# CEMG - Coastal Monitoring Plan Overview

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St. Lawrence Island – North Bering Sea– Photo: ShoreZone

# CEMG and Coastal Background Paper

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Coastal Background Paper

- Describes the approach to the Coastal Plan
- Accepted at the Feb 2016 CAFF Management Board meeting


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# Coastal Plan Approach

- Overall goal to generate useful and timely information of the state of Arctic coastal biodiversity
- International framework – national implementation
- start with ongoing programs – a ‘coalition of the willing’
- common set of FECs, Attributes and Parameters – common basis for reporting

# FECs, Attributes and Parameters

**Focal Ecosystem Components** (FECs) are biological categories of major importance to biodiversity conservation objectives and to Arctic residents, and considered central to the functioning of Arctic ecosystems, and likely to be good proxies of Arctic environmental change.

**FEC Attributes** are the general category of measurements used to track change in a FEC, e.g, abundance, demographics, productivity.

**FEC Parameters** are the actual metrics measured in the field and used for analysis of change and developing specific monitoring questions.

# FEC Example

| FEC | Attribute | Parameter |
|---|---|---|
| **Herbivorous Birds (geese, swans, ptarmigan)** | Abundance | population size, number, habitat selection |
| | Spatial Structure | local density, presence/abundance, habitat selection; migration patterns |
| | Demographics, Productivity and Phenology | propensity; clutch size; brood size; age ratio; nest success; age specific survival; genetic diversity; breeding behaviour; phenology |

# Coastal Plan Approach

Ecosystem-based approach

- Existing monitoring capacity and information
- Use TK, community based monitoring and science
- Identify a suite of coastal biodiversity indicators linked to key drivers and stressors - ecosystematic
- Identify optimal existing sampling schemes for chosen parameters
- Identify gaps in existing monitoring programs

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# Coastscapes

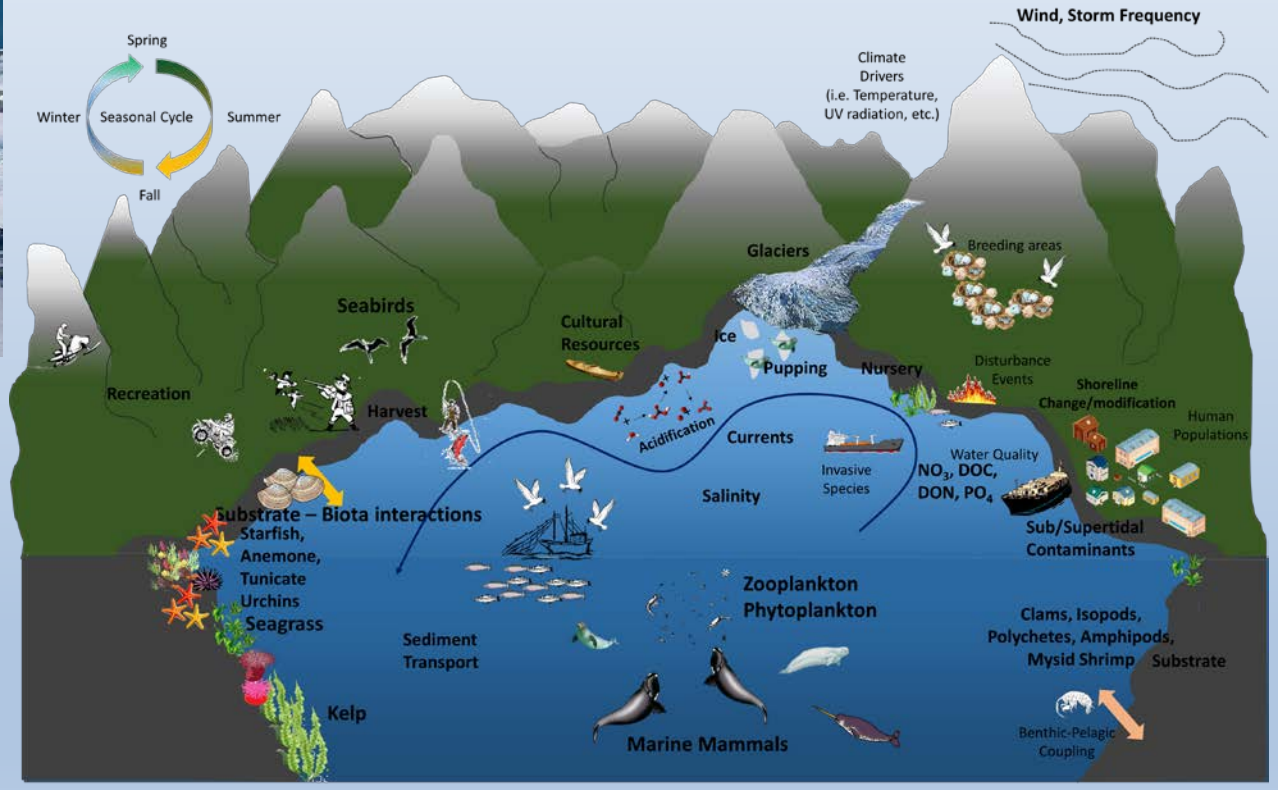
- areas of the circumpolar Arctic coast with recurring physiographic features (steep to shallow bedrock, low, soft-sediment coastal plains, river estuaries, lagoons) where,

- similar terrestrial, marine and freshwater processes interact with physiographic features to create a relatively predictable range of habitats that support characteristic populations of coastal species

- a particular coastscape will contain a relatively predictable range of habitat elements (e.g., beaches, mudflats, soft benthos, wetlands, rock cliffs, estuaries) and often will contain small elements of other coastscapes (e.g., rapidly-eroding shores often include lagoons or estuaries).

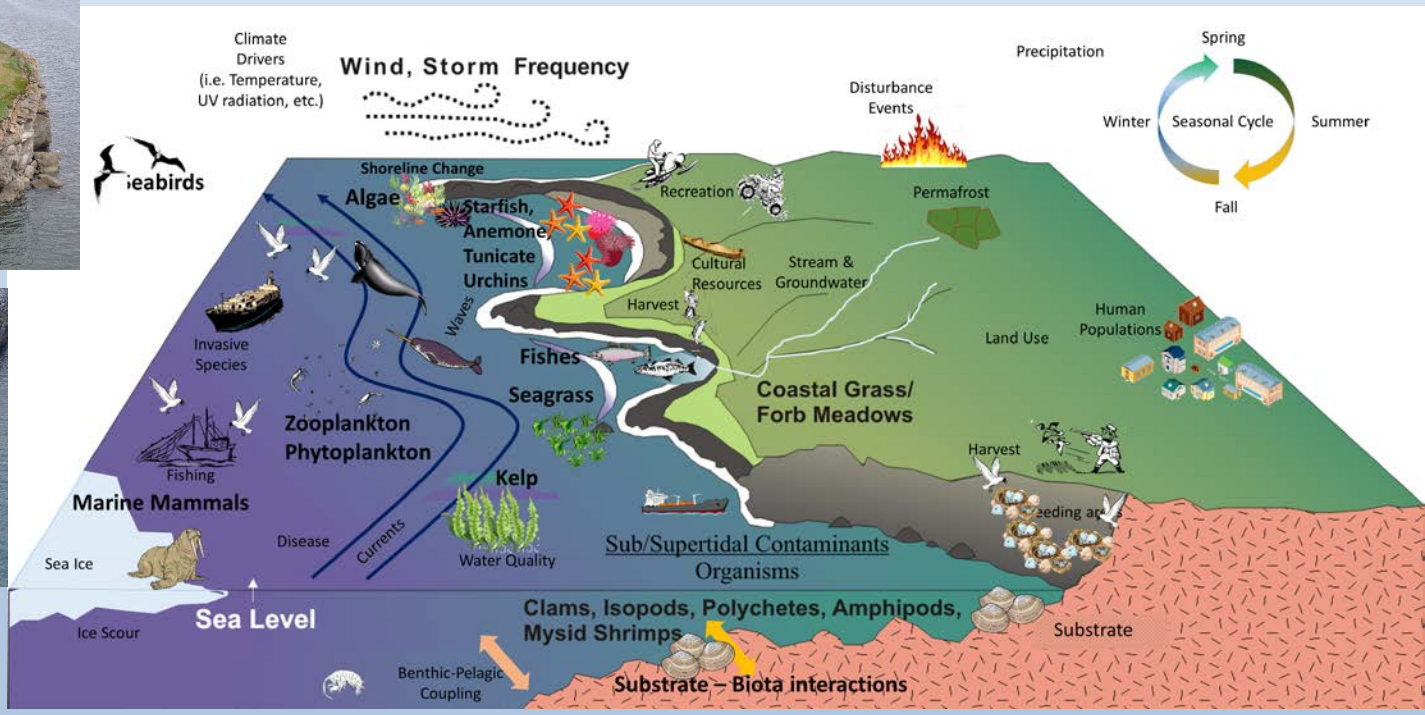
# Fjords

Long, narrow inlets with steep sides and cliffs usually formed by Quaternary sub-sea level glacial erosion. They are commonly headed by glaciers with associated meltwater streams, and feature frequent, small, lateral side streams with small deltas and estuaries. Fjords are the predominant coastscape in Norway, Iceland, Greenland, and the eastern Canadian Arctic.



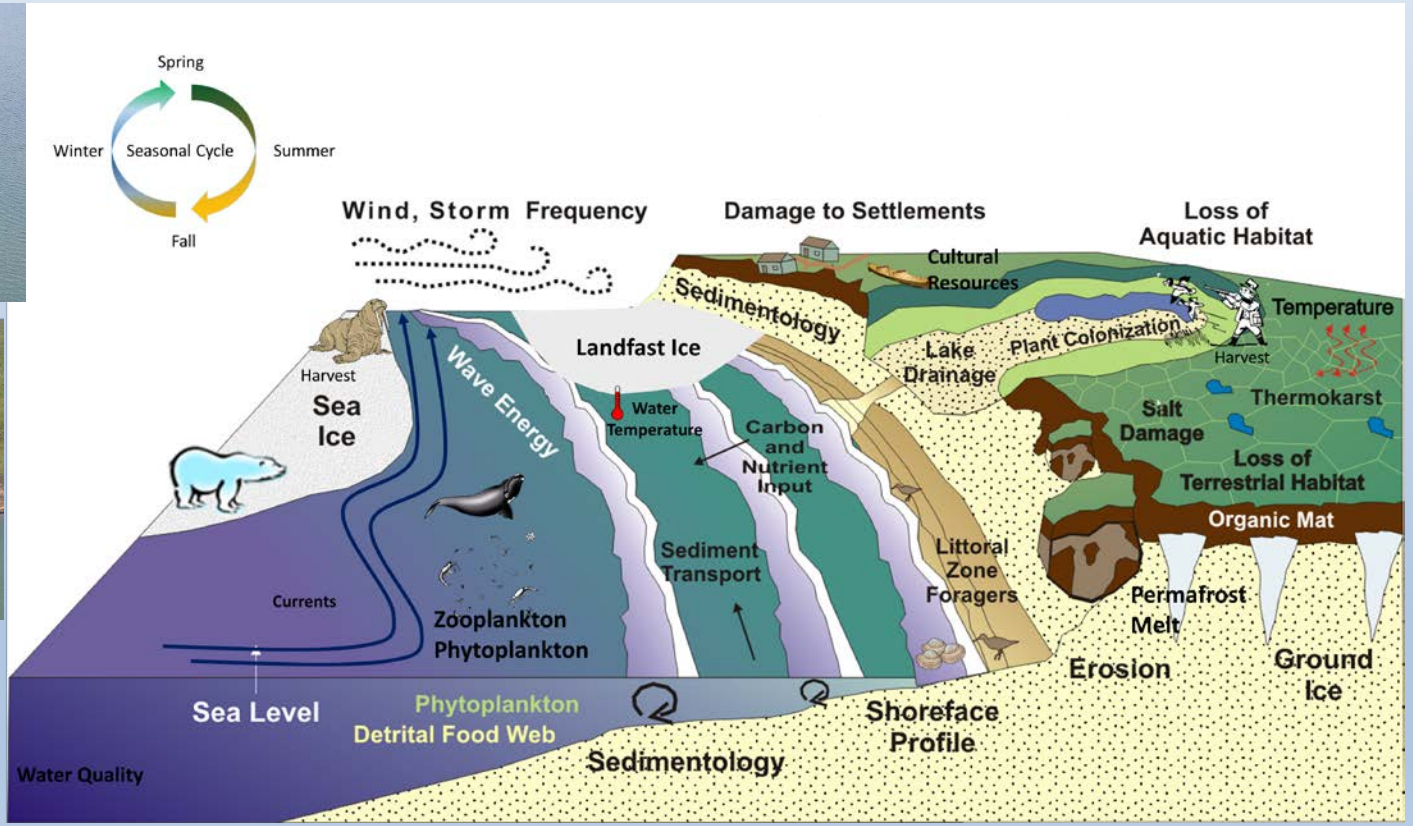
# Rocky Shores and Cliffs

Low-gradient to steep coasts (including sea cliffs) with exposed bedrock to the waterline that frequently include rock pools, beaches, and small wetlands. Scattered throughout the Arctic and often associated with the Fjord coastscape.



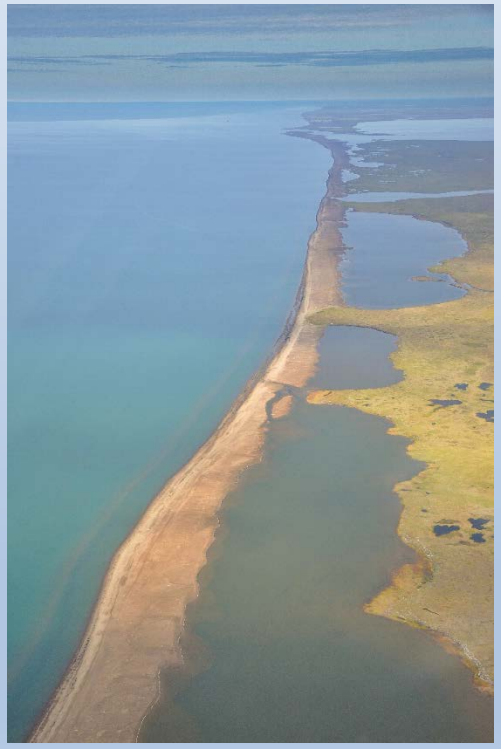
# Low Gradient

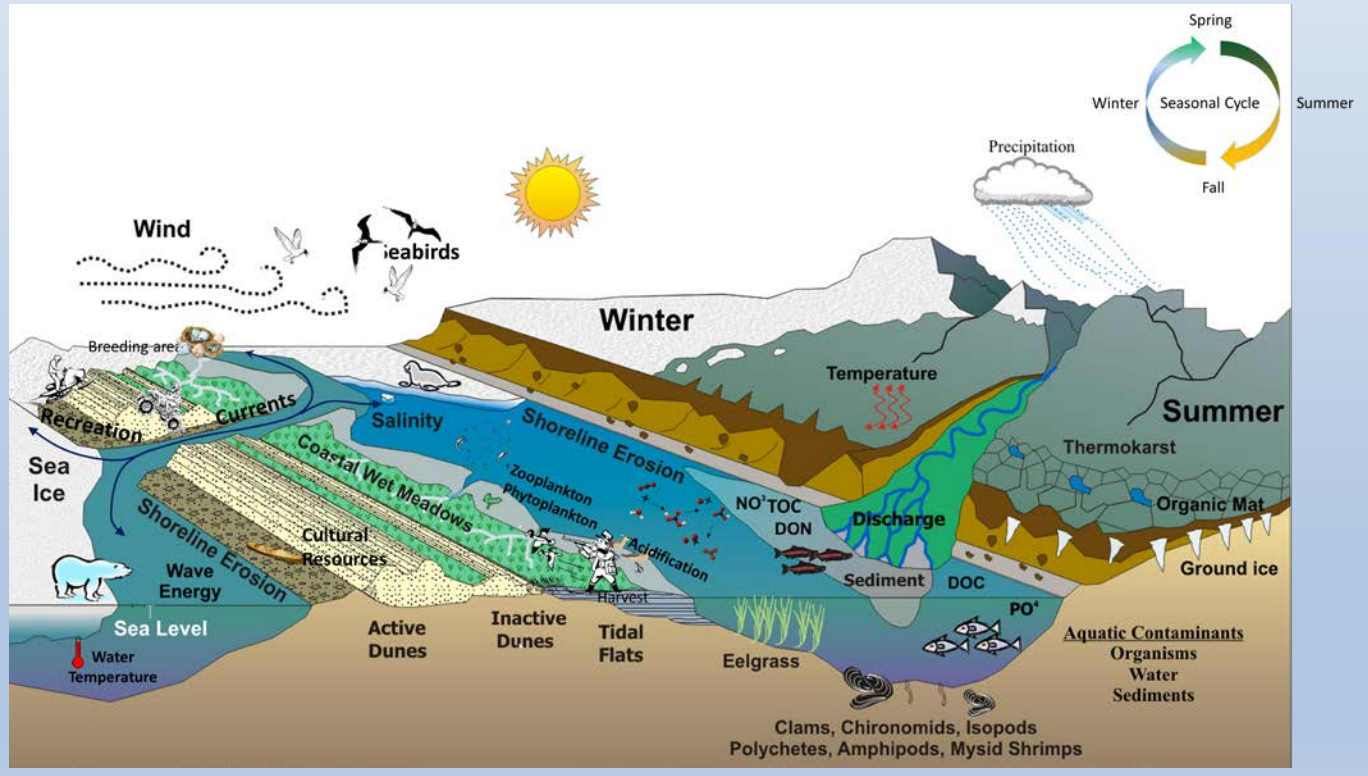
Low-gradient coasts with varying thicknesses of surficial materials over bedrock, and characterized by mudflats, small wetlands, and beaches. Scattered throughout the Arctic, but cover large coastal areas of the Canadian Arctic Archipelago, along the Alaskan Chukchi and Beaufort Seas, and along the Russian and Iceland coasts.



# Lagoons

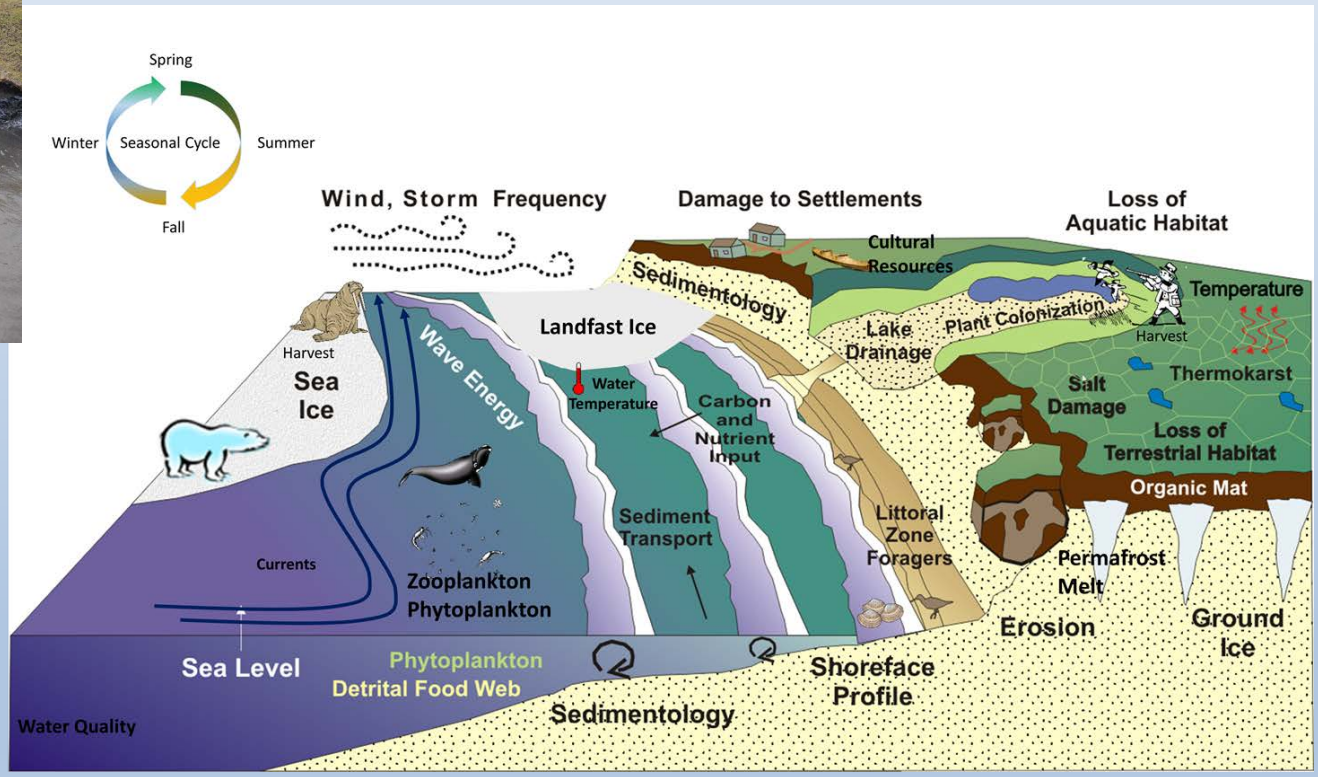
Coasts that feature low-lying, shallow, brackish lake and wetland systems protected from the ocean by barrier bars and spits, usually connected by a relatively small stream that flows in both directions with the tide. Frequently flooded by storms that can significantly alter salinity and turbidity characteristics. Often occur with Rapidly eroding Shore and Low Gradient Soft Shores coastscapes that supply sediment for land building. Common in Russia, Alaska, and Canada along the Bering, Chukchi, and Beaufort Seas, and along the Iceland coast.





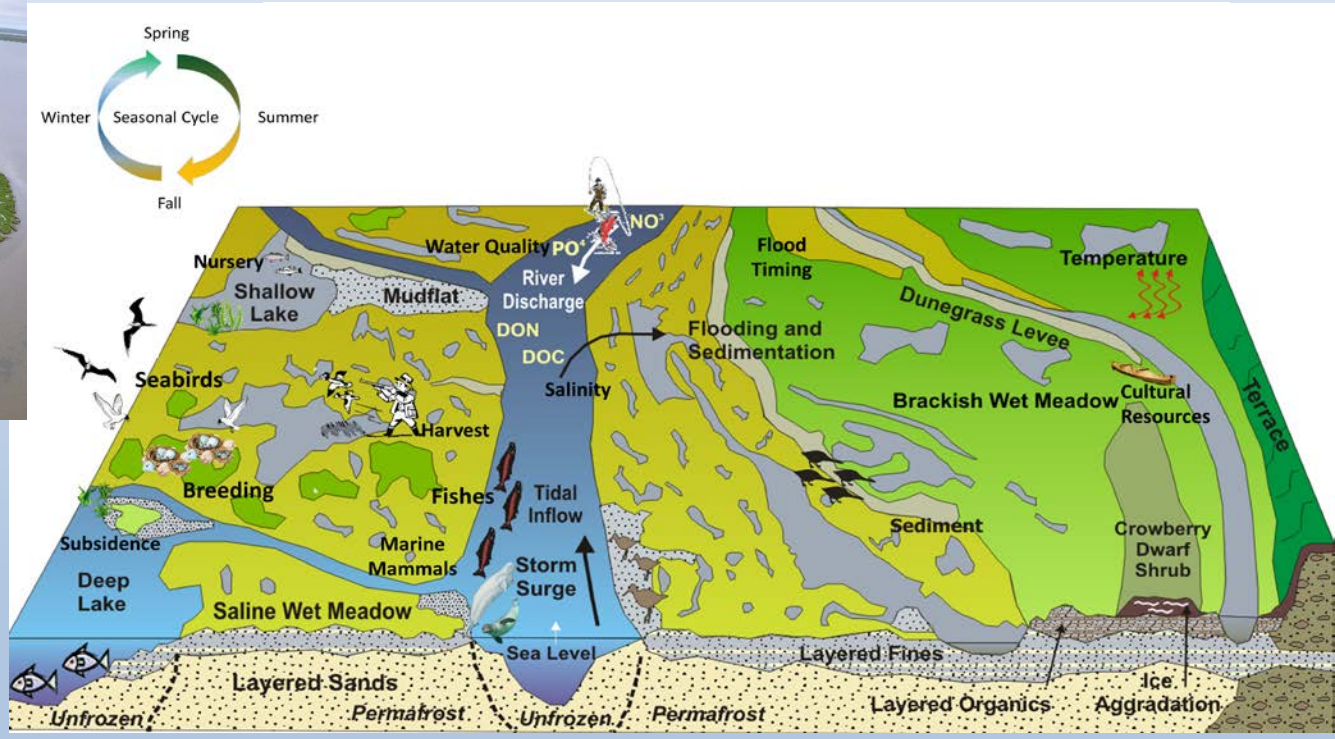
# Rapidly Eroding Shores

Coastal areas with soft shores, often containing significant ground ice, that are eroding at moderate to rapid rates to create offshore bars, spits and mudflats. Occur mostly along the southern coasts of the Beaufort, East Siberian, and Laptev Seas.



# Estuaries

Estuaries develop at the mouths of most rivers where sediments are deposited as river-born sediment load enters the ocean. Often featuring extensive low-gradient networks of wetlands, streams, and brackish ponds with broad mudflats. Occur along the Arctic coast wherever rivers enter the sea; ranging from very small to very large estuaries such as the Lena, Ob, Yukon, and Mackenzie.



# Monitoring Methods

Traditional Knowledge Monitoring

Community Based Monitoring

Site-Based Monitoring

Species-Based Monitoring

Remote Sensing

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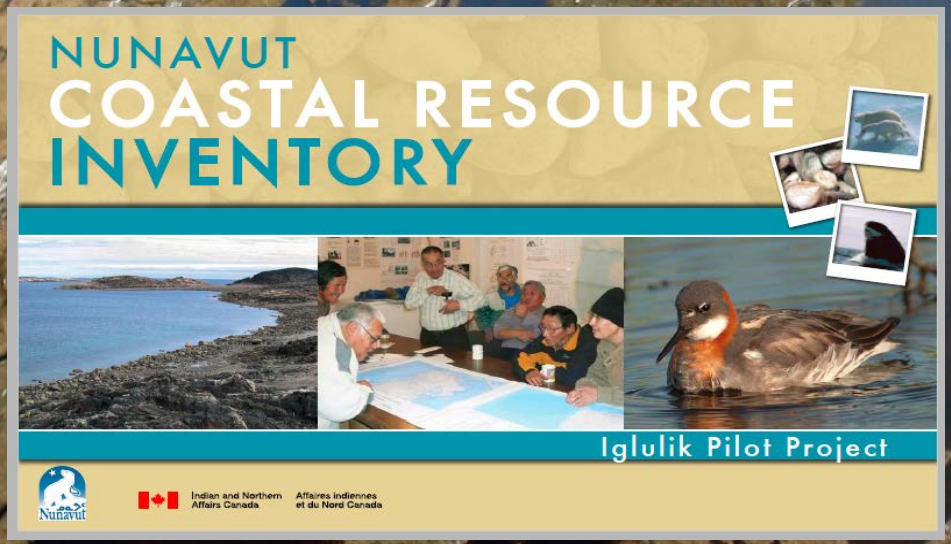


Critical to establishing an approach for utilizing multiple knowledge systems in coastal assessments.

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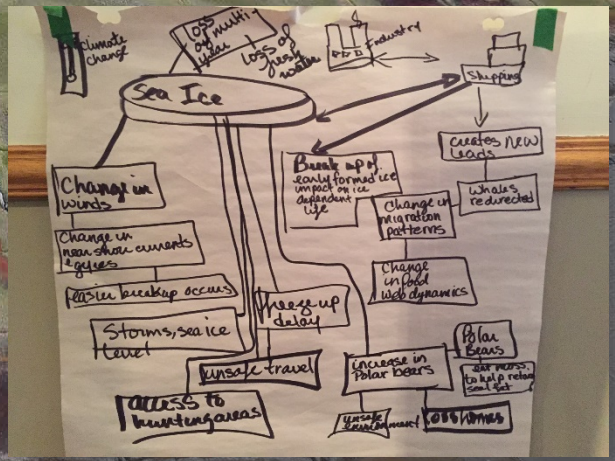
# Coastal Expert Workshop

- Finalize the FECs, parameters and attributes for the Plan.
- Address key components to establish a platform for utilizing multiple knowledge systems in coastal assessments.
- Align the Marine Monitoring Group with the Coastal Monitoring Group to take advantage of monitoring synergies and avoid overlap.
- Address remaining monitoring plan issues to prepare for finalizing the coastal monitoring plan.



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# Status

- Coastal Background Paper was completed and accepted
- First Science and TK Experts' workshop in March 2016 – Report completed May 2016
- Different coastal zones identified and defined in 6 Coastscapes: rocky shores, eroding shores, lagoons, river estuaries, fjords, and low gradient coasts.
- Coastal monitoring Plan is in final stages of development
- Science and IK Experts' workshop is being held currently in Anchorage with a final to be held in Norway in January
- Expert review will occur nationally
- Draft plan is currently scheduled for completion in 2018
- Plan for country and IK Review in Spring 2018

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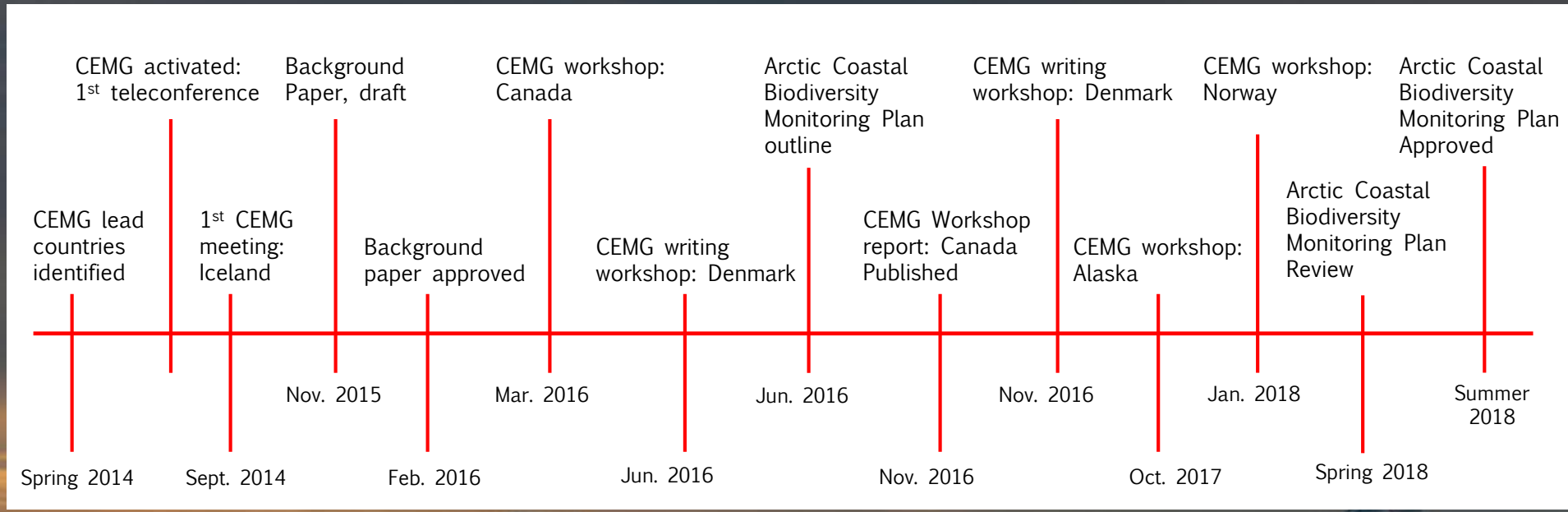
# Next Steps in the Process

- Experts (IK and Science) final meeting for the Arctic Coastal Biodiversity Monitoring Plan development
- Completion of the plan for review
- Country and IK holder review
- Approval and implementation of the plan

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# Near Term Timeline…

| Activity | Date | Purpose |
|---|---|---|
| Coastal Experts Monitoring Group Workshop | Oct. 11 - 13, 2017 | Select key components and attributes of the monitoring plan and prepare for plan finalization |
| Revise plan based on October meeting | Oct. - Dec., 2017 | Complete initial draft of the monitoring plan |
| Coastal Experts Monitoring Group Workshop | Jan 2018 | Finalize key components of the monitoring plan and prepare for plan review |
| Country and IK holder review | Feb. - Mar. 2018 | Review the monitoring plan and provide comments and feedback |
| Finalize the Monitoring plan | Apr. 2018 | Finalize the monitoring plan for submission to CAFF Board for approval |
| Submit final Coastal Monitoring plan for approval | May 2018 | Complete the coastal monitoring plan and begin implementation process |

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# CEMG Contacts

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Lopp Lagoon– Chukchi Coast – Photo: ShoreZone