Saint Paul Shellfish Hatchery Permit Application

North Pacific Fishery Management Council
Crab Plan Team Update

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Background

Long history of Alaska fishery enhancement using private nonprofit (PNP) hatchery partnerships with State of Alaska

- Authorized by state legislature / process regulated by ADF&G
- PNP hatcheries' purpose is to benefit the public through fishery enhancement and rehabilitation as opposed to propagation for research or educational purposes
- Historically focused on salmon but new statute recently enacted (2022) allows shellfish enhancement
- Saint Paul Hatchery first crab enhancement project to seek approval

Statutory guidance

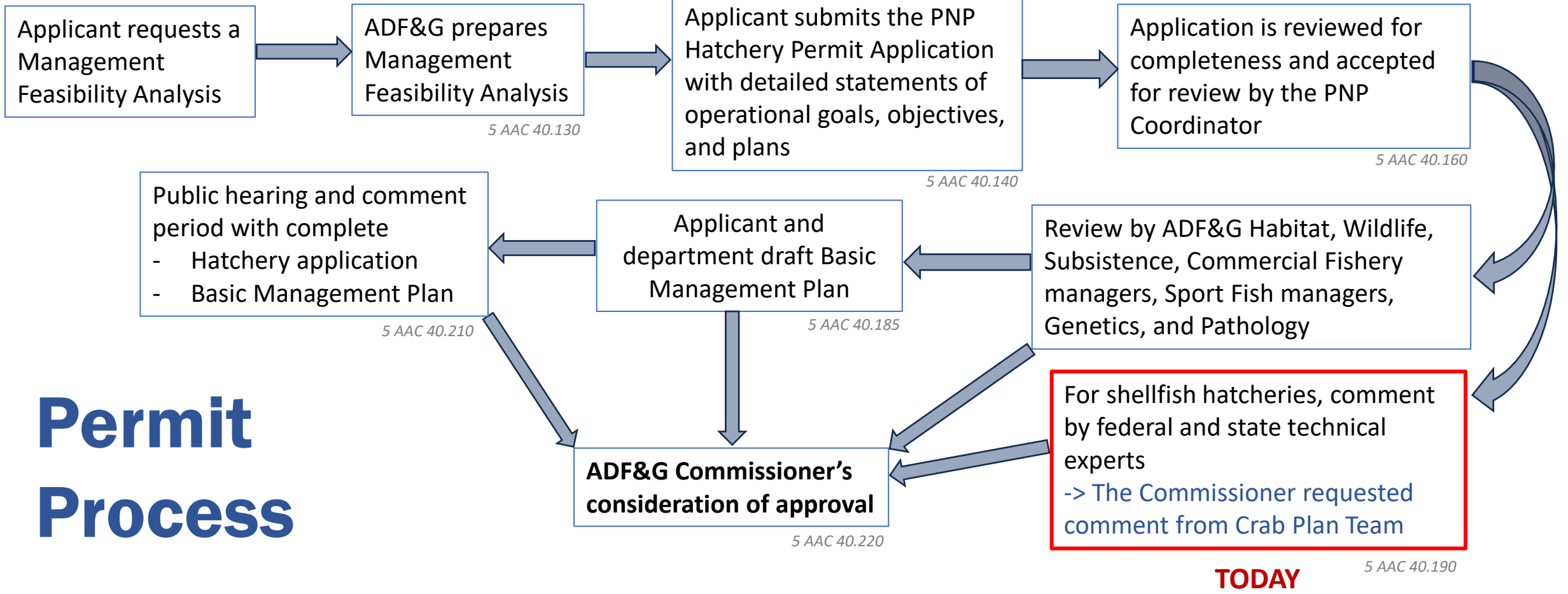
AS 16.12.010. Permits for shellfish enhancement projects.
…the [ADF&G] commissioner may issue a permit to a nonprofit corporation … to

(1) augment the yield and harvest of shellfish indigenous to state water above naturally occurring levels by natural, artificial, or semiartificial production systems

Enacted in 2022

Statutes: https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/shellfish_hatchery_statutes.pdf

Regulatory guidance



Permit Process

Regulations, effective 6/11/2025:
https://www.adfg.alaska.gov/static/fishing/PDFs/hatcheries/shellfish_hatchery_regulations.pdf

Precautionary policies

Genetic Guidelines for Mariculture of Invertebrates in Alaska
https://www.adfg.alaska.gov/FedAidPDFs/RIR.5J.2024.06.pdf

- Stock transports will be limited to locations within larval drift zones
- Maintenance of genetic diversity
- Minimize domestication selection

Fish Health: The Pathology Lab oversees the health of creatures at hatcheries for the protection of wild and hatchery stocks.

https://www.adfg.alaska.gov/index.cfm?adfg=fishingpathologylab.main

Photo: Scott Goodman

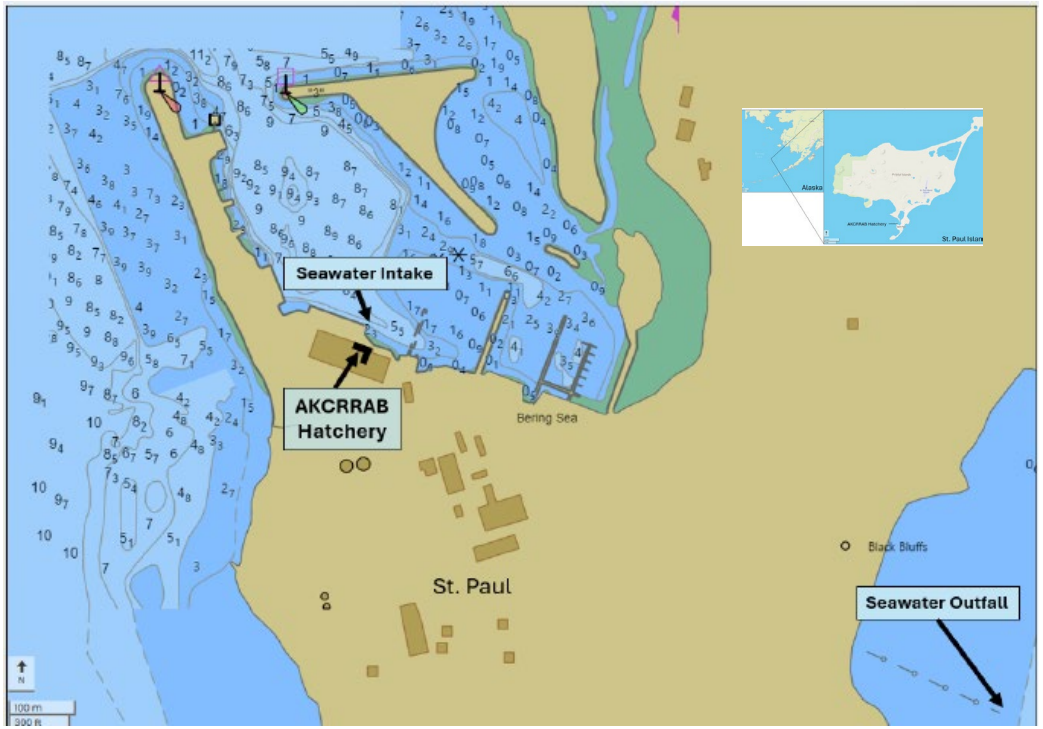
Hatchery Application

Available at: https://www.adfg.alaska.gov/index.cfm?adfg=hatcheries.hatchery

Facility and operations

Hatchery housed in Trident Seafoods processing facility – Saint Paul Island

Operations largely continuation of established AKCRRAB practices

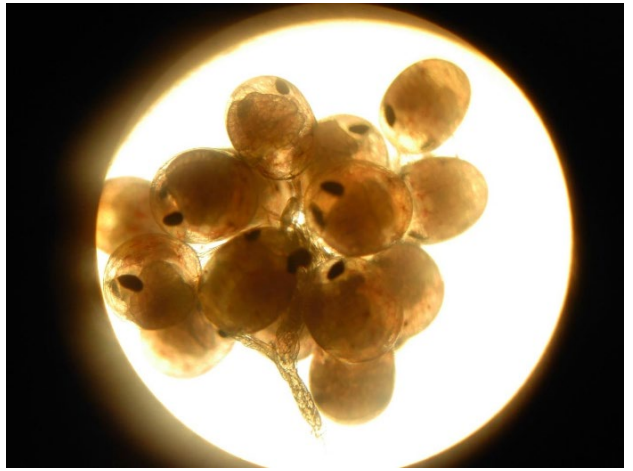


(Courtesy Ethan Candyfire)

Production goals

Species	At start up	At capacity
Paralithodes sp.	45 adult females	45 2,000,000 larvae (Z1) 1,200,000 glaucathoe (G1) 640,000 juvenile crab (C1)

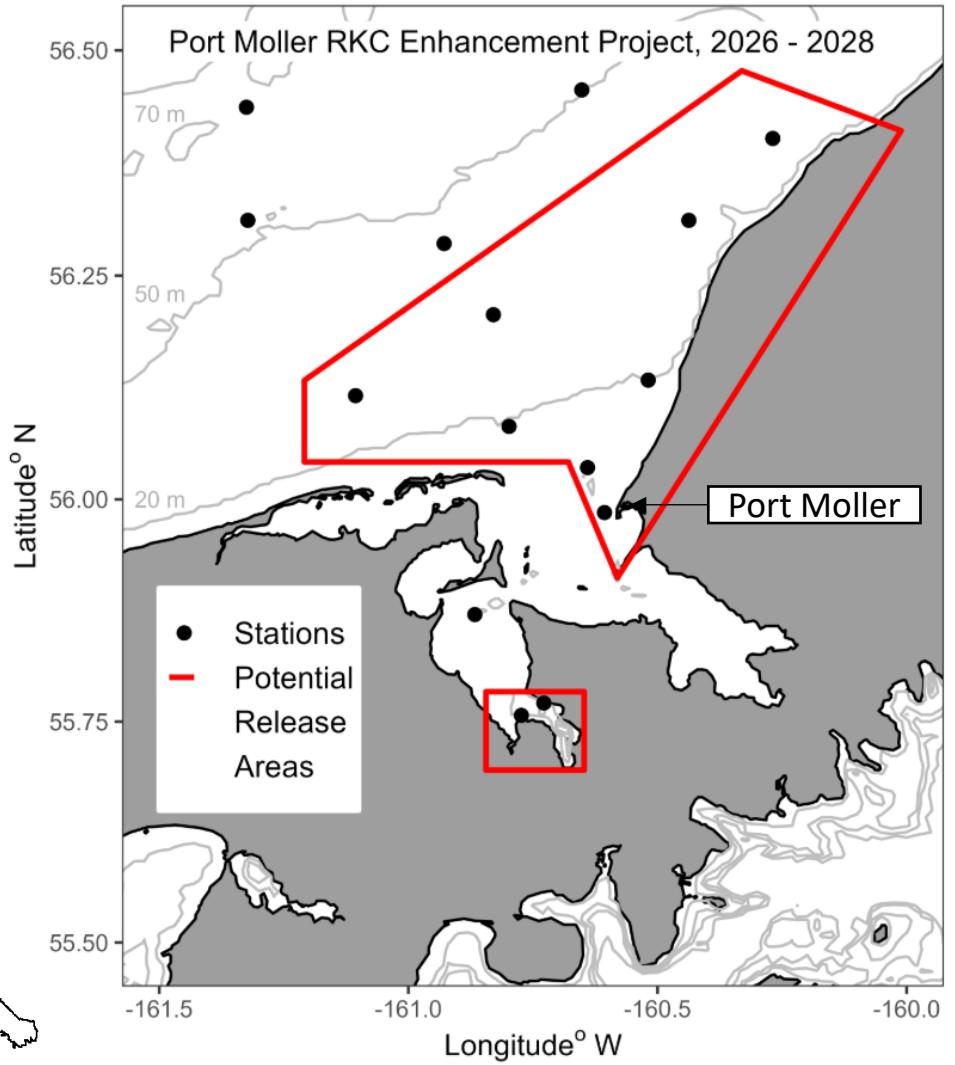
Life stage	Number alive	Cumulative survival (%)
Z1	2,000,000	100%
G1	1,200,000	60%
C1	640,000	32%

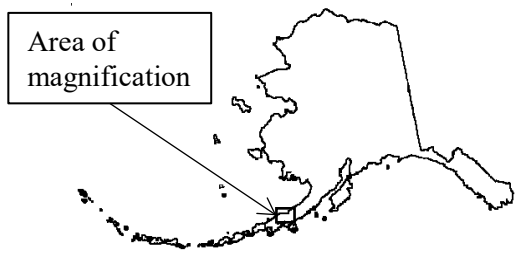


(Courtesy James Swingle)

Release plan

- Proposed juvenile release sites located near Port Moller
- Sites chosen based on the availability of appropriate juvenile crab habitat (ADF&G – Weems)
- Animals released during the C1 life stage at an estimated at 2 mm carapace width





Post release

- Survival of hatchery red king crab (RKC) from release to maturity/legal size is unknown and likely variable
- Ongoing research-scale site monitoring
- Assume most mortality will occur shortly after release and hatchery-reared juvenile RKC will survive as well as wild stock crab
- Approximately 5–7 years for released hatchery crabs to recruit to the fishery

Photo: Scott Goodman

Evaluation

- No defined plan for marking hatchery-reared RKC
  - Some possibility for future genetic mass marking
- RKC observed in trawl survey gear starting ~20-30 mm carapace width, likely 2+ years after release
- Unexpected increases in juvenile abundance in EBS trawl survey could suggest contribution from hatchery release

Courtesy Shiona Melovidov

ADF&G
Management Feasibility Analysis (MFA)

Available at: https://www.adfg.alaska.gov/index.cfm?adfg=hatcheries.hatchery

MFA requires evaluation of 6 criteria specific to the hatchery application:

1. Potential contributions to common property fisheries
2. Potential size and location of special harvest area
3. Potential broodstock sources
4. Management considerations or need for additional studies
5. Assessment of production potential for each species
6. Additional relevant factors considered

MFA – Common property

Potential Contribution to Common Property Fishery

- Assuming 5% survival from release to maturity, releases of 250,000 to 1,000,000 C1 crab would yield 12,500 to 50,000 total mature animals
- Assuming a 50/50 sex ratio, final yield could result in ~6,000 to 25,000 hatchery-origin mature females and harvestable males
- Contribution likely not measurable on a population-level and commercial fishery scale
  - Small relative increases are notable when abundance levels are at or near minimum regulatory thresholds necessary for a commercial fishery opening
  - At recent exvessel prices ($25/lb), even modest contributions to TAC could have net-positive economic gains for commercial users

MFA – SHA and broodstock

Potential Size and Location of Special Harvest Area

An SHA was not requested

Potential Broodstock Sources

Initial red king crab hatchery broodstock will originate from Bristol Bay District (Registration Area T) as defined in regulation

MFA – Management considerations

Management Considerations or Need for Additional Studies

- New tag/mark methods useful to identify hatchery origin from wild stock RKC
- Hatchery releases most effective if the targeted populations are recruitment limited and it is known where population bottlenecks occur
  - Field experiments to estimate post-release survival, movement, growth, and fecundity of hatchery crabs
- Maintaining genetic diversity reduces risk to the populations and allows populations to adjust to environmental changes such as climate change or disease
  - Research could focus on genetic stock structure to guide broodstock collection numbers and release strategies before scaling up future hatchery releases

MFA – Production potential

Assessment of Production Potential

Hatchery facility potential: Proposed objective of collecting and brooding 30–50 mature female crab to produce and release 250,000 to 1,000,000 juvenile C1 stage crab appears achievable

Enhancement potential: (~50,000 mature crab)

- Environmental forcing and predation pressures on BBRKC are variable across time, space, and crab life stage, and difficult to assess
- Currently unknown to what degree stock enhancement can meaningfully change fishery or population level outcomes

Crab Plan Team Comment

Goal for today – Provide update on Saint Paul BBRKC hatchery permitting process and receive CPT comment specific to evaluating the current hatchery plan/application

By statute, proposed hatchery production may not unreasonably or adversely affect management of natural stocks

- Compatibility of hatchery production with stock assessment and setting ABC/OFL?
- Consider research priority recommendations specific to managing hatchery-origin BBRKC.
- Regulatory capacity limits established for PNP hatcheries (i.e., salmon fishery enhancement is limited by the number of eggs collected annually).
  - Permitted capacity unit for crab (number of mature females collected, larvae produced, juveniles released, etc.)?
- Other?

Contact Information

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