ANGUNIAQVIA NIQIQYUAM MARINE PROTECTED AREA 2019 ANNUAL REVIEW

Introduction

Well hello again everyone! It's been a whole year since our last newsletter, hope everyone is doing well. It's almost that time of year when the whole family goes camping and harvesting our geese for the year. I wanted to take this opportunity to provide an update on the work of the Anguniaqvia niqiqyuam Marine Protected Area (ANMPA) working group since our last newsletter.

Over the past year, the ANMPA working group has been working on developing the monitoring plan and have managed to complete the first draft text for all six(6) ecological indicator sections (Harvest, Traditional Knowledge, Unusual ecological events, Pressure/Threats, Offshore, and Nearshore) of the monitoring plan. The socio-economic and governance indicator themes will be developed in collaboration with co-management partners (FJMC and DFO) and Inuvialuit organizations (IRC and IGC) through the ANMPA working group and the Western Arctic Marine Protected Area (WAMPA) Steering Committee.

The ANMPA monitoring plan will provide the framework and approach to monitoring activities (i.e. Scientific studies and community-based monitoring programs) for the next five-year MPA management cycle. The final draft ANMPA Monitoring plan will be presented to the broader community before being finalized by the ANMPA working group and WAMPA.

In December, the ANMPA working group welcomed their newest member Bill. S. Ruben to the group. Welcome Bill! The ANMPA working group want to thank Chris Ruben for his time and dedication to the ANMPA working group during his term.

The ANMPA working group would also like to thank Lois Harwood for all her help with tackling the ecological indicator themes of the ANMPA monitoring plan.

ANMPA Field Season

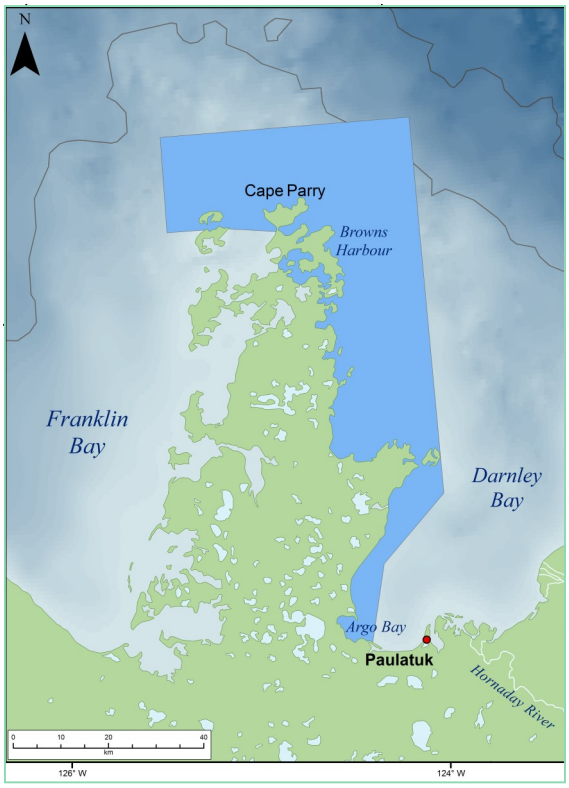

Figure 1. *Map of Protected area Anguniaqvia Niqiqyuam*

I wish everyone a safe and successful spring and summer harvesting season! I hope you enjoy the ANMPA Annual Review and if you are camping and harvesting within the ANMPA this summer and observe anything unusual, please do share that with your HTC or ANMPA WG member! -Jody Illasiak

Inside this issue:

Arctic Coast Summer Fish Surveys

Figure 2. 2019 Field Crew (left to right): Zander Chila (UVic), Kevin Gully (DFO), Steve Illasiak, Brandon Green, Dwayne Illasiak, Nelson Ruben, Darcy McNicholl (DFO) . Photo credits to D. McNicholl & K. Dunmall.

Figure 3. Bering Wolffish, a species at risk, caught July 22, 2019. Photo credits to D. McNicholl & K. Dunmall.

Summer Field Program- D. McNicholl & K. Dunmall

The 2019 summer field program was completed in Argo Bay and Bennett Point areas of the ANMPA. The project objectives include;

- Continue the annual community-led fish monitoring program for the MPA.
- Investigate the biodiversity and abundance of fish species
- Monitor habitat parameters of fish (salinity, temperature, depth, etc.).
- Collect samples to study fish diet and compare with co-occurring species.
- Compare fish and habitat data among years, and with results from the winter sampling program.

Figure 4. Training new crew members. Photo credits to D. McNicholl & K. Dunmall

Figure 5. Banded Gunnel caught. Photo credits to D. McNicholl & K. Dunmall

Arctic Coast Summer Fish Surveys

Fishes collected at Bennett Point between July 13th and 27th. Numbers represent total captured fishes; a maximum of 30 individuals from each species for each location were dead sampled, the remainder were live released, except for capelin which were collected post-spawn.

Species	Live Released	Dead Sampled	Total
Arctic Char	0	1	1
Arctic Cisco	0	1	1
Banded Gunnel	0	1	1
Capelin	0	251	251
Greenland Cod	22	30	52
Pacific Herring	1	1	1
Shorthorn Sculpin	28	30	58
Starry Flounder	0	5	5
Total	51	320	371

Table 1. Fish caught at Bennet Point 2019.

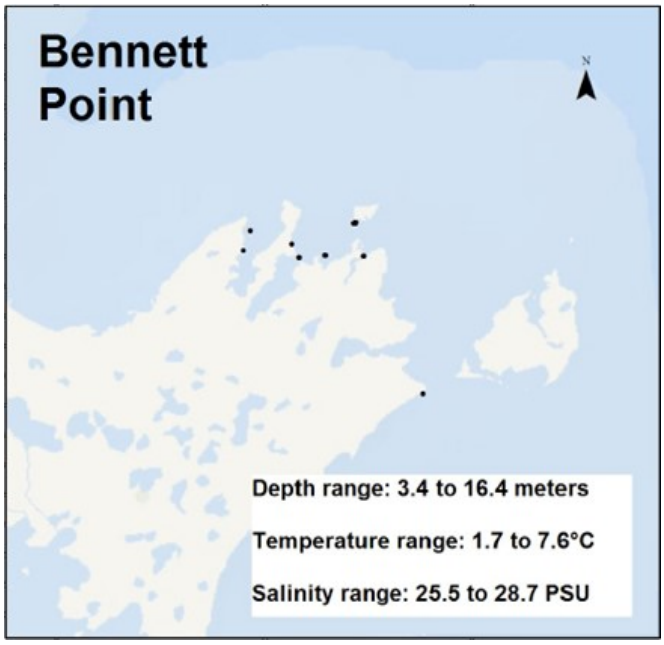

Figure 6. *Bennett Point sampling locations 2019*

The Arctic Coast – Summer Fish Survey continues to support community-based environmental monitoring of the ANMPA and continues to develop coastal linkages with the Canadian Beaufort Sea Marine Ecosystem Assessment (CBS_MEA).

Field work was completed at Bennett Point and Argo Bay sampling locations between July 13th & July 27th, 2019 and January Highlights from the 2019 field season include;

- First record of a Bering Wolffish (Figure 3), a species at risk, in Darnley Bay and Canadian Beaufort Sea collected at Argo Bay site.
- First record of a Banded Gunnel (Figure 5), a fish found in coastal kelp habitats, for Darnley Bay.
- Two new community-based technicians trained in coastal fish research.
- Footage collected via Remote Operated Vehicle (ROV) of benthic habitats.
- Water samples collected for eDNA research.
- Plankton samples collected using pelagic tow.

Arctic Coast Winter Fish Surveys

Winter field Program- D. McNicholl & K. Dunmall

The Winter baseline Survey of ANMPA was conducted between Jan 17, 2019 and March 22, 2019 in Argo Bay area of the ANMPA. The lack of winter environmental and fish biodiversity data in the ANMPA is an identified knowledge gap.

This project aims to fill that gap by developing our understanding of winter fish biodiversity and habitat use within the ANMPA through a collaboration with Canadian Rangers Ocean Watch (CROW) program and the Paulatuk Hunters and Trappers Committee (PHTC). The objectives of the program were to:

- Begin development of a community-led approach for winter research by testing methods and equipment
- Complete a baseline survey of winter habitat under the sea ice in the ANMPA
- Collect data on ice thickness, snow depth, temperature (air and water) and salinity (saltiness)
- Collect fish under the ice to better understand seasonal habitat use
- Investigate fish diet in the winter and compare with summer samples
- Collaborate with Canadian Rangers Ocean Watch (CROW) to gather environmental data

Figure 7. Nelson Ruben, Noel Green and Terrance Green. Photo credit: D. McNicholl & K. Dunmall.

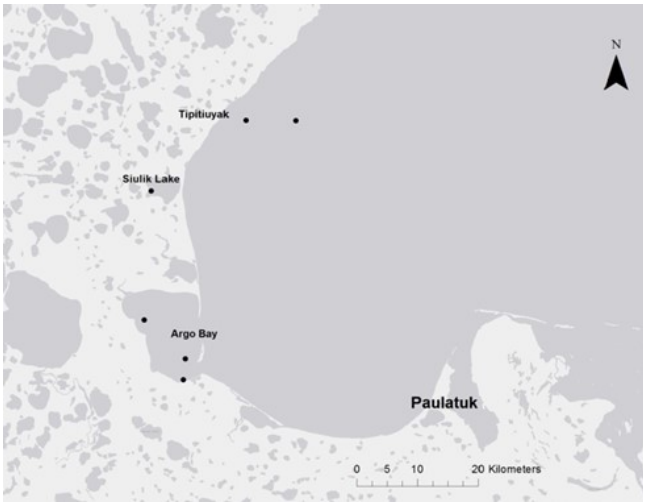

Figure 8. Sampling locations for fish surveys 2019.

Arctic Coast Winter Fish Surveys

Key findings during the 2019 baseline survey include:

Technicians successfully completed weekly stations (14 days) where they collected habitat information, video and fishes (Steve Illasiak and Nelson Ruben)

- 6 survey stations were completed in March with DFO-Biologists and two additional technicians (Noel Green and Terrence Green). Fish, video and oceanographic information were collected under the ice
- 47 fish were collected by weekly monitors (Greenland Cod, Saffron Cod and Sculpins) which will be used to compare with diets of the same species collected in the summer
- 2 time lapse cameras have been set up to take pictures of ice breakup every day until the summer season

Figure 9. Terrence Green with water profiler. Photo credit: D. McNicholl & K. Dunmall.

Figure 10. Measuring Ice thickness, snow depth and water level. Photo credit: D. McNicholl & K. Dunmall.

The results of this program increase our understanding of fish ecology within the ANMPA and will be compared to the fish biodiversity observed during the Arctic Coast – Summer Fish survey program. It was a successful baseline program and is building local capacity for the Winter Survey to be Community-based program in the future.

Canadian Rangers Ocean Watch 2019

Mike Dempsey-DFO

The Canadian Rangers Ocean Watch (CROW) program is a collaboration between the Canadian Rangers, the Department of National Defense (DND) and the Department of Fisheries and Oceans (DFO).

The objective of the program is to establish a sustainable monitoring program for the Northwest Passage whereby Canadian Rangers are trained by DFO scientists and technicians to collect oceanographic climate data during their regular patrols. Training on the use of oceanographic instruments was provided to Paulatuk Canadian Rangers; R/Sgt Ryan Green, Rgr Nelson Ruben, Rgr Andy Ruben, Rgr Johnny Ruben from in April 2019 through the Institute of Ocean Sciences – DFO.

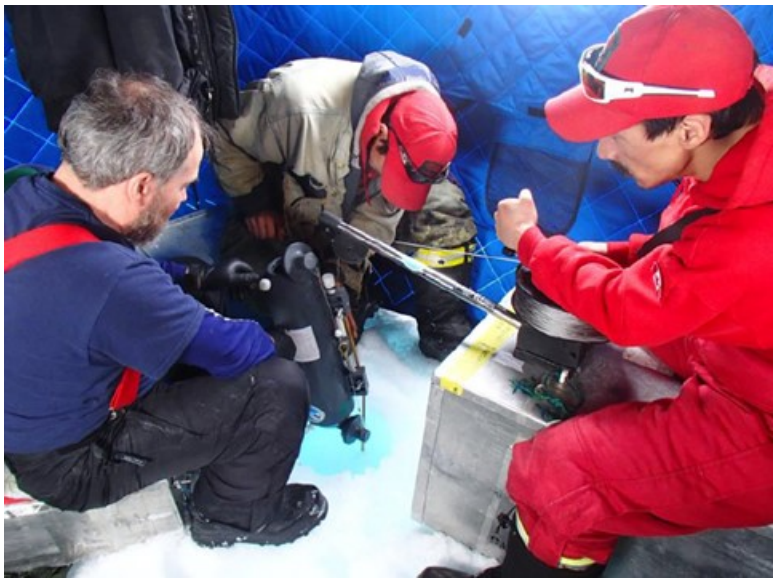

Figure 12. Mike Dempsey, Ryan Green and Johnny Ruben lowering Niskin sampler through sea ice. Photo credit: M. Dempsey.

Sampling

Following training, two(2) DFO scientists and the four(4) trained Rangers travelled along the south East coast of the ANMPA and conducted snow surveys and CTD casts at six (6) locations in the ANMPA. Next, the crew travelled to Clapperton Island to sample at two (2) locations where water was collected from 4m, mid-water, and bottom depths sampled during the CBS-MEA study and collected snow and ice measurements along with CTD data.

Canadian Rangers Ocean Watch 2019

Table 2: Summary of ANMPA sample locations, dates, samples collected and ice thickness measurements.

Sample site	Location	Date sampled	Ice thickness (cm)	Other sampling
CMPA2	Darnley Bay	April 5, 2019	128	Snow survey Ice thickness
CMPA1	Argo Bay	April 5, 2019	140	Snow survey Ice thickness CTD profile
CMPA4	Darnley Bay	April 5, 2019	131	Snow survey Ice thickness CTD profile GoPro under the ice
CMPA3	Darnley Bay	April 5, 2019	140	Snow survey Ice thickness
CMPA5	Darnley Bay	April 5, 2019	141	Snow survey Ice thickness
CMPA6	Darnley Bay	April 5, 2019	127	Snow survey Ice thickness
BPT_01	Darnley Bay	April 7, 2019	118	Water samples at 68, 41, 12, and 3.7 metre depths. GoPro footage and dirty ice sample in O18
BPT_HC2	Darnley Bay	April 7, 2019	118	Water samples at 91, 20, and 3 metre depths

Figure 13. Ryan Green & Nelson Ruben operating Auger**.** Photo credit: Mi. Dempsey.

Sampling Continued

Six additional water sampling casts measured dissolved oxygen, alkalinity, salinity, nutrients, and O18 at near surface, mid water, and near bottom depths that will inform environmental modeling efforts in the Beaufort Sea. The data collected through the program provides a baseline of winter conditions in the ANMPA and supports the Arctic Coast - winter monitoring program.

Acoustic and Seal Monitoring in the ANMPA

Seal Monitoring Project- Stephen J. Insley, PhD

The goal of the seal monitoring project is to maintain a long-term, locally-based, ringed seal and bearded seal diet and condition monitoring program in the ANMPA and the eastern Beaufort Sea.

Seal monitoring occurred opportunistically. Harvested seals were brought to monitors Joe Illasiak and Ryan Green who took body measurements, stomachs for diet analysis and other samples for future analyses. The stomachs from this year are currently being analysed.

2018 Seal Monitoring Results

Previous season (2018) was completed for diet content and showed a number of fish species, including:

- Arctic cod,
- capelin
- sandlance,
- invertebrate species (mostly marine amphipods.)

These results and those from other areas in the ISR were presented at the September IGC meeting in Whitehorse and the ArcticNet meeting in Halifax. In addition the results are also now being summarized in a manuscript.

Acoustic Monitoring in the ANMPA -Stephen J. Insley

The goal of the project is to assess the impacts of increased shipping on marine mammals in the ANMPA and the eastern Beaufort Sea.

Methods:

- Passive acoustic monitoring using anchored recorders.
- These record underwater sound for the entire time they are deployed.
- Some year-long and seasonal recordings have been made.
- Deployed around Amundsen Gulf region over the past six years.
- This year 3 seasonal recorders were deployed in Darnley Bay in the ANMPA in July 2019 and recovered in September 2019.
- The equipment used for these recordings is similar to that previously used, including submersible acoustic datalogging recorders.

Both deployment and recovery of the recorders took place with Hank Wolki and his boat. The recorders operated as planned and were filled with continuous sound records during this time period. Analysis is currently underway.

Vessel Traffic in the ANMPA

Large vessel (≥300 gross tonnage) tracking in the ANMPA is made possible by the Canadian Coast Guards (CCG)Automatic Identification System (AIS). Foreign vessels transiting Arctic waters are tracked using the Long Range Identification & Tracking system (LRIT).

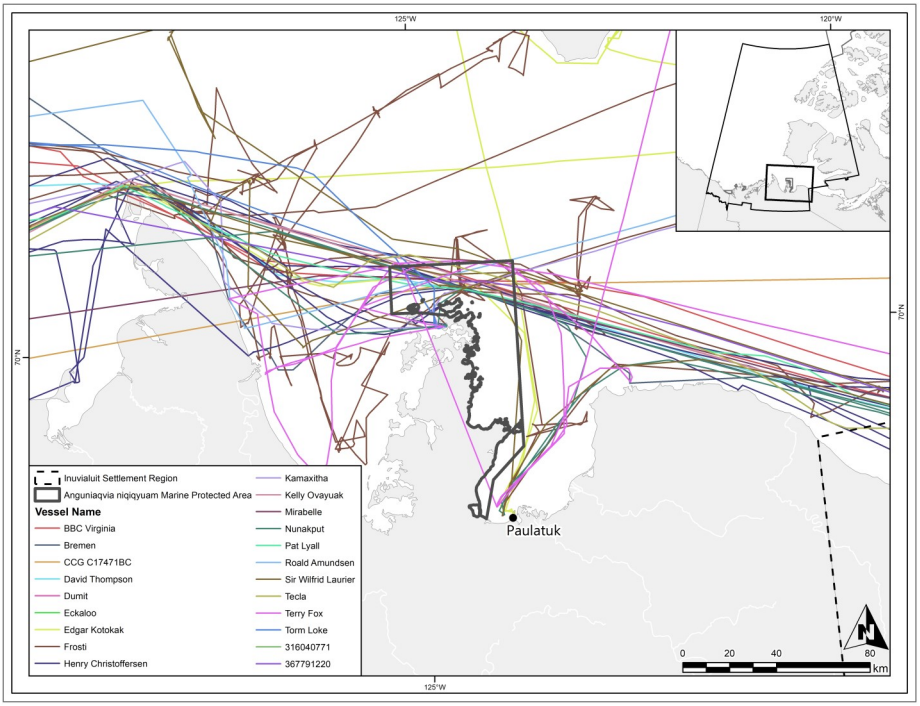

Figure 14. *Vessel traffic in the ANMPA in 2019. Provided by T. Raddi.*

The Tuktoyaktuk Marine Awareness Information System (Tuk-MAIS) has been expanding in both regional coverage and monitoring capabilities over the past two years and will be a great real-time vessel tracking resource to the Inuvialuit Settlement Region as vessel traffic in the arctic is expected to increase in coming years.

Year	August	September	October
2019	10	15	2
2018	7	4	n/a
2017	5	9	1

Table 3. Number of vessels transiting ANMPA yearly from August-October when ice is typically less prevalent.

ANMPA Activity Plan Summary 2019: Photocensus of Thick-billed Murres at Cape Parry Bird Sanctuary

Summary of Activities-
D. Hogan

Survey personnel on board the CCGS Sir Wilfrid Laurier launched a small auxiliary vessel from the main ship outside of the MBS on August 7, 2019. The auxiliary vessel progressed into the MBS and surveyed Murres from Police Point to East Point, keeping approximately 200m from the face of the cliffs of Cape Parry MBS.

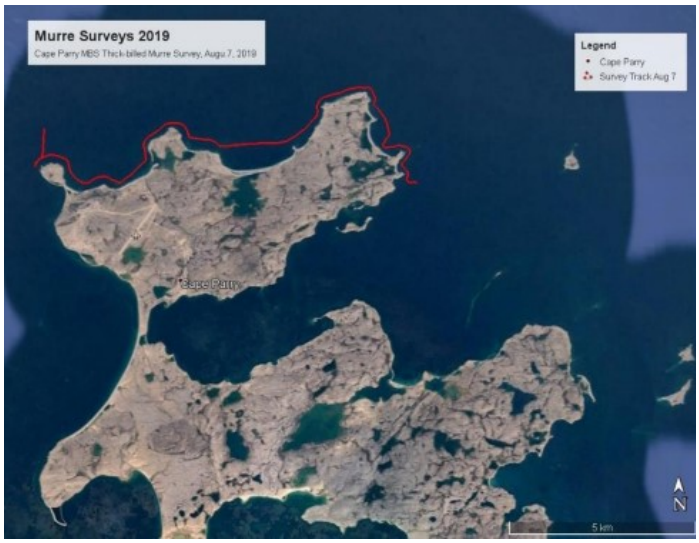

Figure 15. The survey boat progressed West to East from Police Point to East Point, keeping approximately 200m from the face of the cliffs of Cape Parry MBS. Provided by: Danica Hogan.

Figure 16. The Thick-billed Murre. From: Wikipedia, open source.

Survey
The survey crew recorded all observations of birds flying and on the water, and took photographs of Thick-billed Murres resting on the cliffs of the MBS. The auxiliary vessel then left the MBS and returned to the CCGS Sir Wilfrid Laurier. The survey took approximately 1 hour to complete.

Photos are currently being processed to obtain a total count of Thick-billed Murres within the MBS; we will update the ANMPA working group on the count, once it is available.

Arctic Char Harvest Monitoring at Tippitiuyak

Annual Community-based Monitoring Program -C. Gallagher

One of the conservation objectives of ANMPA is to maintain the habitat to support populations of key species, including Arctic Char. Inuvialuit harvesters from Paulatuk, NT rely heavily on Arctic Char for subsistence.

An annual community-based monitoring program for Arctic Char at Tippitiuyak (Tippi) was established in 2012. Harvest, catch-effort, biological data, and tissue samples are collected by Tony Green (figure 17), to characterize the fishery, investigate 'blue char' (a type of char reportedly different from those associated with the Hornaday River and of unknown origin), and implement the Paulatuk Char Management Plan.

Year	Total	% blue char
2019	37	97.3
2018	21	100.0
2017	36	94.4
2016	13	61.5
2015	36	97.2
2014	23	91.3
2013	50	84.0
2012	8	62.5
Total	**224**	

Table 4. Total Char caught and blue char catch percentage..

Figure 17. Tony Green checking his net. Photo Credit: Colin Gallagher .

The biological data indicate harvested Char average approximately 600 mm in length, 2400g in weight, and 9 years in age. Biological indicators appear stable across years.

The average number of Char harvested at Tippi every summer is ~30; (Table 4) the large majority of which are 'blue char'. Catch-per-unit-effort (CPUE) is relatively consistent among years, with most catches occurring mid to late July.

On the Horizon

- Coordinate MPA related summer field activities with community in light of current COVID19 situation
- Continue development of the Socio-economic and governance indicator sections of the monitoring plan through ANMPA working group and WAMPA.
- Hold workshop in Paulatuk in 2020 to bring together Science and Traditional and Local knowledge for final draft ANMPA monitoring plan.
- Develop ANMPA management Plan

WAMPA

The Western Arctic Marine Protected Area (WAMPA) Steering Committee coordinates the management of Western Arctic Marine Protected Areas.

WAMPA Chair: Joel Ingram

Arctic Observer App

This app allows for environmental and marine observations to be recorded with mobile devices. This app works online and offline:

https://survey123.arcgis.com/share/fa672cf2088548f09f3411a0c9d24472

Contact the MPA Coordinator, Kayla Hansen-Craik for more information

BEAUFORT SEA PARTNERSHIP

Questions?

Contact: Jasmine Brewster
Email: Jasmine.brewster@dfo-mpo.gc.ca

Contact: Kayla Hansen-Craik, MPA Coordinator
Email: khansen-craik@jointsec.nt.ca

Thank you to the 2019 field crew!

- Steve Illasiak
- Brandon Green
- Dwayne Illasiak
- Nelson Ruben
- Kevin Gully (DFO)
- Zander Chila (UVic)
- Darcy McNicholl (DFO)

Traditional & Local Knowledge (TLK) Protocol

The final draft TLK protocol is currently in review. If you have plans to conduct TLK research in the ISR please contact the TLK Coordinator: Cassandra Elliot : tlkcoord@jointsec.nt.ca

We're on the Web!

Beaufortseapartnership.ca

Wolfish Call for Information

DFO is looking for evidence of the at risk Wolffish species. If any observations or information please contact Darcy.mcnicholl@dfo-mpo.gc.ca

Staff Changes

The ANMPA Working group welcomed new PHTC member Bill S. Ruben in December 2019. FJMC welcomed Marissa Murphy as new Resource Biologist. IRC welcomed Tess Forbes as new Marine Program Coordinator, Tess will sit as an observer with the ANMPA working group.