Environmental monitoring techniques for offshore artificial fish reefs and fishing ports

: Effective enhancement and conservation of marine resources , and building a decarbonizing society through macroalgal beds

沖合域人工魚礁や漁港周辺の水産環境モニタリング調査技術

ー効果的な水産資源増殖・保全と藻場による脱炭素化社会に向けてー

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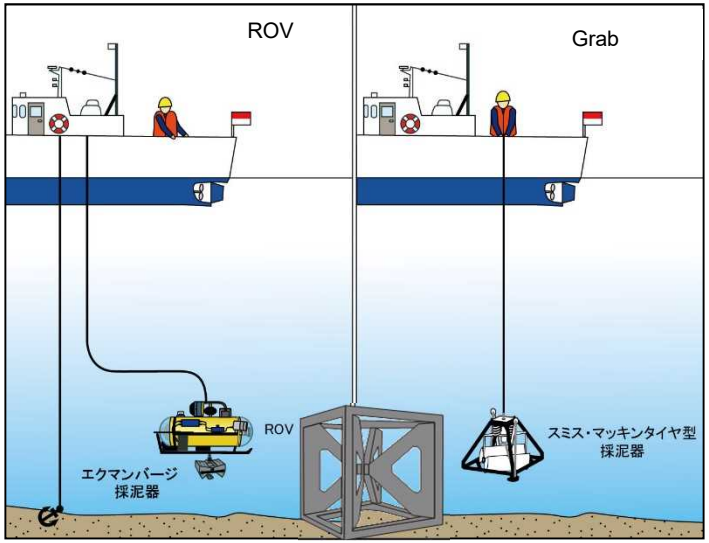
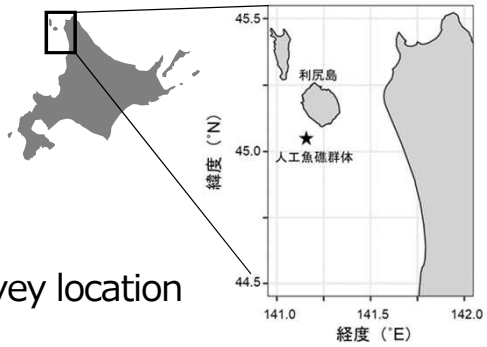
Survey of offshore artificial fish reefs

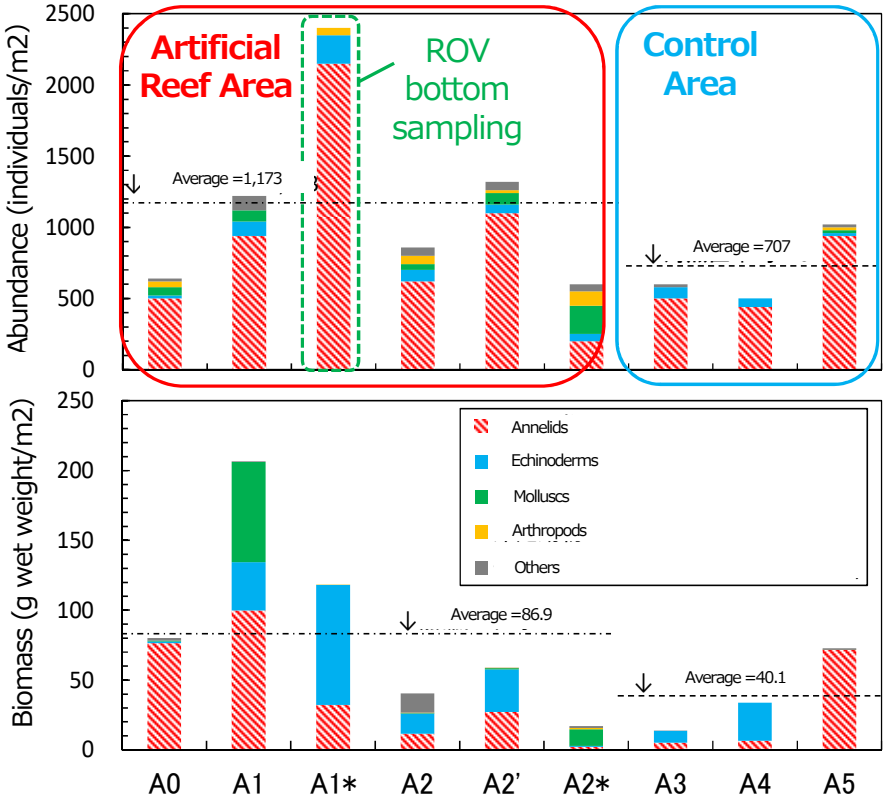
①Survey of benthic organisms



Method of bottom sampling



Survey location



Biomass of benthic organisms
(Jul.25～29, 2018)

②Buoy equipped with a high-resolution dimensioning and weighing detector

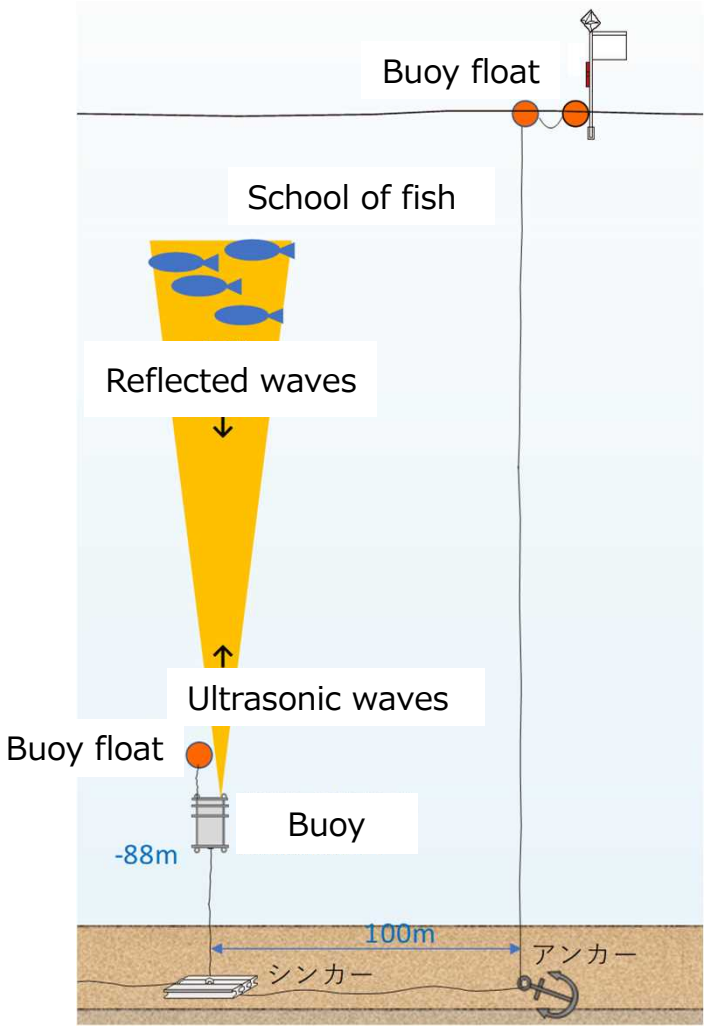
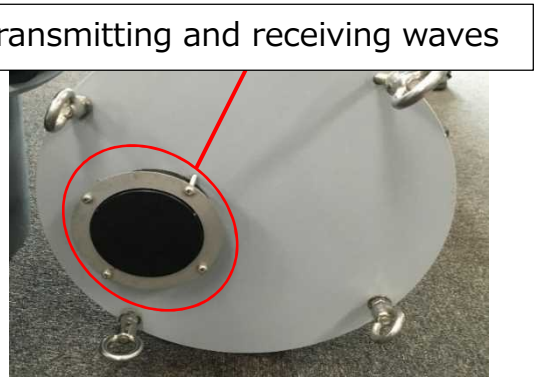
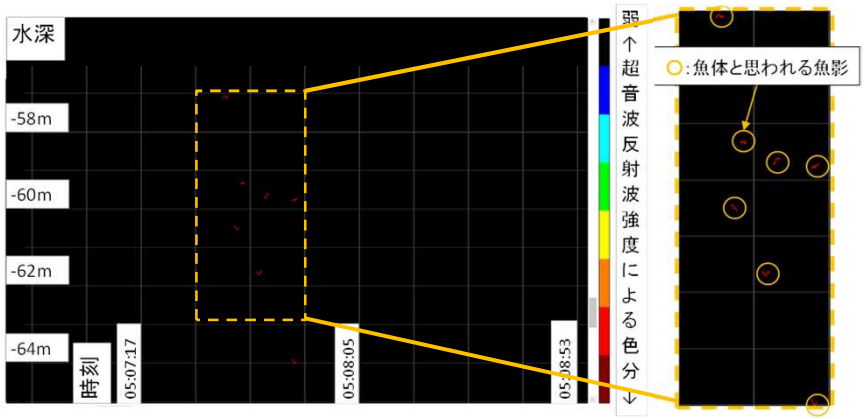


Image of installation



Buoy appearance



Depth (m)	numbers
0～55	0
55～65	7
65～88	0
計	7

Fish length range (cm)	numbers
1～10	0
10～20	1
20～30	6
30～	0
計	7

Fish shadow and results of depth and fish length

Development of efficient survey methods of macroalgal beds

【Drone aerial photography：Efficient but less accurate】

【Underwater Survey：High accuracy but high cost and inefficiency】

⇒ Integrating both methods

①Increased efficiency through the use of ROV

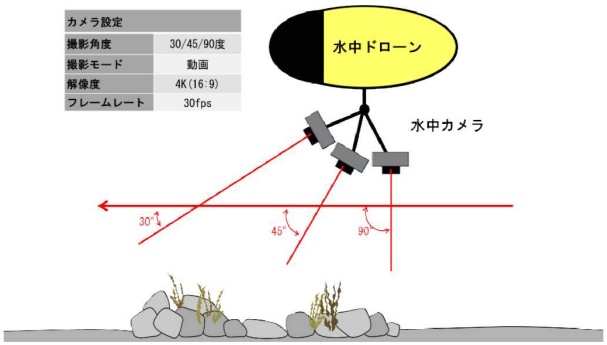
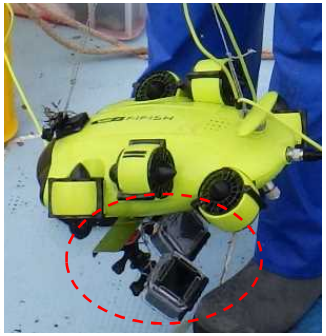
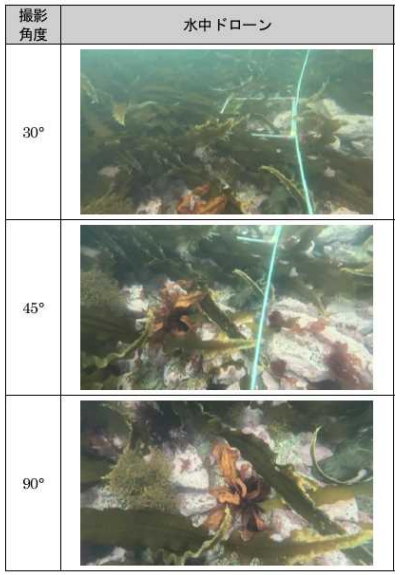


Image of shooting method

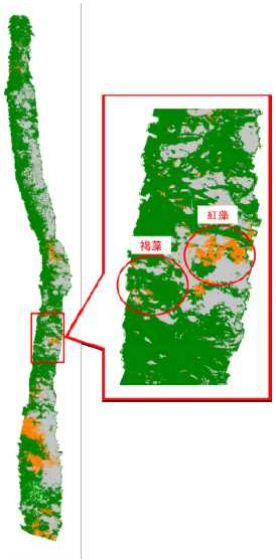


Installing three small cameras

Images from different shooting angles



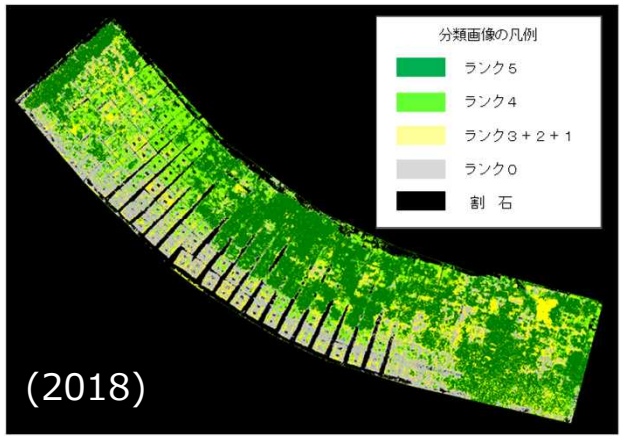
Identifying macroalgal species and distribution through image analysis



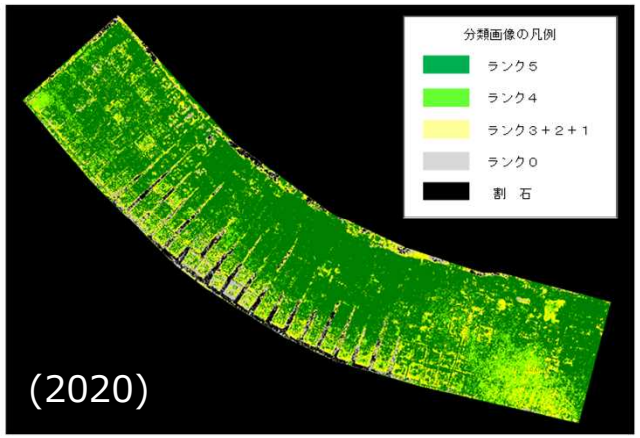
②Understanding the distribution of macroalgal beds by integrating both methods

Drone aerial photography

Classification with teacher data



Areas with high coverage and areas without macroalgae : similar



Classified as having a higher coverage than the aerial photography