on the subsistence foods.
        - And to help them out – study the impact it is having on their clams.
        - Assess the long-term impacts and finding a balance between sea otters and subsistence harvest.
- **Goal 4: Prioritize research projects within this working group so it is directly beneficial to this working group.**
  (POC TBD - learning from Case study) – Longer term goal -
    - Facilitate research between different research groups
    - Focus granting agencies to Southeast sea otter priority data needs
    - Identify if worth looking into the extent of clam gardens as a strategy to manage subsistence resources. British Columbia is doing this
- **Goal 5: Regular and routine Southeast population surveys** –
  (POC: Joe Eisaguirre and sea otters working group).
    - Advocacy for funding for this survey to continue to happen
        - Amplify any messages to help with this goal (Mandy)
    - Develop localized survey design to be informative
        - Utilize the Guardian Program as an example

- **Next Meeting**
    - Update from POCs on their goals for the draft workplan document
    - Reports from any task forces

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Southeast Alaskan kelp forests: inferences of process from large-scale patterns of variation in space and time

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Humans were considered external drivers in much foundational ecological research. A recognition that humans are embedded in the complex interaction networks we study can provide new insight into our ecological paradigms. Here, we use time-series data spanning three decades to explore the effects of human harvesting on otter–urchin–kelp trophic cascades in southeast Alaska. These effects were inferred from variation in sea urchin and kelp abundance following the post fur trade repatriation of otters and a subsequent localized reduction of otters by human harvest in one location. In an example of a classic trophic cascade, otter repatriation was followed by a 99% reduction in urchin biomass density and a greater than 99% increase in kelp density region wide. Recent spatially concentrated harvesting of otters was associated with a localized 70% decline in otter abundance in one location, with urchins increasing and kelps declining in accordance with the spatial pattern of otter occupancy within that region. While the otter–urchin–kelp trophic cascade has been associated with alternative community states at the regional scale, this research highlights how small-scale variability in otter occupancy, ostensibly due to spatial variability in harvesting or the risk landscape for otters, can result in within-region patchiness in these community states.

1. Background

Despite increasing attention paid to the ecological role that humans play in ecosystems, our understanding of how human behaviours influence well-known ecological paradigms is still limited [1,2]. The sea otter–sea urchin–kelp trophic cascade is one of the most well known of these ecological paradigms [3]. At the broadest level, our understanding of this trophic cascade is based on the presence/absence of sea otters (*Enhydra lutris*) in an ecosystem, linked to human exploitation patterns associated with the maritime fur trade and subsequent repatriation patterns in the North Pacific [4]. More recent work has illustrated the effect of sea otters on kelp forest community structure via space-for-time comparisons of locations differing in the duration of otter occupancy post re-introductions [5–7]. While this conceptual framework includes human impacts *on* the ecosystem via intensive harvesting or reintroduction of otters, it does not adequately capture the more nuanced role humans can play *in* the ecosystem where otters and humans co-occur and interact. For example, indigenous communities coexisted with sea otters for thousands of years prior to the maritime fur trade [8]. Food web models including human hunter–gatherers suggest humans acted as generalists and could have promoted the resilience of the ecosystem by prey-switching as resources fluctuated through time [9]. More specifically, archaeological evidence suggests

†Dr Hoshijima passed away on 7 August 2019.

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that humans had access to both otters and abundant shellfish [10,11]. This finding runs counter to our understanding of a sea otter-driven trophic cascade, whereby the presence of otters is associated with stark reductions in local shellfish populations. This evidence raises important, new questions about the role of humans in modern marine food webs regarding the conditions under which predators and prey can coexist in ecosystems typified by strong trophic cascades and alternative stable states.

Sea otters are exemplary keystone predators [12], the influence of which occurs via a trophic cascade from predatory sea otters to herbivorous sea urchins (one of the otter's prey) to kelp and other macroalgae (the urchins' prey). Kelp forests, in turn, have a broad array of knock-on effects (*sensu* [13]) on other species and ecological processes [14]. Sea otters are also voracious predators of other shellfish, including abalone, mussels and clams [15–17]. The negative direct effect of sea otters on their macroinvertebrate prey can manifest as human costs because the sea otters' macroinvertebrate prey base is also the foundation for several commercial, subsistence and recreational shellfisheries. In contrast, the positive indirect effects of sea otters on kelp commonly manifest as human benefits because kelp forests provide numerous ecosystem services, including habitat provisioning for other species, carbon sequestration and wave attenuation, among others [5,18–20].

Sea otters were exterminated from southeast Alaska during the maritime fur trade, then reintroduced into this area in the late 1960s [21]. With protection under the Marine Mammal Protection Act in the United States, populations have spread and grown [22], although harvest by indigenous communities is allowed and has occurred in some areas [23]. As sea otters have recovered, the resulting loss of local shellfisheries has led to resource conflicts and a call by local communities for the management of sea otter populations [23,24]. However, any plan for natural resource management through the limitation of sea otters raises several further questions, including how reductions in sea otter population densities would affect other ecosystem services provisioned by kelp forests. A better understanding of the interactions between humans, sea otters, urchins and kelp, and the spatial scale over which humans influence sea otter behaviour and abundance, may provide insight into opportunities for co-management of sea otters, kelp forests and shellfisheries.

While previous research has documented distinct, alternative ecosystem states associated with otter presence and absence across broad geographies [4,25], smaller-scale spatial variation in habitat usage by sea otters within regions associated with human activity provides an opportunity to further explore and elucidate the conditions over which kelp forests and productive shellfisheries may be able to co-occur. For example, spatial variability in predation pressure by humans or landscapes of fear for sea otters, in which spatial variation in predation risk influences otters' behaviour and distribution [26], could potentially affect otters' ecological effects at spatial scales smaller than previously recognized, even in ecosystems typically characterized by alternate stable states at larger spatial scales. Here, we use time series in two regions of southeast Alaska spanning three decades to highlight the functional relationships between humans, sea otters, urchins and kelp created by within-region spatial variability in otter populations.

2. Methods

(a) System and study design

Our study was done in two areas of southeast Alaska—Torch Bay and Sitka Sound (figure 1). Subtidal reefs were initially sampled at both areas in 1988. Reintroduced sea otters had recolonized Torch Bay by about 1986 but remained rare in Sitka Sound at the time of these initial surveys [4]. Torch Bay was resurveyed in 2003 and again in 2019, at which times otters were at or near carrying capacity (fig. 3 from [22]). Sitka Sound was resurveyed in 2009, at which time otters were abundant and widespread in the area [25,27], and again in 2018, following a period of intensive sea otter harvest and population reduction (particularly near the town of Sitka) [3,23].

(b) Sea otter surveys

Sea otter populations in southeast Alaska have been surveyed intermittently since the early 1970s. Tinker *et al*. [22] used these data in conjunction with a Bayesian state model to project area-specific trends in abundance relative to estimated carrying capacity. One such area was Sitka Sound (N05 in fig. 1 from [22]). We use these data (fig. 5, panel B from [22]) to characterize the trend in sea otter abundance in Sitka Sound, and the further analyses of Raymond *et al*. [23] to estimate the influence of Native harvest on this local sub-population (fig. 3, panel B from [23]). Although exact harvest locations were not reported, the hunters did report that they endeavoured to minimize their travel distances, resulting in an inverse relationship between harvest intensity and distance from population centres of hunters [23]. While sea otter density in Torch Bay remained relatively low throughout the study period, there has been no known harvest (Torch Bay occurs within the confines of Glacier Bay National Park), and the local population is thought to have been at or near carrying capacity since the late 1980s (fig. 3 from [22]).

In February 2018, we conducted surveys to determine the relative abundance of sea otters at each subtidal sample site in Sitka Sound (see below) to infer the spatial influence of human activity or harvesting on the distribution of sea otters. We did this prior to the habitat surveys (undertaken in August 2018, see below) out of concern that the more intensive boating that occurs during summer months in Sitka Sound would affect otter presence and detection. For each site assessment, we anchored the boat at the site, and three observers searched for otters with binoculars for 1 min, followed by a 4 min rest period. We then repeated this sampling protocol two more times with a 4 min break in between each survey. The search area (360 degrees around our boat) was divided into three exhaustive and mutually exclusive sectors, each counted by a dedicated observer. Observations occurred over a 10-day window from 8 to 18 February 2018 from 10.00 to 15.00. Weather conditions ranged from sunny to overcast. Observers recorded the number and geographic coordinates of all otters observed. We used these combined counts as a spatial index for the abundance of otters at each sample site. The spatial index was developed from a logistic regression using latitude and longitude as predictor variables and otter presence (1) or absence (0) as the response. Hence, the fitted surface represented the probability of the presence of at least one otter as a function of geographic location.

(c) Subtidal community surveys

Habitat and sea urchin sampling methods are described in detail by Estes & Duggins [4]. Sites were initially chosen as a random sample of shoreline intersections of a grid superimposed over a navigational chart ($n = 11$ for Torch Bay; $n = 22$ for Sitka Sound). The spatial extent of both sample areas was determined by the maximum distance that could be safely travelled from the

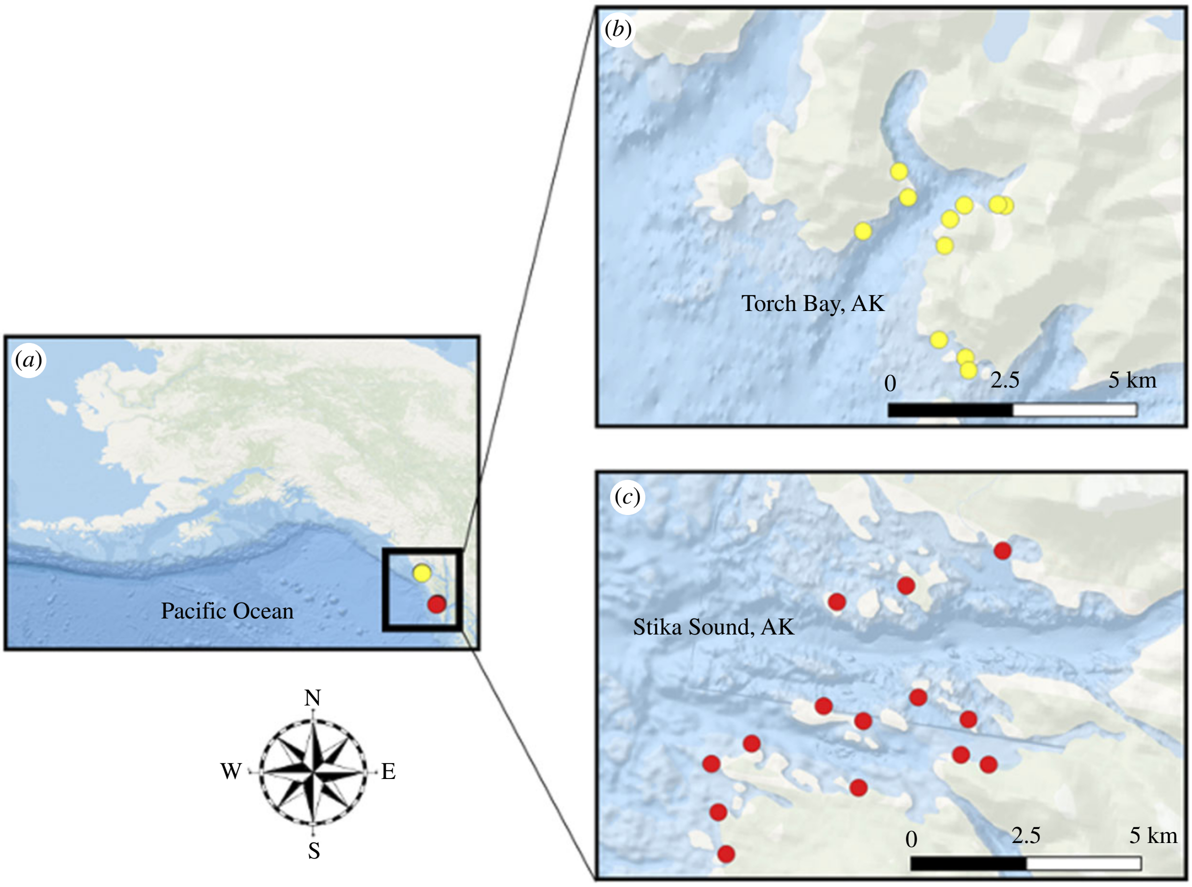

Figure 1. Map of study area showing location of Torch Bay (northern site, yellow) and Sitka Sound (southern site, red) (*a*), as well as sites sampled across the latter two time periods (2003/2009 versus 2018/2019, respectively) in each location (*b* and *c*). The maps only display sites from the latter two sampling periods. (Online version in colour.)

local base of operation by small boat (roughly 10–18 km). The locations of the sites surveyed in 1988 in Sitka Sound were recorded by hand on a navigational chart, which was not used in the second resampling effort and could not be located prior to the third sampling effort. In the second set of sampling periods (2003 for Torch Bay; 2009 for Sitka Sound), sites were located in the same manner from the same areas as in the 1988 surveys, but were assigned high-resolution latitude and longitude coordinates using GPS. The 2018 data from Sitka Sound and 2019 data from Torch Bay were obtained from these same GPS locations ($n = 11$ for Torch Bay; $n = 16$ for Sitka Sound). The hand-drawn map of Sitka Sound from 1988 was relocated in 2021, and the locations were extracted by hand using Google Earth.

Sea urchins and macroalgae were sampled in 0.25 m^2 quadrats, placed randomly on the seafloor along the 6–7 m isobath. We sampled approximately 20 such quadrats for macroalgae and sea urchins at each site. The test diameters of sea urchins were measured until greater than 200 individuals or 20 quadrats had been sampled. From these measurements, we determined the density and size–frequency distribution of sea urchin populations and the density of kelp species (including *Macrocystis pyrifera, Nereocystis leutkeana, Pleurophycus gardneri, Agarum clathratum, Neoagarum fimbriatum* and the category *Laminaria* spp.), as well as community structure. Community structure was sampled in the same quadrats used to count kelps by estimating the percentage cover of primary benthic space holders, which were primarily coralline algae and other fleshy macroalgae, including kelps. Each taxon was given a score of 1–6, which represented (i) less than 5% cover, (ii) 5–25% cover, (iii) 26–50% cover, (iv) 51–75% cover, (v) 76–95% cover or (vi) greater than 95% cover [4]. Because we were interested in understanding the effect of sea urchin grazing on the algal assemblage, we estimated sea urchin biomass density for all sampled site × year combinations. This is especially important because sea urchin density, another potential estimator of grazing pressure, is based on abundance, which is likely to be inadequate for estimating the effect of urchins on the algal community when the size distributions of both urchin species were as broad as found in this investigation (electronic supplementary material, figure S1). To transform numerical density to biomass density, we first estimated volume for both red (*Mesocentrotus franciscanus*) and green (*Strongylocentrotus droebachiensis*) urchins using the equation for a hemisphere (equation (2.1)), then converted volume to mass using the 1 to 1 relationship between wet mass (g) and volume (cm^3) that has been previously described (see mass/diameter equation in [4]), and finally converted these values to biomass density (kg m^{-2}):

$$\sum_{i=1}^{n} \frac{2}{3}\left(\frac{D}{2}\right)^3 \pi \left(\frac{1\ \text{liter}}{1000\ \text{cm}^3}\right) \frac{1\ \text{kg}/1\ \text{liter}}{A}, \qquad (2.1)$$

where D = test diameter (cm), A = area sampled (m^2) and n = number of urchins sampled.

(d) Statistical analyses

To compare both sea urchin biomass density and kelp density across years, we used an ANOVA with year as a fixed effect. For these analyses, the mean values for kelp density or urchin biomass density were calculated over all quadrats sampled at a site, and those averaged values were used in subsequent analyses. When *year* was significant, we used a Tukey HSD test to determine differences among specific years. Data were log-transformed (log $[x + 1]$) as needed to meet the assumptions of normality and homogeneity of variances. We also present size–frequency distributions for urchins to assess the degree to which any observed difference in biomass density of urchins over time was caused by population density versus size distribution. To determine if the composition of the algal assemblage changed over time, we used a PERMANOVA analysis, and to assess spatial variability in assemblage structure within locations (e.g. patchiness), we used a PERMDISP analysis. For these multivariate analyses, we used location × year combinations as levels of a single factor ($n = 6$ levels). To assess the potential effects of otter harvests on local otter abundances and the subtidal community, we used regression approaches to determine how sea otter sighting indices (see above), sea urchin biomass density and kelp density covaried with Euclidean distance from the town of Sitka. This last analysis of the otter sighting data was only done for the 2018 sampling period in Sitka Sound because otters were not harvested from Torch Bay and spatially explicit measurements of otter presence were not available for other areas and earlier years. Euclidean distance from a central point in Sitka was used because there are three harbours in Sitka Sound and numerous islands that provide several different estimates of potential distance hunters could travel on the water to a survey site. Using this Euclidean distance analysis, we discovered significant distance relationships for otters, urchins and kelp in 2018 and thus conducted the similar distance analyses for urchins and kelp for the 2009 surveys (prior to any significant sea otter harvests) in Sitka Sound. Finally, we directly compared the otter sighting indices with total urchin biomass density and kelp density for 2018 in Sitka Sound. For regression analyses, we fit both linear and non-linear (square root transform) models and compared the model fits using R^2-values (electronic supplementary material, table S1). Here, one-tailed tests were used because each comparison had a directional hypothesis (e.g. a negative relationship between urchin biomass density and otter presence).

Statistical analyses and tests (critical $\alpha = 0.05$) were run in JMP Pro 14 (v. 14.0.00) or PRIMER-E (v. 7) for community analyses.

3. Results

(a) Sea otters

Southeast Alaska supported an estimated 5407 (4053–6855, 95% CI) sea otters in 1988 [22], and in Sitka Sound, there were low numbers of animals mostly limited to the north and south peripheries of the outer Sound [28]. Otters increased in abundance through the 1990s (judging from modelled projections [22] and reports by local residents) and by 1995 the population for all of southeast Alaska contained an estimated 8027 (5578–10 751, 95% CI) animals. By the time of our first resampling in 2009, Southeast Alaska contained an estimated 22,271 (16 749–28 544, 95% CI) sea otters, 639 (311–1125, 95% CI) of which occurred in Sitka Sound (area N05 in fig. 1 of [22]). Otters were commonly observed in the nearby waters of our Sitka Sound sites during resampling activities in 2009. The Torch Bay area (N01 from [22]) supported an estimated 160 otters in 1988, a number that has remained roughly constant to present (see electronic supplementary material, figure S2 for relative densities through time).

Two thousand, seven hundred and forty-four sea otters were harvested from the Sitka Sound area (N05 from [22]) between 1989 and 2015 [23]. Harvest numbers increased from 53 yr^{-1} from 1989–2009 to 272 yr^{-1} from 2010–2015. This increasing harvest mortality caused the local population to decline from approximately 900 animals in the early 2000s to less than 500 animals by 2012 (the final year of Tinker *et al.*'s [22] analysis). Without this harvest, the Sitka Sound sea otter population is projected to have increased to over 1300 animals by 2012 [23]. These analyses thus indicate that just prior to our 2018 sampling, the Sitka Sound sea otter population density was approximately 70% lower than it would have been in the absence of harvest. Our 2018 surveys establish that the likelihood of sighting an otter increased with distance from the town of Sitka, with a 300% increase in the probability of seeing an otter at the sites most distant from Sitka compared to those closest to town (figure 2; $t_{12} = 4.10$, $p < 0.001$).

(b) Sea urchins

(i) Sitka Sound

In 1988, red and green urchins were large and abundant ($\bar{x} = 1.5$ kg m^{-2}, s.e.m. = 0.2) in Sitka Sound (figure 3; electronic supplementary material, figure S1). Although green urchin abundance had increased somewhat by 2009, red urchins were essentially absent from Sitka Sound at this time. While there was a detectable decrease in urchin biomass density with increasing distance from Sitka (figure 2; $F = 13.53$, d.f. = 1, 14; $p = 0.0013$), total urchin biomass density had declined by 99% from 1988 across the area. By 2018, total urchin biomass density had increased to 0.25 kg m^{-2} (s.e.m. = 0.083; means = 0.164 and 0.086 kg m^{-2} for red and green urchins, respectively; figure 3), with total urchin biomass density showing a decrease with increasing distance from town (figure 2; $F = 5.16$; d.f. = 1, 14; $p = 0.0197$). When compared directly, we found a decline in biomass density of urchins with the increasing probability of sighting an otter (figure 4; $F = 8.23$; d.f. = 1, 14; $p = 0.006$), with a decline in urchin biomass density occurring when the probability of seeing an otter surpassed 0.5.

(ii) Torch Bay

In 1988, red and green urchins were small and rare in Torch Bay (0.0005 kg m^{-2}), and in 2003, these patterns were largely unchanged (figure 3; electronic supplementary material, figure S1). In 2019, the size structure of urchins remained largely unchanged (electronic supplementary material, figure S1), whereas sea urchin biomass density increased almost 200% to 0.0014 kg m^{-2} (figure 3).

(c) Macroalgae

(i) Sitka Sound

Kelps were essentially absent from all sites in 1988 (figure 3). By 2009, however, kelp density had increased to 21 individuals per m^2 (s.e.m. = 2.45). One or more individuals occurred in most of the quadrats sampled, and at this time, there was no significant pattern of variation in kelp density with distance from the town of Sitka (figure 2; $F = 1.96$, d.f. = 1, 14; $p = 0.092$). By 2018, total kelp abundance had declined about 60% from 2009 to 8 individuals m^{-2} (s.e.m. = 2.27), and one or more individuals occurred in less than half of the quadrats sampled. Moreover, kelp density increased with increasing distance from the town of Sitka (figure 2; $F = 3.51$; d.f. = 1, 14; $p = 0.042$), as well as with the probability of seeing an otter (figure 4; $F = 6.43$, d.f. = 1, 14; $p = 0.012$). Reflecting the pattern observed in urchin biomass density, kelp density was consistently low at sites where the probability of seeing an otter was less than 0.5.

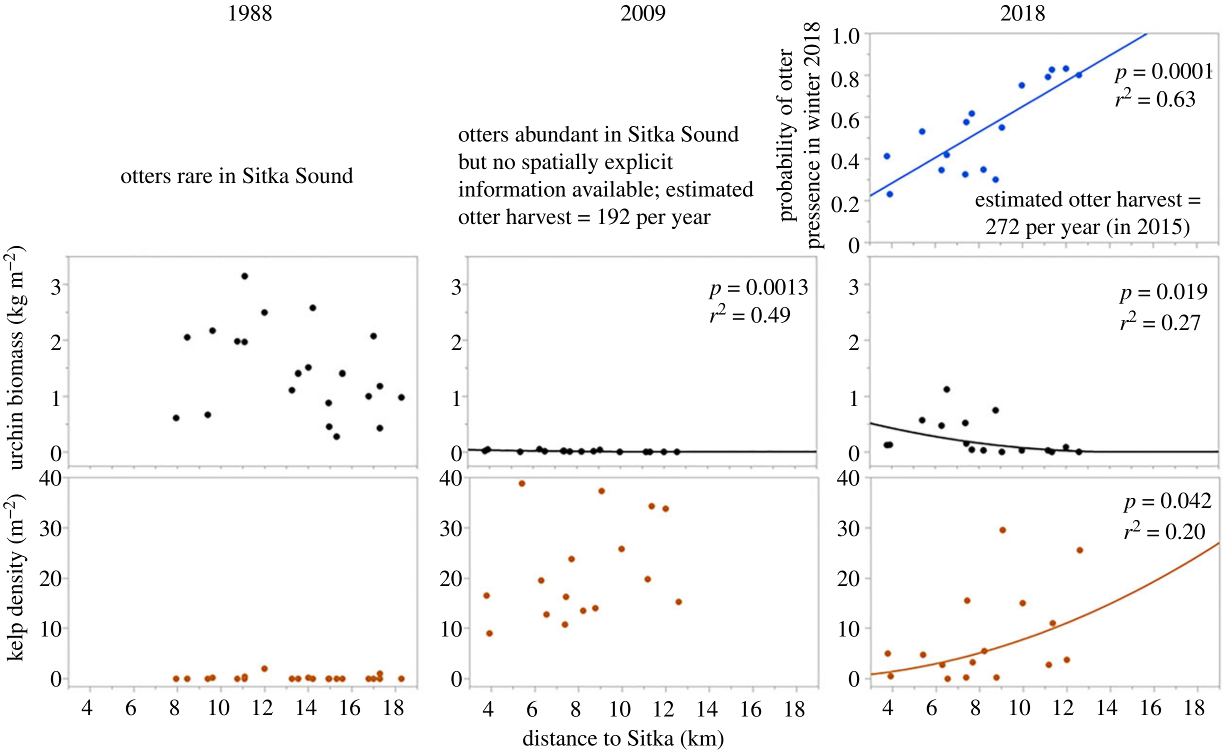

Figure 2. Patterns of variation with distance over time from the town of Sitka for sea otter abundance index, urchin biomass density and kelp density. The line indicates a significant linear (2018 otters) or nonlinear relationship with distance from Sitka. With the exception of the relationship between the distance to the town of Sitka and the probability of otter presence, all analyses shown here were performed on square-transformed data. (Online version in colour.)

(ii) Torch Bay

Kelps were abundant (33 individuals m^{-2}; s.e.m. = 7.8; figure 3) throughout Torch Bay in 1988. One or more individuals occurred in 72% of the quadrats sampled at this time. Many individuals were small. Kelp density had declined about 35% to 21.5 individuals m^{-2} by 2003 (s.e.m. = 4.1; figure 3), at which time one or more individuals occurred in 89% of the quadrats sampled. Kelp density had declined further by 2019 to 12.1 individuals m^{-2} (s.e.m. = 2.4), at which time one or more individuals occurred in 82% of the quadrats sampled.

(d) Ecosystem state

Both sea urchin and kelp abundance varied greatly in time and space over the 30-year time series of measurements. In general, the relationship between sea urchin density and kelp density resulted in the community being defined by two distinct areas of state space, one in which urchin biomass density is uniformly low and kelp density is high but variable (referred to hereafter as the kelp state), and the other in which kelp density is uniformly low and urchin biomass density is high but variable (referred to hereafter as the urchin state; figure 5).

(i) Sitka Sound

In 1988, mean urchin biomass density was greater than 1 kg m^{-2} at over 60% of the sites. All sites were in the urchin state at this time. By 2009, mean urchin biomass density was less than 0.05 kg m^{-2} at all sites (nearing 0 kg m^{-2} at most of these), resulting in all sites being in the kelp state. However, by 2018, mean urchin biomass density varied between 0 and 1 kg m^{-2} across the sites, resulting in about half of these sites being in the kelp state and the other half nearing the point of transition between the two states (i.e. both urchin biomass density and kelp density were relatively low) or had moved slightly into the urchin state (i.e. urchin biomass density was distinctly elevated and kelp density was low).

(ii) Torch Bay

All Torch Bay sites remained distinctly within the kelp state throughout the 31-year time series (i.e. 1988–2019; figure 5).

(e) Community structure

Benthic community structure varied substantially over space and time (PERMANOVA pseudo $F_{5,107} = 27.49$, $p < 0.001$; figure 6), with all pairwise comparisons of location × year differing significantly from each other ($p = 0.001$). The greatest of these pairwise differences was between Sitka Sound and Torch Bay in 1988. These results are illustrated in the non-metric multidimensional scaling plots, where distance in two-dimensional space indicates differences in the community structure. This plot also demonstrates the significant differences in variability in community structure within locations (Sitka Sound versus Torch Bay) in each year of sampling (PERMADISP $F_{5,107} = 13.641$, $p = 0.001$; figure 6), which is illustrated by the size of the ellipse. Temporal differences within Sitka Sound versus Torch Bay were most evident from this analysis. For Sitka Sound, the spatial variability in community structure was similarly low between 1988 (urchin-dominated) and 2009 (algal-dominated) ($p = 0.122$), but different ($p < 0.0010$) and very high for 2018 (i.e. some sites urchin-dominated and some sites algal-dominated). For Torch Bay, the variability of the community did not change over time (all pairwise comparisons $p > 0.30$) even though the composition of the communities changed—implying that

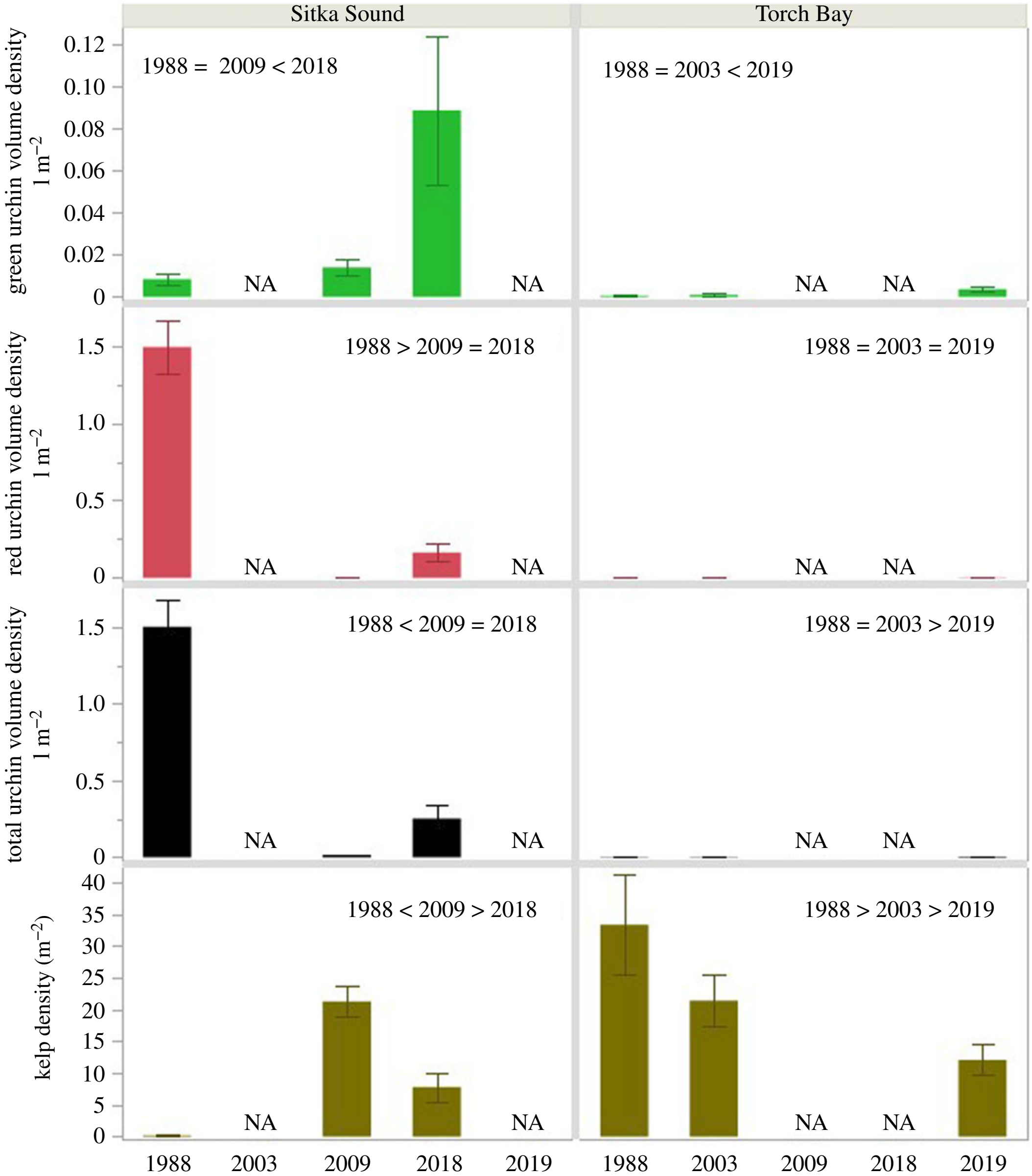

Figure 3. Variation in abundance of sea urchins and kelp in Sitka Sound and Torch Bay among the years. Green = *Strongylocentrotus droebachiensis*, Red = *Mesocentrotus franciscanus*, Black = total urchin biomass density, Brown = *Laminariales*. Inset year comparison is from ANOVA/TUKEY analyses. (Online version in colour.)

whatever led to the change in community structure affected the entire location.

4. Discussion

Our understanding of the otter–urchin–kelp trophic cascade is a product of both theory [29,30] and data from spatio-temporal contrasts of habitats with and without sea otters or areas that differ in the timing of otter occupancy. Here, we use similar data gathered at multiple temporal and spatial scales to show how the local harvesting of sea otters appears to have mediated the outcome of this trophic cascade, resulting in within-region variability of kelp density and community structure in an area with a large sea otter population. Our data from Sitka Sound in 1988 (when otters were still recolonizing and at very low densities) and 2009 (after this area had been occupied by sea otters for several decades), while consistent with the well-known otter–urchin–kelp paradigm, are nonetheless remarkable because of their extreme difference [4]. However, the data from 2018 provide new insight into this trophic cascade through the influence of human harvest in Sitka Sound on the probability of seeing an otter. While it is clear that the ecosystem exists in one of two alternate states at the equilibria (otters absent and otters near carrying capacity), we document a wider range of community states within Sitka Sound in 2018, including some kelp dominated sites and some urchin-dominated sites. These findings highlight the potential for small-scale variation in the presence of sea otters to create patchiness in the kelp forest landscape that may allow for the co-management of kelp forests and shellfisheries in areas with otters.

Anecdotally, we understand that the sea otter harvest has been greatest closest to the town of Sitka, supported by previous analyses of otter harvests in Sitka Sound [23], which we hypothesize created a more spatially explicit pattern in community structure and ecosystem state than was otherwise expected. We found the sites with the fewest urchins were farther from the town of Sitka, whereas the sites with the least kelp were closest to the town—although there was some important variability in this relationship (electronic supplementary material, figure S3). In particular, we found

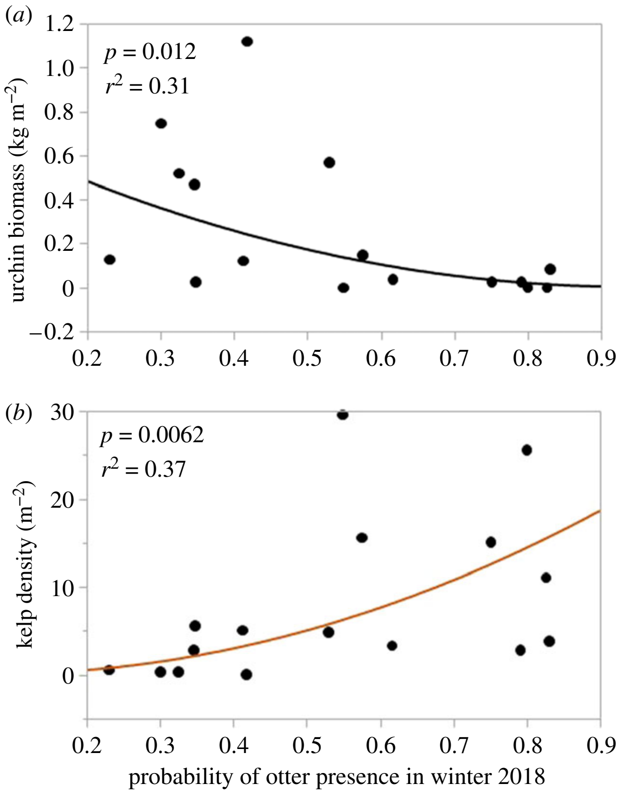

Figure 4. Functional relationships between urchin biomass density (*a*) and kelp density (*b*) as a function of the probability of seeing an otter in Sitka Sound in 2018. (Online version in colour.)

some intermediate states (with some urchins and low kelp density) scattered throughout the region. While it is unclear whether the intermediate states are at equilibria, or in the process of changing states, the overall patchiness in the density of urchins and kelp in 2018 indicates that both ecosystem states can co-occur when the presence or relative density of otters is patchy. These localized sea otter effects are consistent with a growing recognition that sea otter habitat use and abundance are often structured at very small spatial scales [22,31,32]. This spatial structuring occurs because reproductively mature sea otters, particularly females, have small lifetime home ranges of just 10–25 km of coast [31,33,34], with limited movements of reproductive individuals between adjacent habitats [35], and thus substantial differences in abundance can occur over short distances [32]. Sea otter responses to top-down threats (whether human harvesters, killer whales or white sharks) can also reflect small-scale variation in the risk landscape [36,37], whereby otters change their behaviours and habitat usage in response to threats. Understanding how spatially varying mortality risk for sea otters can translate into patchiness in community structure may help explain archaeological evidence that indigenous people in the Pacific Northwest apparently had access to areas of both abundant shellfish and abundant sea otters [10,11,38]. Given previous research on the alternative stable states associated with the sea otter–urchin–kelp trophic cascade, we suggest that management actions promoting patchiness in sea otter occupancy seem feasible and may be important for maintaining both kelp ecosystem services and shellfisheries in regions with abundant otters.

Although the primary focus of our study was on the ecological consequences of the recovery and subsequent reduction of sea otter populations in southeast Alaska, other processes no doubt contributed to the large-scale patterns of variation in the distribution and abundance of sea urchins and kelp that occurred over the course of our study. Of particular importance is the loss of sunflower stars (*Pycnopodia helianthoides*) because of sea star wasting disease (SSWD) and the episodic recruitment of sea urchins [39]. The extreme difference in urchin and kelp abundance between 1988 and 2009 in Sitka Sound, while mainly caused by the repatriation of sea otters into an area from which they had been absent for more than a century, may have been exacerbated by a lack of urchin recruitment (at least in the years immediately prior to 2009) and a robust population of sunflower stars that consumed most newly recruited small urchins that entered the system during the 1988 to 2009 period [40,41]. The more detailed time series required to chronicle these effects is lacking from our study locations in Sitka Sound and Torch Bay. However, D. O. Duggins never witnessed the recruitment of otherwise abundant red sea urchins during the 5 or 6 years he worked in Torch Bay in the late 1970s and early 1980s ([4] and personal communication), and we see no indication of a recruitment pulse in the size–frequency distribution of sea urchins from Sitka Sound in 1988 (electronic supplementary material, figure S1). Recent studies from other localities [40,42] suggest sunflower stars can affect the distribution and abundance of urchins and kelp, and it is possible that SSWD contributed to shifts in community structure seen across both Torch Bay and Sitka Sound.

Torch Bay provides an intriguing point of contrast with Sitka Sound because sea otters remained at or near carrying capacity in Torch Bay throughout the time series. Although urchin biomass density increased and foliose algae and kelp density declined somewhat in Torch Bay between 2003 and 2019, the system remained distinctly in the algal/kelp state throughout our three decades of study (figure 5*b*). And while urchin biomass density in Torch Bay increased, that increase did not approach the 0.5–1 kg m^{-2} levels associated with the intermediate sites with some urchins and some kelp in Sitka Sound.

We hypothesize that the reduction in kelp density that occurred in Torch Bay between 1988 and 2003 was the likely result not of grazing, but of heavy kelp recruitment following the repatriation of otters to this area just before 1988 followed by succession to a mature kelp forest. The further reduction in kelp density and shift in community structure that occurred between 2003 and 2019 could be a consequence of continued succession [43] and/or the loss of the sunflower star from SSWD releasing some pressure on key kelp forest grazers, including both snails and small urchins [40]. However, it would be surprising if the increase in urchin biomass density that occurred in Torch Bay during this latter time period was an important contributing factor to the change in kelp density, given the overall low biomass density in sea urchins in comparison with Sitka Sound (figure 3). Indeed, because the community structure in Torch Bay in 2019 became more similar to the community structure in Sitka Sound in 2018 (figure 6), we hypothesize that the driver was probably something occurring region wide (e.g. SSWD or other anomalous environmental conditions such as the Blob [44]).

Because urchins and kelps were sampled independently from different quadrats, we cannot assess the pattern of covariation in urchin biomass density and kelp density at this smallest spatial scale. Nevertheless, we can assess the patterns of covariation in urchin and kelp abundance at the

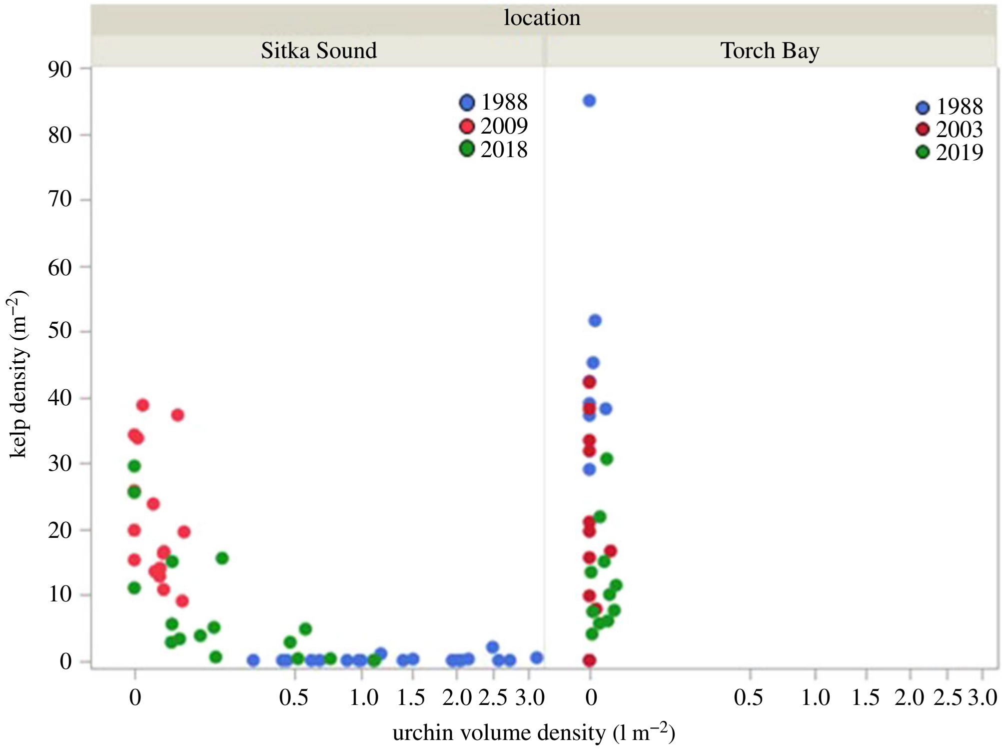

Figure 5. State space plots of total urchin biomass density versus kelp density by sample sites for Sitka Sound and Torch Bay among the years these areas were sampled. (Online version in colour.)

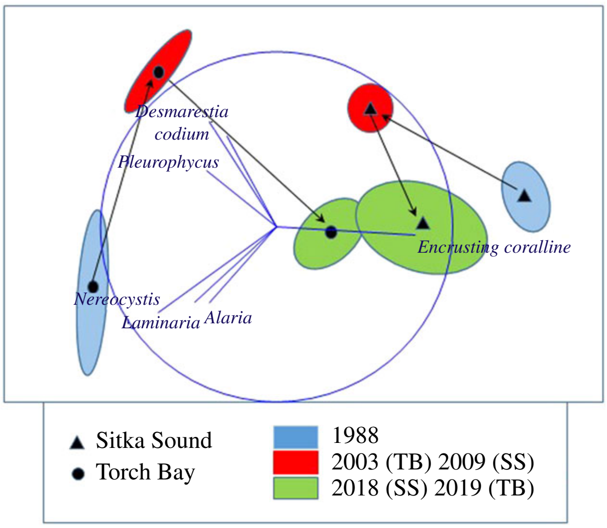

Figure 6. Non-metric multidimensional scaling plot of the centroids and 80% confidence ellipses for benthic community structure for Sitka Sound and Torch Bay based on the broad taxonomic and functional groups. Black arrows depict the temporal trajectory of the communities at each location (1988 to 2003 (TB) or 2009 (SS) to 2018). Blue vectors indicate the region of the graph with greater abundances of indicated species. (Online version in colour.)

scale of sites within our two study regions, and at that scale, the system generally occurs in one of two distinct alternate states (the urchin state or the kelp state; figure 5). Those sites in Sitka Sound with intermediate urchin and kelp densities in 2018 may have been in a state of transition, where a decrease in the abundance of otters near the town of Sitka led to a transition toward the urchin-dominated state. This conjecture is supported by the lack of sites exhibiting both high urchin biomass density and high kelp density (figure 5) and raises an important point for consideration if management actions were taken to promote patchiness in otter occupancy. These findings lend further support to the view that North Pacific kelp forests occur as alternate stable states [10,19,45,46], with the transition points between these states being both rare and unstable [47]. This situation contrasts sharply with that for kelp forests in Australia and New Zealand where kelps and urchins typically co-occur at relatively high densities, even at small spatial scales [48].

Our study is founded on post hoc interpretations of simple time-series measurements that are informative because of the large spatial and temporal scales over which the information was obtained, and the interceding events (sea otter recovery initially, and subsequent sea otter reduction from harvests) that made the observed patterns of change interesting. Our analyses and interpretations lack the inferential rigour of well-designed and properly controlled experiments. However, experimental studies of processes that occur at such large scales of space and time were simply not possible in this case and, by analogy, will not be possible in many others in which the scales of process are similar. Progress in field ecology demands recognition of the fact that, from a methodological perspective, one shoe does not fit all.

Data accessibility. The data that support the findings of this study are openly available in BCO-DMO at www.bco-dmo.org, project number 756735.

Authors' contributions. T.R.G.: conceptualization, data curation, investigation, methodology, writing—original draft and writing—review and editing; S.C.R.G.: conceptualization, investigation, methodology and writing—review and editing; M.R.L.: conceptualization, investigation, methodology, writing—review and editing; U.H.: investigation and supervision; J.A.E.: conceptualization, data curation, funding acquisition, methodology, writing—original draft and writing—review and editing; P.T.R.: conceptualization, data curation, formal analysis, investigation, methodology, supervision, visualization and writing—review and editing; M.T.T.: formal analysis, visualization and writing—review and editing; M.C.K.: data curation, investigation, methodology and writing—review and editing; K.J.K.: conceptualization, funding

acquisition, investigation, methodology, project administration, supervision, writing—original draft and writing—review and editing. All authors gave final approval for publication and agreed to be held accountable for the work performed therein.

Competing interests. We declare we have no competing interests.

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Item 11B.

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Location-specific factors influence patterns and effects of subsistence sea otter harvest in Southeast Alaska

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Abstract. To better understand the spatial context of population dynamics of sea otters (*Enhydra lutris*) in Southeast Alaska (SEAK), we investigated the spatial and temporal patterns of subsistence sea otter harvest and assessed the effect of harvest on population growth. U.S. federal law permits subsistence harvest of sea otters and sale of clothing and handicrafts made by coastal Alaska Natives. Hunters are required to self-report these harvests along with information on date, location, age class, and sex. Using harvest data collected from 1988 to 2015, we developed a spatially explicit, age-structured, density-dependent population simulation model to explore the potential impacts of harvest on sea otter population dynamics. We examined patterns of harvest and simulation model results at two spatial scales: the SEAK stock and three smaller subregions that vary in sea otter occupation time and carrying capacity: Sitka Sound, Keku Strait, and the Maurelle Islands. Annual sea otter harvest in SEAK increased from 55 animals in 1988 to a reported maximum of 1449 animals in 2013. Estimated mean annual harvest rate was 2.8% at the SEAK stock scale, but ranged from 0% to 39.3% across the three focal subregions described above. Across all subregions (n = 55), annual sea otter harvest rate was strongly influenced by time since recolonization, sea otter population density, and proximity to communities with sea otter hunters. The simulation model predicted population trends and per capita harvest rates similar to those estimated from aerial survey data, providing a reasonable approximation of population dynamics. Results of the simulation model suggested that current harvest levels can reduce population size at both the SEAK and subregional scales. Variation in harvest impacts was a function of subregion-specific factors, including time since recolonization and population status with respect to carrying capacity. We found that subsistence harvest and its population effects were scale- and location-dependent, indicating that higher spatial and temporal resolution of sea otter population and hunting data could help address emerging sea otter management and conservation concerns in this region.

Key words: apex predator; harvest; population simulation; spatial dependence; subsistence.

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Introduction

Variation in ecological and demographic processes across different scales can lead to spatial structure in populations (Turner 1989, Dunning et al. 1992). Therefore, effective management of populations requires information about population status and dynamics at spatial scales relevant to the species in question. For populations that are hunted for subsistence, harvest data can provide local-scale information that can be used to evaluate population status, management actions, and harvest sustainability (Shaffer et al. 2017, Mahoney et al. 2018). Furthermore, subsistence harvest data can inform our understanding of population dynamics and highlight spatially dependent factors that may influence the population and hunting itself (van Vliet et al. 2010). For example, bowhead whale (*Balaena mysticetus*) populations declined significantly as a result of commercial whaling in the 1800s. After commercial whaling ceased, populations recovered slowly (George et al. 2004, Minerals Management Service 2009, Phillips et al. 2013, North Slope Borough 2018). Thus, the use of subsistence harvest data has great potential to improve population management of particular species, in part because of the investment of local hunters in maintaining a viable population for future harvest, provided that competing interests do not exist. Here, we examine the spatial and temporal patterns of sea otter subsistence harvest and test for effects of harvest on population abundance and trends, to better understand the factors affecting population trends of sea otters in Southeast Alaska (SEAK).

Sea otters are apex predators that once inhabited much of the coastal North Pacific Ocean from Baja California to the northeastern coast of Asia including the Kamchatka Peninsula and northern Japan. Indigenous peoples have hunted sea otters primarily for their fur as an integral part of their culture for thousands of years (Fedje et al. 2001, Erlandson et al. 2005, Szpak et al. 2012). However, commercialization of sea otter harvest for fur beginning in the mid-1700s drove populations to near extinction (Kenyon 1969, Riedman and Estes 1990). Through legal protections, reintroductions, and other conservation efforts, sea otters have recovered to a global population of approximately 125,000 (Doroff and Burdin 2015). One area of notable recovery is SEAK, where sea otters were extirpated around the turn of the 20th century and then reintroduced to seven sites in the late 1960s (Burris and McKnight 1973; Fig. 1). From the 1970s through 1990s, the initial population of 413 sea otters grew rapidly in areas near reintroduction sites on the outer coast. By the 2000s, the distribution and numbers of sea otters increased greatly, and from 2003 to 2011, the population grew at an average rate of approximately 8.6% per year (Tinker et al. 2019*a*). The most recent abundance estimate (2011) for the SEAK stock was 25,584 individuals (Tinker et al. 2019*a*), which represents approximately one quarter of the sea otters in the United States and one fifth of the global population (Doroff and Burdin 2015). The SEAK population now extends across much of the outer coast of SEAK, from Icy Bay in the north to Dixon Entrance in the south, and into the inside waters of SEAK including Glacier Bay, Icy Strait, Kuiu Island, and Sumner Strait (Fig. 1).

While commercial harvest of sea otters is illegal, the U.S. Marine Mammal Protection Act (MMPA) permits coastal Alaskan Natives to harvest sea otters, as long as the harvest is done for subsistence and "is done for purposes of creating and selling authentic native articles of handicrafts and clothing" (50 CFR 18.23). Anecdotal reports indicate that sea otters are eaten very rarely, and the primary motivation for harvest is to obtain pelts. The U.S. Fish and Wildlife Service (USFWS) is responsible for the management and conservation of sea otters in the United States and collects data on subsistence sea otter harvest in Alaska (no harvest is permitted outside of Alaska). Harvest data are collected by USFWS designees, usually Alaska Natives who are sea otter hunters or artisans. These designees, called taggers, record information on the harvest and other basic demographic information and physically tag the pelt, as required under the MMPA. Previous analyses of the SEAK sea otter population have postulated that subsistence harvest of sea otters may affect sea otter population growth (Esslinger and Bodkin 2009), especially at local scales (Bodkin and Ballachey 2010, Tinker et al. 2019*a*). USFWS conducts aerial surveys to estimate population size and trend, but owing to budget and logistical constraints, surveys occur

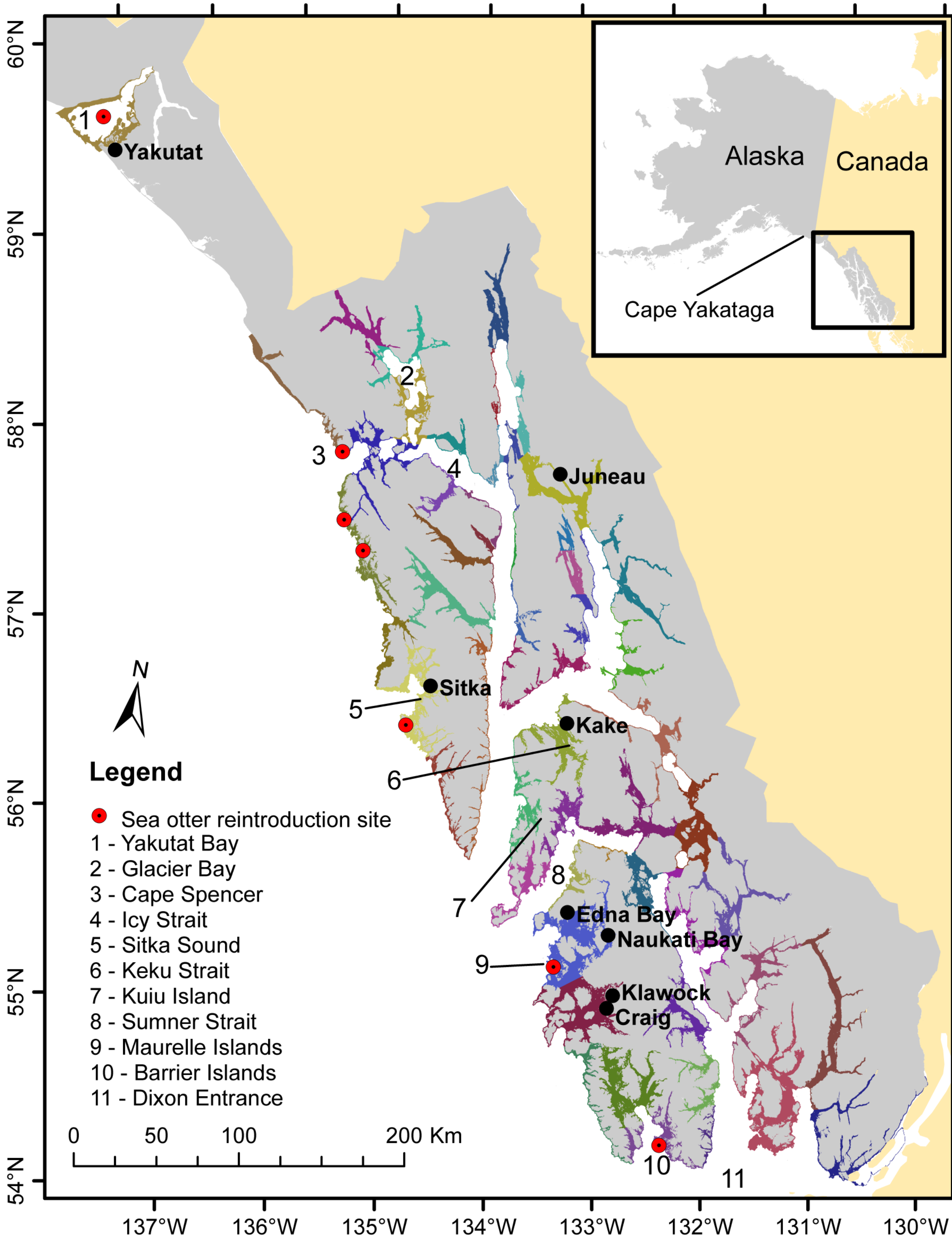

Fig. 1. Map of Southeast Alaska with sea otter reintroduction sites and sea otter population subregions (colors denote different subregions).

infrequently (7–10 yr). Tinker et al. (2019*a*) recently estimated population trends and carrying capacity at multiple spatial scales, but to date, SEAK sea otter harvest data have not been analyzed for spatial and temporal trends or for potential effects to the sea otter population.

While hailed as a conservation success story, the return of sea otters exemplifies the challenge of a predator returning to its native range, which raises ecological, conservation, and management questions (Roman et al. 2015, Silliman et al. 2018). In particular, the recovery of sea otter populations resulted in conflicts with human interests for shellfish resources (Carswell et al. 2015). In SEAK from 2009 to 2012, commercially important marine species represented 46% of sea otter diets, and sea otter expansion contributed to declines in shellfish available for commercial harvest (Larson et al. 2013, Hoyt 2015). In response, legislation was introduced to the Alaska State Senate in 2013 that proposed a bounty for sea otters that would be given to Alaskan Native harvesters (Carswell et al. 2015). However, its passage would have put the State of Alaska in direct conflict with the federal government who has the legal authority to implement the MMPA and manage sea otter harvest. More recently, a resolution was introduced in the Alaska State Senate urging the federal government to amend the MMPA to allow for comanagement of sea otters between Alaska Native organizations and the Alaska Department of Fish and Game (which has no management authority over sea otters), arguing that local organizations may be better able to manage the population (Stedman et al. 2018). Furthermore, recent summaries of sea otter harvest in SEAK indicate a marked increase since 2010 (USFWS 2014*a*). These legislative actions and recent harvest increases have caught the attention of conservation organizations that want to prevent changes to current law (Friends of the Sea Otter 2018). This situation highlights the need for information surrounding the patterns of sea otter harvest and the impacts of harvesting on the SEAK population.

A recent analysis of population trends and estimation of carrying capacity for sea otters in SEAK (Tinker et al. 2019*a*), together with the existence of hunter-reported data on harvest numbers, provide a unique opportunity to evaluate harvest impacts for this species and assess the spatial structure of the population. To assess population effects, we developed a spatially explicit, age-structured, density-dependent population simulation model for sea otters in SEAK using empirical demographic data and recently derived carrying capacity values from Tinker et al. (2019*a*). We hypothesized that sea otter harvest and any effect of harvest on the population would vary as a function of geographic location. Sea otters have small home ranges compared with most marine mammals, ranging from 1.0 to 11.0 km^2 (Garshelis and Garshelis 1984, Tarjan and Tinker 2016), aggregate in social groups (Jameson 1989, Laidre et al. 2009), and show spatial variability in carrying capacity (Tinker et al. 2019*a*) and variability in the history of sea otter recolonization and expansion in SEAK (Burris and McKnight 1973, USFWS 2008, 2014*b*). These factors all suggest that sea otter population dynamics and therefore patterns of harvest and harvest effects are likely to vary at scales smaller than the current scale of management, which is all of SEAK. Our analysis provides a structure for quantifying and testing the relationship between subsistence harvest and sea otter population dynamics and resilience in SEAK and the rest of Alaska where this species is harvested for subsistence. Our analysis provides a structure for quantifying and testing the relationship between subsistence harvest and sea otter population dynamics and resilience in SEAK and serves as a framework for further analysis of the sea otter population in SEAK and other regions in Alaska where this species is harvested for subsistence purposes.

Methods

Study area

The SEAK stock of sea otters is spatially defined as all sea otters from Dixon Entrance to Cape Yakataga on the southeastern coast of Alaska, which stretches over 850 km in length and encompasses 17,790 km^2 of suitable sea otter habitat (Bodkin and Udevitz 1999; Fig. 1). The region is comprised of large and small islands, fjords, exposed and protected shorelines, and a wide array of nearshore habitats including kelp forests, seagrass beds, rocky reefs, and mudflats. Harvest occurs throughout most of this region with the exception of Glacier Bay National Park, where U.S. National Park Service regulations prohibit it. While the USFWS manages sea otters at the stock level, a number of recent studies and reviews have highlighted that demographically important processes in sea otter populations, including density-dependent resource limitation, occur at much smaller scales because of the low mobility and high site fidelity of mature sea otters (Bodkin 2015, Tinker 2015, Tinker et al. 2017, Gagne et al. 2018). Therefore, we examined harvest patterns and potential impacts of harvest at both the stock and subregional scales.

We adopted the same subregions used by Tinker et al. (2019*a*) to estimate carrying capacity of sea otters in SEAK. The authors delineated these subregions in order to track population trends in SEAK at an appropriate spatial scale based on sea otter life history and ecology and on recent findings of fine-scale demographic structuring of sea otter populations (Bodkin 2015, Tinker 2015, Gagne et al. 2018, Johnson et al. 2019, Tinker et al. 2019*b*). Specifically, each subregion encompassed an area of sea otter habitat approximately 100 times the size of a typical adult home range, which ranges from 1.0 to 11.0 km^2 (Garshelis and Garshelis 1984, Tarjan and Tinker 2016), bounded by the low tide line inshore and the 40 m depth contour offshore (Fig. 1). Subregion size was chosen to be small enough so that individuals within a subregion could be considered a well-mixed population experiencing similar environmental and density-dependent conditions, but large enough so that demographic processes (births and deaths) would have a greater influence on population trends than movement between subregions (Tinker et al. 2019*a*). Thus, the mean swimmable distance (calculations below) from the centroid of a given subregion to its nearest neighbor was 50 km (±28 km standard deviation [SD]), twice the mean annual net displacement distance for female sea otters (Tinker et al. 2008), and boundaries between subregions corresponded, whenever possible, to natural geographic features (e.g., prominent headlands) that were assumed to discourage movements. In our analysis, we used 21 subregions identified by Tinker et al. (2019*a*; N01–N10, S01–S12, and YAK). To ensure size consistency, we further subdivided Glacier Bay (GBY) into three subregions (GBYA, GBYB, and GBYC) and subdivided the coastal area of SEAK not occupied by sea otters at the time of the most recent survey (referred to in Tinker et al. 2019*a*, as "un-surveyed") into 29 additional subregions (N11–N27 and S13–S24; Fig. 1). Thus, in our analysis we used 55 subregions across SEAK.

We summarized spatial and temporal patterns of sea otter harvest and population effects at two spatial scales, the SEAK stock and at three focal subregions that represented a range of sea otter occupation time, estimated carrying capacity, proximity to human communities, and harvest history and trends: Sitka Sound, Keku Strait, and the Maurelle Islands (Table 1). The Sitka Sound subregion includes a sea otter introduction site, is adjacent to the community of Sitka with a human population of 8881 (U. S. Census Bureau 2010), and has a long history of sea otter harvests (USFWS 2014*a*). Keku Strait was recently colonized by sea otters and is adjacent to the community of Kake with a human population of 557 (U. S. Census Bureau 2010, USFWS 2014*a*, Hoyt 2015) and has reported variable sea otter harvest since sea otters colonized this subregion (USFWS 2014*a*). The Maurelle Islands includes another reintroduction site, is directly adjacent to the small communities of Edna Bay and Naukati Bay, with a combined population of 155, and is reasonably accessible from the communities of Craig and Klawock with a combined human population of 1956 (U. S. Census Bureau 2010). The Maurelle Islands subregion has had on average relatively high numbers of sea otter harvests but high year-to-year variability (USFWS 2014*a*).

Subsistence sea otter harvest data

We analyzed sea otter harvest data for SEAK from the start of records in 1988 through 2015. These data were collected by USFWS taggers who record information provided by hunters for each harvested sea otter and tag each pelt with a unique identifying physical tag. Data include date of tagging, date of harvest, location of tagging (community), location of harvest (latitude and longitude and description), age class (adult, subadult, or pup), and sex of the harvested sea otter. The tagger also records if tissue specimens

Table 1. Subregion data and reported sea otter harvest statistics from the Southeast Alaska population, Sitka Sound, Keku Strait, and the Maurelle Islands.

Region	Area (km^2)	Carrying capacity (±SD)†	Percent Alaska Native‡	Mean annual hunters reporting (±SD)	Min annual harvest	Max annual harvest	Cumulative harvest (%)	Mean annual contribution to total harvest % (±SD)
Southeast Alaska	17,790	4.20 (1.58)	16.6§	53.5 (28.6)	55	1449	12,546	
Sitka Sound (N05)	615	1.76 (1.35)	24.6	18.9 (10.4)	4	498	2744 (21.9)	18.6 (10.1)
Keku Strait (S08)	472	9.89 (9.61)	80.6	2.4 (1.4)	0	195	641 (5.1)	2.7 (4.4)
Maurelle Is. (S02)	976	4.09 (1.58)	4.5, 42.1¶	12.2 (7.6)	4	167	1880 (15.0)	19.0 (15.0)

Notes: Includes subregion area, estimated carrying capacity, percent Alaska Native population minimum and maximum annual harvest, cumulative harvest, and mean annual contribution to total harvest. SD, standard deviation.

†Tinker et al. (2019*a*).

‡U.S. Census Bureau (2010).

§Robinson et al. (2017).

¶Percent Alaskan Native population of the communities of Craig and Klawock AK, which are not directly adjacent to the Maurelle Islands subregion but are reasonably close to permit harvest.

were taken and any other relevant information. The physical tag remains with the pelt, as only tagged pelts can be tanned by commercial tanning operators.

Before analysis, we reviewed data for consistency and spatial ambiguity. After removing duplicate harvests and addressing typographic errors, 13,151 harvest records remained. Of those, 12,546 (95%) included acceptable geographic information and were used for spatial and temporal analyses and simulation models. We used the latitude and longitude of harvest to assign a geographic subregion. If the geographic coordinates of a harvest location resulted in a land-based location, we used the reported geographic description to generate coordinates in the adjacent marine-based subregion. If the geographic description was not specific enough to assign new coordinates, and the harvest location was less than 1-km inland, we adjusted the harvest latitude and longitude to the nearest subregion. In all other instances of spatial ambiguity, we removed records from analysis. All analyses were conducted at the subregion scale; thus, the specific coordinates were not used after this assignment.

For parameterization of the population simulation model, we converted hunter-reported age and sex into four age/sex classes: adult male, adult female, juvenile male, and juvenile female. If age and/or sex were missing, we assigned the age/sex as unreported for purposes of harvest summaries. For the population simulation model, we assigned harvest records with unreported age and sex data were assigned age/sex classes corresponding to the proportion of reported age/sex classes for the appropriate subregion and year.

Patterns of sea otter harvest

For SEAK as a whole and the three focal subregions, we summarized annual reported number of harvested sea otters, the age/sex class of harvested sea otters, and the annual harvest rate using the estimated preharvest population abundance for that year from Tinker et al. (2019*a*, *b*; Eq. 1).

$$\text{Harvest rate}_{y,i} = \frac{\text{harvest}_{y,i}}{\text{population}'_{y,i}} \quad (1)$$

where $\text{harvest}_{y,i}$ is the number of sea otters harvest in subregion, i in year y, and $\text{population}'_{y,i}$ is the estimated preharvest sea otter population from Tinker et al. (2019*a*). We also calculated the mean annual percent contribution to total harvest for each subregion (Eq. 2).

$$\text{Mean annual percent contribution}_i = \frac{\sum\left(\frac{\text{harvest}_{y,i}}{\sum_i \text{harvest}_y} \times 100\right)}{N\ \text{years of reported harvest}_i}. \quad (2)$$

To identify factors that may be driving variation in sea otter harvest rate at the subregional scale, we constructed a linear mixed-effects model to test for effects of time since sea otter recolonization (TimeOcc), sea otter population density (SODens), proximity to human communities (PopProx), and proximity to sea otter hunters (HunterProx):

$$\mathrm{HR}_{y,i} = \mathrm{TimeOcc}_{y,i} + \mathrm{TimeOcc}^2_{y,i} + \mathrm{SODens}'_{y,i} + \mathrm{PopProx}_{y,i} + \mathrm{HunterProx}_{y,i} + \mathrm{SRerr}_i \quad (3)$$

where $\mathrm{HR}_{y,i}$ is the harvest rate for subregion i in year y, measured as the number of sea otters harvested divided by the estimated preharvest population abundance. Time since occupation for each subregion and year ($\mathrm{TimeOcc}_{y,i}$) was measured as the interval (in years) between a harvest record and the year in which sea otters were known to have first recolonized a given subregion (or year of translocation in the case of subregions containing translocation sites). We allowed for both linear and quadratic effects of $\mathrm{TimeOcc}_{y,i}$, based on the a priori hypothesis that duration of sea otter occupation could have a nonlinear relationship with harvest rate. Sea otter population density for each subregion and year was calculated as estimated abundance divided by habitat area (km^2). To account for collinearity between years of occupation and sea otter density (Tinker et al. 2019*a*), we first fit a separate linear model of sea otter population density as a function of years of sea otter occupation (Appendix S1: Table S1) and extracted the residuals from this model, thereby creating a de-trended metric of relative sea otter population density ($\mathrm{SODens}'_{y,i}$). We used inverse distance weighting (IWD) to interpolate the cumulative effects of human population centers ($\mathrm{PopProx}_{y,i}$) and sea otter hunters ($\mathrm{HunterProx}_{y,i}$) at each subregion and year (Shepard 1968). This was calculated as the sum of the inverse Euclidean (straight-line) distances from each community to the center of each subregion, multiplied by the natural log of that community's population size (human population proximity) or the reported number of unique sea otter hunters that tagged a sea otter pelt (sea otter hunter proximity). Finally, to account for unexplained spatial variation in harvest rate we also included a random effect of subregion (SRerr_i). In the absence of reliable survey data, we assumed that sea otters colonized a subregion one year prior to the first reported harvest. While the true time from recolonization to first harvest is unknown in many subregions, our exploration of harvest trends indicated that in many subregions where the year of colonization is well-documented through aerial surveys, reported harvest appears immediately. We restricted the linear mixed-effects analysis to the period of 1990–2010 and to subregions with reported harvest to avoid biases associated with limited data availability. We performed a simultaneous forward and backward selection procedure with delta Akaike's information criterion (AIC) discrimination to identify the best model from our initial full model. For the purpose of model fitting, sea otter harvest rate was arcsine-square root-transformed, human population proximity was natural log-transformed, and sea otter hunter proximity was square root-transformed to reduce the effect of extreme values. Human population data were obtained from the U.S. Census Bureau (U. S. Census Bureau 2010). Anonymized sea otter hunter data were obtained from USFWS.

Population simulation model

We developed a spatially structured matrix projection model (Caswel 2001) to simulate population dynamics of SEAK sea otters both with and without harvest mortality. Assuming that the model accurately captures the key processes underlying sea otter population dynamics through the subregions defined above, we aimed to use the difference between projected abundance under the two scenarios, at both subregional and stock scales, as a quantitative measure of harvest impacts. While other population models have assessed the effects of sea otter harvest mortality generally (Samuel and Foin 1983, Bodkin and Ballachey 2010), our model differs in key ways. (1) Our model incorporates spatial structure at a scale that is meaningful for tracking demographic processes in sea otter populations (Bodkin 2015, Tinker 2015, Tinker et al. 2019*a*). (2) The model allows for density dependence, demographic stochasticity, and environmental stochasticity in age- and sex-specific vital rates. (3) The model incorporates annually reported sea otter harvest data, including the spatial distribution, age, and sex structure of harvest. (4) The model allows for realistic spatial dynamics, including range expansion and dispersal/movement among subregions. (5) The model uses empirically derived and spatially explicit carrying capacity estimates. (6) The model is initiated in 1970 using the known location and abundance of translocated populations, and then iteratively run forward in time, allowing validation of model performance by comparison of predicted dynamics with observed dynamics between 1970 and 2015 based on a recent analysis of survey data in Tinker et al. (2019*a*).

The simulation model is constructed on a stage-based projection model, where life stages correspond to easily recognized and demographically relevant age/sex classes (Caswel 2001). Adult male sea otters become sexually mature at age 4–8 and adult females at age 2, and have an annual reproductive cycle (Jameson and Johnson 1993, Riedman et al. 1994). After a gestation period of six months, females give birth to a single pup that enters the juvenile age class (if weaned successfully) after a dependency period of approximately six months (Jameson and Johnson 1993). Our matrix model therefore tracks demographic transitions for two age classes of each sex, prereproductive juveniles and subadults (weaning—2.5 yr of age) and reproductive adults (>2.5 yr of age). This division corresponds to the female age of first reproduction, because population dynamics are determined primarily by female survival and reproduction. We used an annual time step to track dynamics, and for each stage *i*, we defined the following vital rates: annual survival rate (s_i), growth transition probability for juveniles (g), birth rates (b), and weaning success rates (w) for adult females. These demographic transitions were combined mathematically into a population projection matrix for subregion j at time t:

$$M_{j,t} = \begin{bmatrix} s_1(1-g) & \frac{b}{2}\cdot w \cdot s_2 & 0 & 0 \\ s_1 \cdot g & s_2 & 0 & 0 \\ 0 & \frac{b}{2}\cdot w \cdot s_2 & s_3(1-g) & 0 \\ 0 & 0 & s_3 \cdot g & s_4 \end{bmatrix}. \quad (4)$$

The reproductive contributions to the juvenile stage depend on birth rate (halved to reflect a 50:50 sex ratio at birth) and weaning success rate and are conditional upon the mother's survival (s_2). The growth transition probability parameter (g) was calculated for each new parameterization of Eq. 5 using the standard equation for fixed-duration age classes (Caswel 2001):

$$g = \left(\frac{(s_1/\lambda)^T - (s_1/\lambda)^{T-1}}{(s_1/\lambda)^T - 1}\right) \quad (5)$$

where T represents the time from recruitment to maturity (2 yr) and λ is the annual growth rate associated with a particular matrix parameterization. Eq. 5 is solved iteratively, whereby λ is initially set to 1, Eq. 5 and then Eq. 4 are solved, λ is recomputed as the dominant eigenvalue of $M_{j,t}$, and then calculations repeated until the value of λ stabilizes to two decimal places.

The primary goal of our simulation model was to approximate realistically demographic processes within a sea otter population while avoiding over. We parameterized vital rates based on estimates from previously published studies of sea otter populations. Adult female birth rates for sea otters remain almost invariant at approximately one pup per year (Monson et al. 2000, Tinker et al. 2006, Riedman et al. 2019), while all other vital rates exhibit both stochasticity and density-dependent variation (Siniff and Ralls 1991, Eberhardt 1995, Monnett and Rotterman 2000, Monson et al. 2000, Gerber et al. 2004, Tinker et al. 2017). To account for this variation, we first generated a large number (A = 1000) of random but biologically feasible sets of vital rates, $VR_a = \{b, w, s_1, s_2, s_3, s_4\}$. Each random array VR_a was consistent with published sea otter life-history schedules and implied an associated annual rate of growth (λ_a) that was calculated algebraically as the dominant eigenvalue of $M_{j,t}$. We first created two extreme VR arrays corresponding to published vital rates for a population growing rapidly near the theoretical r_{max} (λ_a = 1.22 for VR_{high}) and a declining population (λ_a = 0.95 for VR_{low}; Monson et al. 2000). We then generated random adjustment factors to interpolate between the extreme values for each vital rate:

$$VR_a = adj_a \cdot VR_{low} + (1 - adj_a) \cdot VR_{high} \quad (6)$$

where $0 < adj < 1$. To allow flexibility in stage-specific vital rates (representing the effects of demographic stochasticity), while maintaining appropriate life-history schedules (e.g., $s_2 > s_1 > w$), we used Cholesky decomposition to ensure that the random adjustment factors were correlated across vital rates (assuming a correlation coefficient of 0.95). Solving Eq. 6 resulted in 1000 unique sets of correlated vital rates, each with an associated value of λ_a. These random vital rate arrays were then selected during population simulations so as to account for density dependence and stochastic variation (Appendix S1: Fig. S1). At each year and for each subregion within a given simulation, an expected growth rate ($\hat{\lambda}_{j,t}$) was calculated to reflect environmental stochasticity and density dependence. Specifically, if $N_{j,t-1}$ represents the abundance for subregion j at time $t-1$, K_j is the estimated carrying capacity for subregion j, and σ_e is the standard error of log(λ) across years (estimates of K_j and σ_e were based on Tinker et al. 2019*a*), we calculate $\hat{\lambda}_{j,t}$ as

$$\hat{\lambda}_{j,t} = \exp\left(r_{\max}\left(1 - \frac{N_{j,t-1}}{K_j}\right) + \varepsilon_{j,t}\right), \quad (7)$$

where $\varepsilon_{j,t} \sim \text{Normal}(0, \sigma_e)$. An appropriate set of vital rates (VR_a) was then selected randomly after filtering by $\lambda_a = \hat{\lambda}_{j,t}$, and used to parametrize $M_{j,t}$. We then calculated demographic transitions for subregion j at year t using standard matrix multiplication:

$$n'_{i,j,t} = M_{j,t} \times n_{i,j,t-1} \quad (8)$$

where $n'_{i,j,t}$ represents the expected number of individuals of stage i in subregion j at year t, prior to the effects of harvest and redistribution (dispersal) among subregions.

We next adjusted $n'_{i,j,t}$ to reflect harvest mortality (for simulation runs including harvest) and dispersal:

$$n_{i,j,t} = n'_{i,j,t} - H_{i,j,t} + I_{i,j,t} - E_{i,j,t} \quad (9)$$

where $H_{i,j,t}$ is the total recorded harvest mortality for a given year, subregion, and age/sex class, $I_{i,j,t}$ represents immigration to subregion j from other occupied subregions, and $E_{i,j,t}$ represents emigration of animals out of subregion j to other occupied subregions. Immigration and emigration were treated as stochastic Poisson processes, with stage-specific dispersal probabilities computed from dispersal kernels fit to empirical data on tagged sea otter movements (Tinker et al. 2008). Specifically, following previous analyses (Tinker et al. 2008, 2019*b*) we used maximum-likelihood methods to fit Weibull probability distributions to stage-specific data on annual net linear displacement (NLD) measurements from radio-tagged sea otters (Hoyt 2015). We calculated NLD as the most direct, swimmable distance between an individual's recorded position at the start and end of one year. We used minimum cost path (MCP) analysis to prevent overland movements when calculating distances between an otters' starting and ending locations. We also used MCP to compute pairwise swimmable distances between the geographic centroids of all subregions, resulting in a distance matrix D giving the pairwise movement distances between any two subregions. The probability that a sea otter of stage i does not disperse from subregion j is computed by evaluating the fitted Weibull cumulative density function at critical distance δ_j, defined as the average distance between the centroid of subregion j and the centroids of adjacent subregions that share a common boundary. The probability of emigration (P_E) is then calculated as one minus this value, and the actual number of animals of stage i emigrating from subregion j in year t is calculated as a stochastic variable:

$$E_{i,j,t} \sim \text{Poisson}(n_{i,j,t} \cdot P_{E,i}). \quad (10)$$

For those sea otters that emigrate from subregion j, we also must specify the recipient subregion. We did this by first restricting consideration to those subregions known to be colonized at time t (as explained in the next paragraph): For this subset of potential recipient subregions (z = 1, 2 . . . z), the relative probability of dispersal from j to z was computed by evaluating the Weibull density function at the pairwise distances in column j of matrix D (excluding the diagonal), and then rescaling these probabilities to sum to 1 over all z. We distributed the emigrating otters stochastically among occupied subregions by drawing from a multinomial probability distribution with parameters $\alpha_{j,z}$ equal to these rescaled movement probabilities. The number of otters immigrating to subregion j ($I_{i,j,t}$) was computed as the sum of emigrants from all other occupied subregions for which j was randomly selected as the recipient subregion:

$$I_{i,j,t} = \sum_{z \neq j} E_{i,z,t} \rightarrow j. \quad (11)$$

We augmented the stochastic movements between subregions with published data on two specific dispersal events: the colonization of

Coronation Island by approximately 50 sea otters from the Maurelle Islands around 1975 (Pitcher 1989) and the colonization of Glacier Bay by approximately 500 sea otters from Icy Strait in 1995 (Esslinger and Bodkin 2009). The inclusion of these two well-documented dispersal events in the simulation model greatly improved overall performance; however, except for these two events, all modeled other dispersal between subregions was stochastic and determined by the simple probabilistic functions described above. Finally, after accounting for the dynamics of immigration, emigration, and harvest mortality (Eq. 9), we computed the expected population abundance for subregion j at time t as:

$$N_{j,t} = \sum_{i} n_{i,j,t}. \quad (12)$$

The simulation model was initiated at t_0 = 1970, with the 413 sea otters reintroduced in the late 1960s distributed among seven subregions (Appendix S1: Table S2; Burris and McKnight 1973). The year at which additional subregions became colonized (and thus eligible for receiving dispersers from other subregions) was set according to data from aerial and skiff surveys (Pitcher 1989, Esslinger and Bodkin 2009, Tinker et al. 2019*a*), and/or based on harvest records. As in our regression analysis of factors influencing harvest rate, in the absence of precise survey-based estimates of colonization year for a given subregion, we assumed colonization occurred the year before the first harvest records were recorded for that area. We ran simulations for each of two scenarios: (1) including known sea otter harvest and (2) without harvest (i.e., $H_{i,j,t}$ forced to 0). Each model was run for 46 yr (1970–2015) with 10,000 iterations. Mean projected abundance was calculated for all of SEAK and for the three focal subregions. We generated 95% confidence intervals (CIs) for annual expected abundance using a bootstrapping procedure with 10,000 samples. We calculated the simulation-based harvest rate as the ratio of harvested sea otters to the pre-hunted simulated population. Our simulation ran from 1970 through 2015, however scenarios with and without harvest did not differ from 1970 through 1987, before sea otter harvest data collection began, so we therefore present model results from 1988 through 2015. All simulation model parameters are summarized in Table 2.

Table 2. Key to symbology used to denote model parameters.

Symbol	Description
s_i	Annual survival of life stage i
g	Juvenile growth transition probability
b	Birth rate
w	Adult female weaning success rate
$M_{j,t}$	Projection matrix for subregion j and time t
T	Time from recruitment to maternity
λ	Annual growth rate associated with a particular $M_{j,t}$ parameterization
$\hat{\lambda}_{j,t}$	Expected growth rate for subregion j and time t
$N_{j,t-1}$	Sea otter abundance subregion j and time t
K_j	Estimated carrying capacity for subregion j
σ_e	Standard error of log(λ)
$n'_{i,j,t}$	Expected number of individuals of stage i in subregion j at year t, prior to the effects of harvest and dispersal among subregions
$H_{i,j,t}$	Total recorded harvest mortality of life stage i, subregion j, and year t
$I_{i,j,t}$	Immigration to subregion j of life stage i in year t from other occupied subregions
$E_{i,j,t}$	Emigration of animals out of subregion j of life stage i in year to other occupied subregions
$P_{E,i}$	Probability of emigration of life stage i
δ_j	Average distance between the centroid of subregion j and the centroids of adjacent subregions that share a common boundary
D	Distance matrix

Assessing model performance

To evaluate the ability of the simulation model to produce realistic dynamics, we compared model projections to observed abundance trends estimated from aerial survey data (Tinker et al. 2019*a*). Because the model consists of forward projections from the initial translocated population in 1970 and is not fit in any way to the survey data (although certain parameters such as local carrying capacity and environmental stochasticity are based on previous analysis of survey data), agreement between the simulations and observed trends would suggest that the model successfully captures the key factors driving sea otter population growth and range expansion. We visually compared the expected abundance from simulations to the most recent survey results (2010–2012) for the 21 subregions for which survey data were available.

Harvest effects on population

We measured the effect of harvest on sea otter population dynamics by comparing the projected trends with and without sea otter harvest mortality, using paired simulations. This meant that for a given random sequence of environmental stochastic effects, we ran a simulation with observed harvest numbers and a matching simulation with harvest mortality set to zero. We calculated the relative effect of harvest as the proportional difference in abundance at year t between paired simulations using all i bootstrap samples described above: $(N_{i,t,\text{harvest}} - N_{i,t,\text{no harvest}})/\text{mean}(N_{,t,\text{no harvest}})$. Thus, a negative value would indicate decreased abundance due to harvest. As with abundance estimates, we used bootstrap resampling with 10,000 replicate samples to calculate the mean difference and 95% CI for each year and area of interest. We considered years where the 95% CI did not include zero to be instances of significant differences between the two scenarios. We evaluated harvest effects by visually comparing temporal variation in the instantaneous growth rate of simulations with per capita harvest rates.

All statistical analyses and population simulation runs and calculations were performed using R version 3.5.1 (R Core Team 2018). Data and analysis code can be viewed at https://doi.org/10.5281/zenodo.3378051. Sea otter harvest data are available from the USFWS Marking, Tagging, and Reporting Program.

Results

Patterns of sea otter harvest and population effects generally differed between the SEAK stock and the smaller subregions, and among subregions. Harvest records indicated an increase in harvested sea otters over time with stable harvest rates at the SEAK scale but variable harvest rates at the subregional scale. Furthermore, analysis indicated that harvest rate appears to be driven by factors that operate at the subregion scale. Sea otter population simulation results suggested that harvest can lead to reduced populations and in some cases population declines. Overall, our results indicate that variation in harvest itself and its effects on the sea otter population was dependent on the spatial location of interest and that small-scale patterns did not necessarily appear at the SEAK scale.

Reported sea otter harvest

Reported sea otter harvest in the SEAK stock increased from 55 in 1988 to a maximum harvest of 1449 animals in 2013 (Appendix S1: Table S3; Fig. 2e; see Fig. 2a–d for sea otter population estimates from Tinker et al. 2019*a*, *b*). Annual total harvest was low (range = 55–147) relative to the total sea otter population size in the late 1980s, but increased in the early 1990s from 313 to 833. Total annual harvest was low and stable (range = 120–432), from the mid-1990s through the late 2000s. From 2009 to 2013, total annual harvest increased from 597 to 1449. Sea otter harvest remained greater than 1000 per year through 2015. These fluctuations in harvest over time were largely mirrored in Sitka Sound, but at a lower magnitude (Appendix S1: Table S3; Fig. 2f). Harvest patterns differed in the other two focal subregions. Harvest in Keku Strait began in 2000, a few years after sea otter colonization of this area in 1995. From 2000 to 2011, harvest was low, but then increased from 2012 to 2014 (Appendix S1: Table S3; Fig. 2g). The Maurelle Islands experienced periodic pulsed harvest events that were consistently around 100–150 animals (Appendix S1: Table S3; Fig. 2h). Sitka Sound and Maurelle Islands accounted for a similar and high contribution to average annual sea otter harvest in SEAK (18.6% ± 10.10 SD and 19.0% ± 15.0 SD, respectively). Keku Strait accounted for only 2.7% (±4.40 SD) of annual harvest in SEAK (Table 3).

Annual reported sea otter harvest rate varied among the different geographic areas and spatial scales investigated (Table 3, Figs. 2i–l). Annual harvest rate over the whole region was low and stable through time (mean 2.9% ± 1.9 SD), with the exception of the early 1990s, when a maximum harvest rate of 10.6% in 1993 was estimated (Table 3, Fig. 2i). Sitka Sound consistently showed a high annual harvest rate (mean 9.8% ± 9.4 SD) that peaked in 1993 at 39.3% (Table 3, Fig. 2j). In contrast, Keku Strait had low harvest rates when sea otters first colonized the area in 1995. After 2000, the harvest rate increased and became more variable, fluctuating between 0% and 23%, with a mean annual harvest rate of 5.0% (±6.4 SD; Table 3, Fig. 2k). The

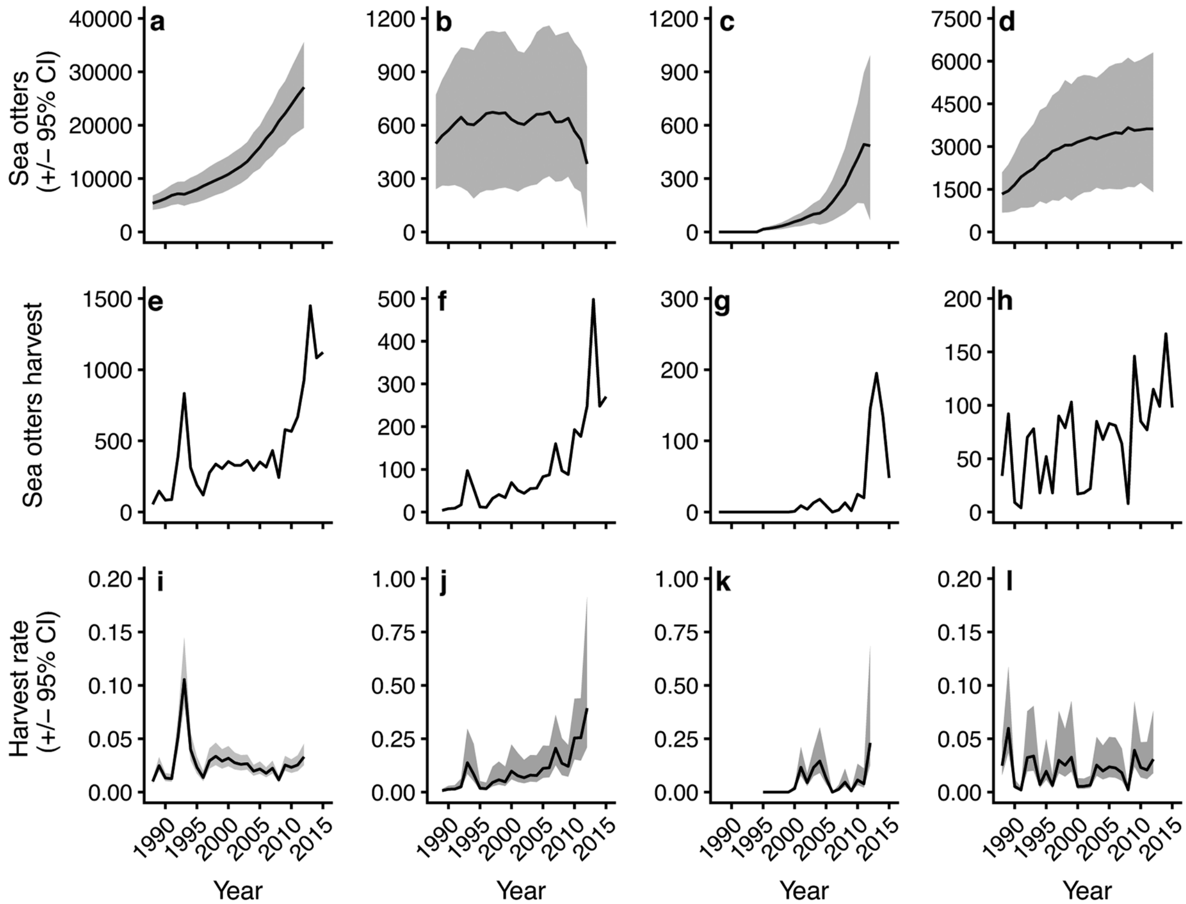

Fig. 2. (a–d) Sea otter population estimates from Tinker et al. (2019*a*), (e–h) annual sea otter harvest, and (i–l) annual sea otter harvest rate from 1988 to 2015 for (a, e, i) Southeast Alaska, (b, f, j) Sitka Sound, (c, g, k) Keku Strait, and (d, h, l) the Maurelle Islands. Annual harvest rate was calculated as the proportion of harvested sea otters to the estimated preharvested sea otter abundance in a given year and location. Note the different *y*-axis scale on (a–d) sea otter population estimates, (e–h) annual sea otter harvest, and (i–l) annual harvest rate.

Table 3. Minimum, maximum, and mean sea otter harvest rate calculated from survey data/population simulation data.

Region	Min	Max	Mean (±SD)
Southeast Alaska	1.0/1.2	10.6/12.6	2.9 (1.9)/3.2 (2.2)
Sitka Sound (N05)	0.7/0.7	39.3/53.4	9.8 (9.4)/12.4 (14.1)
Keku Strait (S08)	0.0/0.0	23.0/78.7	5.0 (6.4)/35.0 (27.9)
Maurelle Is. (S02)	0.2/0.3	6.0/11.4	2.1 (1.4)/3.3 (2.3)

Note: SD, standard deviation.

Maurelle Islands showed periodic sharp increases in harvest rate (0.2–6.0%) followed by little to no harvest, with a mean harvest rate of 2.0% (±1.4 SD; Table 3, Fig. 2l).

Adult sea otters accounted for 82%, juveniles for 14%, and unidentified as 4% of all reported harvests (Appendix S1: Table S4, Fig. S3). The male:female sex ratio of harvested animals was 70:30 for adults and 60:40 for juveniles. Age and sex ratios of harvested otters varied little across years and focal subregions (Appendix S1: Table S4, Fig. S3), regardless of total number of animals harvested (Appendix S1: Table S3).

Our examination of factors potentially explaining variation in annual sea otter harvest rates found that inclusion of the random effect of subregion improved model performance (ΔAIC = 20.25). The best-supported mixed-effects model included linear and quadratic effects of years of sea otter occupation, a negative effect of sea otter population density (de-trended for occupation time), and a positive effect of proximity to sea otter hunters (Table 4). These results indicate that, on average, harvest rate increases after initial colonization, then stabilizes, and eventually decreases. Furthermore, our results on the temporal patterns of sea otter harvest (above) indicate that even after sea otters colonize a subregion, like Keku Strait, hunting may not immediately increase. After controlling for years of sea otter occupation, subregions with higher sea otter densities had lower harvest rates. Finally, subregions with greater proximity to more hunters experienced higher harvest rates.

The spatial extent of sea otter harvest increased from 1988 to 2015, following the range expansion of sea otters. By 2015, harvest had occurred in nearly all subregions that sea otters occupied. Only the Glacier Bay subregions GBYB and GBYC and N01, and N10 had no reported sea otter harvest (Appendix S1: Table S3).

Simulation model: estimating harvest effects on sea otter population dynamics

The simulation model produced estimated trends at both the SEAK stock and subregion scales that were consistent with observed trends based on survey data (compare Fig. 2a–d to Fig. 3a–d). Visual comparison between survey-based estimates of abundance and simulation-based estimates suggested good agreement for subregions all but GBY, where the simulation-based estimates were lower than survey-based estimates (Appendix S1: Fig. S2).

Comparison of simulations between harvest and no-harvest scenarios indicated that harvest of sea otters reduced sea otter growth for the SEAK stock and for the three focal subregions. However, the relative magnitude of this reduction varied among subregions (Fig. 3a–d). For the SEAK stock, the difference between harvest and no-harvest scenarios was evident in the early 1990s. Simulations including harvest showed 15–20% lower abundances relative to simulations without harvest in all years after 1990 (Fig. 3a, e). In the Sitka Sound subregion, the effect of harvest was more striking. From 1994 to 2010, simulations including harvest showed abundances that were approximately 20% lower relative to simulations without harvest. This difference increased sharply after 2010, when the simulations including harvest indicated population declines (Fig. 3b). By 2015, simulations including harvest predicted 50–70% lower sea otter abundance than simulations without harvest (Fig. 3f). In Keku Strait, the impacts of harvest did not precipitate a population decline, but harvest mortality was associated with a reduction in the rate of population increase after the area was colonized in the mid-2000s (Fig. 3c). Simulations including harvest showed a reduction in abundance of approximately 75% relative to simulations without harvest between 2011 and 2015 (Fig. 3g). Model results from the Maurelle Islands indicated a more limited effect of harvest than in Sitka Sound or Keku Strait subregions, with a slight reduction in the rate of growth associated with harvest mortality (Fig. 3d). Simulations including harvest showed a significant reduction in abundance relative to no-harvest

Table 4. Regression output of the best fit model testing the effects of years of sea otter occupation, sea otter population density, human population effect, and sea otter hunter effect on square root-transformed annual harvest rates.

Effect	Estimate	Lower	Upper	SE	*t*	*P*
Random effect of subregion						
Intercept	0.1166	0.0798	0.1703			
Residual	0.2018	0.1883	0.2164			
Fixed effect						
Intercept	0.0376			0.0430	0.8747	0.3823
Years of sea otter occupation	0.0087			0.0038	2.3016	0.0219
Years of sea otter occupation^2	−0.0002			0.0001	−2.1340	0.0212
Sea otter population density	−0.1565			0.0422	−3.7064	0.0002
Sea otter hunter	2.6655			1.2439	2.1429	0.0327

Note: SE, standard error.

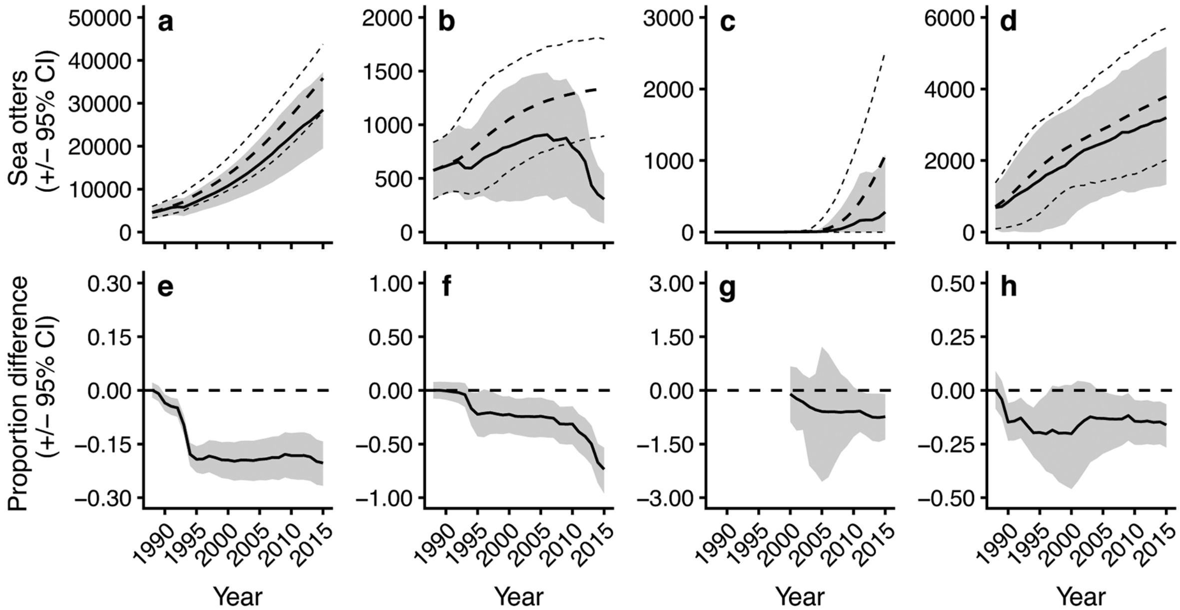

Fig. 3. (a–d) Results from sea otter population simulation models (±95% confidence intervals [CIs]) without reported harvest (dashed lines) and with reported harvest (solid lines and shading). (e–h) Proportional difference (±95% CIs) between simulation model runs with and without reported sea otter harvest calculated from 10,000 bootstrap samples from 1988 to 2015 from (a, e) SEAK, (b, f) Sitka Sound, (c, g) Keku Strait, and (d, h) the Maurelle Islands. Simulation model harvest rate was calculated as the proportion of reported harvest to modeled sea otter population preharvest. Note difference in *y*-axis scale of (a–d) annual sea otter abundance plots, and (e–h) proportional difference plots.

simulations between 1990 and 1996 and between 2005 and 2015. Simulations including harvest predicted a population size approximately 15–20% lower than no-harvest simulations (Fig. 3h).

In summary, simulation models including sea otter harvest predicted a lower abundance of sea otters as compared to models without harvest. However, harvest was not necessarily associated with population declines at the SEAK or subregional level. The exception to this pattern was Sitka Sound, where the simulation estimated that the sea otter population declined from 575 (309–838, 95% CI) in 1988 to 307 (81–546, 95% CI) in 1998, presumably in response to high harvest rates (Fig. 3b).

Discussion

Our analysis of 27 yr of sea otter harvest data, combined with the results of a spatially structured population simulation model built around these data, demonstrates that harvest mortality has strongly influenced population trends in SEAK. However, our results also highlight the importance of considering spatial scale and demographic context when evaluating harvest trends and effects on population dynamics. Patterns of harvest at the entire SEAK stock scale were comparatively muted to the patterns seen at the subregional scale, which showed much more year-to-year variability. The effects of harvest were most apparent at subregional scales and less evident at the scale of the entire SEAK stock, consistent with other recent findings indicating that demographic processes in sea otter populations are structured at relatively small scales (Garshelis and Garshelis 1984, Tarjan and Tinker 2016, Tinker et al. 2019*a*). Thus, concentrated local harvest mortality can have substantial impacts on trends at these scales, even causing local declines. However, sea otter population status with respect to carrying capacity appeared to mediate these effects. Moreover, the magnitude of harvest rate in a given area depended on both the social context (proximity to communities with hunters) and the number of years since that area was first colonized by sea otters.

A key insight gained from our simulation model was that the effects of harvest on population status were most relevant at spatial scales smaller than the SEAK stock scale at which management currently operates. At the SEAK stock scale, sea otter populations may be resilient to periods of high harvest, especially if they are followed by periods of low harvest. This resilience may be explained in part by the heterogeneity of sea otter population dynamics and carrying capacity across SEAK. For example, our analyses and other modeling efforts (Tinker et al. 2019*a*) showed that while some subregions may experience decline or reduced growth rate, they were usually compensated by other subregions experiencing high growth. Synchronous elevated mortality across the entire region, such as occurred in the early 1990s, resulted in a brief cessation of population recovery at the stock scale, but this was the exception rather than the rule. In contrast, year-to-year patterns of population growth or decline at the subregional scale were more closely coupled to variation in harvest rate. The difference between stock and subregional patterns of harvest and population effects highlights the challenge of detecting impacts of localized perturbations at larger spatial scales. As seen in the range of environmental gradients across Hawaiian monk seal (*Monachus schauinslandi*) populations (Schmelzer 2000, Baker et al. 2007) and predatory control of coyotes (*Canis latrans*; Mahoney et al. 2018), a clear understanding of the demographic impacts and context of a given perturbation is best achieved by monitoring dynamics at the appropriate spatial scale. For species which have high site fidelity and small home ranges, localized disturbances can have outsized effects possibly leading to genetic bottlenecking, as seen in sea otters (Larson et al. 2002, 2012) and wolves (Moura et al. 2014).

Considering harvest in terms of a population's carrying capacity can be essential for evaluating critical population thresholds or tipping points (Lande et al. 1995). Samuel and Foin (1983) suggested that a sea otter harvest rate between 2% and 4% of an established population at or near carrying capacity may lead to a stable, albeit lower, sea otter population in approximately 25 yr. Furthermore, Samuel and Foin (1983) and Tinker et al. (2019*a*) suggested that harvest rates greater than 8–10% may lead to population instability and decline. While these results do provide some guidelines for managers, they apply only to established populations at or near carrying capacity, and indeed, they assume availability of reliable estimates of carrying capacity at appropriate scales. Equilibrium densities for sea otters in SEAK are estimated to range from 0.65 to 16.89 sea otters/km^2 with a mean of 4.20 sea otters/km^2 (±1.58 SD; Tinker et al. 2019*a*; Appendix S1: Table S2). Variability across space in equilibrium densities, combined with differences in occupation time and current densities, implies that sustainable harvest levels also could vary widely. For example, Sitka Sound, a long-established subregion thought to be near carrying capacity by the mid-1990s (Tinker et al. 2019*a*), has declined in recent years, likely in response to high levels of harvest (annual average harvest rate of 9.8%; Fig. 2j). In contrast, Keku Strait is a recently established and rapidly growing population, still well-below carrying capacity, where similar harvest rates (above 10% or more) slowed but did not stop growth. Thus, to predict and manage harvest levels sustainably, it is important to consider the subregional population history and status with respect to carrying capacity in addition to the ecology of the species.

Our analysis also provided important insights into some of the factors that determine the magnitude of sea otter harvest rates, including sea otter population status and proximity to human communities, both of which vary across subregions in SEAK (van Vliet et al. 2010). On average, sea otter harvests were greater in subregions that were in close proximity to sea otter hunters. However, the realized per capita harvest rate also depended on how long sea otters had been in a subregion and the current density of the otter population in that location. The nonlinear relationship between harvest rate and years of sea otter occupation suggests that when sea otters first occupy an area, there were several years of increased harvest effort, perhaps in part as communities respond to depletion of local subsistence shellfish resources (Carswell et al. 2015). Therefore, harvest rate increased initially, but then tended to decrease over time as the sea otter population continued to grow and as individual otters responded by moving away from higher-risk areas near communities (Hoyt 2015). Thus, some combination of avoidance behavior by sea otters and numerical saturation (i.e., a type II functional response) ultimately led to a reduced per capita harvest rate. Furthermore, demand for sea otter pelts may not be as high as hunters anticipated, leading to oversupply of pelts, reducing the need to harvest more sea otters.

In addition to considering subregional scale processes in management, it has been suggested that viewing sea otter population and the human communities that harvest them as a coupled social–ecological system may improve management overall (van Vliet et al. 2015). In SEAK, the intensity of sea otter harvest has varied over time and space, with periods of elevated harvest associated with periods of increased information and outreach about sea otter hunting. The increase in hunting in the early 1990s may have been a result of increased awareness of the laws surrounding sea otter harvest. During that period, the USFWS led a series of meetings in SEAK communities to clarify the laws involving harvest of sea otters and other marine mammals under the MMPA (A. R. DeGange, *personal communication*). The number of unique sea otter hunters in SEAK increased from 8 in 1992 before these meetings to 55 in 1994 after these meetings. Similarly, in the early 2000s, regional and local Alaska Native organizations supported classes focused on fur sewing (Sealaska 2013, Eddy 2015, Baxter 2018). Furthermore, increased discussion of commercial and subsistence fishery impacts and proposed sea otter legislation likely contributed to greater awareness (Stedman et al. 2018, Carswell et al. 2015). Collectively, these events likely increased awareness of sea otter hunting in the regions and the number of unique hunters in SEAK has continued to increase, from 60 in 2009 to an overall high of 103 in 2014 (B. Benter, *personal communication*). Furthermore, our analyses found that increased hunter participation was linked to increased reported harvest rate (Table 4). A comprehensive and effective management strategy should therefore recognize and incorporate these social factors.

Our simulation model predicted spatial and temporal trends in sea otter populations consistent with those estimated from aerial survey data, indicating that our model successfully captured the key processes influencing population dynamics in sea otters. However, data availability and quality likely influenced model prediction accuracy at both subregional and stock scales. For example, harvest mortality estimates in our analyses were based only on reported sea otter harvest numbers, even though unreported sources of hunting mortality undoubtedly exist. As seen in the subsistence harvest of beluga whales in Cook Inlet, Alaska, inaccuracies in reported harvest numbers may occur when hunters shoot an animal but are unable to recover the body, a phenomenon called "struck and loss" (Mahoney and Shelden 2000). Estimates of struck and loss from subsistence harvest marine mammals can be high. For example, struck and loss estimates of walrus (*Odobenus rosmarus*) in Alaska average 42% (Fay et al. 1994) and of harp seals (*Pagophilus groenlandicus*) in the northeastern Atlantic range from 0% to 50% (Sjare and Stenson 2002). Currently, USFWS does not have empirical estimates of struck and loss for sea otter harvests in SEAK. Inaccuracies in the sex composition of reported harvests also could have affected estimates of hunting impacts on the population. Following general population dynamic theory, removal of females reduces the reproductive capacity of the population while removal of males does not, except in extreme cases (Bodkin and Ballachey 2010). The sex of a harvested sea otter is hunter-reported and is not necessarily confirmed by the tagger or USWFS, potentially introducing further unaccounted noise to the data. Finally, our data filtering procedure removed 605 harvest records from the analyses. While this is a small proportion of the dataset (5%), it could have had a disproportionate effect on results. Low harvest numbers can result in high harvest rates for newly established populations and have a large effect on growth, as observed for Keku Strait.

Another limitation of our simulation model is that it did not explicitly account for variation in extrinsic mortality factors that are known to influence sea otter population growth (although we did indirectly account for such factors via inclusion of environmental stochasticity in the model). Extrinsic mortality can occur due to variation in food availability or habitat quality (Laidre et al. 2001, 2002, Gregr et al. 2008, Tinker et al. 2017), predation mortality from sharks (Estes and Hatfield 2003, Tinker et al. 2016), killer whale (*Orcinus orca*; Estes et al. 1998), and bald eagles (*Haliaeetus leucocephalus*; Sherrod et al. 1975), disease-associated mortality (DeGange and Vacca 1989, Kreuder et al. 2003), and mortality associated with fisheries, including gillnet and crab pot fisheries that have the potential to entangle sea otters (Wendell et al. 1986, Hatfield et al. 2011), though reports of entanglement of sea otters in Alaska are rare (Worton et al. 2016). Inclusion of any or all of these factors (data permitting) could improve precision and accuracy of future models.

As predator populations continue to recover worldwide, ecologists, conservation biologists, managers, and other stakeholders are likely to face new questions regarding the management of these species (Silliman et al. 2018). In preparation for, or in response to, recovering predator populations, it will be important to re-examine the spatial context of current management frameworks and their ability to effectively manage spatially heterogeneous populations (Mahoney et al. 2018). Our analyses showed that spatial scale, proximity to human settlements, and status and trends of the local population are all important considerations when evaluating the effects of harvest on SEAK sea otter populations. Historically, observer-based aerial surveys have been the primary tool to monitor sea otter populations. While these surveys provide comprehensive data on abundance, they are expensive and time-consuming and therefore have occurred infrequently, at intervals of 7–10 yr (USFWS 2008, 2014*b*). In light of the growing conflicts between humans and recovering sea otter populations and the spatial heterogeneity of status, trends, and equilibrium densities (Tinker et al. 2019*a*), a new approach may be necessary to help resolve some of these issues. To improve current management of sea otters in SEAK, we recommend (1) collecting sea otter population data at the subregional scale and at more regular intervals, perhaps through repeatedly sampling index sites; and (2) expanding harvest data collection to include information on struck and loss, hunter effort, and improve consistency of hunting location accuracy. These goals may be achieved, in part, by changing the management paradigm to one of a social–ecological system rather than considering harvest, population dynamics, and human interests in isolation (van Vliet et al. 2015). If the spreading sea otter population in SEAK and other predator populations around the world are to coexist with human interests, more contemporary approaches to management and conservation are needed to ensure future sustainability of those populations.

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Supporting Information

Additional Supporting Information may be found online at: http://onlinelibrary.wiley.com/doi/10.1002/ecs2.2874/full

Mayor's Report
For
March 21, 2022 Assembly Meeting

1. Seeking Letters of Interest: The Petersburg Borough is accepting letters of interest from citizens who wish to serve the community by filling one of the vacant seats on the following Borough Boards/Commissions until the October 2022 Municipal Election:

Planning Commission – two vacant seats
Parks & Recreation Advisory Board – two vacant seats

Letters of interest should be submitted to Clerk Thompson at the Borough offices located at 12 S. Nordic Drive; by sending to PO Box 329, Petersburg, AK 99833; or by emailing to dthompson@petersburgak.gov.

PETERSBURG BOROUGH
ORDINANCE #2022-03

AN ORDINANCE AMENDING PETERSBURG MUNICIPAL CODE CHAPTER 14.20, ENTITLED "MUNICIPAL HARBORS", TO INCREASE HARBOR FEES

WHEREAS, Petersburg's Municipal Harbor Department and the Harbors and Ports Advisory Board recommend an increase in moorage and use fees to bring harbor revenues in line with expenses; and

WHEREAS, harbor fees were last increased in 2018 at the recommendation of the Waterfront Master Plan, adopted along with the Petersburg Borough Comprehensive Plan dated February 22, 2016 by Ordinance #2016-02.

THEREFORE, THE PETERSBURG BOROUGH ORDAINS, as follows:

Section 1. Classification: This ordinance is of a general and permanent nature and shall be codified in the Petersburg Municipal Code.

Section 2. Purpose: The purpose of this ordinance is to increase harbor fees to bring harbor revenues in line with expenses.

Section 3. Substantive Provisions: Section 14.20.390, *Fees and charges for services,* of Chapter 14.20 entitled "Municipal Harbors", of the Petersburg Municipal Code shall be amended to read as follows (the language proposed for deletion is struck through, and the new language is in blue and underlined):

Chapter 14.20 MUNICIPAL HARBORS

14.20.390 Fees and charges for services.

A. Annual Moorage fees.

1. Unless otherwise stated in this chapter, the base moorage fee (also referred to as the permanent stall rate), available to a vessel which has a moorage contract for a stall in the municipal harbors located in Service Area 1 for a minimum term of seven full consecutive months, is as follows:

Stall length	$ per foot
18 ft.	× ~~$37.00 = $666.00 ($55.50 mo.)~~ $39.00 = $702.00 ($58.50 mo.)
20 ft.	× ~~$37.00 = $740.00 ($62.00 mo.)~~ $39.00 = $780.00 ($65.00 mo.)
26 ft.	× ~~$37.00 = $962.00 ($81.00 mo.)~~ $39.00 = $1,014.00 ($84.50 mo.)
32 ft.	× ~~$37.00 = $1,184.00 ($99.00 mo.)~~ $39.00 = $1,248.00 ($104.00 mo.)
40 ft.	× ~~$41.45 = $1,658.00 ($138.00 mo.)~~ $43.50 = $1,740.00 ($145.00 mo.)

42 ft.	× ~~$41.45 = $1,740.90 ($145.00 mo.)~~ $43.50 = $1,827.00 ($152.25 mo.)
48 ft.	× ~~$48.00 = $2,304.00 ($192.00 mo.)~~ $50.00 = $2,400.00 ($200.00 mo.)
50 ft.	× ~~$48.00= $2,400.00 ($200.00 mo.)~~ $50.00 = $2,500.00 ($208.33 mo.)
50 ft. wide (55)	× ~~$48.00= $2,640.00 ($220.00 mo.)~~ $50.50 = $2,777.50 ($231.46 mo.)
60 ft.	×~~$54.50 = $3,270.00 ($272.50 mo.)~~ $57.25 = $3,435.00 ($286.25 mo.)
62 ft.	× ~~$54.50 = $3,379.00 ($281.50 mo.)~~ $57.25 = $3,549.50 ($295.79 mo.)
75 ft.	× ~~$54.50 = $4,087.50 ($340.50 mo.)~~ $57.25 = $4,293.75 ($357.81 mo.)
100 ft.	× ~~$54.50 = $5,450.00 ($454.00 mo.)~~ $57.25 = $5,725.00 ($477.08 mo.)

2. Monthly 20-foot stall rental in South Harbor:

   a. 1—11 months: $~~62.00~~65.00

   b. 12 months: $~~31.00~~32.50 (prepaid)

3. Overhanging stall: One dollar per foot, per month, except there shall be no overhanging stall fee charged to the 20-foot stalls in South Harbor.

4. Unless otherwise stated in this chapter, the base semi-annual moorage fees available to a vessel which has a moorage contract for a stall in the municipal harbors located in service area 1 for a term of 3 to 6 consecutive months shall be charged $~~5.60~~ 5.88 per linear foot per month.

B. Use fees.

1. Transient vessel moorage fees.

   a. The owner, master or agent of any transient vessel moored within the municipal harbors for less than ten days in any calendar month shall pay per day, or any portion thereof, moorage based on the length of vessel as follows:

      i. All ~~United States registered~~ vessels: $0.~~72~~75 per linear foot.

      ii. ~~Foreign registered vessels 75 feet and under: $0.72 per linear foot.~~Non-Commercial Fishing >90 foot: Daily $1.50 per linear foot.

   b. The owner, master or agent of any transient vessel moored within the municipal harbors for ten days or more in any calendar month shall pay moorage at the rate of $~~7.20~~ 7.50 per linear foot per calendar month except as set out below.

      i. ~~Foreign registered vessels over 75 feet: $1.45 per linear foot~~Non-Commercial Fishing >90 foot: Monthly $15.00 per linear foot.

2. Skiff float use. The owner, master or agent of any vessel moored at the skiff float shall be charged $2.00 per linear foot per month.

3. Grid use fee. The owner, master or agent of any vessel using a grid shall pay for the use of the grid at the following rate per linear foot (vessel length) per day:

   a. Wood grid, $0.~~65~~70.

   b. Steel grid, $~~1.10~~1.20.

4. Live-aboard fee. The vessel owner, master or agent shall pay the following rate per month for persons living aboard a vessel:

    a. One person, $~~60~~65.00.

    b. Each additional person, $~~25~~30.00.

5. Launching ramp permit fee.

    a. Commercial use of launching ramp. Persons launching vessels without purchasing an annual launch permit shall pay $~~28~~30.00 for each launch. An annual launch permit for commercial use may be purchased at a cost of $~~28~~300.00 for unlimited use of the launching facilities.

    b. Noncommercial use of launching ramp. Persons launching vessels without purchasing an annual launch permit shall be charged $~~10~~15.00 for each launch. An annual launch permit may be purchased at a cost of $~~35~~50.00 for the first permit and $~~17.50~~25.00 each for each additional permit (each trailer must have its own permit) for unlimited use of the launching facilities. The permit must be attached to the tongue of the trailer.

6. Port facility use fee.

    a. Dock face moorage fee. The owner, master or agent of any vessel mooring at a dock face shall pay $~~1.00~~2.50 per linear foot (vessel length) for each 24-hour period or portion thereof.

    b. Wharfage fee. The owner, master or agent of any vessel loading or unloading freight at the port dock shall pay $5.00 per ton of freight loaded or unloaded.

    c. Upland outdoor storage fees. The owner, master or agent of a vessel whose gear or equipment is stored at an upland outdoor storage area of a municipal harbor shall pay $0.~~26~~30 per square foot of storage space rented per month. Prior approval of the harbormaster is required.

7. Port dock, drive down bulkhead, launch ramp and crane dock loading/off-loading use fee.

    a. Persons engaged in loading or off-loading materials, equipment, gear or any other items onto or off vessels at the port dock, drive down bulkhead or crane dock shall be charged $~~25~~50.00 for each vessel loaded or off-loaded or $~~250~~300.00 annually for unlimited use of one of the docks for loading/off-loading. Prior approval of the harbormaster is required.

    b. Vessels are limited to 4 hours moorage within a 24-hour period on the crane dock and drive down bulkhead. Additional time may be granted by the harbor master.

8. Commercial Drive Down Dock and Drive Down Bulkhead Permit.

    a. Annual Permit: $~~2.80~~3.00 per lineal foot of vessel.

    b. Per Use Basis: $1.00 per lineal foot of vessel per use.

    c. Vessels are limited to 4 hours of active loading and unloading activity within a 24-hour period. Additional time may be granted by the harbormaster.

    d. Specific areas are available for vessel repair and maintenance. Reservations must be made prior through the harbormaster. Vessels will be charged $1.00 per foot per day for reserved space.

9. Crane use fee. The owner, master or agent of any vessel using the crane shall be charged $~~35~~40.00 for each hour of use, or portion thereof.

10. Boat pumping fee. The owner, master or agent of a vessel pumped shall pay $60.00 per hour (with a one-hour minimum fee) for the vessel pumping service.

11. Snow removal fee. The owner, master or agent of a vessel provided with snow removal service shall pay $40.00 per hour (with a one-hour minimum fee).

12. Transient electrical service fee. The owner, master or agent of a vessel provided electrical service, if available, shall pay:

    a. $6.00 per day for 30 amp service;

    b. $10.00 per day for 50 amp service;

    c. $34.00 per day for 60 amp service; and

    d. $57.00 per day for 100 amp service.

13. Electric adapter plug rental fee.

    a. 30 amp/110v adapter - $5.00 per day;

    b. 60 amp 3 phase/50 amp adapter - $10.00 per day after a 10 day grace period;

    c. 100 amp plug - $10.00 per day after a 10 day grace period.

14. Impounding fee for gear or other equipment left on dock or floats. The owner, master or agent of a vessel whose gear or equipment, including skiffs, is left on the docks or floats after the harbormaster has directed the items to be removed, after the vessel has left the harbor, or for a period in excess of 24 hours, shall be charged a $~~50~~75.00 minimum impound fee for those items, plus $3.00 per day as the storage fee on the impounded items. Impounded items may, at the discretion of the harbormaster, be discarded if not claimed within 30 days.

15. Vessel moving/towing fee for vessels moored within the municipal harbors. The owner, master or agent of any vessel moored within the municipal harbors which is moved or towed within the facility shall be charged $1.~~25~~50 per linear foot (vessel length) for the moving/towing service. The moving/towing service shall be provided at the discretion of the harbormaster.

16. Harbor skiff emergency use fee. The owner, master or agent of any vessel requiring the emergency use of the harbor skiff shall pay $40.00 per hour (with a one-hour minimum fee) for the skiff emergency service.

17. Power-washer use. The owner, master or agent of any vessel using the power-washer shall be charged $~~35~~40.00 per hour, or any portion thereof.

18. Harbor showers. Use of the showers at the harbormaster's building shall be charged $2.00 for each seven and one-half minutes.

19. Tour ship docking fees.

    a. Float side inner harbor: $~~450~~500.00 per stop;

    b. Port dock and drive down bulkhead: $~~560~~600.00 per stop;

    c. Lighters to the harbor will be charged $~~280~~400.00 per each 24 hours;

    d. Drive Down Float: $700.00 per stop, 8 hour maximum; time over 8 hour maximum $100.00 per hour;

    c. Homeland Security Fee: $400.00 per stop.

20. Tour ship schedule or docking location change fee (in effect from April 30 through October 31 annually) $200.00 per change, per vessel.

21. Tour ship trip cancellation. Prepaid tour ship docking and other use fees will not be refunded for ship cancellations received by the borough after April 30 of each year.

22. Garbage, waste oil disposal fees and water fees.

    a. Vessels not using the harbor facilities for moorage but disposing of garbage or waste oil or obtaining water shall be charged fees as follows:

i. Garbage disposal, $25.00 per cubic yard;

ii. Waste oil disposal, $5.50~~00~~ per five gallons, $~~40~~50.00 per barrel, plus expenses incurred by the borough in disposal;

iii. Potable water, $15.00 minimum or $0.03 per gallon, whichever is greater.

23. Fees associated with vessels in a dangerous condition:

a. Replacing or securing mooring lines, $20.00 plus the cost of material used;

b. Pumping of vessels, $60.00 per hour (with a one-hour minimum fee), plus expenses incurred.

24. Fees for conducting business from a vessel. Twenty dollars per day during such period of time as mooring is approved.

25. Impoundment fees. Impounded vessels shall be charged a minimum fee of $~~60~~75.00 plus storage at the rate of not less than $3.00 per day. These fees are in addition to any costs incurred by the borough during the impoundment process.

C. Fees in this subsection 14.20.390 may be increased, by ordinance amendment, on an annual basis, subject to review of harbor facilities' financial needs and borough assembly approval, based on increases in the Anchorage Consumer Price Index.

Section 4. Severability: If any provision of this Ordinance or any application to any person or circumstance is held invalid, the remainder of this Ordinance and the application to other persons or circumstances shall not be affected.

Section 5. Effective Date: This Ordinance shall become effective April 1, 2022.

PASSED AND APPROVED by the Petersburg Borough Assembly, Petersburg, Alaska this _____ day of ___________________, 2022.

____
Mark Jensen, Mayor

ATTEST:

____
Debra K. Thompson, Borough Clerk

Adopted:
Noticed:
Effective:

PETERSBURG BOROUGH
ORDINANCE #2022-04

AN ORDINANCE OF THE PETERSBURG BOROUGH ADJUSTING THE FY 2022 BUDGET FOR KNOWN CHANGES

Section 1. Classification: This ordinance is not of a permanent nature and shall not be codified in the Petersburg Municipal Code.

Section 2. Purpose: The purpose of this ordinance is to adjust the FY 2022 budget for known changes.

Section 3. Substantive Provisions: In accordance with Section 11.09(a) of the Charter of the Petersburg Borough, the budget for the fiscal period beginning July 1, 2021 and ending June 30, 2022 is adjusted as follows:

Explanation: Necessary revisions in the FY 2022 budget identified after adoption of the Budget.

Account Number	Account	Increase
FISCAL YEAR 2022 REVENUE / EXPENSE BUDGET ADJUSTMENTS		
Electric Department – Fund 755 – 399 Cat Inframe Overhaul		
755.000.501450	Contractor/Construction	$35,000.
410.000.501410	Electric fund – Transfer Out	($35,000)
The award to NC Machinery at the Assembly Meeting on February 22, 2022 was greater then budgeted for within the Capital Project Fund. Transferring $35,000 from the Electric Fund to the Capital Project Fund will remedy this.		
Harbor Department & Motor Pool		
450.000.506XXX	#113 Flatbed / Plow Truck – Harbor Contribution	$60,000.
510.000.507019	#113 Flatbed / Plow Truck – Motor Pool Contribution	$10,000.
Motor Pool will be recommending this replacement in the FY23 Budget however the Harbor would like to get an early start on the replacement due to serious deterioration of the existing unit.		
DCRA Local Government Lost Revenue		
287.000.402270	Grant Revenue	$1,430,892.
287.000.501XXX	Petersburg Medical Center	($825,388)
287.000.501XXX	Borough Enterprise Funds	($136,216)
287.000.501XXX	Borough General Fund	($469,288)
Based on Resolution #2022-02 which was approved at the March 7, 2022 Assembly Meeting.		

Parks and Recreation		
110.574.501410	Rooftop Snow Removal	$15,958.
110.574.501340	Snow Blower Purchase	$3,452.
110.574.501470	Electric Charges Forecasted for April and May	$16,274.
Unexpected rooftop snow removal resulted in hiring additional temporary help and the purchase of a snow blower. Due to the delay in Electrical repairs P&R will see two more months of higher electrical charges.		

Section 4. Severability: If any provision of this ordinance or any application to any person or circumstance is held invalid, the remainder of this ordinance and application to any person and circumstance shall not be affected.

Section 5. Effective Date: This ordinance shall become effective immediately after the date of its passage.

Passed and approved by the Petersburg Borough Assembly, Petersburg, Alaska this 18th day of April, 2022.

____
Mark Jensen, Mayor

ATTEST:

____
Debra K. Thompson, Borough Clerk

Adopted:
Published:
Effective:

PETERSBURG BOROUGH
RESOLUTION #2022-03

A RESOLUTION AUTHORIZING THE PUBLIC SALE OF PARCEL #01-004-320 LOCATED AT 700 SANDY BEACH ROAD BY OUTCRY AUCTION

WHEREAS, the Petersburg Borough owns property located at 700 Sandy Beach Road, more particularly described as follows ("the property"):

Lot 15, US Survey 2986, Section 26, Township 58S, Range 79E, Copper River Meridian, Petersburg Recording District, (Borough parcel #01-004-320); and

WHEREAS, the property has a 2022 assessed value of $76,900; and

WHEREAS, the property has been determined not needed for a public use; and

WHEREAS, the property is zoned Single Family Residential; and

WHEREAS, application has been made to purchase the parcel and on February 8, 2022, a noticed public hearing was held by the Petersburg Planning Commission; and

WHEREAS, the Planning Commission considered and reviewed applicant materials, public comments and testimony, and staff comments, and have made recommendation to the Assembly to sell the property by sealed bid; and

WHEREAS, the Assembly wishes to offer the parcel for public sale by outcry auction.

THEREFORE, BE IT RESOLVED by the Assembly of the Petersburg Borough:

Section 1: Pursuant to PMC 16.12.100(D)(1), said property shall be sold at public sale by outcry auction to be held on Monday, May 2, 2022 at 12:00 p.m. in the Assembly Chambers located at 12 S. Nordic Drive, Petersburg, Alaska. The minimum bid price is set forth below:

Parcel #	Legal Description	Physical Address	Assessed Value	Administrative Fee (advertising, surveying, title, deed recording, legal)	Minimum Bid
01-004-320	Lot 15, US Survey 2986, Section 26, Township 58S, Range 79E, Copper River Meridian	700 Sandy Beach Road	$76,900	Order for Owner's Title Insurance - $250 Est. Recording Fees - $50 Est. Advertising Fees - $300	$77,500

Section 2: The Assembly finds that the property is not needed for a public purpose.

Section 3: Any individual participating in the public sale must be eighteen (18) years of age or older as of the date of submittal of a bid.

Borough Charter Section 11.13(E), Personal Interest, states that Borough officers, employees and elected officials shall not be eligible to purchase anything from the borough by outcry auction while holding office or employment or for a period of six months after leaving office or employment.

Section 4: Immediately following the Assembly's declaration of the highest qualified bid, the successful bidder, or bidder's legal representative, shall sign a Contract of Sale, in the form attached, whereby bidder agrees to purchase the property for the bid price, and further agrees to all other terms and conditions set forth in this Resolution and in the Contract of Sale.

Section 5: The Assembly does not require the construction of improvements within a specified period of time as a condition of a conveyance of this Borough property.

Section 6:

a. The property will be conveyed via quitclaim deed, in form as attached hereto.

b. The property is sold "as is, where is", in its current condition and with all faults. The Borough expressly makes no representations regarding, and disclaims any liability for, the property, including but not limited to (1) the condition of the property and any improvements located thereon; (2) the exact location or size of the property, the existence of markers on the property, or the ability or cost of surveying the property; (3) the status or insurability of title to the property, including the existence of any liens, encumbrances or conditions on the property, of record or not of record, including but not limited to matters which would have been disclosed by a survey or physical inspection of the property; (4) the ability of the Buyer to utilize the property and/or any improvements in any fashion and for any particular purpose or use; and (5) the existence, or the potential for installation, of utilities on or to the property. The Seller makes no representations, warranties or guarantees, express or implied, as to quality, merchantability or suitability of the property for a particular purpose or use. The property is sold subject to all platted easements, rights-of-way and reservations, and may only be used for the purpose for which it is zoned.

c. All bidders should personally inspect the property and make their own determination as to whether the land will meet their needs. The bidder assumes the entire risk as to a property's quality and suitability for intended use. All future uses of the land must comply with applicable federal, state and municipal laws.

Section 7: The successful bidder shall pay a minimum of five percent (5%) of a property's total purchase price as a deposit within fourteen (14) calendar days of the expiration of the appeal period set out in PMC 16.12.110A, and the remaining balance in full within ninety (90) calendar days thereafter. If an appeal of the bid award is timely filed under PMC 16.12.110, the deposit is due from the successful bidder within fourteen (14) calendar days of the decision on the appeal by the Assembly, and the remaining balance is due in full within ninety (90) calendar days thereafter. A quitclaim deed shall not be issued until payment in full of the purchase price has been made. If a purchaser fails to timely make payment in full, the deposit is forfeited to the Borough unless an extension of no more than ten (10) calendar days to pay the balance is authorized in writing by the Borough Manager.

Section 8: If the property is not sold at the public sale, it may be sold on a first-come, first-serve basis under PMC 16.12.150.

Section 9: In the event a purchaser defaults, by either failing to timely make the required deposit, or by failing to pay the remaining purchase price within the required period, the purchaser shall have no further rights to purchase the property under the public sale, and the property shall become available for over-the-counter sale, on a first-come, first serve basis, for the amount equal to the highest qualified bid offered at the public sale. In the event that more than one offer is received by the Borough on the same calendar day for purchase of a property, the purchaser shall be chosen by lot.

Section 10: The Borough Manager is authorized to sign the conveyance documents on behalf of the Borough.

EFFECTIVE DATE. This resolution shall become effective on the day after the date of its passage.

Passed and Approved by the Petersburg Borough Assembly on March 21, 2022.

____
Mark Jensen, Mayor

ATTEST:

____
Debra K. Thompson, Borough Clerk

Parcel #: 01-004-320

Physical Address: 700 Sandy Beach Road - Uplands
Zoned: Single Family – Residential
Legal Description: Lot 15; US Survey 2986; Section 26; Township 58S; Range 79E, Copper River Meridian
Size: 84,942 sq ft
2022 Assessed Value: $76,900

Other comments: Survey completed. This lot is above Sandy Beach Road and has developed lots on both sides. This lot contains a 60' X 440' undeveloped public easement along the eastern property line adjacent to Lot 16. No development may occur within the easement without prior approval of the borough.

CONTRACT OF SALE

This contract of sale is made between the Petersburg Borough, whose address is P.O. Box 329, Petersburg, Alaska, 99833, hereinafter the Seller, and ____________________________, whose address is ___________________________________, hereinafter the Buyer. If Buyer is an individual, s/he represents that s/he is 18 years of age or older. If this contract of sale is being executed by Buyer's authorized representative, the written authorization, or copy thereof, is attached hereto.

1. Upon the following terms and conditions, and those set out in Assembly Resolution 2022-03 of the Petersburg Borough, Seller hereby agrees to sell and convey, and Buyer agrees to purchase, the following described real property:

Lot 15, US Survey 2986, Section 26, Township 58S, Range 79E, Copper River Meridian, Petersburg Recording District, (Borough parcel #01-004-320 Located at 700 Sandy Beach Road)

2. (a) The total purchase price is $_______________, payable as follows: A deposit equal to a minimum of five percent (5%) of the purchase price shall be paid to the Seller within five (5) business days of the date of execution of this contract of sale, and the balance of the purchase price shall be paid in full to the Seller within ninety (90) calendar days of execution of this contract of sale. Conveyance of the property to the Buyer shall be by quitclaim deed upon payment of the full purchase price.

(b) In the event that an appeal of the bid award is filed and the bid award to Buyer is upheld in the decision on appeal by the Assembly, the deposit is due within five (5) calendar days of the Assembly's decision, and the balance of the purchase price shall be paid in full within ninety (90) calendar days of the Assembly's decision.

(c) If the Buyer defaults, by either failing to timely make the required deposit or by failing to timely pay the balance of the purchase price, any deposit made by Buyer shall be forfeited to the Seller and the Buyer shall have no further rights whatsoever to purchase the property. This section is not intended to limit any other legal remedy available to the Seller.

3. The property, and any improvements located thereon, is sold "as is, where is", in its current condition and with all faults. The Seller expressly makes no representations regarding, and disclaims any liability for, the property, and/or any improvements located thereon, including but not limited to (1) the condition of the property and any improvements located thereon; (2) the exact location or size of the property, the existence of markers on the property, or the ability or cost of surveying the property; (3) the status or insurability of title to the property, including the existence of any liens, encumbrances or conditions on the property; (4) the ability of the Buyer to utilize the property and/or any improvements in any fashion and for any particular purpose or use; and (5) the existence, or the potential for installation, of utilities on or to the property. The Seller makes no representations, warranties or guarantees, express or implied, as to quality, merchantability or suitability of the property for a particular purpose or use.

4. The property is sold subject to all platted easements, rights-of-way and reservations, and may only be used for the purpose for which it is zoned. The property is sold subject to all other liens, encumbrances, and conditions, of record or not of record, including but not limited to matters which would have been disclosed by a survey or physical inspection of the property.

IN WITNESS WHEREOF, this contract of sale has been duly executed by the parties thereto.

SELLER, Petersburg Borough

____
By: Stephen Giesbrecht
Its: Borough Manager

Date: ____________________________

STATE OF ALASKA)
)ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that before me, the undersigned Notary Public for Alaska, duly commissioned and sworn as such, personally appeared Stephen Giesbrecht, to me known to be the Borough Manager of the Petersburg Borough, and who executed the foregoing instrument, and acknowledged to me that he signed and sealed the same as his free and voluntary act and deed and on behalf and under proper authority of the Petersburg Borough for the uses and purposes therein mentioned.

WITNESS my hand and official seal this ___ day of _______________, 2022.

____
NOTARY PUBLIC in and for Alaska
My Commission Expires: ___________________

BUYER

____
Name of Buyer (please print)

____
Signature

Date: ______________________________

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that before me, the undersigned Notary Public for Alaska, duly commissioned and sworn as such, personally appeared ____________________, to me known to be the individual described herein, and who executed the foregoing instrument, and acknowledged to me that s/he signed and sealed the same as his/her free and voluntary act and deed for the uses and purposes therein mentioned.

WITNESS my hand and official seal this ____ day of ____________, 2022.

____
NOTARY PUBLIC in and for Alaska
My Commission Expires: ___________________

For recordation in the Petersburg Recording District

QUITCLAIM DEED

The Grantor, PETERSBURG BOROUGH, whose address is P. O. Box 329, Petersburg, Alaska, 99833, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, hereby conveys and quitclaims all of its interest, without warranty, to Grantee, ____, whose address is ____, in that real property more particularly described as follows:

Lot 15, US Survey 2986, Section 26, Township 58S, Range 79E, Copper River Meridian, Petersburg Recording District, (Borough Parcel #01-004-320)

Subject to all easements, rights-of-way and reservations, and liens, encumbrances and conditions, of record or not of record.

DATED this ________ day of ______________, 2022.

PETERSBURG BOROUGH

By:______________________________

Stephen Giesbrecht

Its: Borough Manager

ACKNOWLEDGEMENT

STATE OF ALASKA)
)
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that before me, the undersigned Notary Public for Alaska, duly commissioned and sworn as such, personally appeared Stephen Giesbrecht, to me known to be the Borough Manager of the Petersburg Borough, Alaska, who executed the foregoing instrument, and acknowledged to me that he executed said document under legal authority and with knowledge of its contents; and that such act was performed freely and voluntarily under the premises and for the purposes stated therein.

WITNESS my hand and official seal this ____ day of __________, 2022.

____
Notary Public in and for Alaska
My commission expires: ________________

Return to:
Petersburg Borough Clerk
PO Box 329
Petersburg, AK 99833

Quitclaim Deed
Page 2 of 2

PETERSBURG BOROUGH
RESOLUTION #2022-04

A RESOLUTION AUTHORIZING THE PUBLIC SALE OF PARCEL #01-014-180 LOCATED AT 1015 SANDY BEACH ROAD BY OUTCRY AUCTION

WHEREAS, the Petersburg Borough owns property located at 1015 Sandy Beach Road, more particularly described as follows ("the property"):

Lot FF, US Survey 3276, Section 26, Township 58S, Range 79E, Copper River Meridian, Petersburg Recording District, (Borough parcel #01-014-180); and

WHEREAS, the property has a 2022 assessed value of $168,200; and

WHEREAS, the property has been determined not needed for a public use; and

WHEREAS, the property is zoned Single Family Residential; and

WHEREAS, application has been made to purchase the parcel and on February 8, 2022, a noticed public hearing was held by the Petersburg Planning Commission; and

WHEREAS, the Planning Commission considered and reviewed applicant materials, public comments and testimony, and staff comments, and have made recommendation to the Assembly to sell the property by sealed bid; and

WHEREAS, the Assembly wishes to offer the parcel for public sale by outcry auction.

THEREFORE, BE IT RESOLVED by the Assembly of the Petersburg Borough:

Section 1: Pursuant to PMC 16.12.100(D)(1), said property shall be sold at public sale by outcry auction to be held on Monday, May 2, 2022 at 12:00 p.m. in the Assembly Chambers located at 12 S. Nordic Drive, Petersburg, Alaska. The minimum bid price is set forth below:

Parcel #	Legal Description	Physical Address	Assessed Value	Administrative Fee (advertising, surveying, title, deed recording, legal)	Minimum Bid
01-014-180	Lot FF, US Survey 3276, Section 26, Township 58S, Range 79E, Copper River Meridian	1015 Sandy Beach Road	$168,200	Order for Owner's Title Insurance - $250 Est. Recording Fees - $50 Est. Advertising Fees - $300	$168,800

Section 2: The Assembly finds that the property is not needed for a public purpose.

Section 3: Any individual participating in the public sale must be eighteen (18) years of age or older as of the date of submittal of a bid.

Borough Charter Section 11.13(E), Personal Interest, states that Borough officers, employees and elected officials shall not be eligible to purchase anything from the borough by outcry auction while holding office or employment or for a period of six months after leaving office or employment.

Section 4: Immediately following the Assembly's declaration of the highest qualified bid, the successful bidder, or bidder's legal representative, shall sign a Contract of Sale, in the form attached, whereby bidder agrees to purchase the property for the bid price, and further agrees to all other terms and conditions set forth in this Resolution and in the Contract of Sale.

Section 5: The Assembly does not require the construction of improvements within a specified period of time as a condition of a conveyance of this Borough property.

Section 6:

a. The property will be conveyed via quitclaim deed, in form as attached hereto.

b. The property is sold "as is, where is", in its current condition and with all faults. The Borough expressly makes no representations regarding, and disclaims any liability for, the property, including but not limited to (1) the condition of the property and any improvements located thereon; (2) the exact location or size of the property, the existence of markers on the property, or the ability or cost of surveying the property; (3) the status or insurability of title to the property, including the existence of any liens, encumbrances or conditions on the property, of record or not of record, including but not limited to matters which would have been disclosed by a survey or physical inspection of the property; (4) the ability of the Buyer to utilize the property and/or any improvements in any fashion and for any particular purpose or use; and (5) the existence, or the potential for installation, of utilities on or to the property. The Seller makes no representations, warranties or guarantees, express or implied, as to quality, merchantability or suitability of the property for a particular purpose or use. The property is sold subject to all platted easements, rights-of-way and reservations, and may only be used for the purpose for which it is zoned.

c. All bidders should personally inspect the property and make their own determination as to whether the land will meet their needs. The bidder assumes the entire risk as to a property's quality and suitability for intended use. All future uses of the land must comply with applicable federal, state and municipal laws.

Section 7: The successful bidder shall pay a minimum of five percent (5%) of a property's total purchase price as a deposit within fourteen (14) calendar days of the expiration of the appeal period set out in PMC 16.12.110A, and the remaining balance in full within ninety (90) calendar days thereafter. If an appeal of the bid award is timely filed under PMC 16.12.110, the deposit is due from the successful bidder within fourteen (14) calendar days of the decision on the appeal by the Assembly, and the remaining balance is due in full within ninety (90) calendar days thereafter. A quitclaim deed shall not be issued until payment in full of the purchase price has been made. If a purchaser fails to timely make payment in full, the deposit is forfeited to the Borough unless an extension of no more than ten (10) calendar days to pay the balance is authorized in writing by the Borough Manager.

Section 8: If the property is not sold at the public sale, it may be sold on a first-come, first-serve basis under PMC 16.12.150.

Section 9: In the event a purchaser defaults, by either failing to timely make the required deposit, or by failing to pay the remaining purchase price within the required period, the purchaser shall have no further rights to purchase the property under the public sale, and the property shall become available for over-the-counter sale, on a first-come, first serve basis, for the amount equal to the highest qualified bid offered at the public sale. In the event that more than one offer is received by the Borough on the same calendar day for purchase of a property, the purchaser shall be chosen by lot.

Section 10: The Borough Manager is authorized to sign the conveyance documents on behalf of the Borough.

EFFECTIVE DATE. This resolution shall become effective on the day after the date of its passage.

Passed and Approved by the Petersburg Borough Assembly on March 21, 2022.

____

Mark Jensen, Mayor

ATTEST:

____

Debra K. Thompson, Borough Clerk

Parcel #: 01-004-320

Physical Address: 1015 Sandy Beach Road
Zoned: Single Family – Residential
Legal Description: Lot FF; US Survey 3276; Section 26; Township 58S; Range 79E, Copper River Meridian
Size: 23,087 sq ft
2022 Assessed Value: $168,200

CONTRACT OF SALE

This contract of sale is made between the Petersburg Borough, whose address is P.O. Box 329, Petersburg, Alaska, 99833, hereinafter the Seller, and ____________________________, whose address is ___________________________________, hereinafter the Buyer. If Buyer is an individual, s/he represents that s/he is 18 years of age or older. If this contract of sale is being executed by Buyer's authorized representative, the written authorization, or copy thereof, is attached hereto.

1. Upon the following terms and conditions, and those set out in Assembly Resolution 2022-03 of the Petersburg Borough, Seller hereby agrees to sell and convey, and Buyer agrees to purchase, the following described real property:

Lot FF, US Survey 3276, Section 26, Township 58S, Rangy 79E,
Copper River Meridian, Petersburg Recording District, (Borough
Parcel #01-014-180 located at 1015 Sandy Beach Road)

2. (a) The total purchase price is $________________, payable as follows: A deposit equal to a minimum of five percent (5%) of the purchase price shall be paid to the Seller within five (5) business days of the date of execution of this contract of sale, and the balance of the purchase price shall be paid in full to the Seller within ninety (90) calendar days of execution of this contract of sale. Conveyance of the property to the Buyer shall be by quitclaim deed upon payment of the full purchase price.

(b) In the event that an appeal of the bid award is filed and the bid award to Buyer is upheld in the decision on appeal by the Assembly, the deposit is due within five (5) calendar days of the Assembly's decision, and the balance of the purchase price shall be paid in full within ninety (90) calendar days of the Assembly's decision.

(c) If the Buyer defaults, by either failing to timely make the required deposit or by failing to timely pay the balance of the purchase price, any deposit made by Buyer shall be forfeited to the Seller and the Buyer shall have no further rights whatsoever to purchase the property. This section is not intended to limit any other legal remedy available to the Seller.

3. The property, and any improvements located thereon, is sold "as is, where is", in its current condition and with all faults. The Seller expressly makes no representations regarding, and disclaims any liability for, the property, and/or any improvements located thereon, including but not limited to (1) the condition of the property and any improvements located thereon; (2) the exact location or size of the property, the existence of markers on the property, or the ability or cost of surveying the property; (3) the status or insurability of title to the property, including the existence of any liens, encumbrances or conditions on the property; (4) the ability of the Buyer to utilize the property and/or any improvements in any fashion and for any particular purpose or use; and (5) the existence, or the potential for installation, of utilities on or to the property. The Seller makes no representations, warranties or guarantees, express or implied, as to quality, merchantability or suitability of the property for a particular purpose or use.

4. The property is sold subject to all platted easements, rights-of-way and reservations, and may only be used for the purpose for which it is zoned. The property is sold subject to all other liens, encumbrances, and conditions, of record or not of record, including but not limited to matters which would have been disclosed by a survey or physical inspection of the property.

IN WITNESS WHEREOF, this contract of sale has been duly executed by the parties thereto.

SELLER, Petersburg Borough

____
By: Stephen Giesbrecht
Its: Borough Manager

Date: ____________________________

STATE OF ALASKA)
)ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that before me, the undersigned Notary Public for Alaska, duly commissioned and sworn as such, personally appeared Stephen Giesbrecht, to me known to be the Borough Manager of the Petersburg Borough, and who executed the foregoing instrument, and acknowledged to me that he signed and sealed the same as his free and voluntary act and deed and on behalf and under proper authority of the Petersburg Borough for the uses and purposes therein mentioned.

WITNESS my hand and official seal this ___ day of ______________, 2022.

____
NOTARY PUBLIC in and for Alaska
My Commission Expires: __________________

BUYER

____
Name of Buyer (please print)

____
Signature

Date: __________________________

STATE OF ALASKA)
) ss.
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that before me, the undersigned Notary Public for Alaska, duly commissioned and sworn as such, personally appeared ___________________________, to me known to be the individual described herein, and who executed the foregoing instrument, and acknowledged to me that s/he signed and sealed the same as his/her free and voluntary act and deed for the uses and purposes therein mentioned.

WITNESS my hand and official seal this ____ day of ___________, 2022.

____
NOTARY PUBLIC in and for Alaska
My Commission Expires: __________________

For recordation in the Petersburg Recording District

QUITCLAIM DEED

The Grantor, PETERSBURG BOROUGH, whose address is P. O. Box 329, Petersburg, Alaska, 99833, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, hereby conveys and quitclaims all of its interest, without warranty, to Grantee, ______________________________, whose address is ______________________________, in that real property more particularly described as follows:

Lot FF, US Survey 3276, Section 26, Township 58S, Range 79E, Copper River Meridian, Petersburg Recording District, (Borough Parcel #01-014-180)

Subject to all easements, rights-of-way and reservations, and liens, encumbrances and conditions, of record or not of record.

DATED this ________ day of ______________, 2022.

PETERSBURG BOROUGH

By:______________________________
Stephen Giesbrecht
Its: Borough Manager

ACKNOWLEDGEMENT

STATE OF ALASKA)
)
FIRST JUDICIAL DISTRICT)

THIS IS TO CERTIFY that before me, the undersigned Notary Public for Alaska, duly commissioned and sworn as such, personally appeared Stephen Giesbrecht, to me known to be the Borough Manager of the Petersburg Borough, Alaska, who executed the foregoing instrument, and acknowledged to me that he executed said document under legal authority and with knowledge of its contents; and that such act was performed freely and voluntarily under the premises and for the purposes stated therein.

WITNESS my hand and official seal this ____ day of __________, 2022.

____
Notary Public in and for Alaska
My commission expires: ________________

Return to:
Petersburg Borough Clerk
PO Box 329
Petersburg, AK 99833

Quitclaim Deed
Page 2 of 2

Debra Thompson

From:	Stephen Giesbrecht
Sent:	Monday, March 14, 2022 3:16 PM
To:	Debra Thompson
Cc:	Jody Tow; Sandy Dixson
Subject:	Fwd: New Cardiac Monitor
Attachments:	Petersburg Fire Department - Q-27346 - Version 1.pdf

Get Outlook for iOS

From: Sandy Dixson <sdixson@petersburgak.gov>
Sent: Monday, March 14, 2022 3:14:54 PM
To: Stephen Giesbrecht <sgiesbrecht@petersburgak.gov>
Subject: New Cardiac Monitor

Hello,

Per our conversation this morning, I would like to request an agenda item for the next Assembly meeting to request funding of approxiamtely $30,000 and authorization to purchase one new cardiac monitor. The estimate is just shy of $40,000 for a new cardiac monitor. We have approximately $10,000 with grant money through Southeast EMS Regional Office and I can probably find a few thousand dollars from the current Fire Department budget to go towards the purchase. We will seek funding for the replacement of the second monitor during the 2022/2023 budget process, along with apply for a Code Blue grant from the State of Alaska.

The State of Alaska's standard scope of practice has added new skills at all EMT levels related to medications and cardiac care. In order perform these skills we need a cardiac monitor with 12-lead EKG, transcutaneous pacing, synchronized cardioversion, and End-tidal CO2 monitoring capabilities.

We currently have two cardiac monitors (Zoll M-series and a Zoll E-series), one on each ambulance. The M-series is 15+ years old and the E-series is greater than 10 years old. These machines are no longer supported and difficult at best to try and find batteries to keep them portable (without the need to be plugged in to the wall). They are only capable of obtaining a 3-lead cardiac reading. They do not have End-tidal CO2 monitoring capabilities. The are also very large and heavy pieces of equipment.

We had an EMS instructor in town to teach an EMT-II/III refresher course for recertification. While here, she also provided transition course material and skills checks for the new State of Alaska Scope of Practice for EMS providers. We had to borrow equipment from the hospital in order to perform the skills portion of the transition course.

I have attached the quote from Zoll Medical Corporation.

Please let me know if you have any questions.

Thanks,
Sandy

Sandra K. Dixson

Fire/EMS Director
Petersburg Borough
907-772-3355 (office)
907-518-0119 (cell)

ZOLL Medical Corporation
269 Mill Road
Chelmsford, MA 01824-4105
Federal ID# 04-2711626

Phone: (800) 348-9011
Fax: (978) 421-0015
Email: esales@zoll.com

Item 15D.

Quote No: Q-27346 Version: 1

Petersburg Fire Dept
1200 Haugen Drive
Petersburg, AK 99833

ZOLL Customer No: 315469

Josh Rathmann
907-518-1694
jrathmann@petersburgak.gov

Quote No: Q-27346
Version: 1

Issued Date: March 10, 2022
Expiration Date: March 31, 2022

Terms: NET 30 DAYS

FOB: Shipping Point

Freight: Prepay & Add

Prepared by: Amy Turley
EMS Territory Manager
aturley@zoll.com
+1 2538205490

Item	Contract Reference	Part Number	Description	Qty	List Price	Adj. Price	Total Price
1		601-2231011-01	**X Series Monitor/Defibrillator - 12-Lead ECG, Pacing, NIBP, SpO2, SpCO, EtCO2, CPR Expansion Pack** Includes: 4 trace tri-mode display monitor/ defibrillator/ printer, advisory algorithm, advanced communications package (Wi-Fi, Bluetooth, USB cellular modem capable) USB data transfer capable and large 6.5in (16.5cm) diagonal screen. Accessories Included: MFC cable and CPR connector, A/C power cord, One (1) roll printer paper, 6.6 Ah Li-ion battery, Carry case, Operator Manual, Quick Reference Guide, and One (1)-year EMS warranty. Parameter Details: Real CPR Help - Dashboard display of CPR Depth and Rate for Adult and Pediatric patients, Visual and audio prompts to coach CPR depth (Adult patient only), Release bar to ensure adequate release off the chest, Metronome to coach rate for Adult and Pediatric patients. See-Thru ® CPR artifact filtering • Interpretative 12-Lead ECG (Full 12 ECG lead view with both dynamic and static 12-lead mode display. 12-Lead OneStep ECG cable - includes 4-Lead limb lead cable and removable precordial 6-Lead set) • ZOLL Noninvasive Pacing Technology • Welch Allyn NIBP with Smartcuff. 10 foot Dual Lumen hose and SureBP Reusable Adult Medium Cuff • Masimo SpO2 & SpCO with Signal Extraction Technology (SET), Rainbow SET® • EtCO2 Oridion Microstream Technology. Microstream tubing set sold separately •	1	$41,220.60	$33,800.89	$33,800.89
2		8900-0400	**CPR Stat-padz HVP Multi-Function CPR Electrodes - 8 pair/case**	1	$605.64	$496.62	$496.62

ZOLL

ZOLL Medical Corporation
269 Mill Road
Chelmsford, MA 01824-4105
Federal ID# 04-2711626

Phone: (800) 348-9011
Fax: (978) 421-0015
Email: esales@zoll.com

Petersburg Fire Dept
Quote No: Q-27346 Version: 1

Item	Contract Reference	Part Number	Description	Qty	List Price	Adj. Price	Total Price
3		8900-000219-01	**OneStep Pediatric CPR Electrode (1 pair)**	1	$94.64	$77.60	$77.60
4		8300-000208	**Microstream Advance Adult-Pediatric Intubated CO2 Filter Line, Short Term Use, Box of 25**	1	$275.00	$225.50	$225.50
5		8300-000200	**Microstream Advance Adult Oral-Nasal CO2 Filter Line With O2 Tubing, Short Term Use, Box of 25**	1	$355.00	$291.10	$291.10
6		8000-0895	**Cuff Kit with Welch Allyn Small Adult, Large Adult and Thigh Cuffs**	1	$157.50	$129.15	$129.15
7		8000-001392	**Masimo rainbow® RC-4 - 4FT, Reusable EMS Patient Cable**	1	$252.35	$206.93	$206.93
8		8000-000371	**rainbow® DCI® SpO2/SpCO/SpMet Adult Reusable Sensor with connector (3 ft)**	1	$870.35	$713.69	$713.69
9		8000-0580-01	**Six hour rechargeable Smart battery**	1	$519.75	$426.20	$426.20
10		8200-000100-01	**Single Bay Charger for the SurePower and SurePower II batteries**	1	$1,022.02	$838.06	$838.06
11		8000-000876-01	**Paper, Thermal, w/Grid, BPA Free (Box of 6)**	1	$24.72	$20.27	$20.27
12		8900-0004	**4 ECG electrodes/pouch (120 pouches / 480 electrodes)**	1	$103.82	$85.13	$85.13
13		8900-0006	**6 ECG electrodes/pouch (100 pouches / 600 electrodes)**	1	$129.78	$106.42	$106.42
14		8012-0206	**12-lead ECG Simulator**	1	$1,151.80	$944.48	$944.48
15		8900-0190	**Training CPR Stat-padz.** Includes one training cable with CPR Sensor, Y Connector for simulator connection, and one pair of replacement training electrodes.	1	$96.25	$78.93	$78.93
16		8778-89003-PM	**X Series - Preventive Maintenance - 3 Years At Time of Sale** Includes: Annual preventive maintenance, 24/7 Telephone support, general software updates, and minimum service fee waived. Shipping and use of a Service Loaner during preventive maintenance, no charge shipping.	1	$765.00	$765.00	$765.00
17		7900-9902	**ZOLL ALS Equipment M & E Series Trade In Allowance (EMS Group)** See Trade Unit Considerations.	1		($1,000.00)	($1,000.00)

Subtotal: $38,205.97

ZOLL Medical Corporation
269 Mill Road
Chelmsford, MA 01824-4105
Federal ID# 04-2711626

Phone: (800) 348-9011
Fax: (978) 421-0015
Email: esales@zoll.com

Petersburg Fire Dept
Quote No: Q-27346 Version: 1

Total:	**$38,205.97**

Trade Unit Considerations
Trade-In values valid through March 31, 2022 if all equipment purchased is in good operational and cosmetic condition and includes all standard accessories. Trade-In values are dependent on the quantity and configuration of the ZOLL devices listed on this quotation. Customer assumes responsibility for shipping trade-in equipment at the quantities listed on the trade line items in this quotation to ZOLL's Chelmsford Headquarters within 60 days of receipt of new equipment. Customer agrees to pay cash value for trade-in equipment not shipped to ZOLL on a timely basis.

To the extent that ZOLL and Customer, or Customer's Representative have negotiated and executed overriding terms and conditions ("Overriding T's & C's"), those terms and conditions would apply to this quotation. In all other cases, this quote is made subject to ZOLL's Standard Commercial Terms and Conditions ("ZOLL T's & C's") which for capital equipment, accessories and consumables can be found at http://www.zoll.com/GTC and for software products can be found at http://www.zoll.com/SSPTC and for hosted software products can be found at http://www.zoll.com/SSHTC. Except in the case of overriding T's and C's, any Purchase Order ("PO") issued in response to this quotation will be deemed to incorporate ZOLL T's & C's, and any other terms and conditions presented shall have no force or effect except to the extent agreed in writing by ZOLL.

1. This Quote expires on March 31, 2022. Pricing is subject to change after this date.
2. Applicable tax, shipping & handling will be added at the time of invoicing.
3. All purchase orders are subject to credit approval before being accepted by ZOLL.
4. To place an order, please forward the purchase order with a copy of this quotation to esales@zoll.com or via fax to 978-421-0015.
5. All discounts from list price are contingent upon payment within the agreed upon terms.
6. Place your future accessory orders online by visiting www.zollwebstore.com.

ZOLL Medical Corporation
269 Mill Road
Chelmsford, MA 01824-4105
Federal ID# 04-2711626

Phone: (800) 348-9011
Fax: (978) 421-0015
Email: esales@zoll.com

Petersburg Fire Dept
Quote No: Q-27346 Version: 1

Order Information (to be completed by the customer)

[ ] Tax Exempt Entity (Tax Exempt Certificate must be provided to ZOLL)

[ ] Taxable Entity (Applicable tax will be applied at time of invoice)

BILL TO ADDRESS	SHIP TO ADDRESS
Name/Department:	Name/Department:
Address:	Address:
City / State / Zip Code:	City / State / Zip Code:

Is a Purchase Order (PO) required for the purchase and/or payment of the products listed on this quotation?

[ ] Yes PO Number: ____________ PO Amount: ____________
(A copy of the Purchase Order must be included with this Quote when returned to ZOLL)

[ ] No (Please complete the below section when submitting this order)

For organizations that do not require a PO, ZOLL requires written execution of this order. The person signing below represents and warrants that she or he has the authority to bind the party for which he or she is signing to the terms and prices in this quotation.

Petersburg Fire Dept
Authorized Signature:

____

Name: ______________________________
Title: ______________________________
Date: ______________________________

Save the Date: INFRASTRUCTURE GRANT SYMPOSIUM

hosted by U.S. Senator Lisa Murkowski

APRIL 11

DENA'INA CENTER IN ANCHORAGE, ALASKA

10 AM - 4 PM

Free and open to the public.

Representatives from federal agencies will be available to Alaskans for information and support as the federal government further develops its implementation plan for the infrastructure package.

RSVP

EVENTS@MURKOWSKI.SENATE.GOV OR AT WWW.MURKOWSKI.SENATE.GOV/INFRASTRUCTURE-GRANT-SYMPOSIUM

12 South Nordic Drive
Petersburg, AK 99833

Petersburg Borough

Meeting Agenda

Borough Assembly Work Session

Wednesday, March 23, 2022 | **6:00 PM** | **Assembly Chambers**

1. **Childcare Essential Workers**
2. **Quality Improvement Program for Childcare Workers**
3. **Childcare Flexible Spending Accounts for Borough Employees**
4. **Utility Reimbursement Program for Childcare Provider Businesses**
5. **Early Childhood Education Task Force**
6. **What Can the Borough do to Help with the Childcare Conversation and Sustainable Answers to Future needs?**

Debra Thompson

From: none none <feraltmcloud@hotmail.com>
Sent: Thursday, March 3, 2022 1:59 PM
To: Jeigh Stanton-Gregor; Bob Lynn-External; Jeff Meucci; dkensington@petersburgak.gov; ctrembley@petersburgak.gov; twalsh@petersburgak.gov; Debra Thompson; Stephen Giesbrecht
Subject: lot 1015 SB Rd

I urge the Borough to withdraw the lot at 1015 SB Rd from sale and it be rezoned to Public Use. Once the beach frontage is gone, it's gone for good. As this lot was withdrawn by the State from the original sale of the land along SB Rd and was to be deeded to the City of Petersburg for use as a park that still seems like a good idea . There may not be a record of that "deal", but when I tried to register for the auction in 1972 I was told it had been withdrawn from the sale to be deeded to the City for use as a park. They said the same thing about the lot on the other side of mine.

Or, here's an interesting thought . . . offer the lot to me at the bid minimum of the lot at the time of that auction . . . 1972, when I was originally denied access to purchase. The argument to sell and get it on the tax rolls is somewhat specious. Had it been available then, it would have been on the tax rolls, and taxes paid on it, for many years already.

Thank you for your consideration,

Nancy Strand
907 772 4872

Debra Thompson

From: Bob Martin <bobwmartin@yahoo.com>
Sent: Saturday, March 5, 2022 11:50 AM
To: Assembly
Subject: 1015 Sandy Beach Road

Dear Mayor and Assembly,

I support the sale of the controversial lot near sandy beach park. However, the property lines between 1015 Sandy Beach Road and adjacent lots could benefit from small adjustments before 1015 is put out to bid. I think it would be reasonable for the Borough to carve off and sell small slivers preserving many decades of access to lots 1013 and 1017 for merger with those lots. The price could be linked to the winning bid price per square foot of the main lot, plus additional administrative costs incurred by the adjustments. If done well, I believe this intervention would have little or no negative affect on the value of the main lot for sale, but greatly ease the hardship to adjacent owners and set the stage for good relationships between neighbors and with the Borough.

Sincerely,
Bob Martin

Debra Thompson

From: Bob Martin <bobwmartin@yahoo.com>
Sent: Saturday, March 5, 2022 11:57 AM
To: Assembly
Cc: Stephen Giesbrecht; Glorianne Wollen; Debra Thompson
Subject: Harbor Board and Open Meetings Act

Dear Mayor and Assembly,

It has come to my attention that an informal inspection of the Petro Marine property attended by myself and three Harbors and Ports Advisory Board members from 10:00-11:00 AM March 4, 2022 may have violated the Alaska Open Meetings Act. I take responsibility for the mistake. As a remedy, I propose that a similar visit be properly noticed and conducted as an information gathering or work session before you give consideration to any further advice from the harbor board on the matter of the Petro Marine property.

Sincerely,
Bob Martin, Chair
Harbors and Ports Advisory Board

Debra Thompson

From: Alice Williams <alicew.ak@gmail.com>
Sent: Monday, March 7, 2022 11:36 AM
To: Assembly
Subject: Todays meeting

Hello Assembly members! I am not able to attend the meeting today, but I wanted to very quickly voice my support of the proposals to the Assembly regarding police and dispatch recruitment and retention. These changes are a step in the right direction for attracting new hires and retaining current staff, and I support the approval of these proposals, thank you!

Alice

Debra Thompson

From: Aardvark LLC <architectureoffaith@gmail.com>
Sent: Wednesday, March 16, 2022 12:19 AM
To: Chelsea Tremblay; Assembly
Subject: purloined judgeship

Dear August Assembly of Petersburg,

There is something that affects all of us that seems to have slipped by unnoticed. I understand that many are the tasks presented to a member of the Petersburg Assembly, so I will make an attempt at brevity. In 1982, through jurisprudence and diligent labours, the community of Petersburg attained for itself an upgrade from District judgeship to Superior judgeship(in the early days, Petersburg had no judgeship, but rather a pathetic magistrate, which can do very little in the courts). In order to obtain this rare privilege which is a Superior judgeship, the community had been required to vacate its previous District judgeship. In doing so, Petersburg gained access to a higher court judgeship than it had ever in its own history enjoyed. Let us not get confused - In judicial terms, Court hierarchy goes as follows, in ascending order:

1 - Magistrate
2 - District judgeship
3 - Superior judgeship
4 - (State) Supreme Court

Before having even had the District judgeship, Petersburg was relegated to satisfy itself with a mere magistrate, which meant that any major legal concerns would require a citizen of Petersburg to travel to Juneau, Sitka or Ketchikan. The recent retirement of our beloved Superior Judge has prompted legally ambitious persons over in Ketchikan to look upon our coveted judgeship with greedy eyes, and if we don't do anything about it, they will, in fact, usurp that same judicial privilege. Worse yet, if Petersburg fails to hold onto its Superior judgeship, it will not downsize to a mere District judgeship, but lose all judgeships in their entirety(and be stuck with a mere magistrate). In 1982, Petersburg decided to vacate the District judgeship, as it was required to do, because our forebears intended to share a Superior judgeship with Wrangell. Both communities have benefited from this last over the course of the last two generations!

I feel the need to remind you at this point that a Superior Judge is granted a salary of nearly $190,000 *per annum,* not counting staff and housing, to say nothing of the sheer loss of political clout this will cost Petersburg. Earlier last year, it was the diligent work and vision of Chelsea Tremblay and others who saw Petersburg redistricted to assume a place among communities such as Sitka and Kake - *instead* of Ketchikan. As a result, Petersburg will vote alongside those communities. Losing the Superior judgeship could affect Petersburg culturally, as it will bind our community Eastward toward Ketchikan once more.

For this reason, I shall entreat the members of the Assembly of Petersburg to note the dire importance of this legal battle, as it is, indeed an overstepping of the Separation of Powers Doctrine, wherein the Legislative Decision made 40 years ago is being simply trampled by the Judicial Branch for the gain of some self-interested parties who would rather see our judgeship in Ketchikan. As an essential tenet of that constitutional document, judgeships are ONLY to be chosen by the Legislative Branch, as the Alaska Constitution confers upon the Alaska Legislature exclusive power to create judgeships. (Const. Article IV, 3:)

The Supreme Court of Alaska has recognized that the Separation of Powers Doctrine is firmly embedded in the American Scheme of government, at both the federal and state level. Losing the only judgeship that Petersburg has not only represents a purloining of something that has been ours for almost half a century, but culturally re-aligns Petersburg and its environs with Ketchikan in a way that was not intended by either community. This act of judicial sleigh-of-hand puts the judicial branch at odds with the US Constitution in a fashion that is the definition of *ultra vires* and can only be the design of parties working on their own behalf.

sine cera,

Joshua S. A. Schramek de la Fontaine

Debra Thompson

From: Aardvark LLC <architectureoffaith@gmail.com>
Sent: Wednesday, March 16, 2022 1:48 AM
To: Assembly
Subject: recycling

Dear Assembly,

As an afterthought, I thought I'd mention that some of the facts might not be 100% accurate in my last missive. Please consider it to be a rough draft. There will be future refinements and edits to its particulars. The important thing is that this purloined judgeship be taken seriously because it would be a great calamity for the whole of Petersburg if it were to pass on to Ketchikan.

To wit, my connection to Petersburg is through my wife, Lisa Schramek, and the property that I purchased here at: 201 Mitkof hwy.

Joshua

Debra Thompson

From: Aardvark LLC <architectureoffaith@gmail.com>
Sent: Thursday, March 17, 2022 5:02 AM
To: Assembly
Subject: errata

Dear Petersburg Assembly,

I would like to address two mistaken and/or misleading statements in my last missive:

A) I made a statement that in its early history, Petersburg "*had no judgeship, but rather a pathetic magistrate.*" I want to be clear that in using the word "*pathetic*," I was referring to the limited powers of the post, not the person executing the job.
B) I furthermore would like to correct my statement of "*if* it were to pass on to Ketchikan, " as it was later written. The Superior judgeship has, in fact, been transferred to Ketchikan, and already constitutes an egregious act of political and judicial malfeasance.

It would not be a misuse of time and resources available to the Petersburg Borough to pursue this topic. I remind you all that this judgeship represents a significant economic benefit to Petersburg, such that securing it for Petersburg would certainly justify hiring an attorney skilled in this sort of litigation. That judgeship was stolen, and its theft constitutes a breach of separation of Powers of State. I think that we have a strong case to repone the purloined judgeship that rightfully belongs to Petersburgians, or <u>at the very least</u> return to us a District judgeship, as we had prior to 1982.