

Marine Litter & Jeju's Ocean Ecosystem

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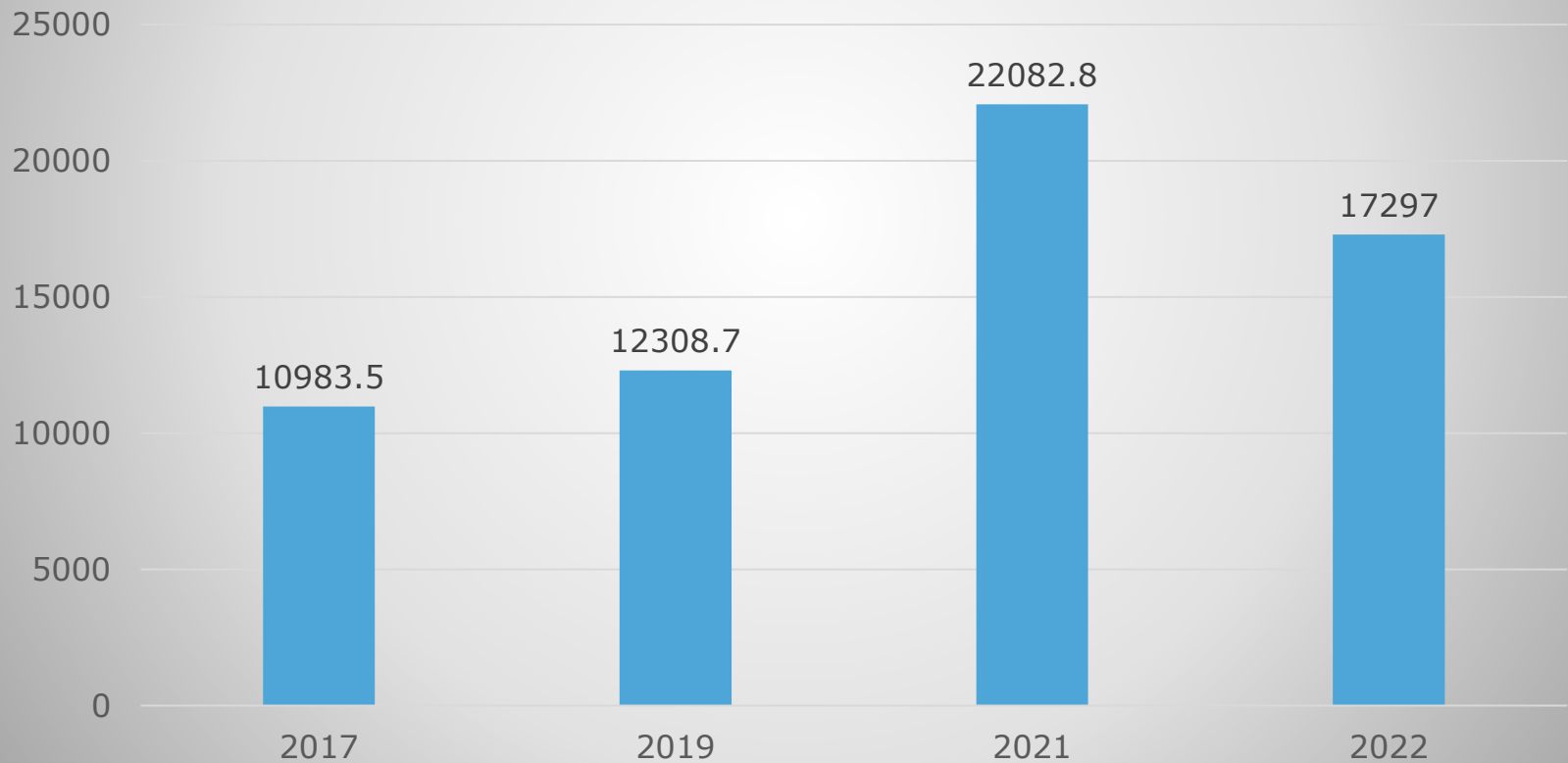
1. Marine Litter Status

How much marine litter is there?

- It is estimated that 8 million tons of plastic waste is annually dumped into the world's oceans.
- Each year, around 145,000 tons of waste is dumped into South Korea's oceans.
- Last year, around 120,635 tons of waste was collected nationwide, marking a 54% increase from around 82,175 tons in 2017.
- Last year, around 17,297 tons of waste was collected in Jeju, marking a 57% increase from around 19,983 tons in 2017.
- Overall, statistics show that marine litter is worsening.

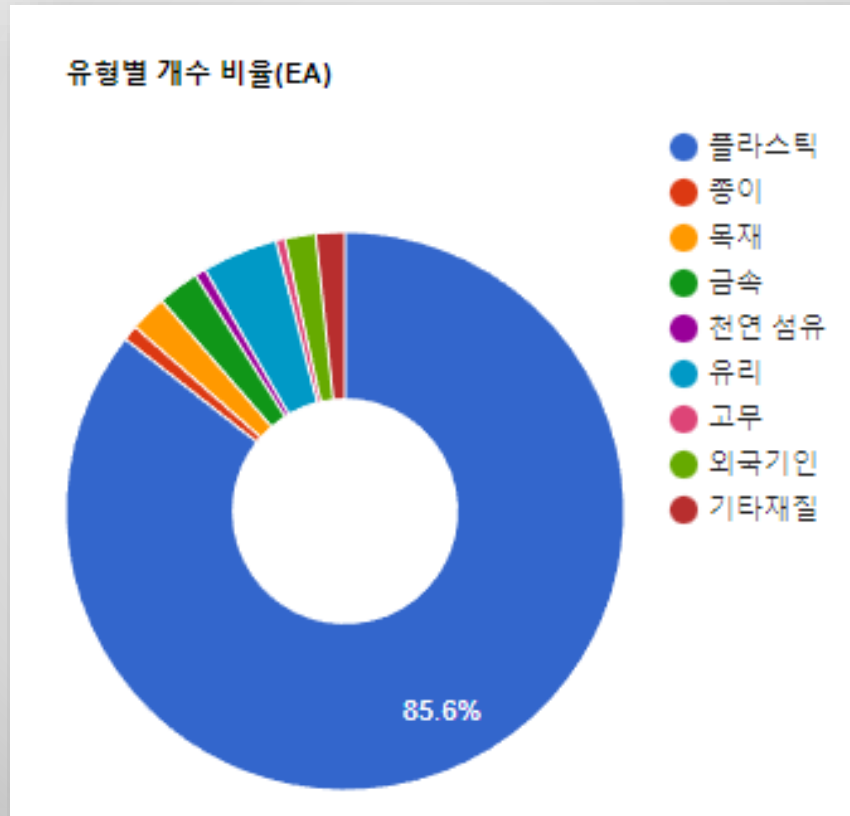
How much marine litter is there in Jeju?

- Collection of Jeju Litter as Published on the Marine Environment Information System (Unit: tons)



Characteristics of Korean Marine Litter: National coastal waste monitoring

- Monitoring Results of Coastal Litter (Nationwide, 2018–2022)



Characteristics of Korean Marine Litter: National coastal waste monitoring

- Monitoring Results of Coastal Litter (by type)

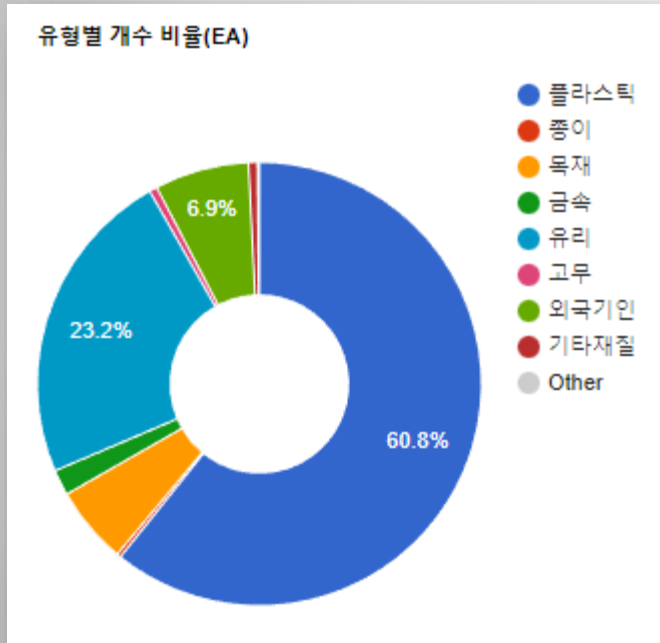
분류	개수(EA)	무게(kg)
플라스틱	187,584.0	8,198.0
종이	1,960.0	64.7
목재	4,672.0	3,546.6
금속	5,275.0	548.1
천연 섬유	1,384.0	180.3
유리	9,591.0	470.6
고무	1,146.0	321.7
외국기인	3,900.0	1,048.5
기타재질	3,690.0	577.7
합계	219,202.0	14,956.2

Characteristics of Korean Marine Litter: National coastal waste monitoring

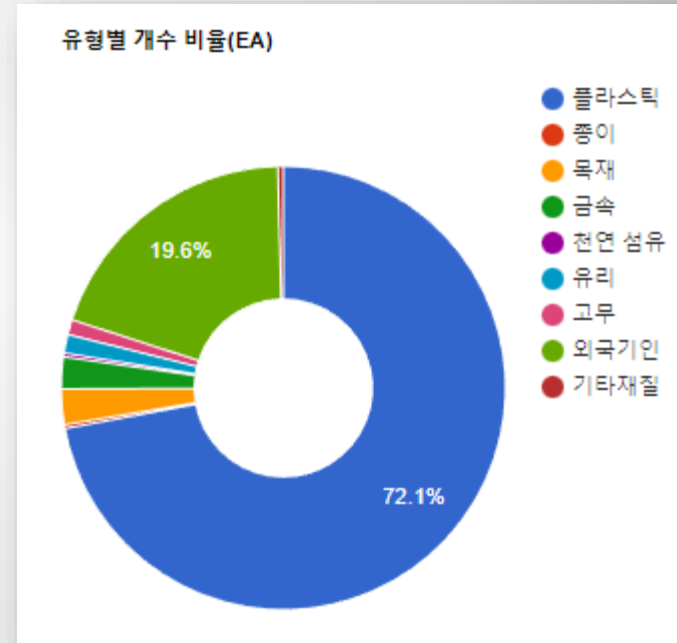
- **Monitoring Results of Coastal Litter (plastics in detail)**
 - ✓ 1. Foam buoy (39,592, 21.1%)
 - ✓ 2. Foam plastic fragments (35,407, 18.9%)
 - ✓ 3. Rope (21,861, 11.7%)
 - ✓ 4. Hard plastic fragments (17,461, 9.3%)
 - ✓ 5. Beverage bottles & caps (15,433, 8.2%)
 - ✓ 6. Plastic packaging such as snack bags (6,353, 3.4%)
 - ✓ 7. Plastic Bags (5,492, 2.9%)

Characteristics of Jeju Marine Litter: National coastal waste monitoring

- Monitoring of Coastal Litter in Jeju 2018–2022



Gimnyeong Denggae Coast



Sagye Beach

Characteristics of Korean Marine Litter: National coastal waste monitoring

- **Monitoring Results of Coastal Litter (plastics by detail, Gimnyeong)**
 - ✓ 1. Rope (645, 24.4%)
 - ✓ 2. Foam plastic fragments (618, 23.4%)
 - ✓ 3. Beverage bottles & caps (227, 8.6%)
 - ✓ 4. Hard plastic fragments (216, 8.2%)
 - ✓ 5. Straps & packaging straps (170, 6.4%)
 - ✓ 6. Plastic packaging such as snack bags (105, 4%)
 - ✓ 7. Plastic Bags (91, 3.4%)

Characteristics of Jeju Marine Litter: National coastal waste monitoring

● Characteristics of Jeju' s Marine Litter

- Majority of coastal litter is overwhelmingly plastic waste.
- Mostly fragmented plastics are found, which show that the transformation into microplastics is serious. This highlights the pollution of marine environments due to long term plastic waste disposal.
- Foam plastic fragments and buoys show well the magnitude of waste from aquaculture. In addition, ropes signify significant litter from fishing activities.
- Abundance of PET bottles, snack wrappers, and instant noodle packaging reflects the increase of land waste on beaches, but also the difficulty of separating shipborne waste from others which should be reviewed.
- Also, the increase in ropes, straps, and packaging indicate the significant potential impact that plastics pose on marine life.

Marine Litter From Fishing Vessels (Estimation)



2. Destruction of Marine Ecosystem by Marine Litter

Ecological Impact of Marine Litter

◆ Impact of Marine litter on the Marine Ecosystem

- Marine animal damage from entanglement: starvation, suffocation, laceration, infection, and amputation damage
- Marine animal damage from swallowing: induces a sense of fullness, which can lead to starvation, infection, internal organ damage, and stress-related mortality
- Marine animal damage from entrapment: starvation and suffocation
- Habitat destruction
- Chemical movement (food chain): microplastics accumulating in top predators through the food chain
- Introduction of invasive species through floating debris

Ecological Impact of Marine Litter

I. Marine Animal Damage From Entanglement (provided by OSEAN, Seoguiipo Coast Guard press release)



Ecological Impact of Marine Litter

II. Marine Animal Damage From Swallowing (provided by OSEAN)



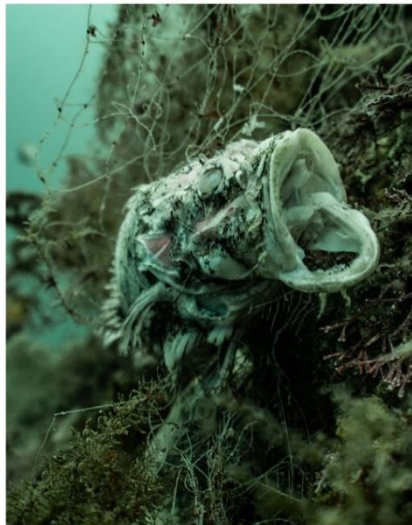
Ecological Impact of Marine Litter

II. Marine Animal Damage From Swallowing (CRI (Cetacean Research Institute) press release (2013))

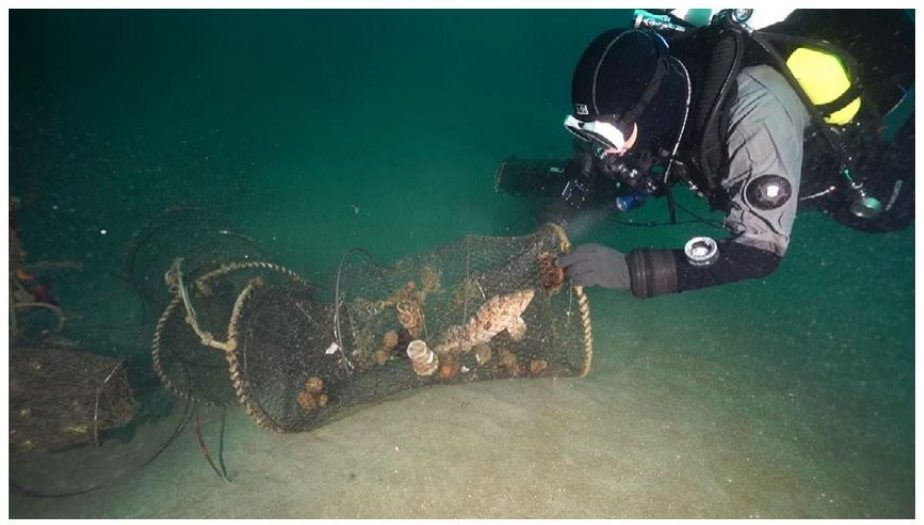


Ecological Impact of Marine Litter

III. Marine Animal Damage From Entrapment (provided by OSEAN)



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쥐노래미 포항시 구룡포 ©김동현 Instagram @diver_hyun

Ecological Impact of Marine Litter

IV. Habitat Destruction (provided by OSEAN)



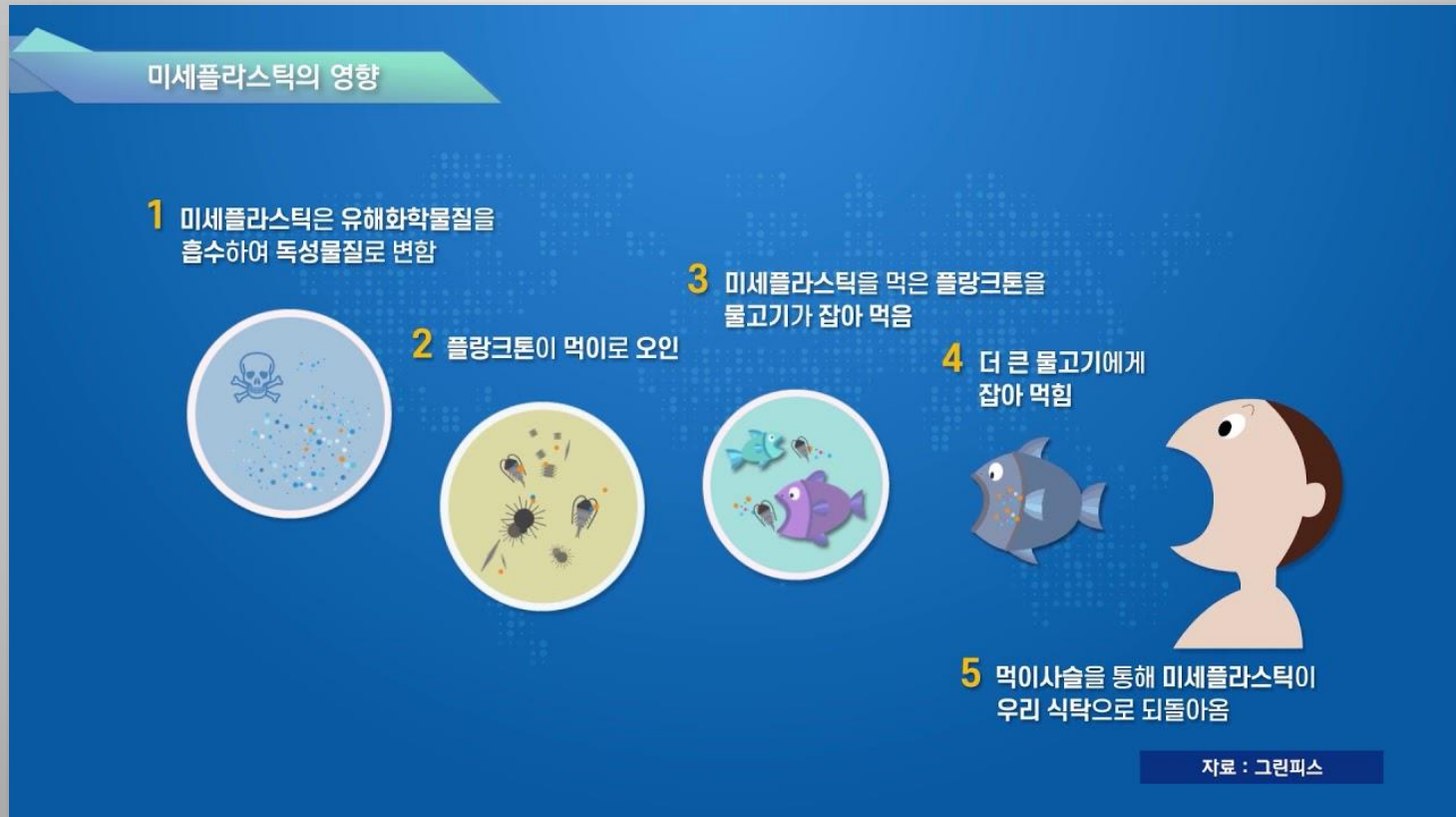
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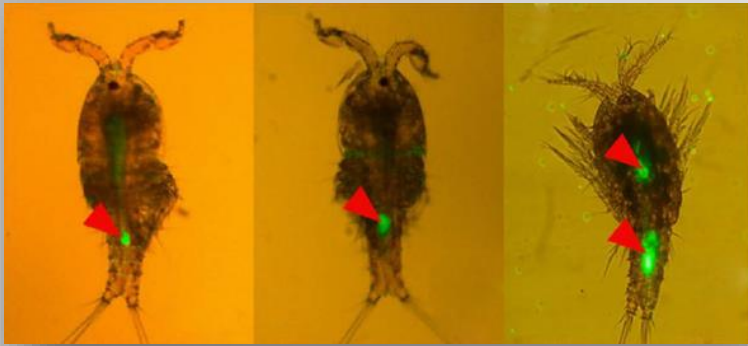
Ecological Impact of Marine Litter

IV. Microplastic



Ecological Impact of Marine Litter

IV. Microplastic



Ecological Impact of Marine Litter

V. Introduction of Invasive Species



3. What to do about Marine Litter?

Countermeasures for Marine Litter in Jeju Island

● Infrastructure Development

- For the recycling or incineration of marine litter, desalination is essential.
- Currently, there are plans for the construction of incineration facilities capable of processing marine litter, and efforts are underway to build desalination facilities.
- It's important to incinerate and sort recyclable items through desalination, and consider operating comprehensive treatment facilities that can convert these materials into resources.
- Also, these facilities should be utilized as marine litter educational sites.

Countermeasures for Marine Litter in Jeju Island

● Policy Improvement

- Beyond initiatives like “Clean Jeju Sea Guardians” and promoting volunteer activities, there is a need to establish professional manpower for marine litter collection, which extends the scope of waste collection strategies.
- Long-term management plans should be implemented and executed, involving detailed and systematic implementation and development plans for activities such as fishing, leisure, beach activities, and land waste prevention.
- Designation of smoke-free zones along all beaches in Jeju should be considered.
- Also, expansion of proactive marine protection is needed.

Countermeasures for Marine Litter in Jeju Island

● Eradication of Dumping Waste by Vessels

- Promotion of marine environmental education and eradication of marine litter disposal to fishing vessels and ship owners must be enhanced.
- Also, mandatory use of biodegradable fishing gear is necessary.
- Systems such as fishing gear registration and gear deposit systems should be established.
- Implementation of deposit refund schemes for bottles, PET, cans and more should be expanded.
- Introduction of the Electronic Monitoring (EM) system to curb marine littering should be implemented.

Countermeasures for Marine litter in Jeju Island

- **Establishment of a Marine Environment Department (allocation of budget and personnel)**
 - In Jeju Island there is no department dedicated to marine environment.
 - Among three professional personnel, only one person is dedicated to marine environment.
 - But, the responsibilities of the person dedicated to marine environment encompasses 22 tasks including marine litter-related duties.
 - Thus, the current structure poses challenges for administrative efforts beyond litter collection.

**Failure to protect our
oceans spells
catastrophe!!
It's time to act!!**

