

CURRENT RESEARCH STATUS OF IMTA IN KOREA

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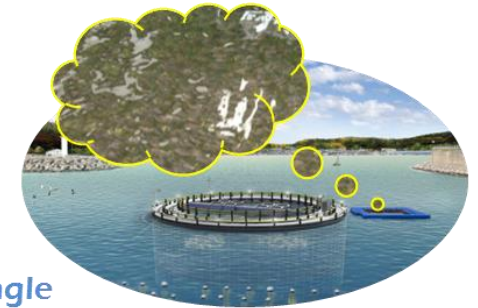


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Current Research Status of IMTA in Korea

1. NIFS carried out “Studies on developing fishing village tourism type IMTA technique utilizing fishing port” in a fishing port located in Yangyang-gun, Gangwon-do, South Korea from 2011 to 2013.
 - Sea tangle (*Saccharina japonica*), Gulfweed (*Sargassum fulvellum*), Korean rockfish (*Sebastes schlegeli*), Pacific oyster (*Crassostrea gigas*), and sea cucumber (*Apostichopus japonicus*) were stocked in the IMTA system

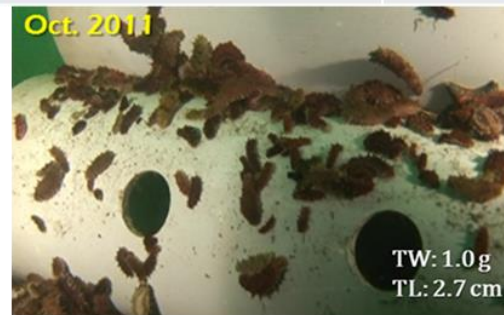


Fishing port of Yangyang county

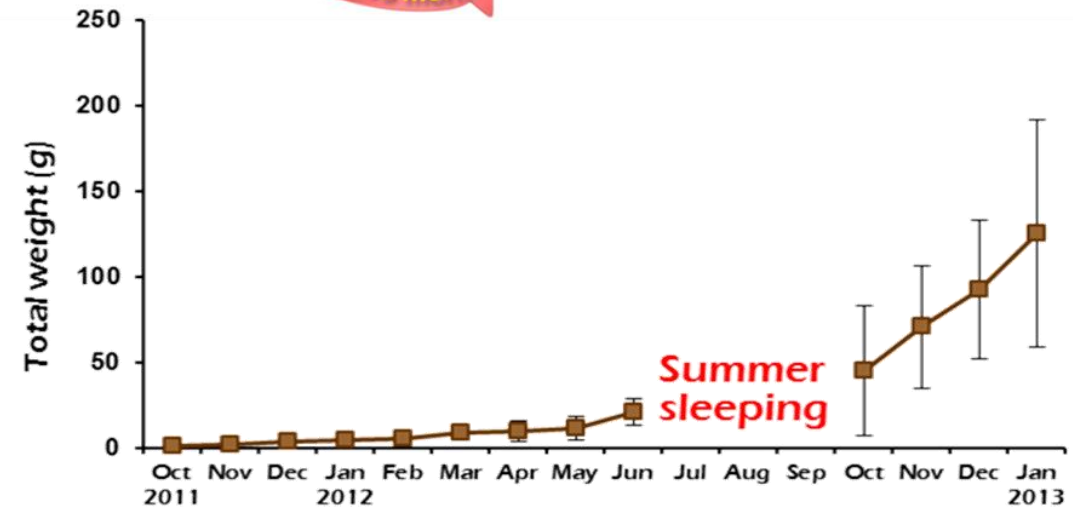
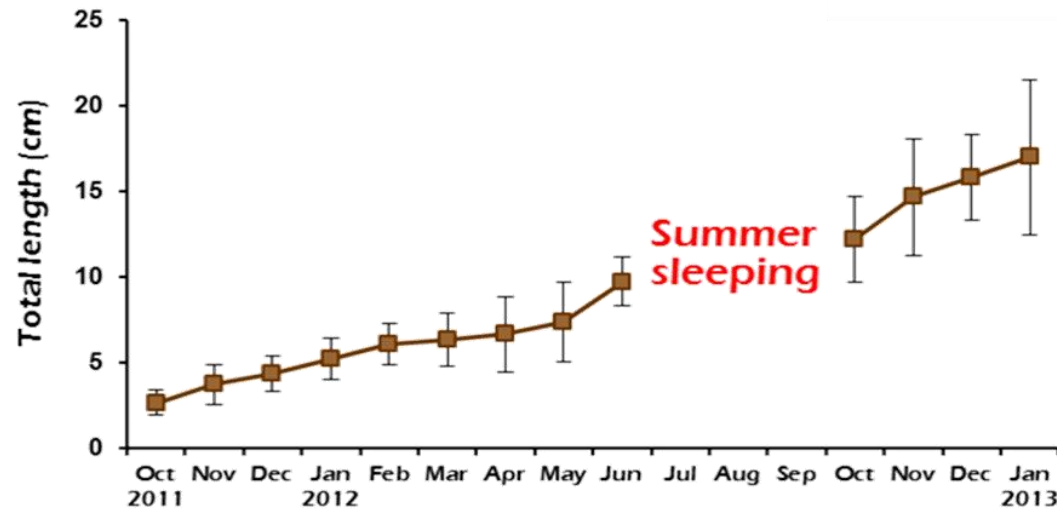


- Sea cucumbers grew 2.7 times faster in IMTA than in a bottom culture farm in the south coast

Parameters	IMTA	Farms in the south coast
Total weight (g)	125.5	55.2
Survival rate (%)	74	?



After 15 months



- Survival of Korean rockfish was 90.5% in IMTA, but 56.8% in the monoculture farm in the south coast
- No fish disease occurred in IMTA (more than 40% farmed Korean rockfish infected with disease in the south coast monoculture farm)

Table. IMTA effect for black rockfish

Parameters		IMTA	Farms in the south coast
Feed efficiency (%)		89.2	70.1
Health parameters	Ht (%)	35.3	37.0
	GOT (IU/L)	26.8	138.2
	GPT (IU/L)	7.6	26.0
Survival rate (%)		90.5	56.8
Disease occurrence (%) [*]		0	> 40 %

^{*}Over 40 % of black rockfish farms in Geoje of the South coast were infected by diseases (Streptococcosis, Dactylogyrosis, etc.).



2. IMTA system was installed in Gain-ri, Changseon-myeon, Namhae-gun, Gyeongsangnam-do in 2014

- Korean rockfish, sea cucumber, Pacific oyster, *Undaria pinnatifida*, and *Saccharina japonica* were stocked
- *Gracilariopsis chorda* was selected as seaweed species for summer

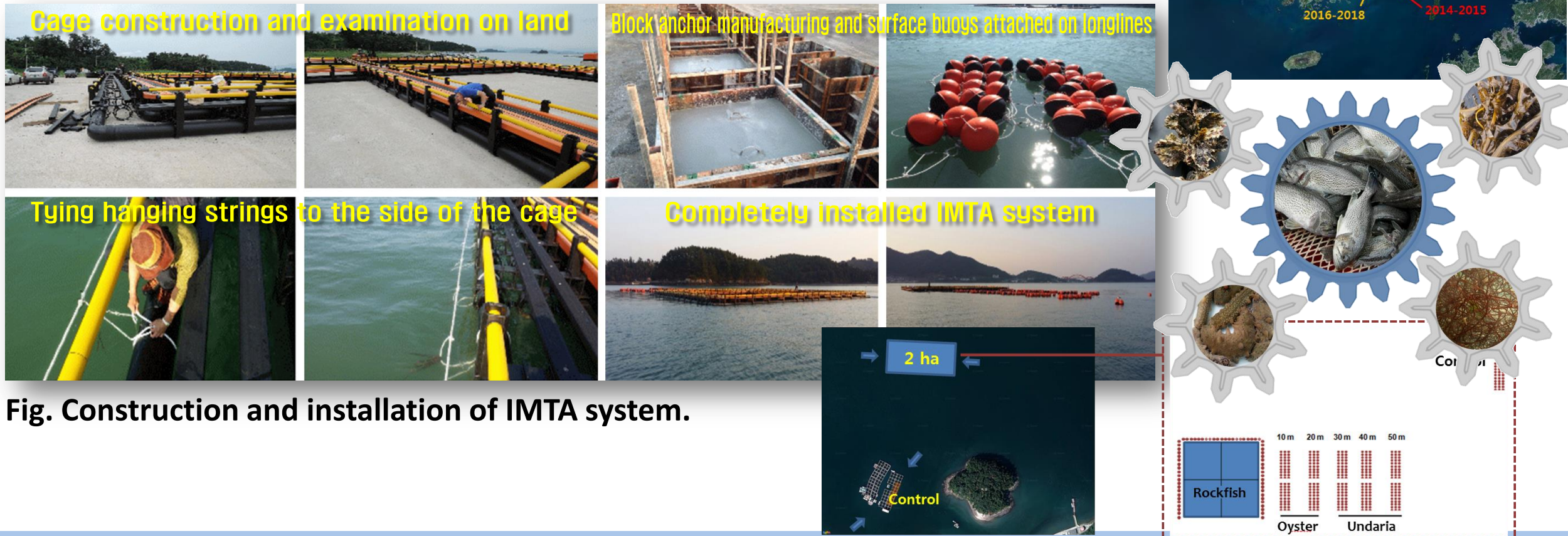
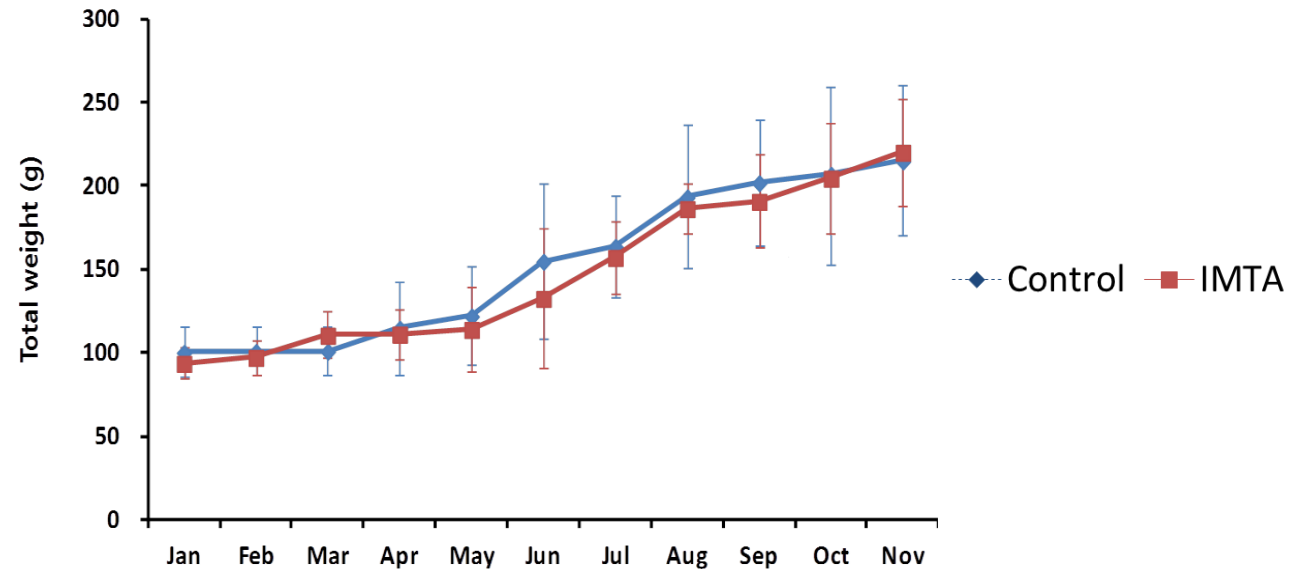
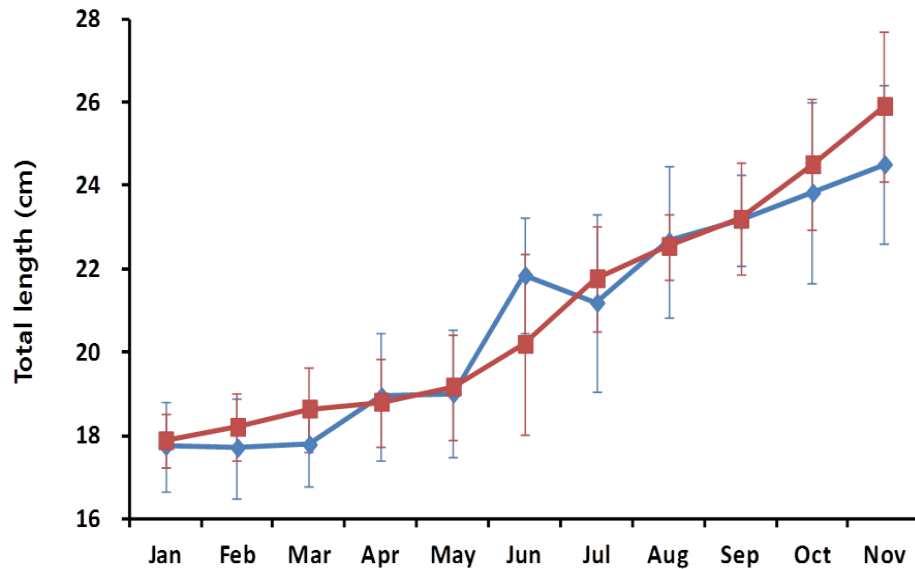


Fig. Construction and installation of IMTA system.

Fig. Location of IMTA system and control and stocked species.



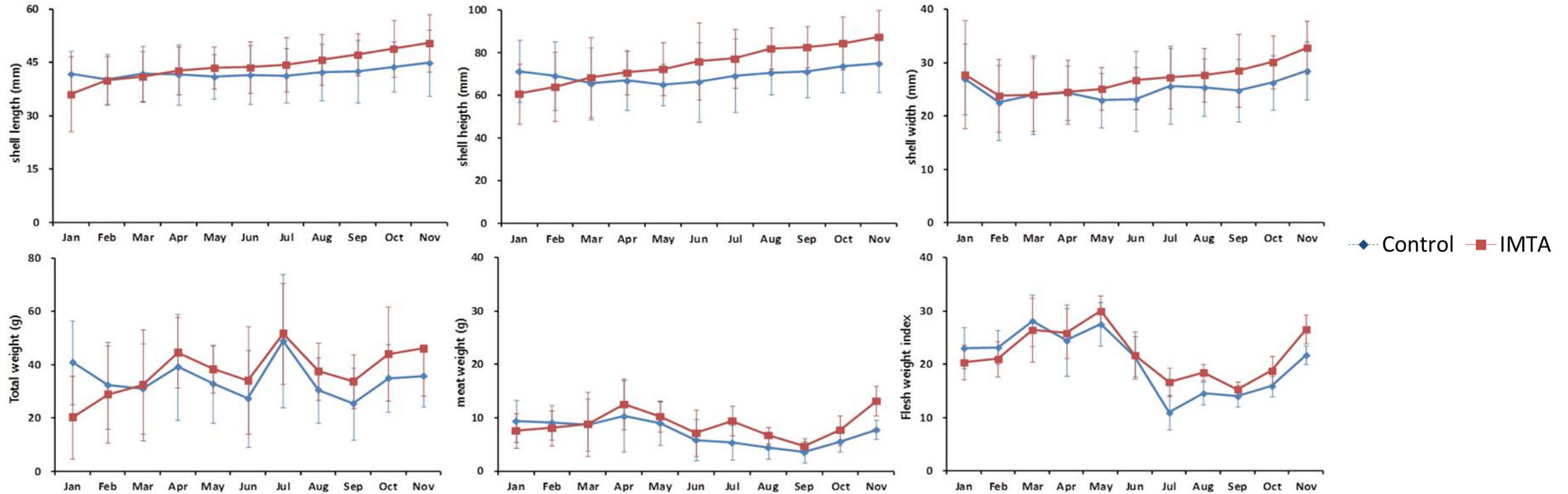
- According to the assessment of the effect of IMTA on farmed species,
 - No significant difference in growth of body length and weight of Korean rockfish between IMTA and control



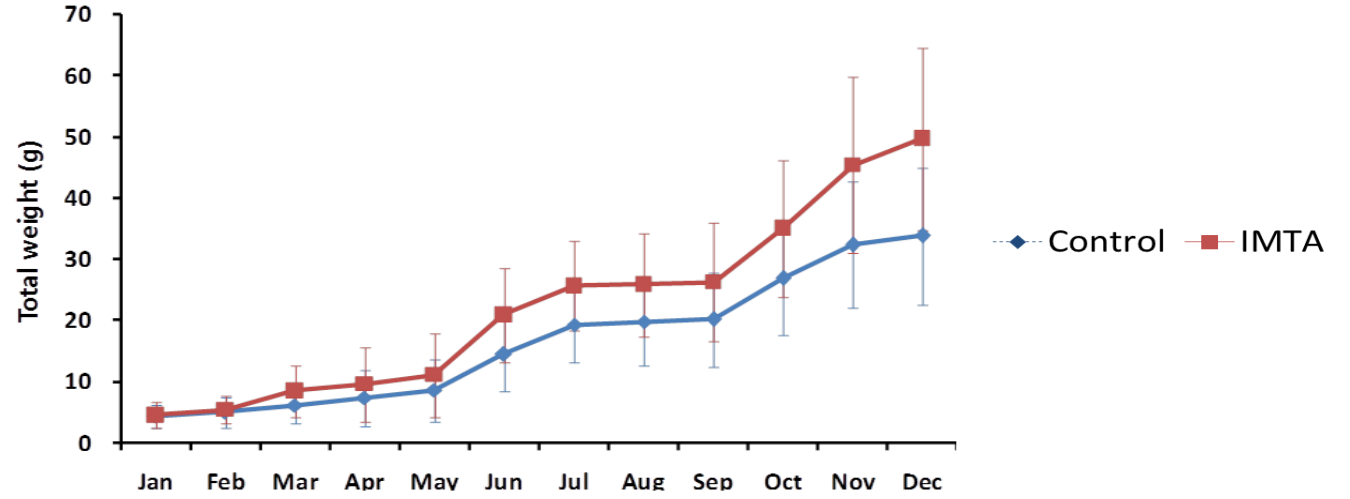
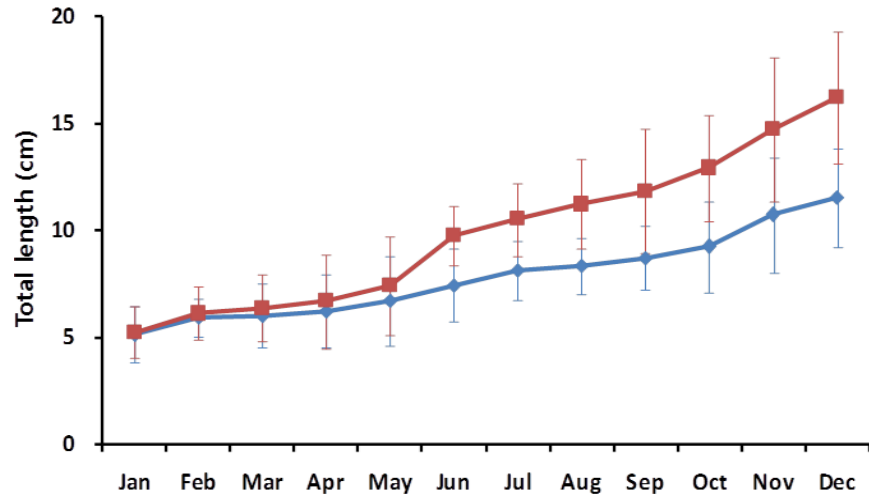
- As for disease infection, 36.7% of Korean rockfish were infected with pathogenic bacteria *Photobacterium damsela* in the control, while no disease occurrence in the IMTA



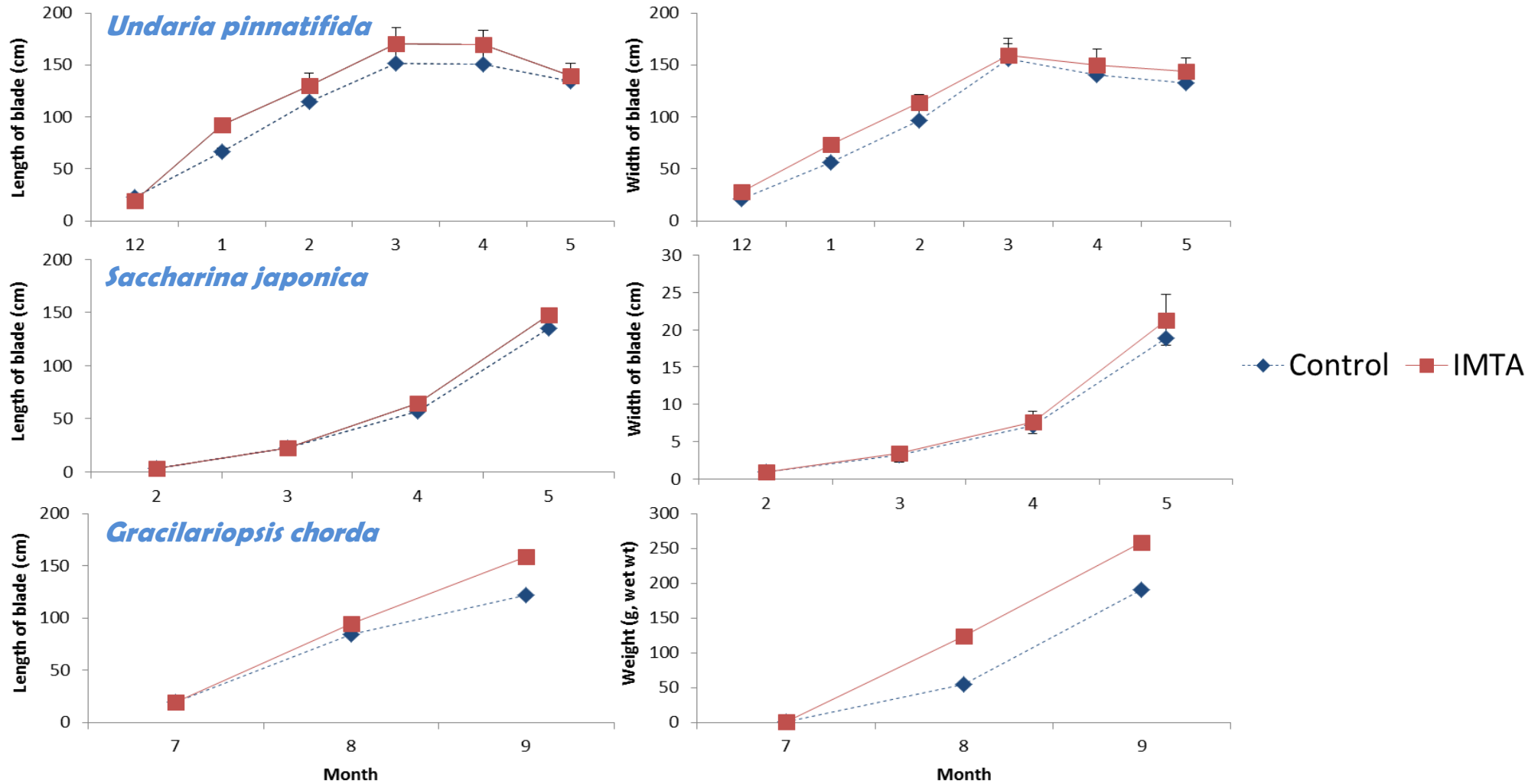
- Pacific oyster showed $\geq 20\%$ faster growth in shell height and whole and meat weight and 22.5% higher fatness in the IMTA



- Sea cucumber also grew $\geq 40\%$ faster in the IMTA



- Seaweed species *Undaria pinnatifida*, *Saccharina japonica*, and *Gracilariopsis chorda* grew 12.8%, 9.3% and 29.9% faster, respectively, in the IMTA



3. IMTA system installed in Jeo-do, Sanyang-eup, Tongyeong-si, Gyeongsangnam-do in 2016

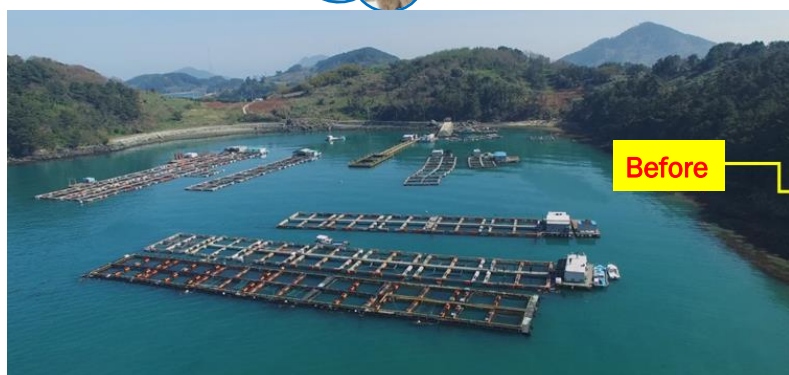
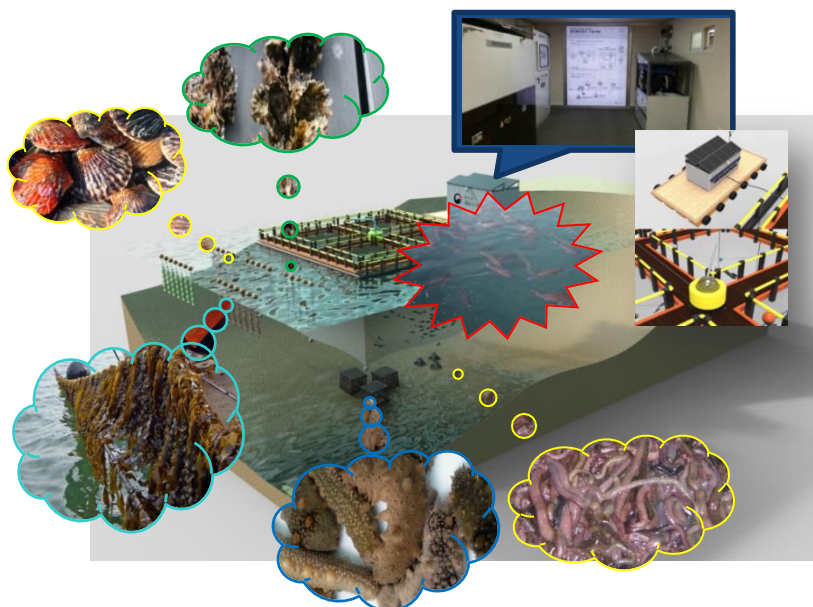
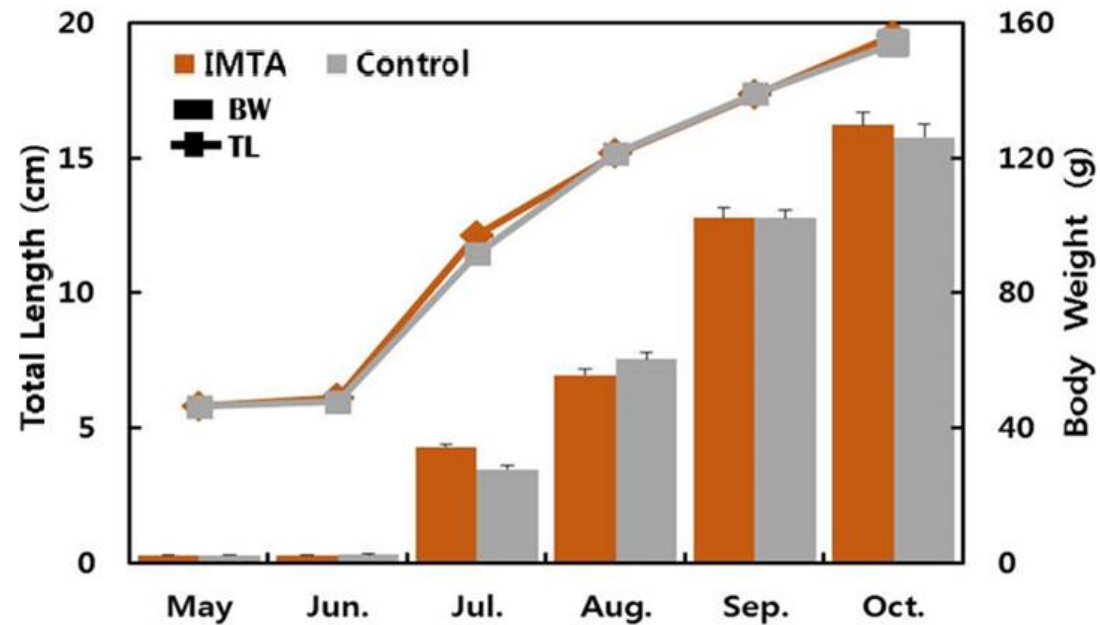


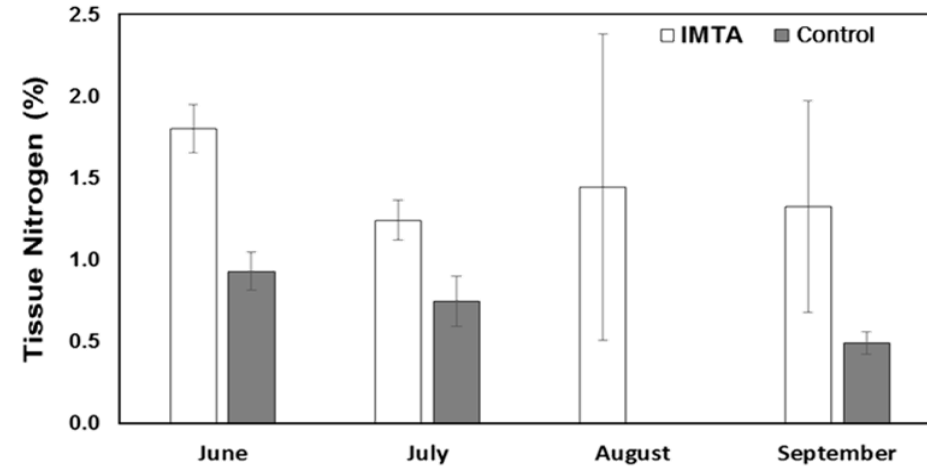
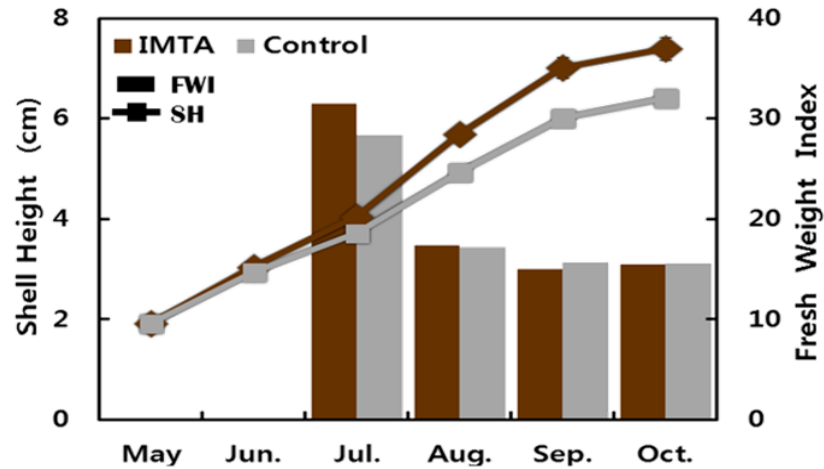
Fig. IMTA system in the south coast.



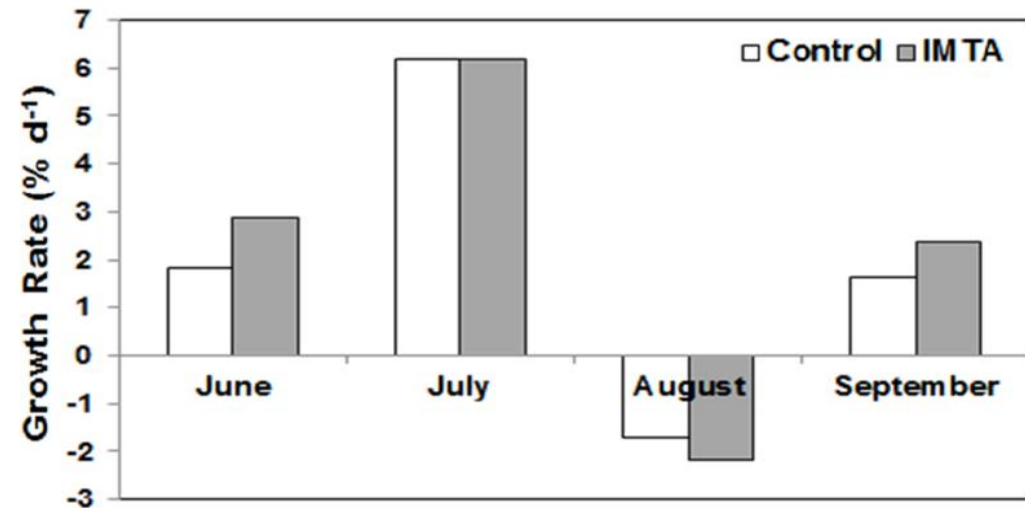
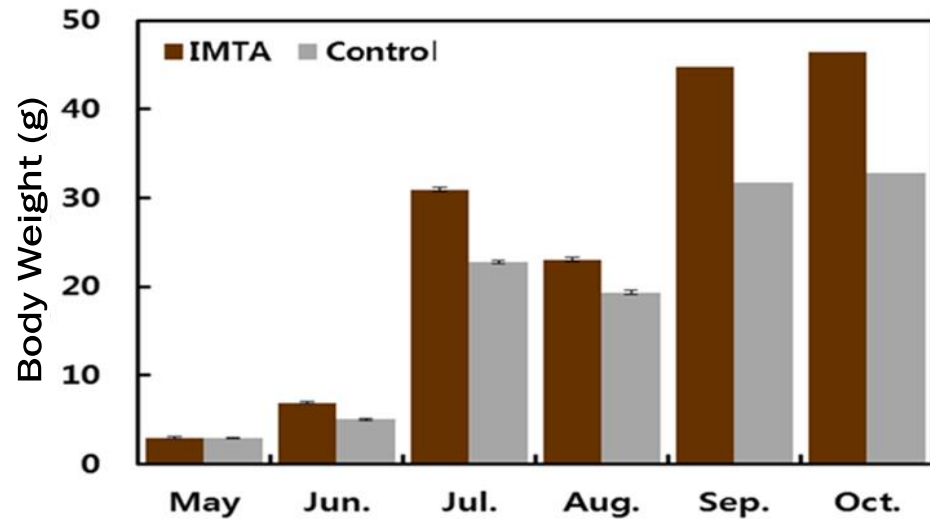
- According to the assessment of the effect of IMTA on farmed species,
 - No significant difference in growth of red seabream between the IMTA and the control
 - No significant difference in mortality between the IMTA(1.2%) and the control(1.5%)



- Pacific oyster in the IMTA showed 15.5% faster growth in shell height and 10.1% faster growth in meat weight than in the control
- Tissue nitrogen was far higher in the IMTA oysters than in the control ones



- Sea cucumbers in the IMTA were 41.7% higher in weight than in the control
- In August, sea cucumbers both in the IMTA and the control showed negative growth and the growth somewhat improved in September



How to Promote IMTA in Korea?

- **Ministry of Oceans and Fisheries (MOF) and local governments should reflect the above results in related laws and regulations**
 - **MOF: Act on Promotion of the Environmentally Friendly Agriculture and Fisheries and Management of and Support for Organic Foods, etc.**
 - **Local governments: Development plans for fishing ground utilization**
- **Promoting IMTA techniques to fisheries cooperatives of each species and aquaculture farmers**
- **Expanding distribution of developed products through IPR (intellectual property rights) transfer to the industry**
- **Policy supports and active industrial cooperation is required to continue R&D&C (Research and Development and Commercialization) for technology development and commercialization of IMTA**



Thanks



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