Discoveries of the Alaska Monitoring and Assessment Program (AKMAP) of the Aleutian Islands

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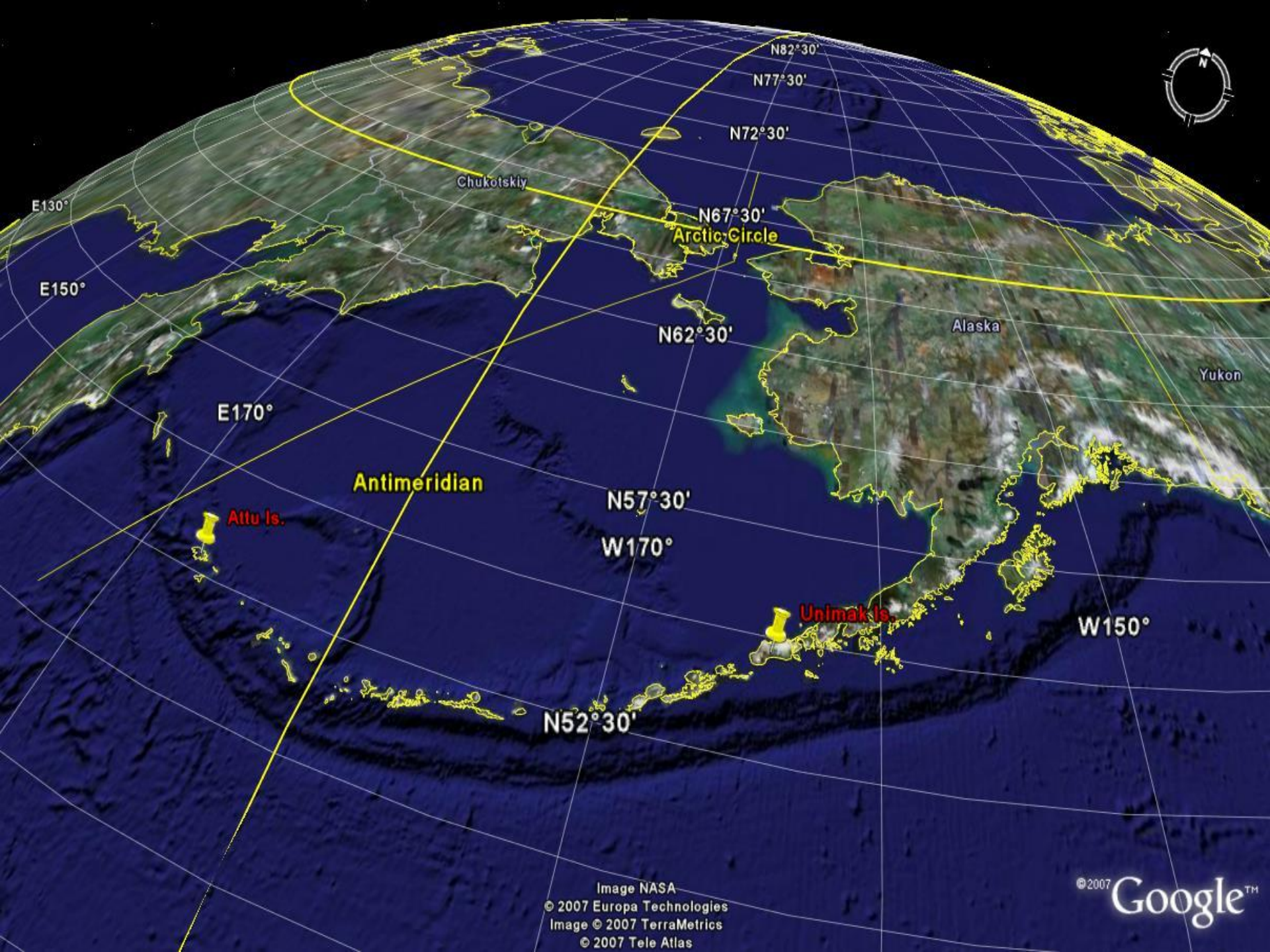
N82°30'
N77°30'
N72°30'
Chukotskiy
E130°
N67°30'
Arctic Circle
E150°
N62°30'
Alaska
Yukon
E170°
Antimeridian
N57°30'
Attu Is.
W170°
Unimak Is.
W150°
N52°30'
Image NASA
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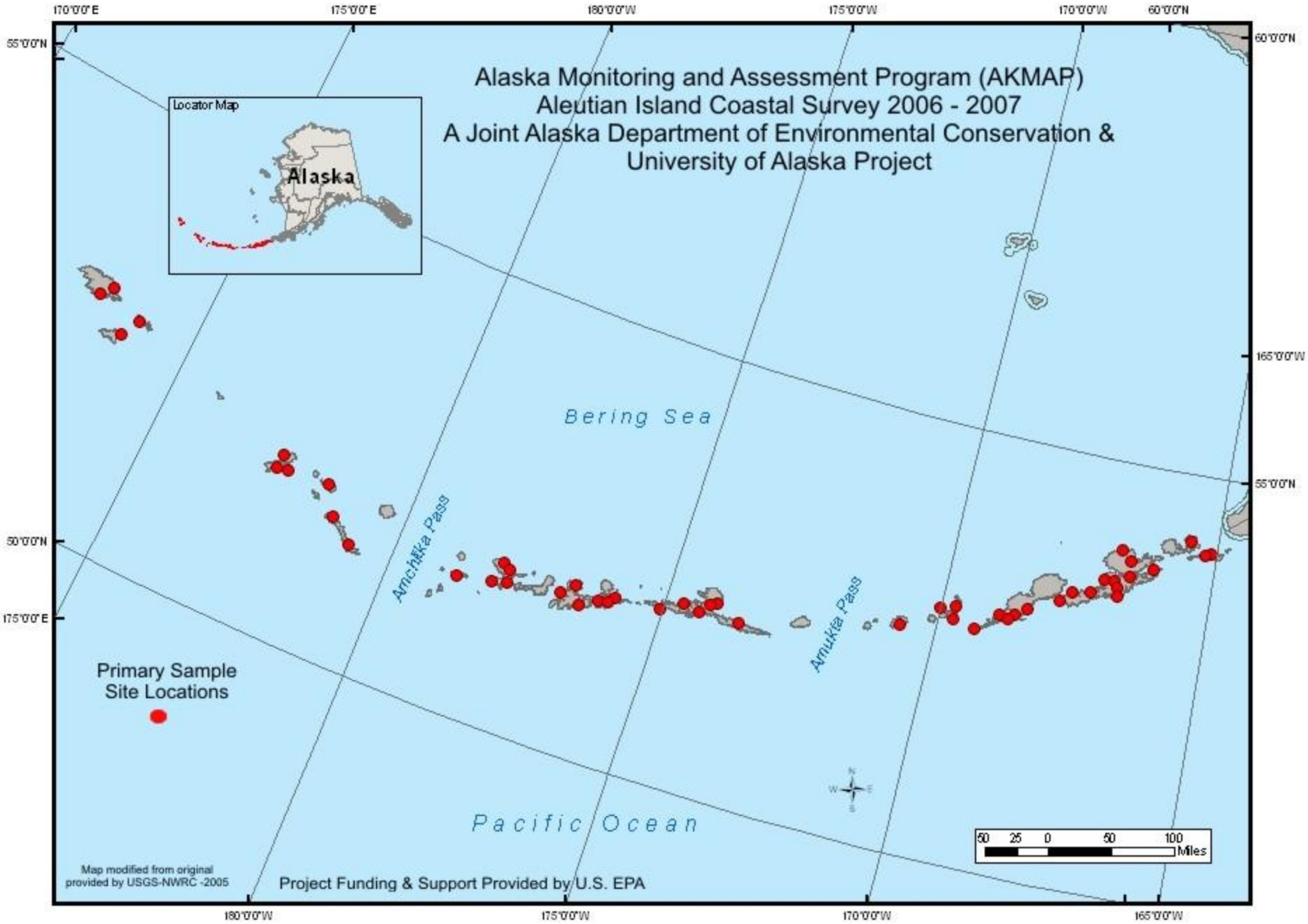
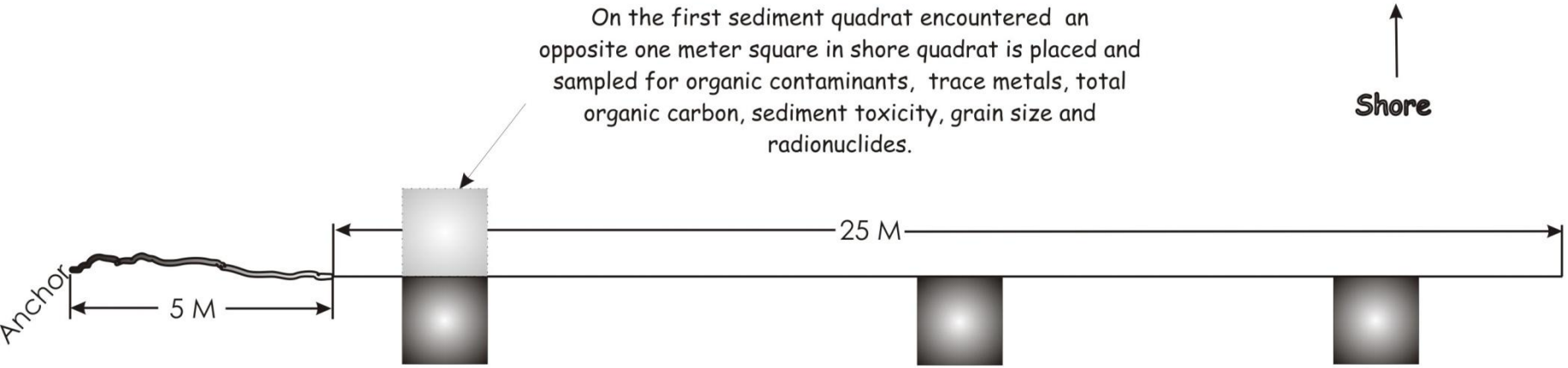

Alaska Monitoring and Assessment Program (AKMAP)
Aleutian Island Coastal Survey 2006 - 2007
A Joint Alaska Department of Environmental Conservation &
University of Alaska Project
Locator Map
Alaska
Bering Sea
Amchitka Pass
Amukta Pass
Pacific Ocean
Primary Sample
Site Locations
Map modified from original
provided by USGS-NWRC -2005
Project Funding & Support Provided by U.S. EPA
50 25 0 50 100
Miles
170°0'0"E
175°0'0"E
180°0'0"W
175°0'0"W
170°0'0"W
60°0'0"N
55°0'0"N
50°0'0"N
165°0'0"W

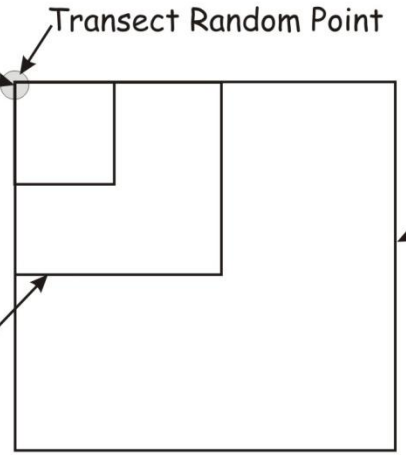
NORSEMAN
15
14
13

Sediment Quadrat For Contaminant Assessment
On the first sediment quadrat encountered an opposite one meter square in shore quadrat is placed and sampled for organic contaminants, trace metals, total organic carbon, sediment toxicity, grain size and radionuclides.



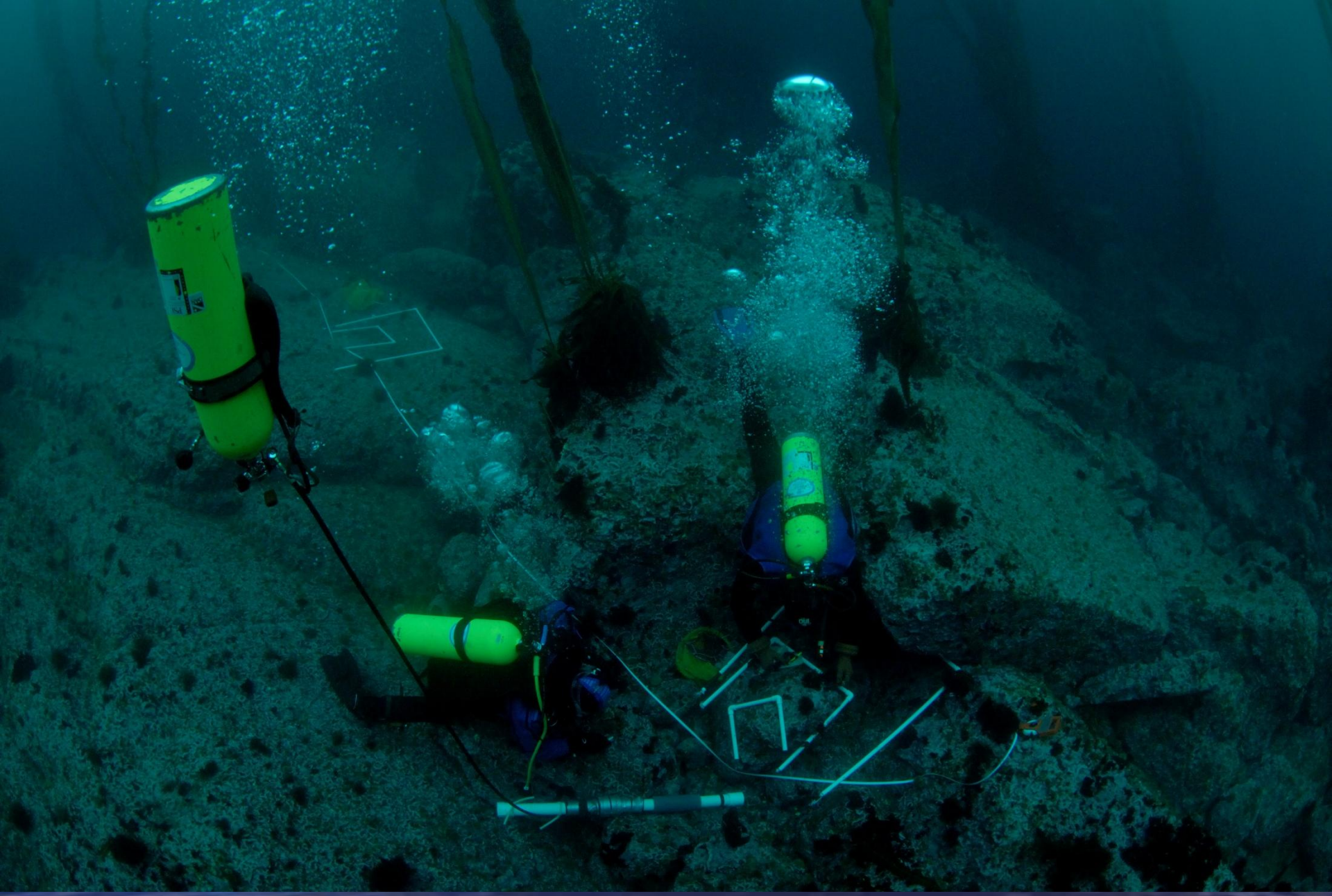
The first quadrat is set randomly within the first one to fifteen meters with the remaining two quadrats set at 5 and 10 meters respectively from the edge the first quadrat.

0.0625 Square meter quadrat
Within the frame all flat horizontal surfaces are scraped of flora and fauna. Macroalgae is removed and collected in the mesh dive bag. Material greater than 1 mm are collected with a air lift system into a mesh bag attached to the end of the air lift pipe.

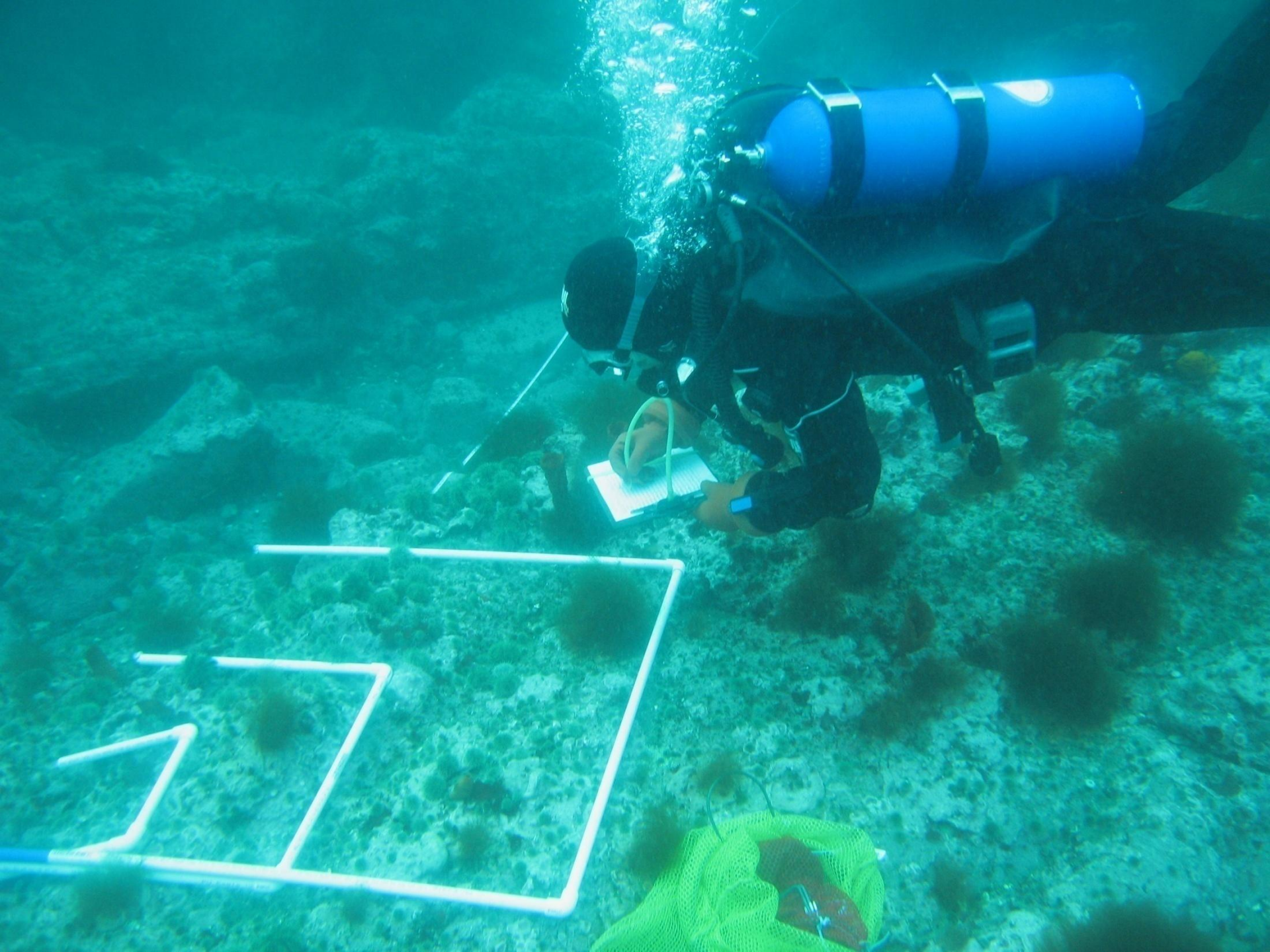


One Square Meter Quadrat
A photographic record is made of the 1x1 meter quadrat, with the 0.0625 square meter quadrat edge laid out on the random transect point. All macrophytes and conspicuous macrofauna (> 2cm in length) are identified in situ and either counted or an estimate of percent cover made. Counts are made of solitary macroflora and macrofauna, while per cent cover is used for those species whose individuals cannot be identified.

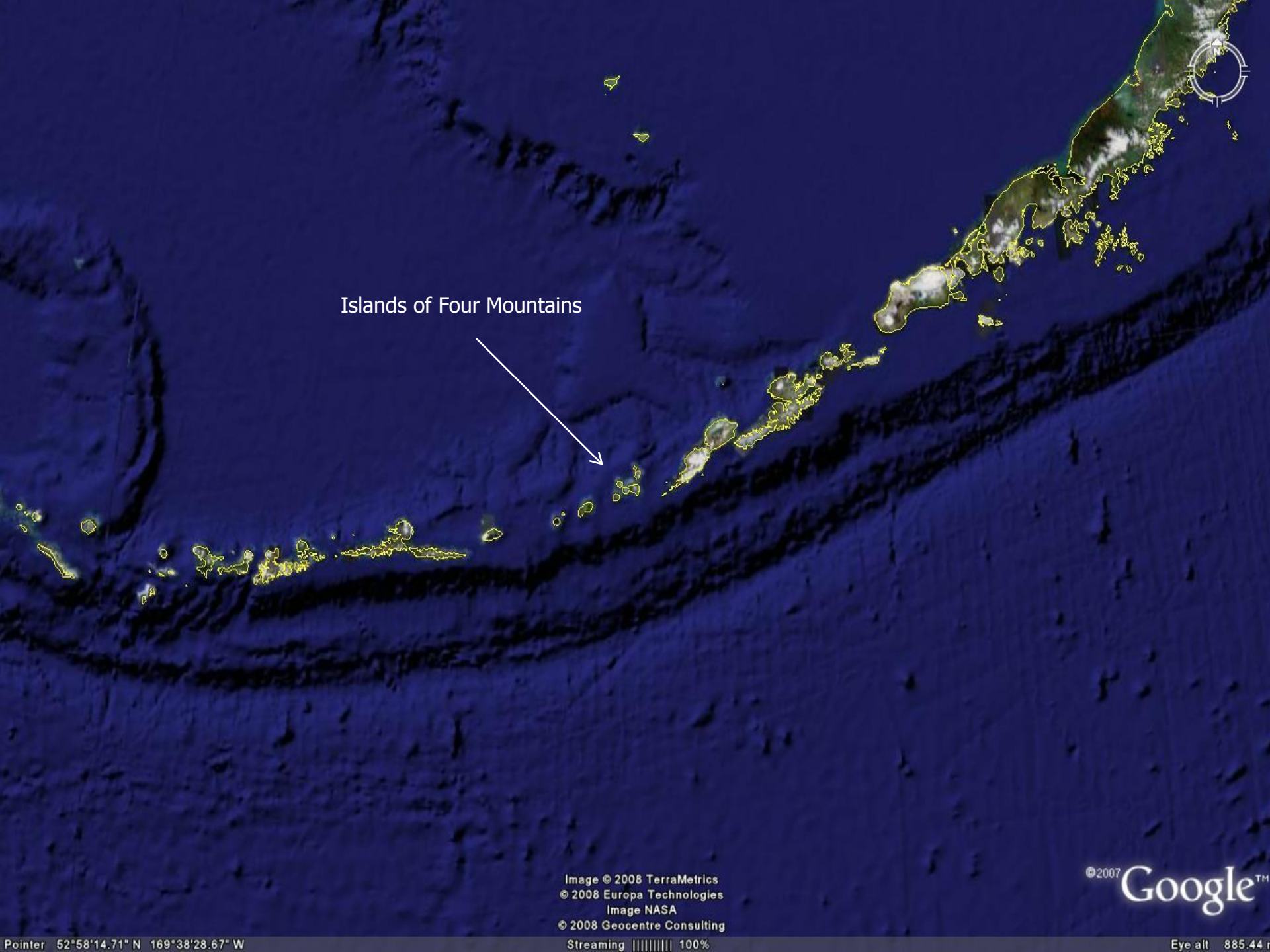
0.25 square meter quadrat
A photographic record is made immediately prior to and after sampling. All macroalgae is removed, except for the 0.0625 square meter area.



Sampling Transect and quadrates



Intertidal assessment adjacent to each subtidal site by Mandy Lindeberg, NOAA


Islands of Four Mountains
Image © 2008 TerraMetrics
© 2008 Europa Technologies
Image NASA
© 2008 Geocentre Consulting
©2007 Google™
Pointer 52°58'14.71" N 169°38'28.67" W
Streaming |||||||||| 100%
Eye alt 885.44

Islands of Four Mountains

Fumaroles on Kagamil Is

First dive on Golden V kelp bed, Kagamile Is., 4 m, 7/15/06

Aleutian EMAP:
New Kelp Discovery

Morphology and molecular phylogeny of *Aureophycus aleuticus* gen. et sp. Nov. (Laminariales, Phaeophyceae) from the Aleutian Islands.

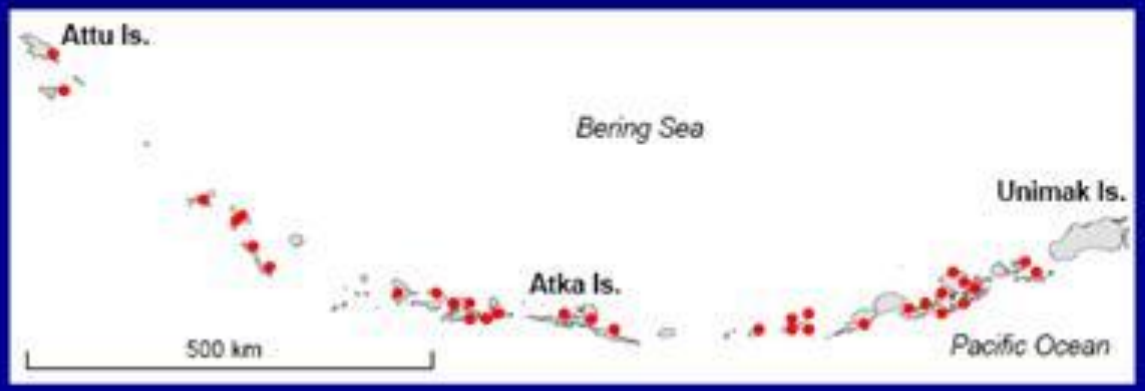
Kawai, H., T. Hanyuda, M.R. Lindeberg, and S.C. Lindstrom.

J. of Phycol. (2008) 44: 1013 – 1021

- A new genus and species, possibly family.
- Genetically significant – may be misssing link to the evolution of other North Pacific kelp families.

Aleutian EMAP:
Benthic Marine Algae Collection

- Collections spanned 24 different islands and 97 separate sites, including intertidal and subtidal locations.
- Specimens were preserved in silica gel and pressed on paper for genetic and taxonomic analyses.

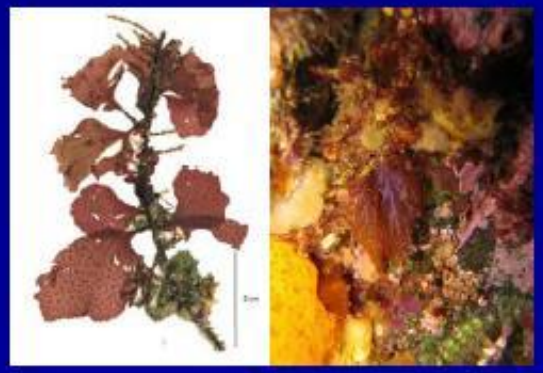


Aleutian EMAP:
Benthic Marine Algae Collection

- Over **900** specimens were preserved and archived.
- **52** new distribution records were documented.
- **150** different species of benthic marine algae were identified.
- **16** new species were discovered, **9** of these are endemic to the Aleutians.

Dudresnaya sp.

Belongs to the Family Kallymeniaceae



Hymenena sp.

“Swimming” Anemone *Ptychodactis* sp.

"Swimming" Anemone *Ptychodactis* sp.

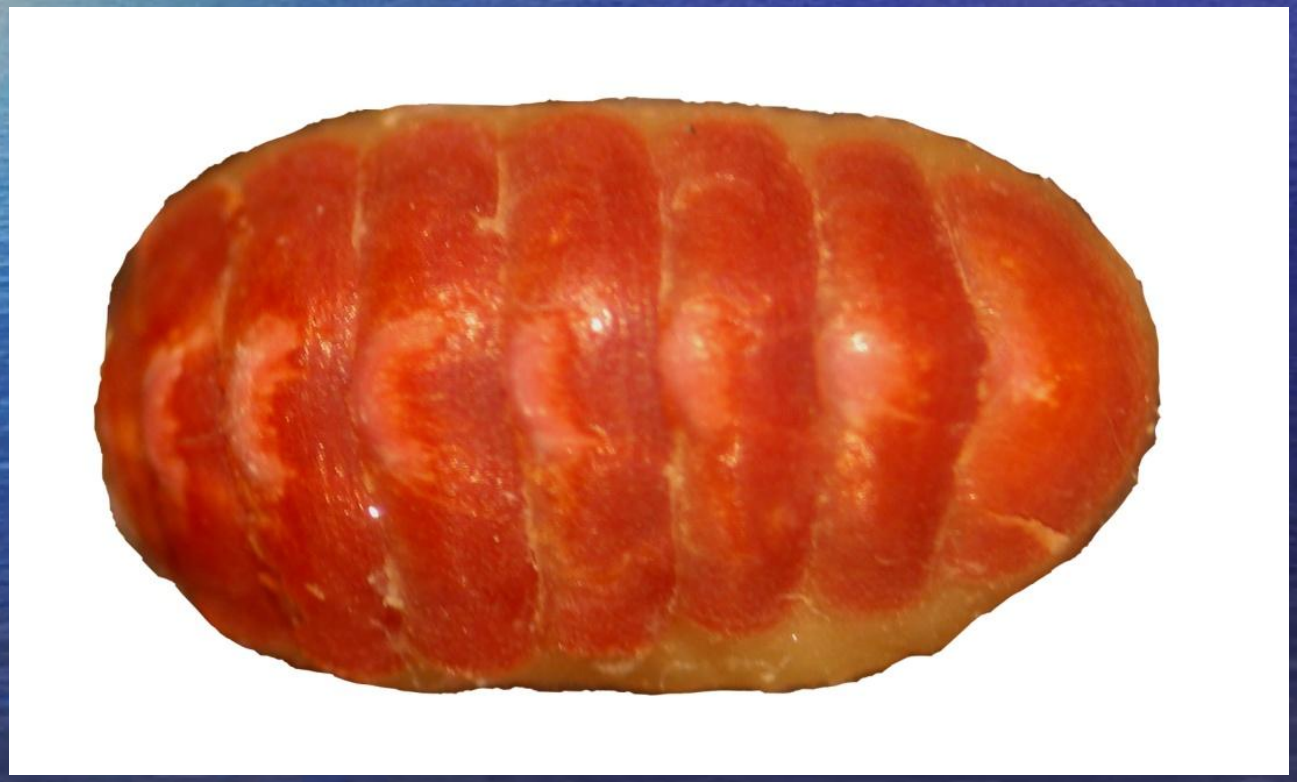
“Swimming” Anemone *Ptychodactis* sp.

Torellia sp. feeding on *Turnurella* sp.: Tanaga Is., AKMAP #0042, 7/6/07

Volutopsius sp. A: Yunaska Is., AKMAP #0037, 7/17/06

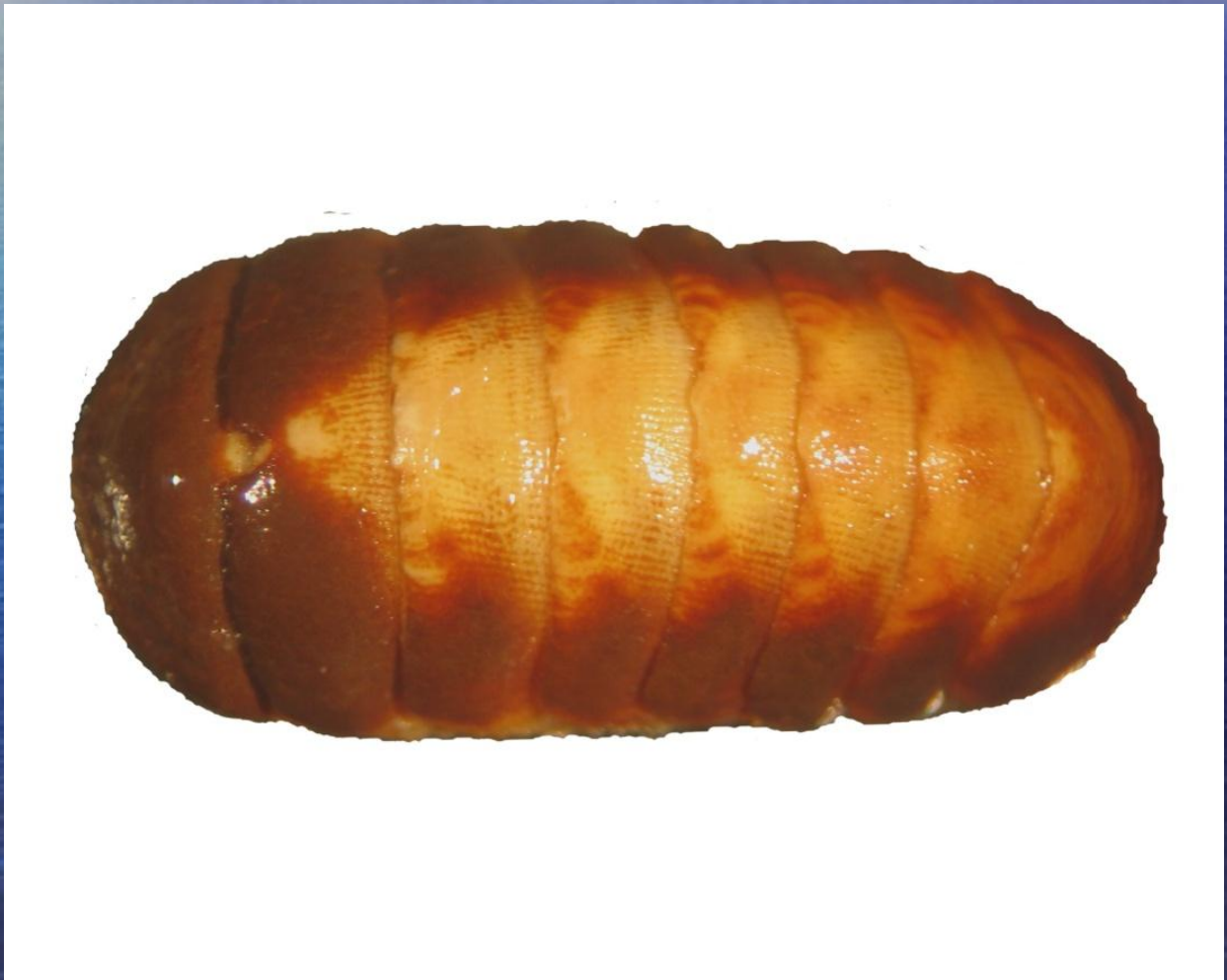
Juvenichiton sp. A: Tanaga Is., AKMAP #DD003, 7/7/07

Juvenichiton sp. B: Kagamil Is. (vent), 7/19/07

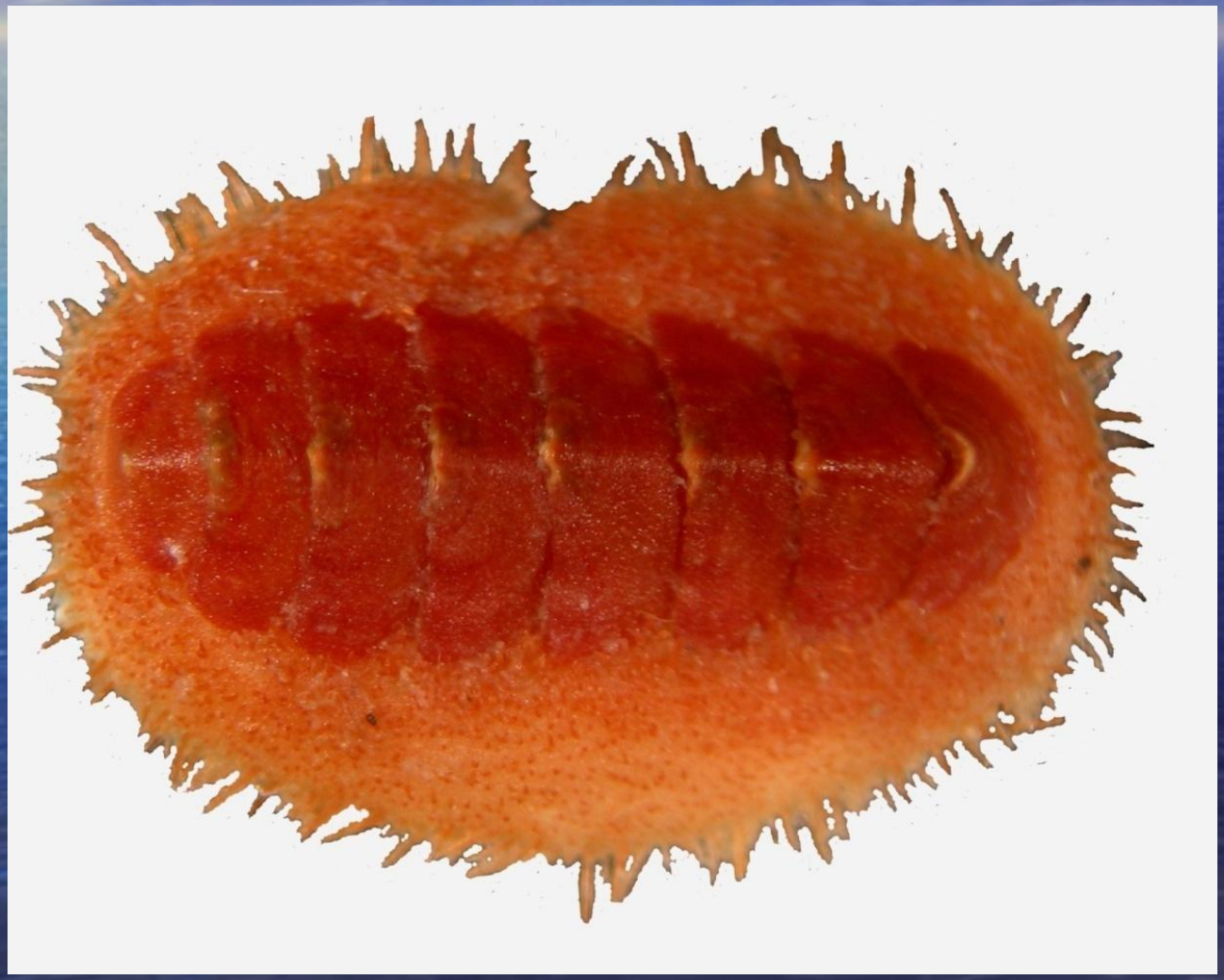


Leptochiton sp. A: Adak Is., Kagalaska Strait, AKMAP #A0021, 7/10/07

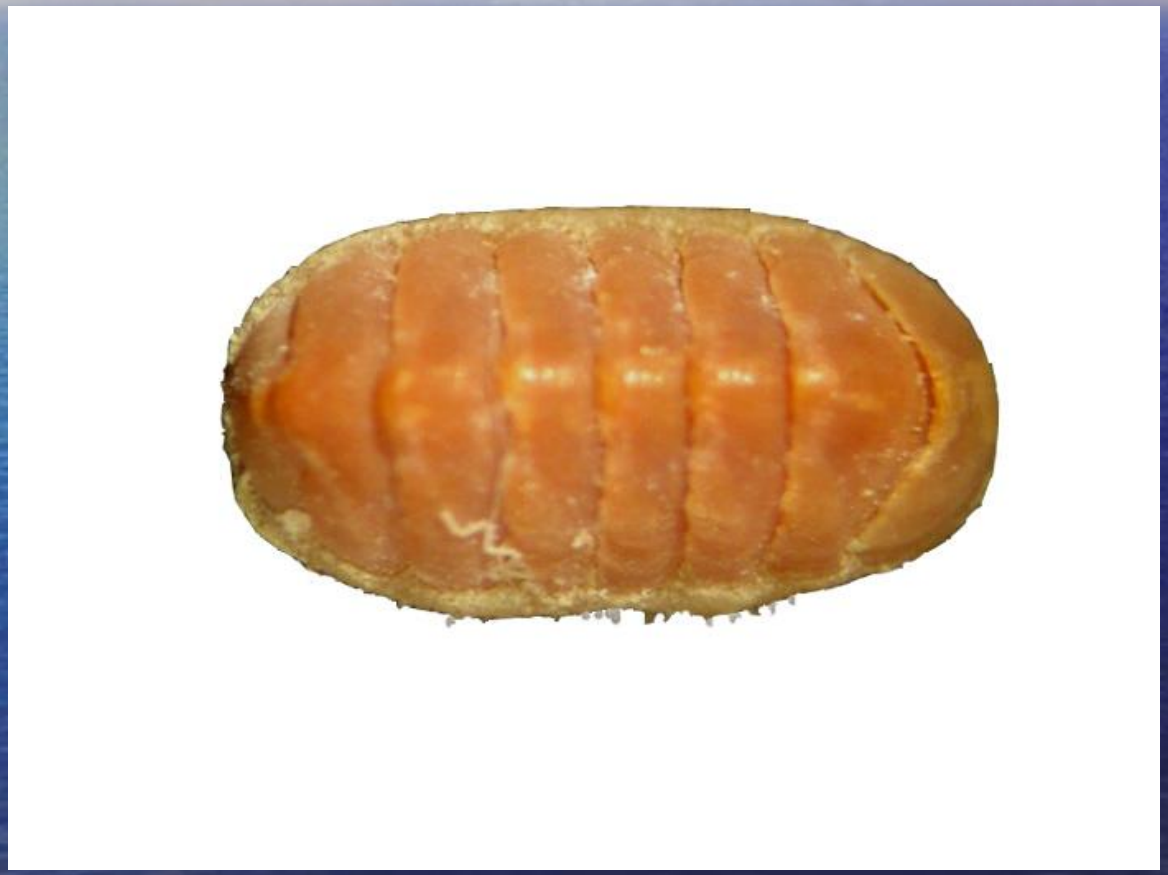
Leptochiton sp. B: Adak Is., Bay of Islands, AKMAP #A0030, Ponar grab, 40 m, 7/9/07



Mopalia sp. A: Adak Is., Bay of Islands, AKMAP #0005, 7/9/07

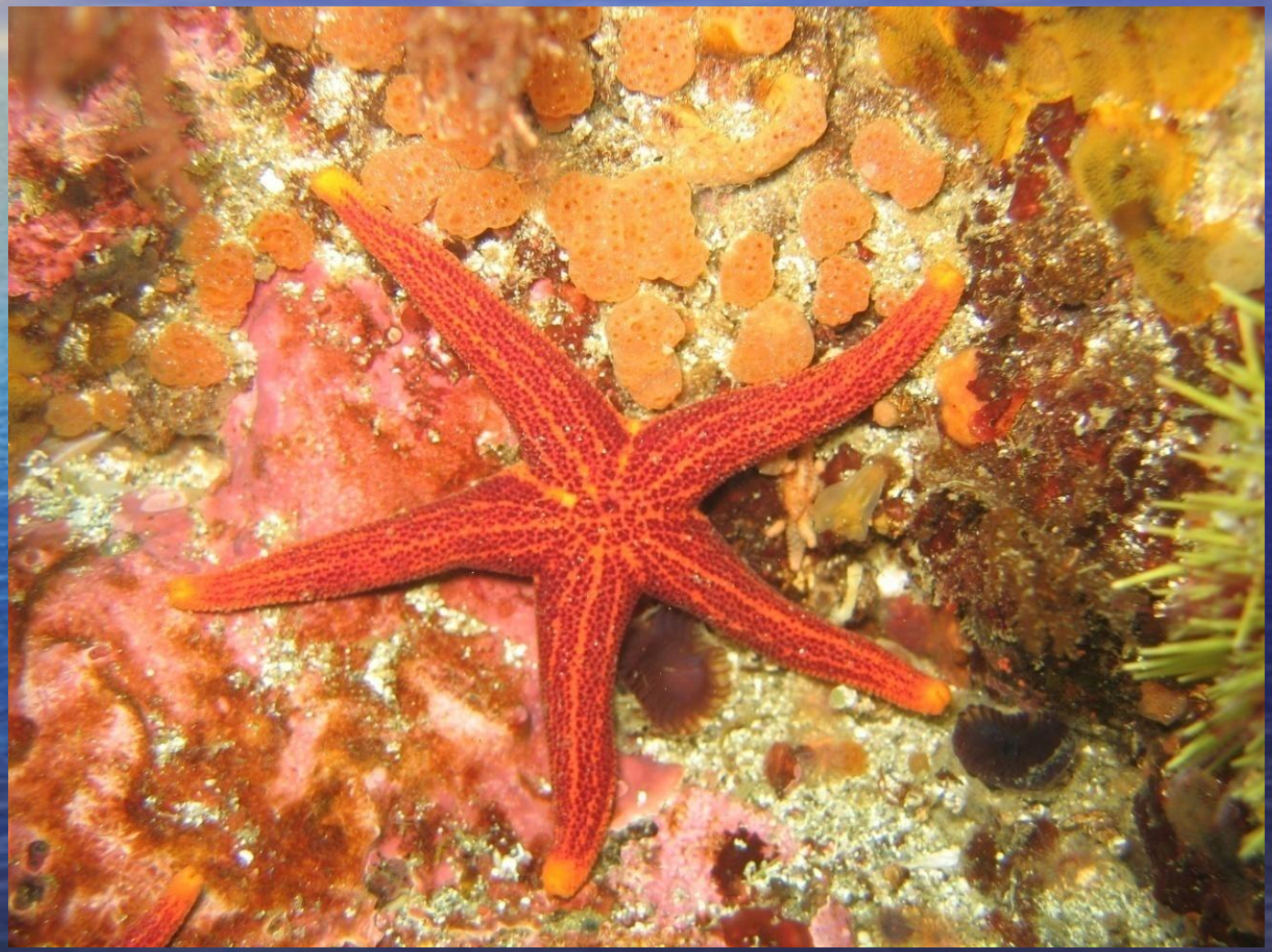


Micichiton sp. A: Carlisle Is., Carlisle Pass, AKMAP #0011, 7/15/06

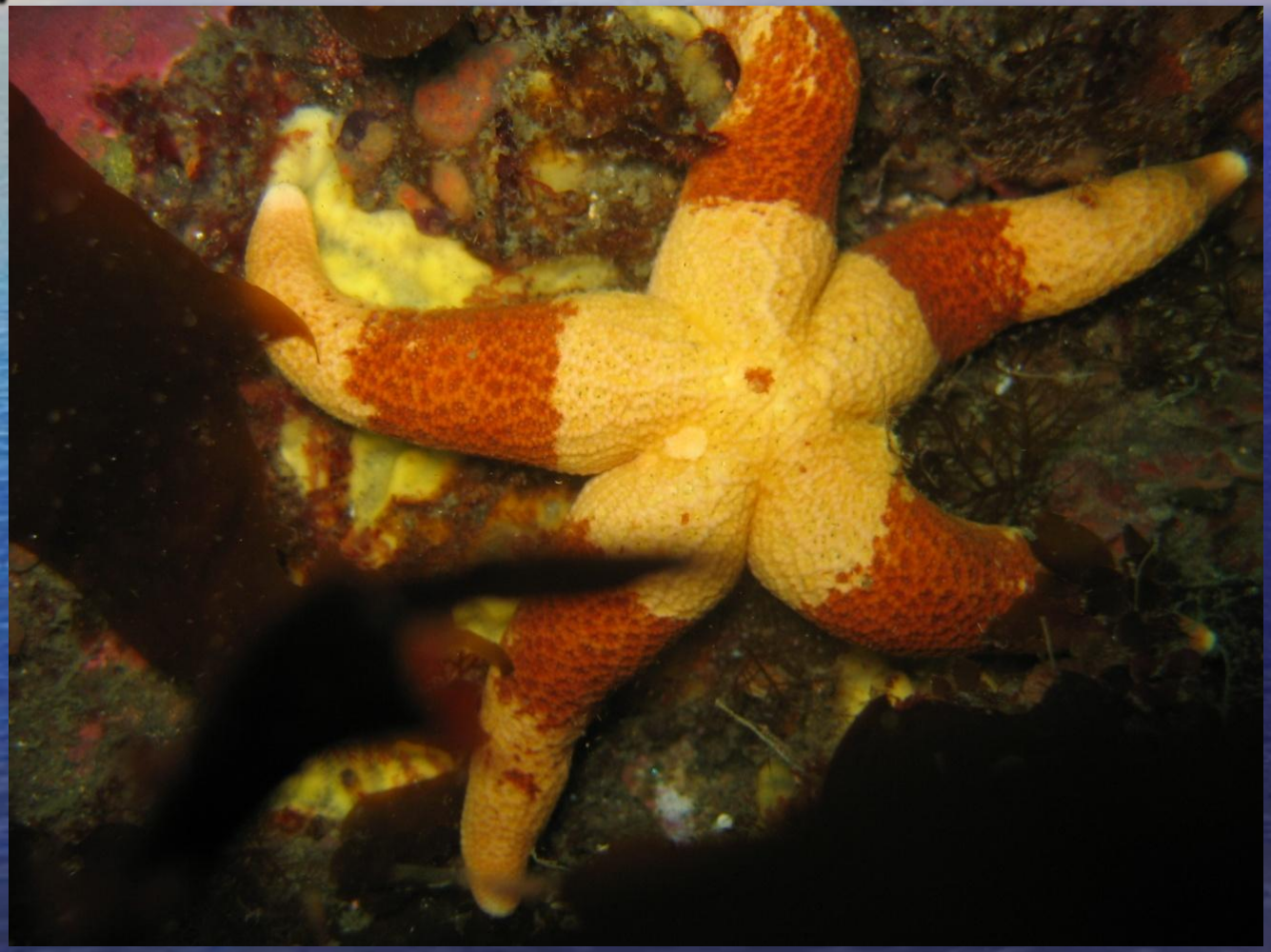


Aleutihenricia federi (sp. A): Adak Is., AKMAP #0005, 16 m, 7/9/07

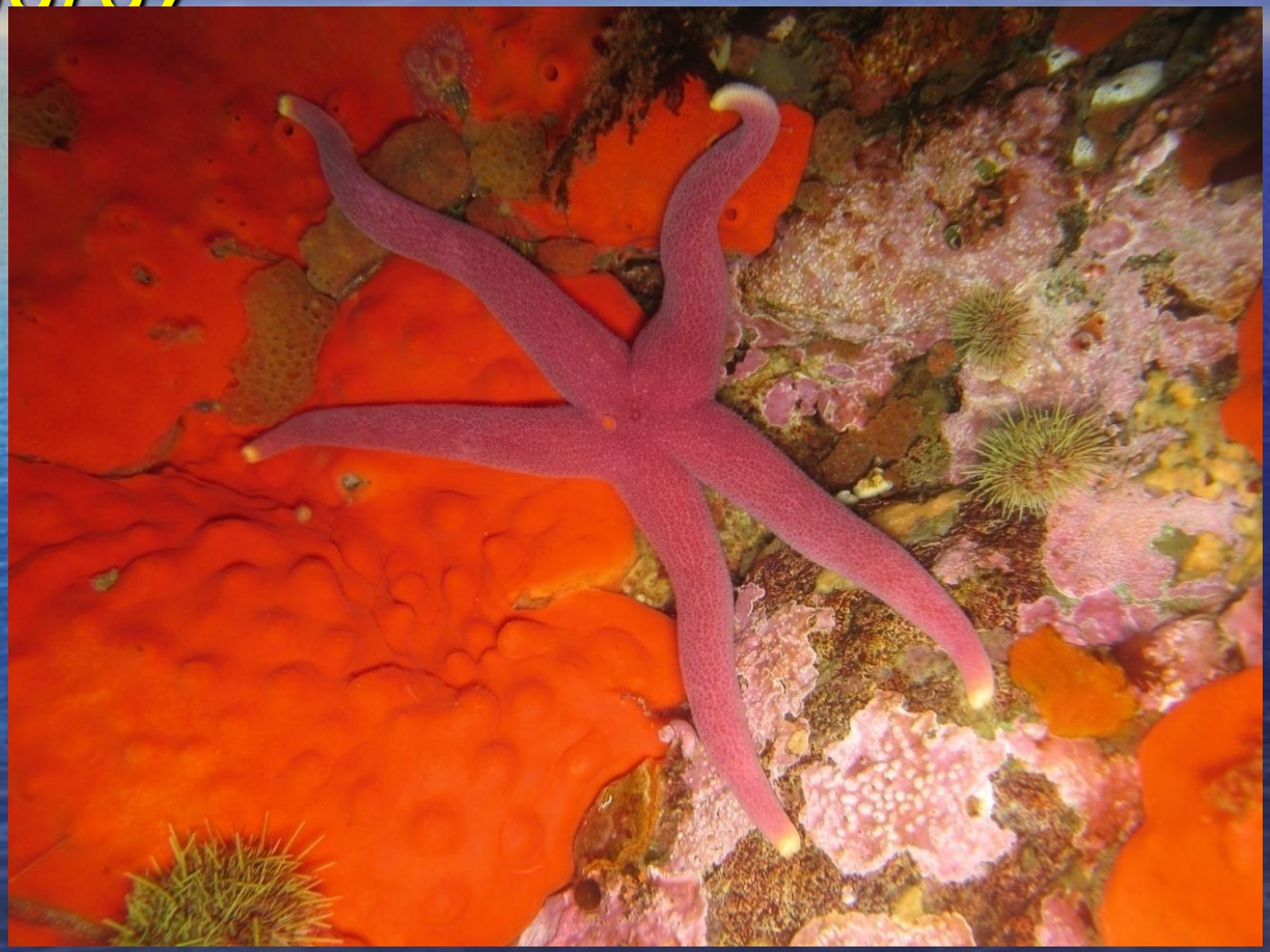
Henricia sp. A (*lineata*): Attu Is., Massacre Bay, 10 m, 6/27/07



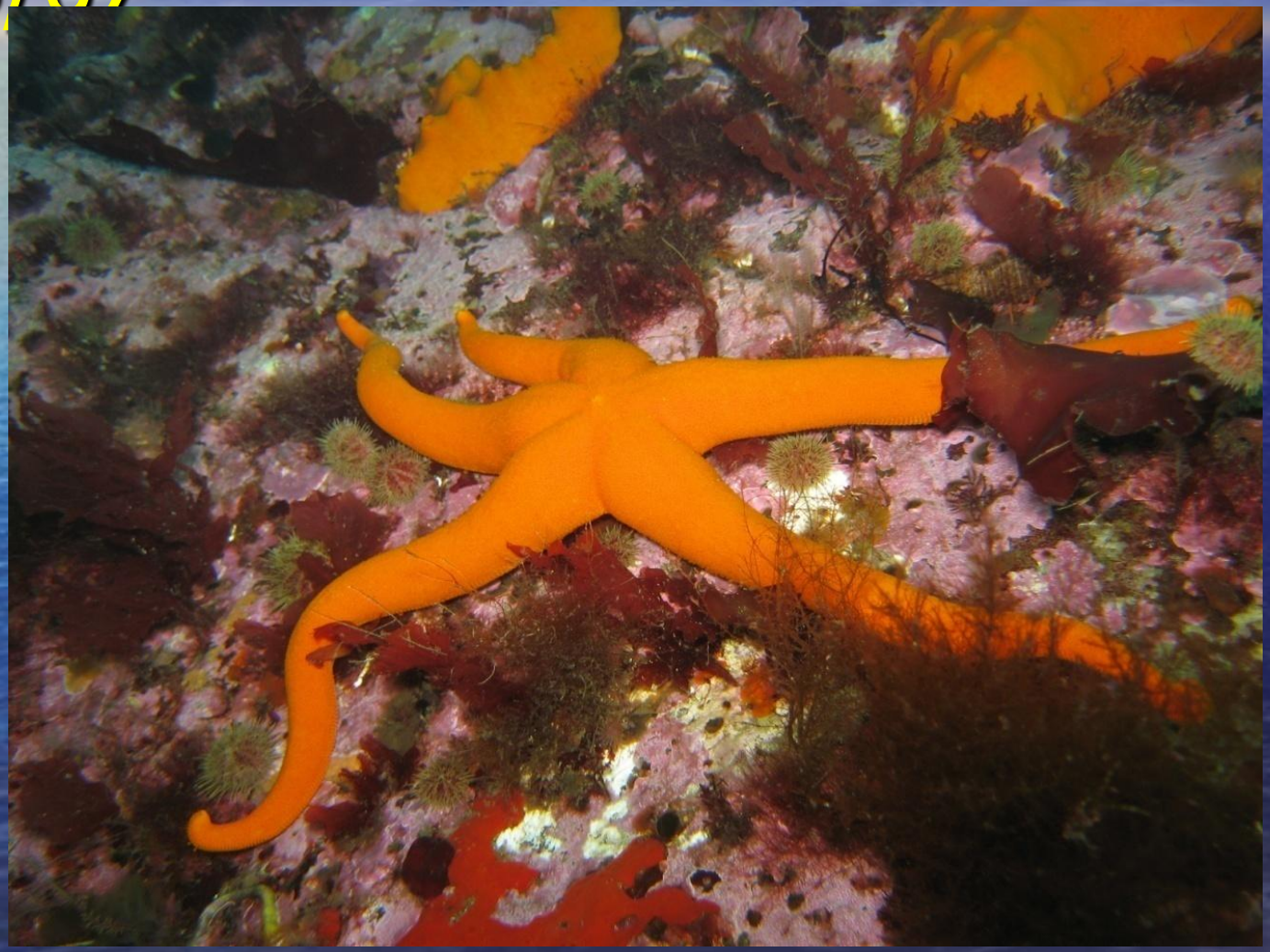
Henricia sp. C (*rhytisma*): Unalaska Is., Peacock Pt., AKMAP #0027, 7/14/06



Henricia sp. D (*iodinea*): Kiska Is., Haycock Rock, AKMAP #A0048, 6/30/07

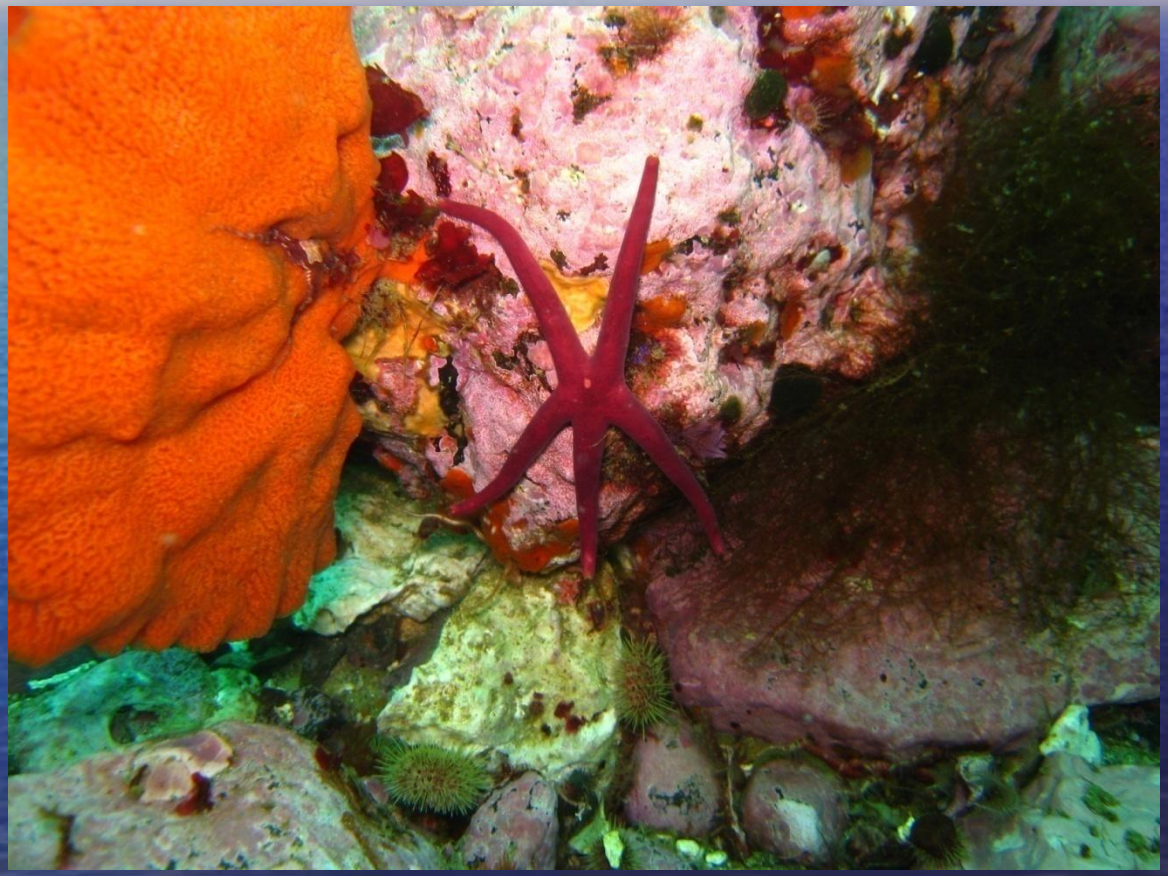


Odontohenricia sp. F (*aurantia*): NW Amchitka Is., AKMAP #DD002, 7/3/07



Odontohenricia sp. C (*borealis*): Carlisle Is., Carlisle Pass, AKMAP #0011, 7/15/06

Odontohenricia violacea (sp. C): Rat Is., AKMAP #A0031, 7/1/07



Hippasterias sp. A: (L) Chuginadak Is., Semalga Pass, AKMAP #0010, 7/16/06; (R) Kagamil Is., 12 m, 7/19/07

Pteraster sp. C: Rat Is., AKMAP #A0031, 7/1/07

Solaster sp. B: (L) Umak Is., Umak Bight, AKMAP #0013, 7/14/07; (R) Petrel Bank (trawled), 141 m, 7/14/02

Solaster sp. C: Adak Is., Sweeper Cove, 13 m, 6/22/07

Summary of New Taxonomic Findings

- 52 range extensions of benthic algae
- 16 new benthic algae species
- 1 new sea anemone species
- 2 new gastropod (snail) species
- 7 new chiton species
- 1 new sea star genus
- 11 new sea star species
- Many new species west of Semalga Pass

So What?

- Alaska resource managers lack tools to assess natural and anthropogenic disturbances in the intertidal and sub-tidal ecosystems.
- AKMAP studies and other work are starting to provide the information necessary to develop biological indices of ecological status.

Acknowledgements

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