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Seals visited 10 years ago
海豹10年前访问过

Status of Scientific Research on Spotted Seal in RO Korea

GYUNG SOO PARK (朴慶洙)
Department of Marine Biotechnology
Anyang University
Ganghwa County, Incheon, ROK

gef UNDP Empowered lives. Resilient nations. UNOPS

Presenter is not a seal expert

Status of scientific research on spotted seal in RO Korea

1. Introduction of main research and education organizations of marine mammals in RO Korea : CRI and KOEM

2. Existing major researches and education programs before 2019

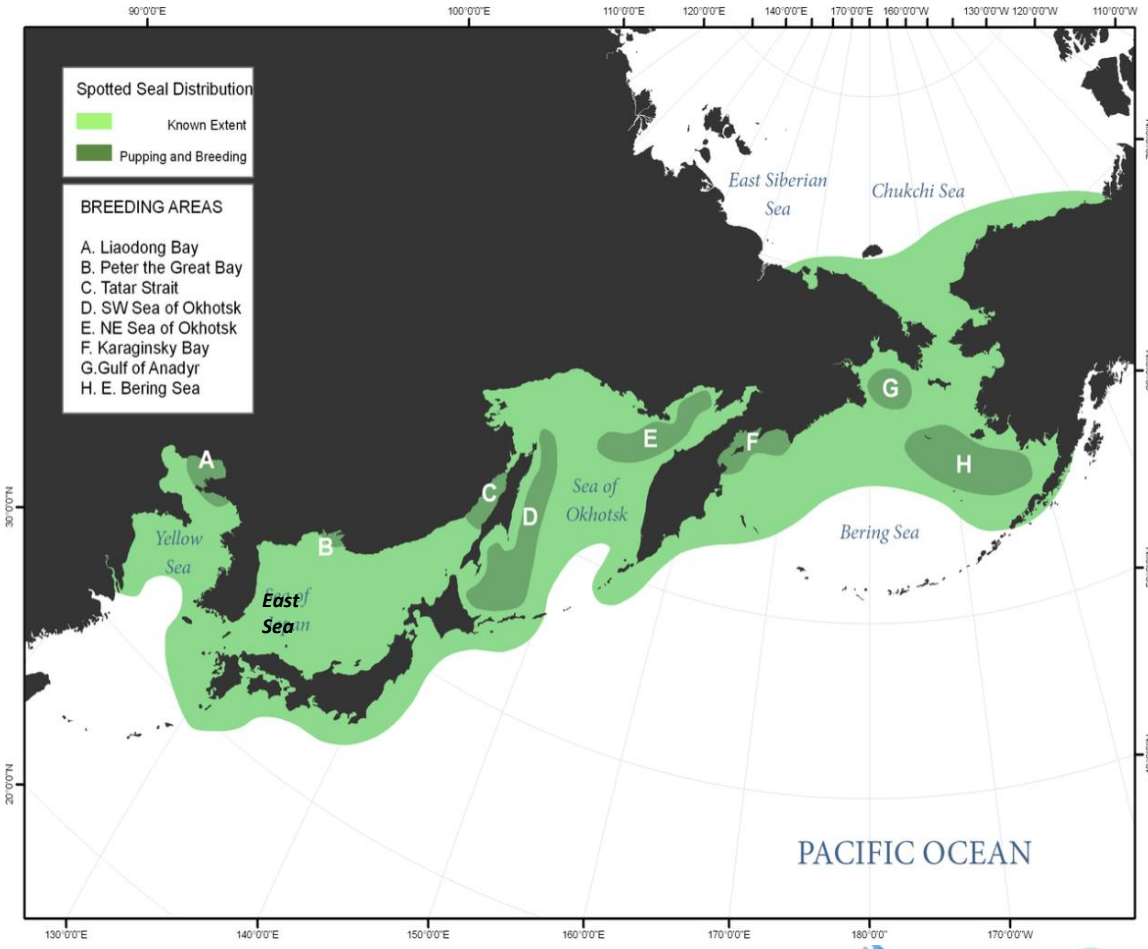
3. Major researches in 2019 by CRI, NIFS of MOF
   - Population survey in Backryeong Is and Garolim Bay (boat /land based & drone survey)
   - By-catches and rescues (including migration study)
   - International joint researches

4. Summary and Suggestions
   - Introduction of seal studies and educations in RO Korea
   - Habitat connectivity between MPAs

World distribution of Spotted Seal

Three populations of spotted seal in the far east Asia

- **Bering Sea population** : about 100,000 in the Kamchatka, in Russia and in Alaska
- **East Sea of Korea (Sea of Japan) and Sea of Okhotsk population** : about 100,000
- **Yellow Sea and Bohai Sea population** : 3,300 in the Yellow Sea : Smaller population of 300 grey spotted seals living in waters off Baekryeong



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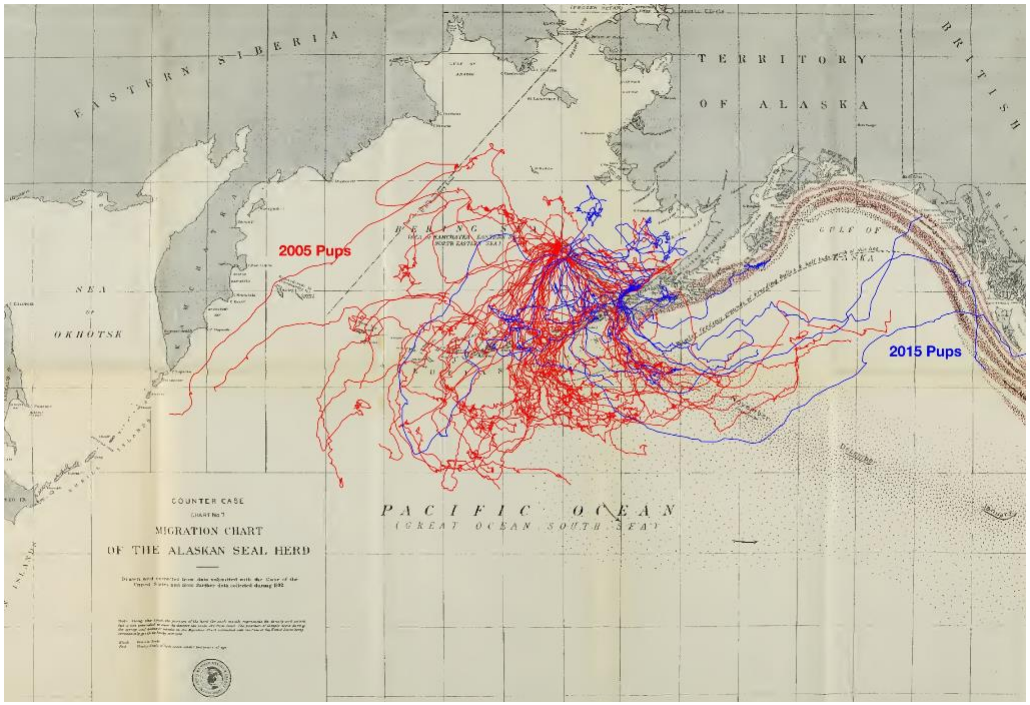
World distribution of Spotted Seal

Ocean winds influence seal pup migration

by American Geophysical Union

Many northern fur seal pups die on their initial migration from the Bering Sea to…

Scientists have confirmed what native Alaskans have observed for centuries - maritime winds influence the travel patterns of northern fur seal pups. New research presented at the Ocean Sciences Meeting here today shows strong winds can potentially displace seal pups by hundreds of kilometers during their first winter migration.



This map shows where tagged seal pups went in 2005 and 2015. These illustrate the contrasts between years, in addition to showing where the pups go in general. These are portions of the pup tracks in November-December, just after they've left their birth islands. The tracks are overlaid on an 1895 chart that depicts the North Pacific Ocean and the understanding at that time of where northern fur seals traveled on their migration.

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Marine Mammal Studies and Educations in ROK

Cetacean Research Institutes (CRI): **Whales & Pinniped**
National Institute of Fisheries Science (NIFS)
Ministry of Ocean and Fisheries (MOF)

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Marine Mammal Studies and Educations in KOEM, ROK

KOEM Korea Marine Environment Management Corporation

About Us | Business | PR Room | Sustainability

Business > Marine Environment Preservation > Restoration of Marine Ecosystem

Restoration of Marine Ecosystem

KOEM leads the restoration and improvement of the functions of the marine ecosystem.

Systematic Management of the Ecosystem

KOEM is promoting systematic mudflat restoration projects in line with the increased social demand for restoration of damaged mudflats. KOEM has prepared a foundation for promoting customized restoration projects in the future by discovering and establishing restoration plans for mudflats as candidate sites for such restoration projects.

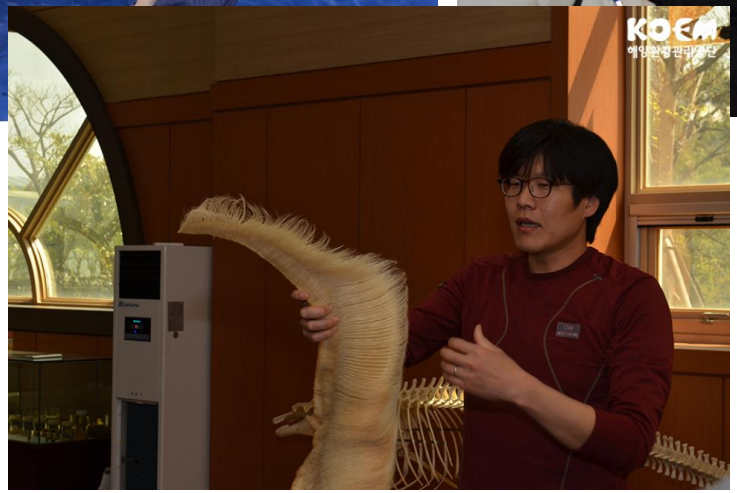
Marine Mammal Studies and Educations in KOEM, ROK

Marine Mammal Studies and Educations in KOEM, ROK

Marine Mammal Studies and Educations in KOEM, ROK

Rescue and treatment practice of whale

Marine Mammal Studies and Educations in KOEM, ROK



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Marine Mammal Studies and Educations in KOEM, ROK

Existing major researches and education programs before 2019

International Symposium on Preservation of Spotted Seal in Backryeong Island held at the Songdo Bridge Hotel in Incheon on February 10, 2010 with experts from South Korea, China, Russia and Japan, organized by CRI, MOF

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Existing major researches and education programs before 2019

The island-style man-made shelter ;
- Upper exposed area of 350m^2, length of 20m× 17.5m
- Constructed during April to November 2018
- 1.8 million USD

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Existing major researches and education programs before 2019

080610_BSS_MBS_084

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180613_BSS_MB_132

080611_BSS_MB_007

=

180613_BSS_MB_142_2

080908_BSS_105_015

=

180613_BSS_MB_175

Three Spotted Seals, which were also visited 10 years ago, came again in Backryeong Is, 2018.

Sited from press release from MOF in January 2019

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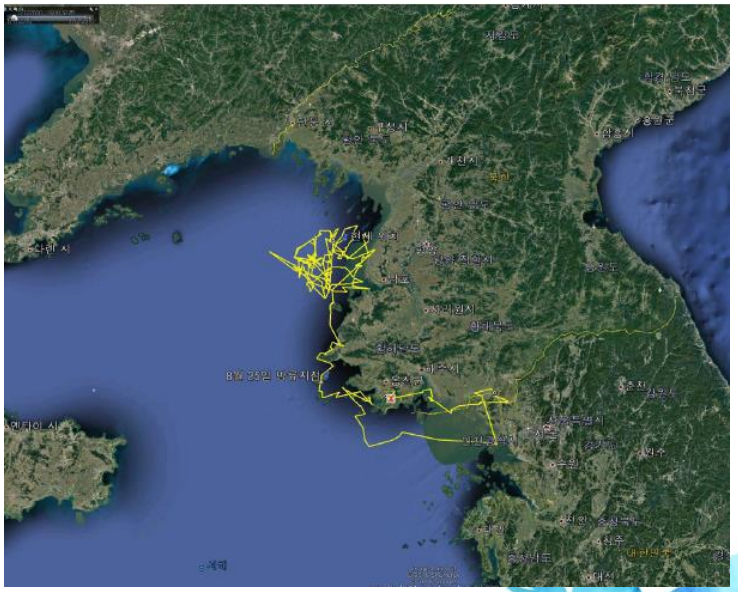
Existing major researches and education programs before 2019

Rescued in 2011 and released in Backryeong Is on Aug. 25, 2016

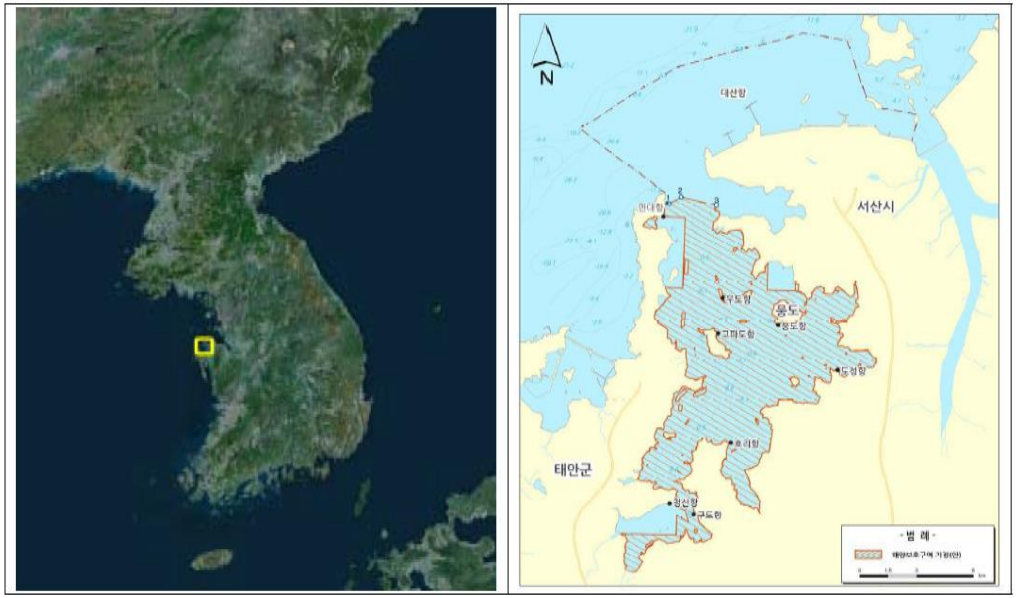


Existing major researches and education programs before 2019

Rescued in May 25, 2013 and released in Ulsan on June 25, 2013

Existing major researches and education programs before 2019

The Ministry of Ocean and Fisheries designated the Garolim Bay area (91.237㎢) in Chungcheongnam-do, Korea, on July 28, 2016 as a high biodiversity and productivity, and clean tidal flat.



붉은발말똥게	흰발농게	점박이물범	거머리말

Existing major researches and education programs before 2019

한국의 점박이물범 보전가치 추정

Measuring the Conservation Value of Spotted Seal in Korea


DBpia

한국의 점박이물범 보전가치 추정

Measuring the Conservation Value of Spotted Seal in Korea

저자 (Authors)	권영주, 백상규, 유승훈 Kwon, Young-Ju, Paik, Sang-Kyu, Yoo, Seung-Hoon
출처 (Source)	해양정책연구 28(2), 2013.12, 41-70(30 pages) Ocean Policy Research 28(2), 2013.12, 41-70(30 pages)
발행처 (Publisher)	한국해양수산개발원 KOREA MARITIME INSTITUTE
URL	http://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE02348970
APA Style	권영주, 백상규, 유승훈 (2013). 한국의 점박이물범 보전가치 추정. 해양정책연구, 28(2), 41-70

권영주*· 백상규**· 유승훈†

Kwon, Young-Ju · Paik, Sang-Kyu · Yoo, Seung-Hoon

Expanding the value to the nation gives us an aggregate value of **31.5 billion won per year**. The results of measuring the conservation value provide decision-makers with data indispensable to devising a conservation and management policy. **31.5 million USD/year**

Existing major researches and education programs before 2019

2011년도 한국해양과학기술협의회 공동학술대회
6월 2일(목)~3일(금) 부산 BEXCO

서식지 보호 조치를 통한 백령도 점박이물범 보전 방안

육근형, 손규희(한국해양수산개발원)

How to protect *Phoca largha*(spotted seal) around Baekryong Island through habitat protection

K.H.Yook, K.H.Son(Korea Maritime Institute)

pISSN 1598-298X
J Vet Clin 31(4) : 322-324 (2014)
http://dx.doi.org/10.17555/ksvc.2014.08.31.4.322

Journal of Veterinary Clinics
www.ksvc.or.kr

Dermatitis Caused by *Candida albicans* in a Captive Spotted Seal (*Phoca largha*)

Kyung-Yeon Eo and Oh-Deog Kwon*[1]

Seoul Zoo, Gwacheon 427-702, Korea
**College of Veterinary Medicine, Kyungpook National University, Daegu 702-701, Korea*

(Accepted: August 11, 2014)

Spotted Seal Survey Sites in ROK 2019

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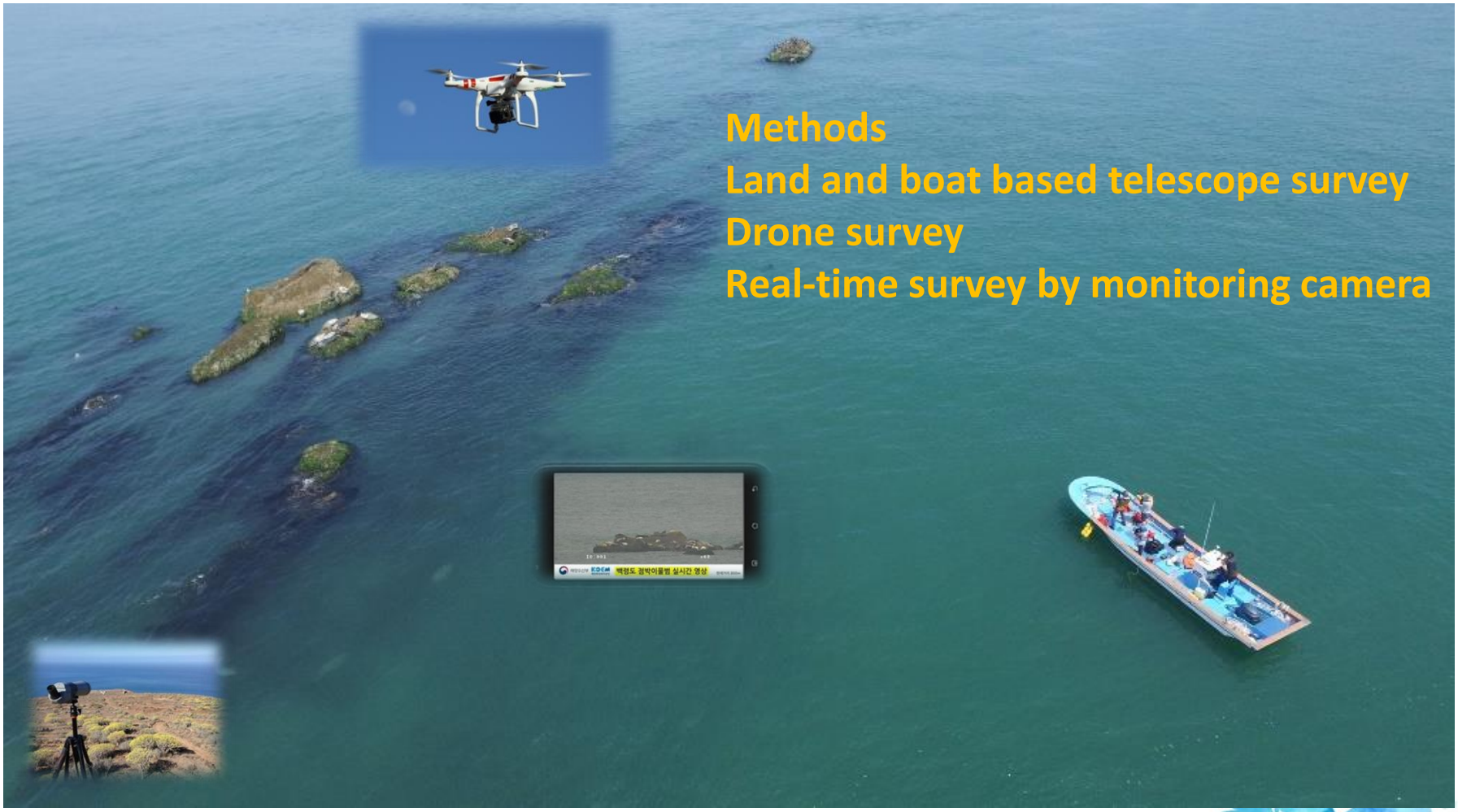
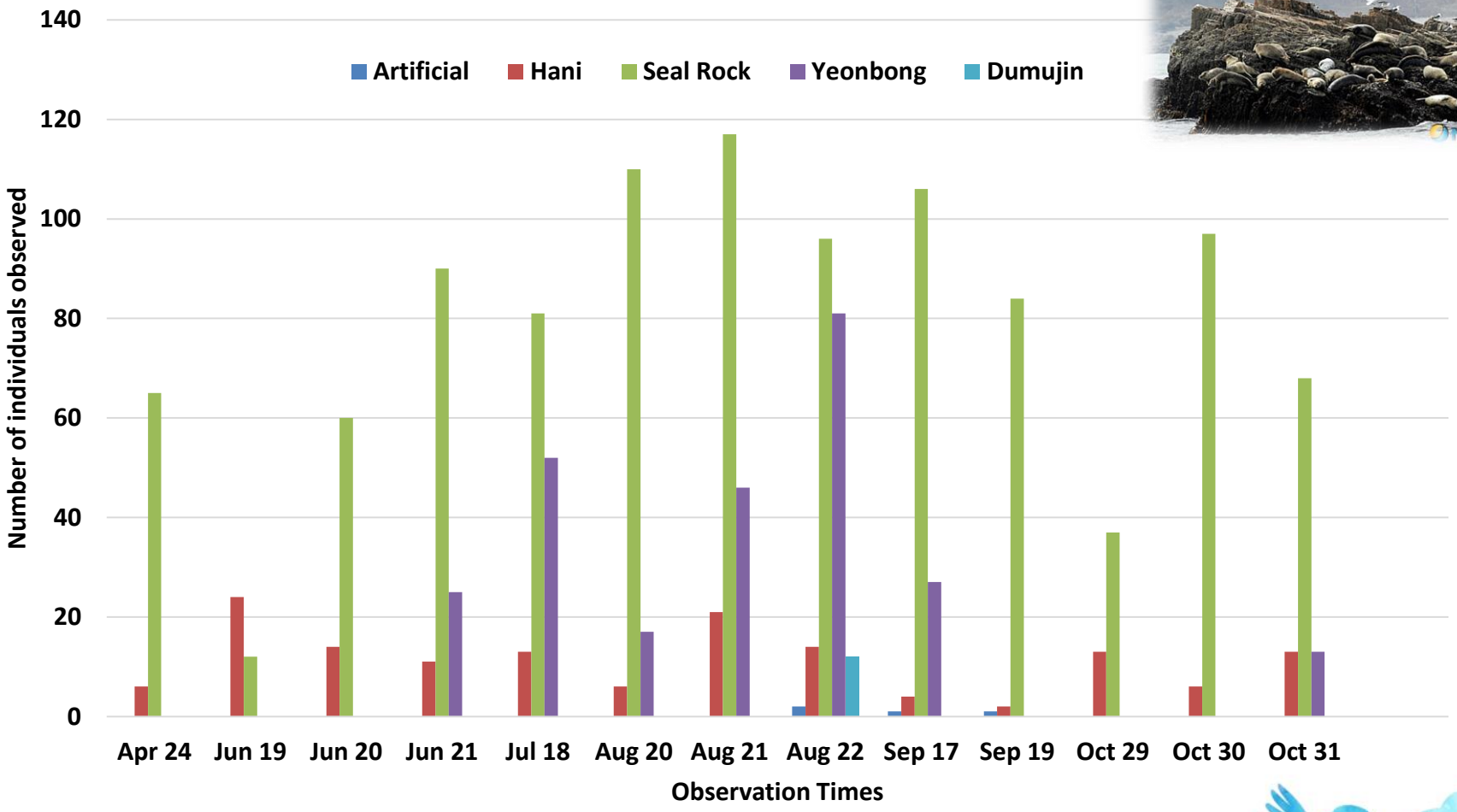
Research Methods for Seal Observation



Number of seals observed at 5 sites of Backryeong Is (Boat based obs in 2019)

Dates	Survey sites (Backryeong Is)					Total
	Artificial rest area	Hani Beach	Seal Rock	Yeonbong Rock	Dumujin	
04/24	0	6	65		X	71
06/19	0	24	12		X	36
06/20	0	14	60		X	74
06/21	0	11	90	25	X	126
07/18	0	13	81	52	X	146
08/20	0	6	110	17	X	133
08/21	0	21	117	46	X	184
08/22	2	14	96	81	12	205
09/17	1	4	106	27	X	138
09/19	1	2	84	x	x	87
10/29	0	13	37	x	X	50
10/30	0	6	97	x	X	103
10/31	0	13	68	26	X	107

Number of seals observed at 5 sites of Backryeong Is (Boat based obs in 2019)



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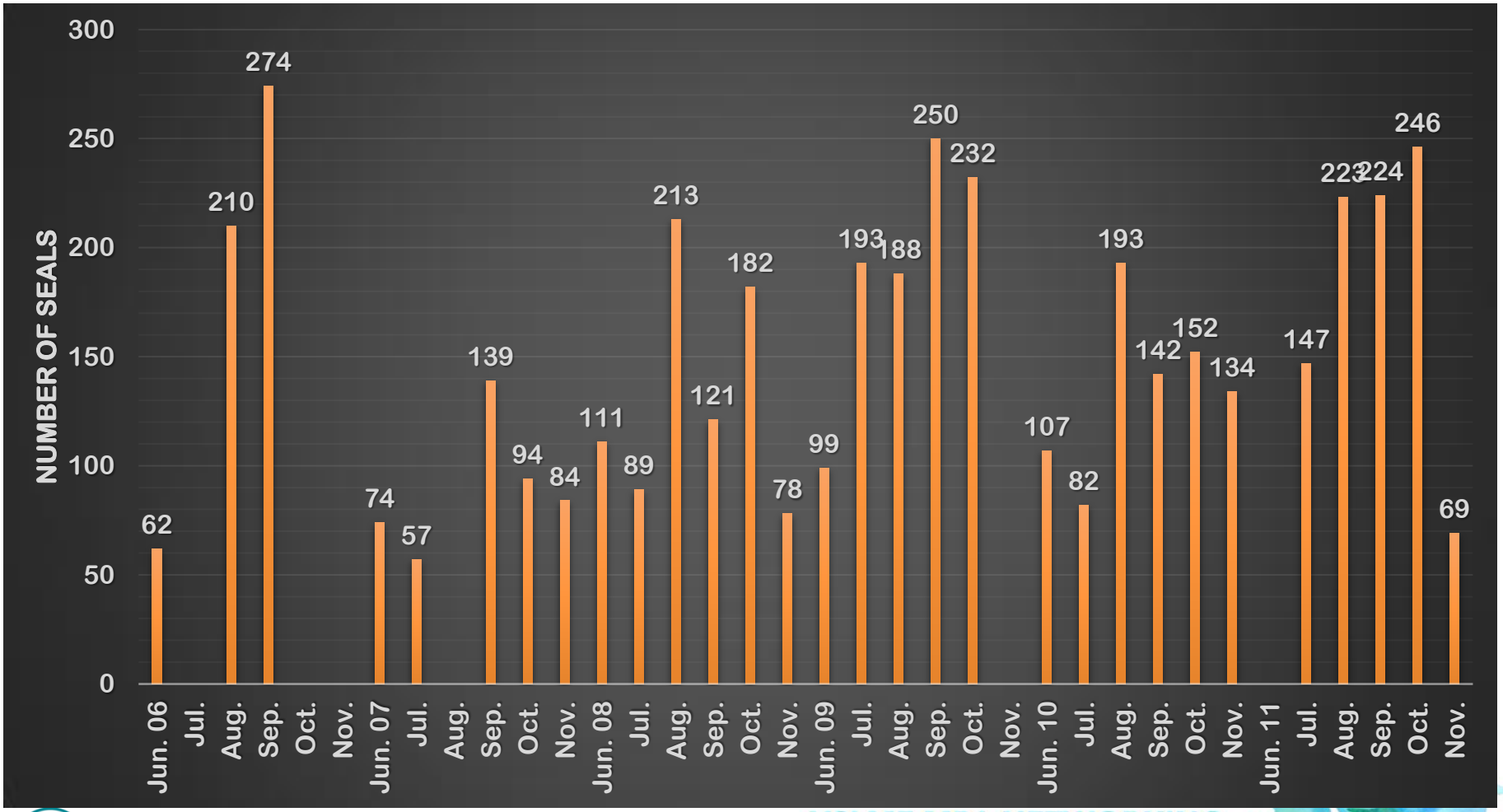
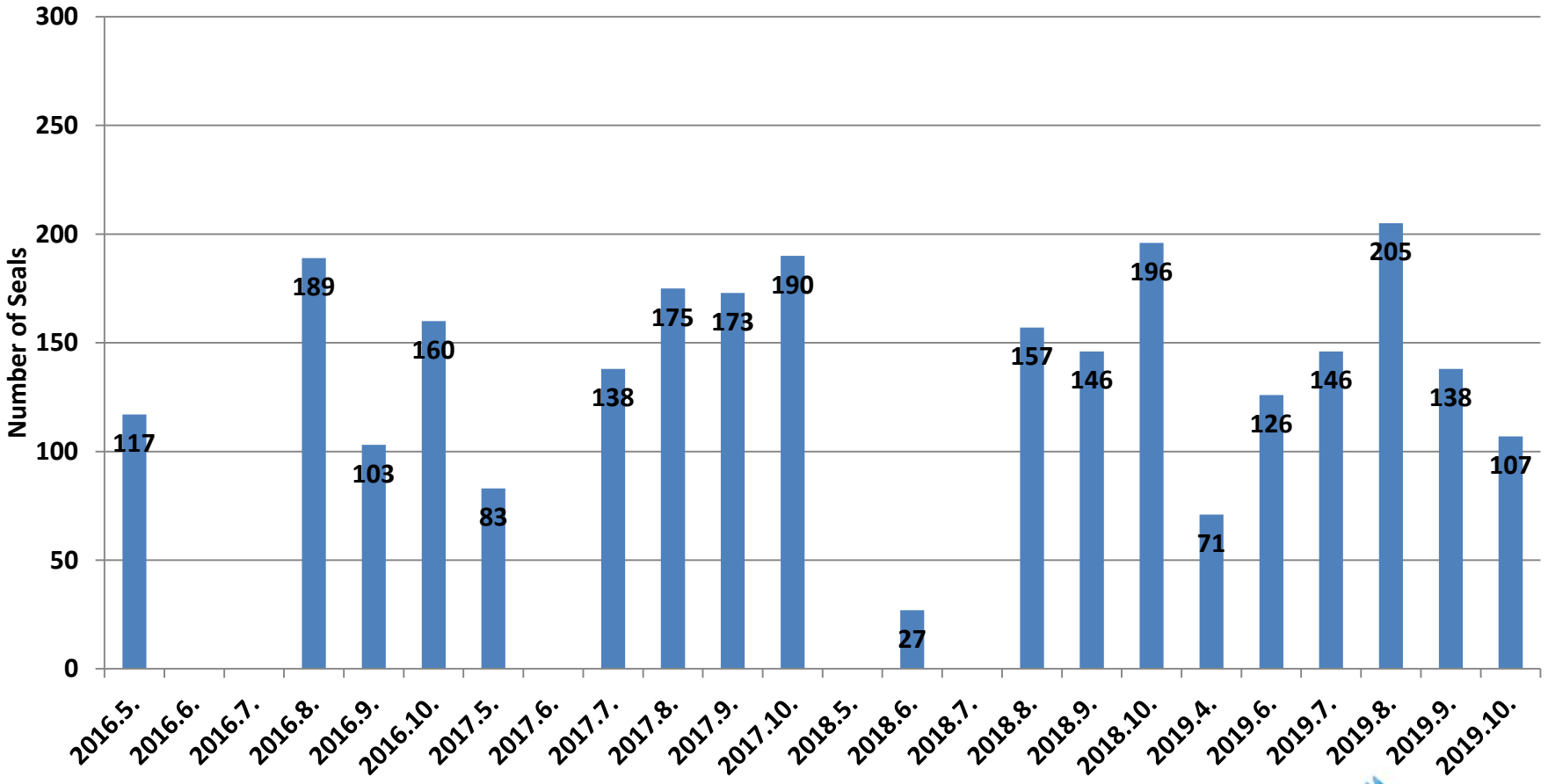
Number of seals observed in Backryeong Is (Boat based obs in 2006-2011)



Number of seals observed in Backryeong Is (Boat based obs in 2016-2019)



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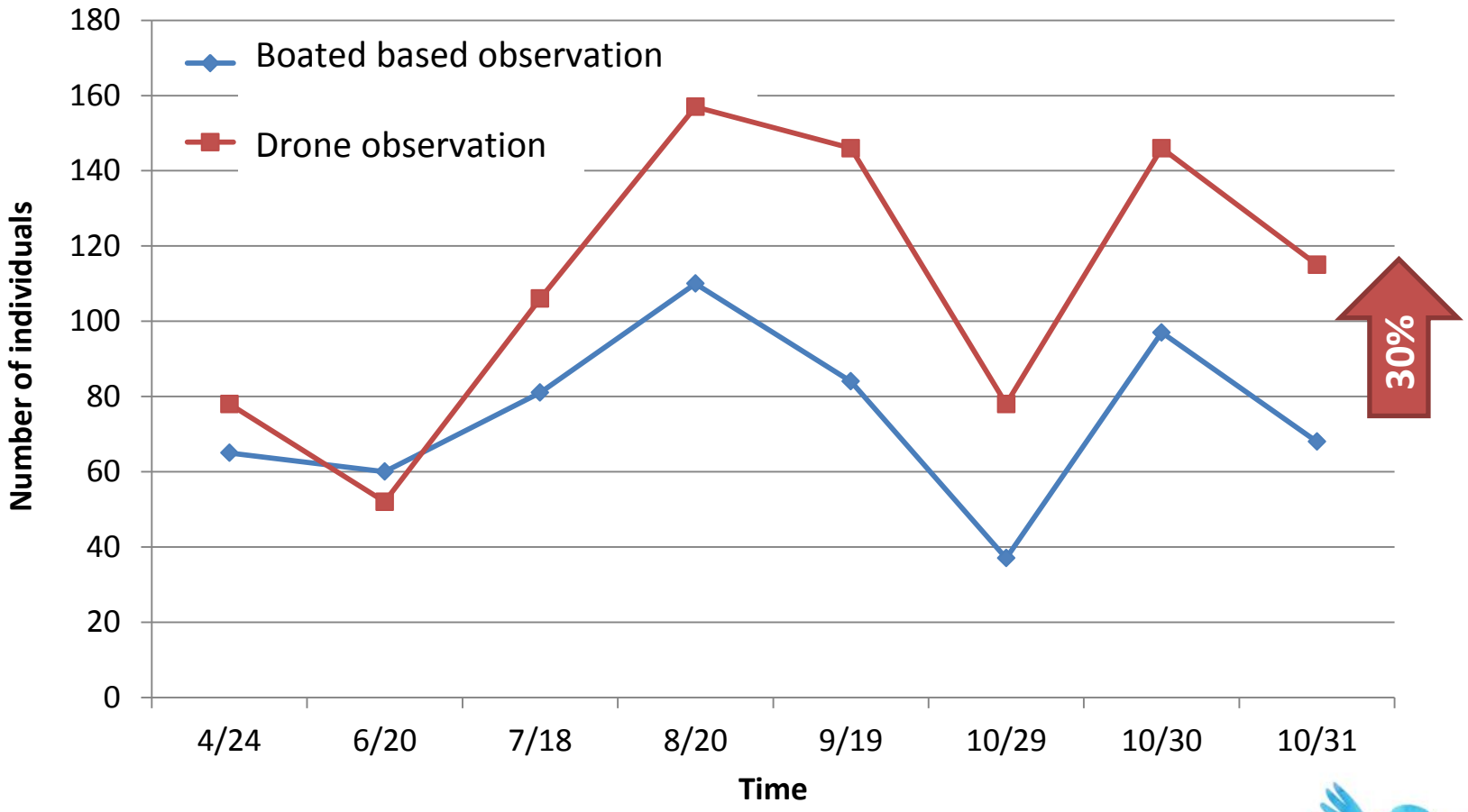
Number of seals observed at 5 sites of Backryeong Is (Drone survey in 2019)

Dates	Survey sites (Backryeong Is)					Total
	Artificial rest area	Hani Beach	Seal Rock	Yeonbong Rock	Dumujin	
04/24		75	3		X	78
06/20			52		X	52
07/18	0	3	102	1	X	106
08/20	0	28	129	0	X	157
09/17			7		X	7
09/19	0	66	79	1	X	146
10/29	0	9	69	0	X	78
10/30	0	24	122	0	0	146
10/31	0	16	99	0	0	115

Comparison of survey results btw drone and boast based observations



Real-time observations

Dates (2019)	Number of individuals
Mar 02	17
Apr 22	67
May 03	69
Jun 02	68
Jul 08	77
Aug 19	82
Sep 20	92
Oct 02	102
Nov 02	96
Dec 02	0

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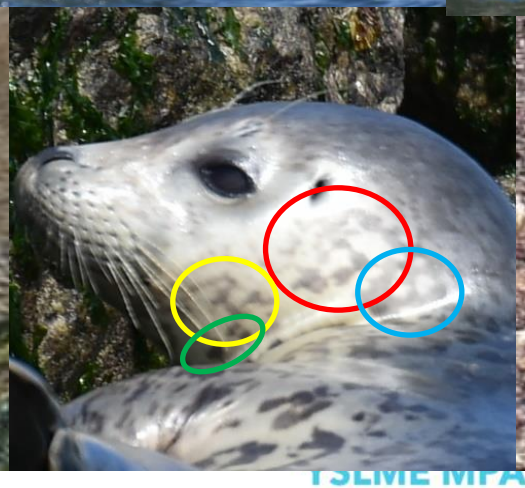
Effects of Artificial Shelter

Aug 09, 2019 : First observation (by Ms. Park)
Aug 21, 2019 : Eight individuals observed
Sep 17, 2019 : One observed

Effects of Artificial Shelter



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190917_BSS_AH

190919_BSS_AH

191030_BSS_MB

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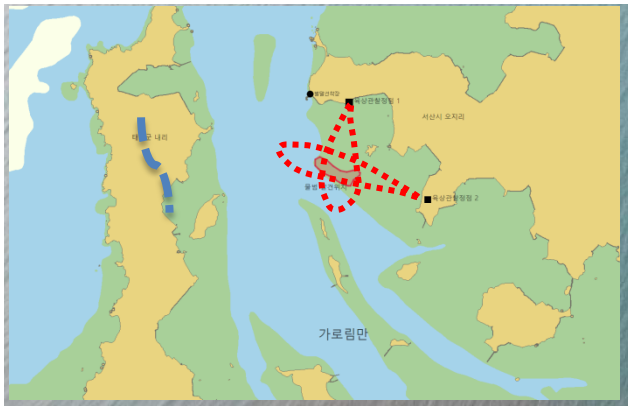
Spotted Seal Studies in Garolim Bay ROK (2019)



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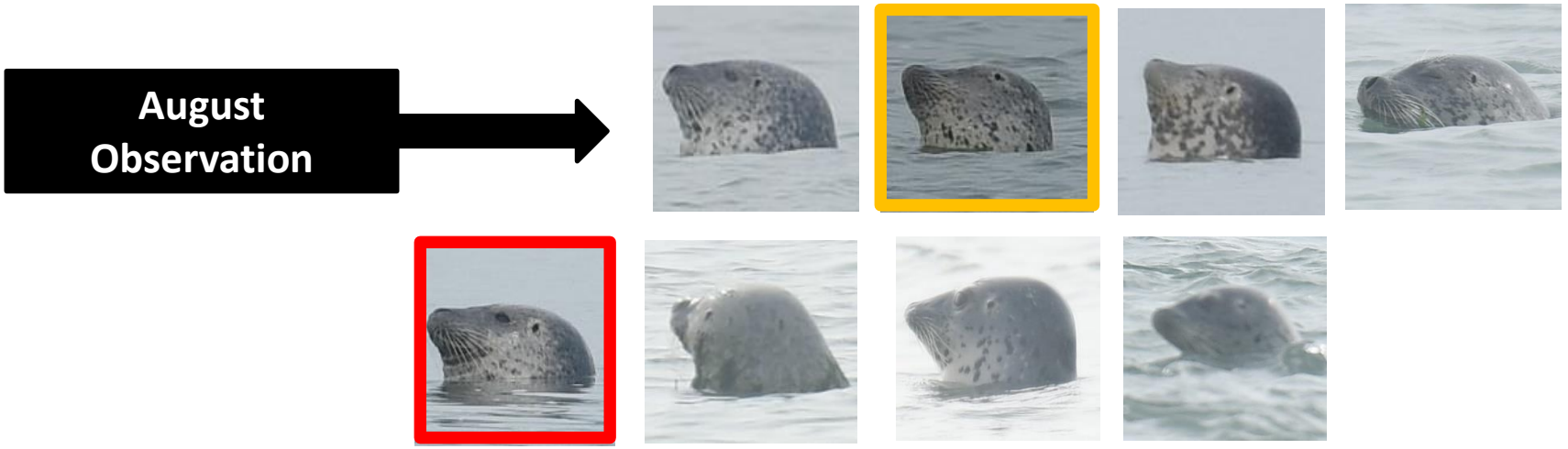
Spotted Seal Studies in Garolim Bay ROK (2019)

Dates	Tide	Number of individuals
Jul 11	05:08/17:47	7
Jul 12	06:29/18:56	8
Jull 13	07:49/20:00	0
Aug 07	02:43/15:12	3
Aug 08	03:33/16:00	5
Aug 09	04:35/17:02	0

Spotted Seal Studies in Garolim Bay ROK (2019)

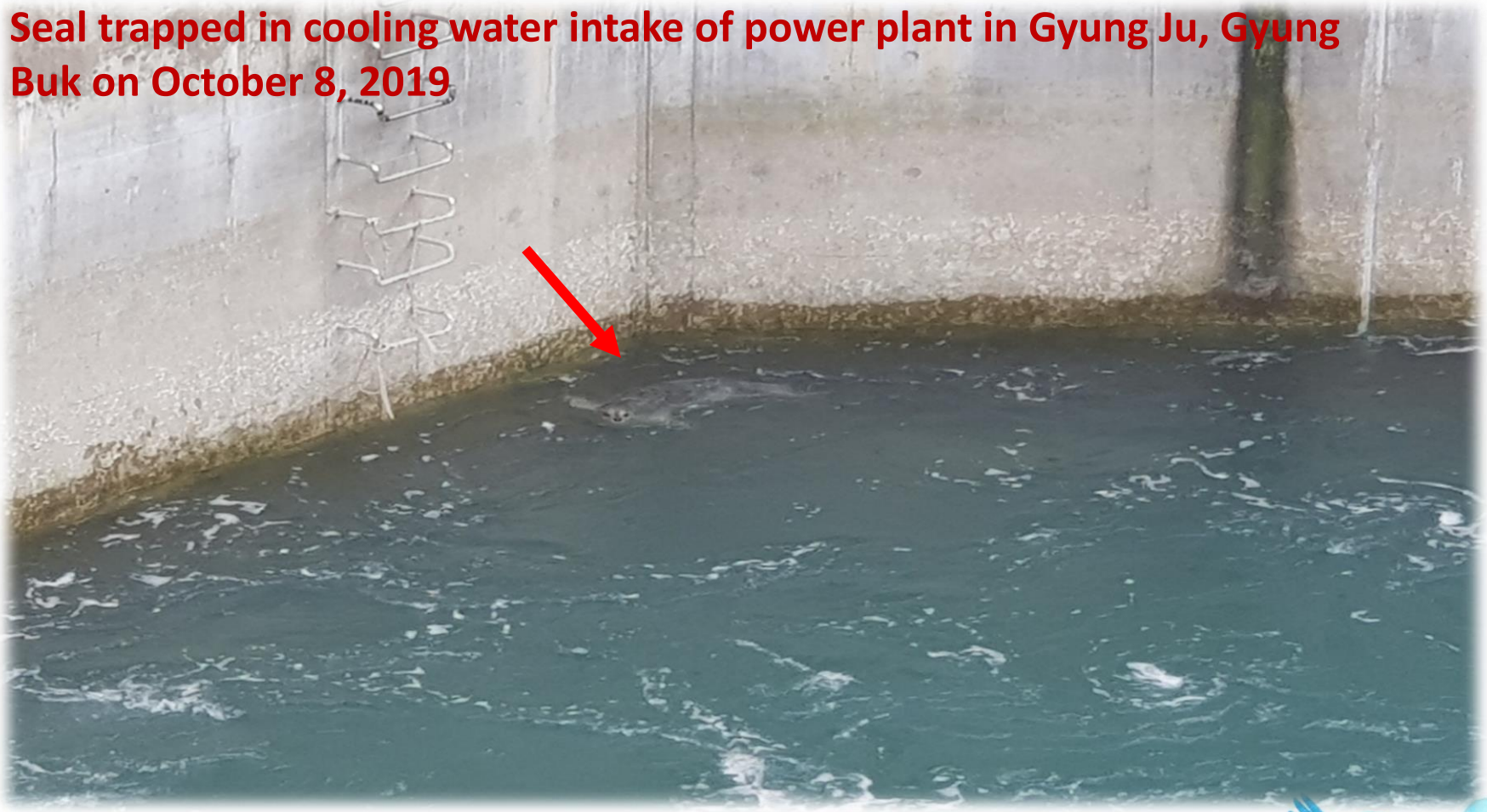


By-catches and stranding statistics of Spotted Seal in ROK 2019

Dates	Life stages	Locations	References
2019.05.05	immature	Goseong, Ganwon	stranding
2019.05.17	immature	Pohang, Gyung Buk	drifting
2019.05.24	immature	Hwaseong, Gyunggi	Drifting
2019.05.28	immature	Taean, Chungnam	By-catch
2019.06.01	immature	Junggu, Incheon	Stranding
2019.06.01	adult	Gyung Ju, Gyung Buk	Drifting
2019.06.12	Immature	Samchuck, Gangwon	By-catch
2019.06.25	Immature	Samchuck, Gangwon	Stranding
2019.10.08	Immature	Gyung Ju, Gyung Buk	Stranding
2019.10.08	Immature	Backryeong, Incheon	Drifting
2019.10.15	adult	Backryeong, Incheon	stranding

Rescue of Spotted Seal

Seal trapped in cooling water intake of power plant in Gyung Ju, Gyung Buk on October 8, 2019



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Rescue of Spotted Seal

Rescue of Spotted Seal

Released on Oct 22, 2019 after taking blood sample and attaching tracking device

Rescue of Spotted Seal

First satellite signal on Oct 24, 2019 and terminated on Nov 15, 2019

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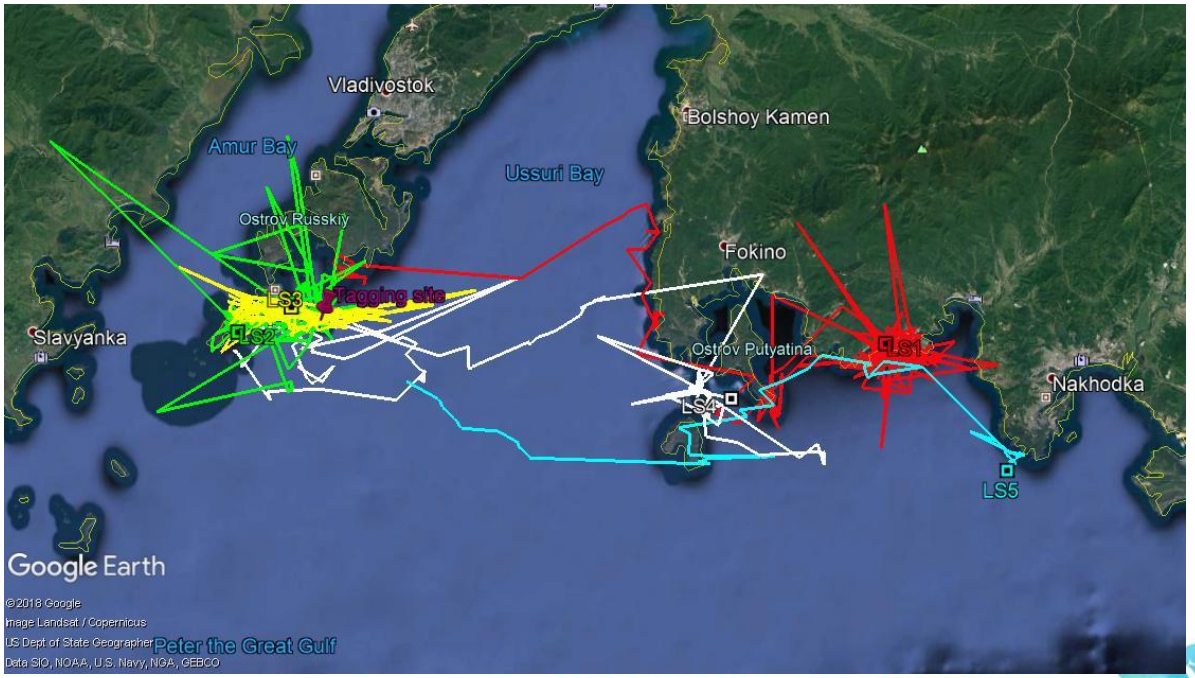
International joint research on spotted seal and other marine mammals

May, 2017 : released 3 spotted seals in Posyet, Russia
Oct, 2018 : released 2 seals in Tyuleniy Island, Russia
May, 2019 : released 5 spotted seals in Verkhovskie, Russia
still have signals from 3 individuals out of 5 released



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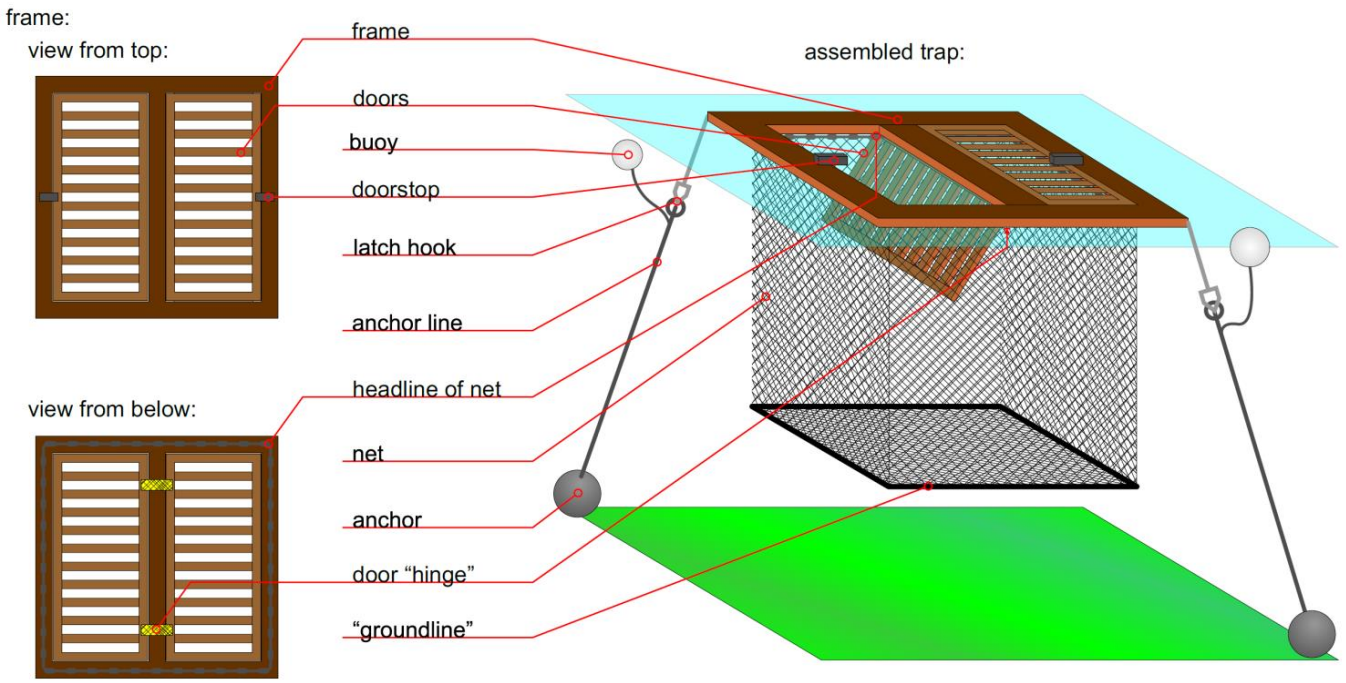
International joint research on spotted seal and other marine mammals

Rescue trap designed with Russian scientists

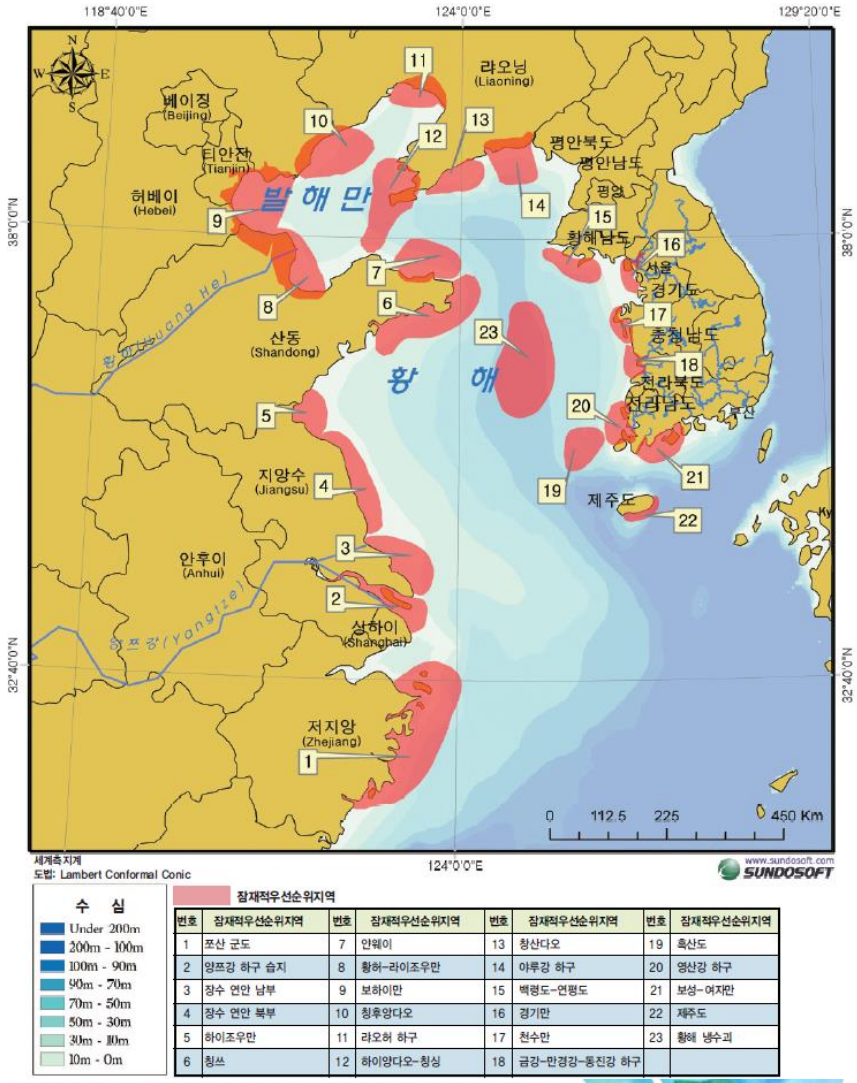


Suggestions

23 potential priority areas (PPA) in YS : connectivity between key habitats?

Degree of connectivity = degree of economic growth

Degree of habitat connectivity = degree of ecosystem stability and biodiversity



번호	잠재적우선순위지역	번호	잠재적우선순위지역	번호	잠재적우선순위지역	번호	잠재적우선순위지역
1	포산 군도	7	안웨이	13	창산다오	19	혹산도
2	양쯔강 하구 습지	8	황허-라이조우만	14	아루강 하구	20	영산강 하구
3	장수 연안 남부	9	보하이만	15	백령도-연평도	21	보성-여자만
4	장수 연안 북부	10	칭후앙다오	16	경기만	22	제주도
5	하이조우만	11	라오허 하구	17	천수만	23	황해 냉수괴
6	칭쓰	12	하이양다오-칭싱	18	금강-만경강-동진강 하구		

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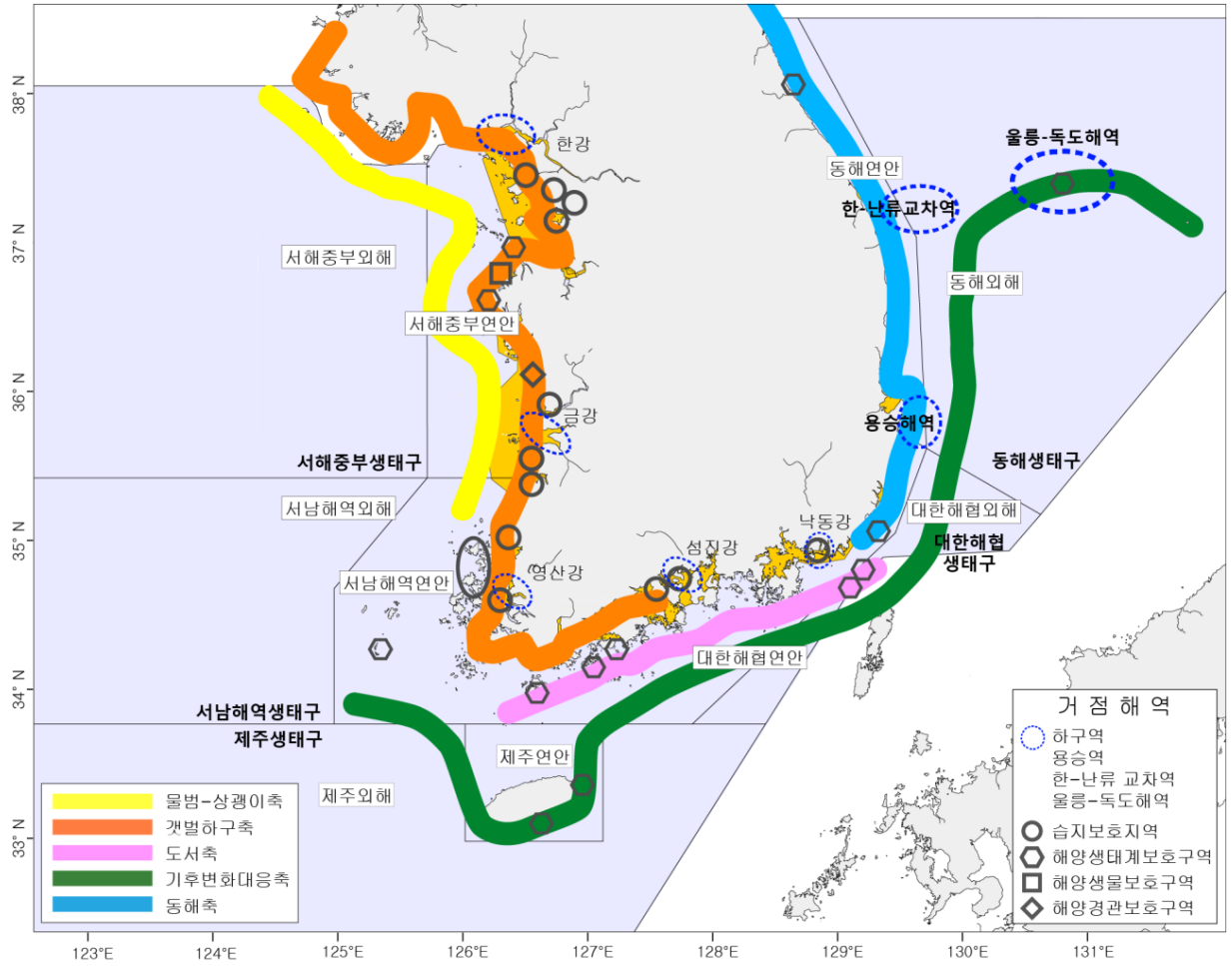
Suggestions



Coastal habitat Connectivity in ROK

- tidal flat and estuary
- archipelago
- climates change
- east sea
- marine mammals

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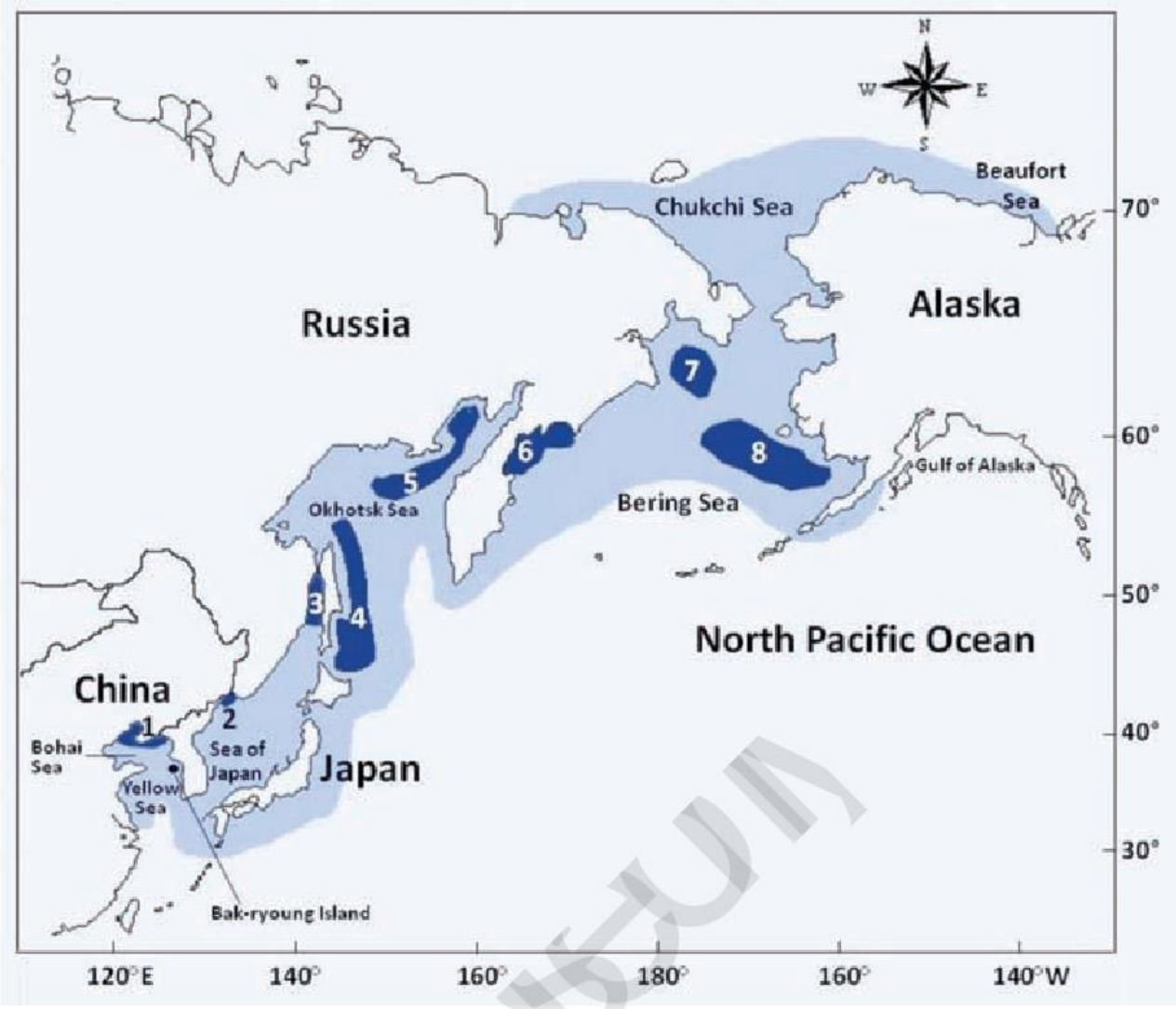
Suggestions

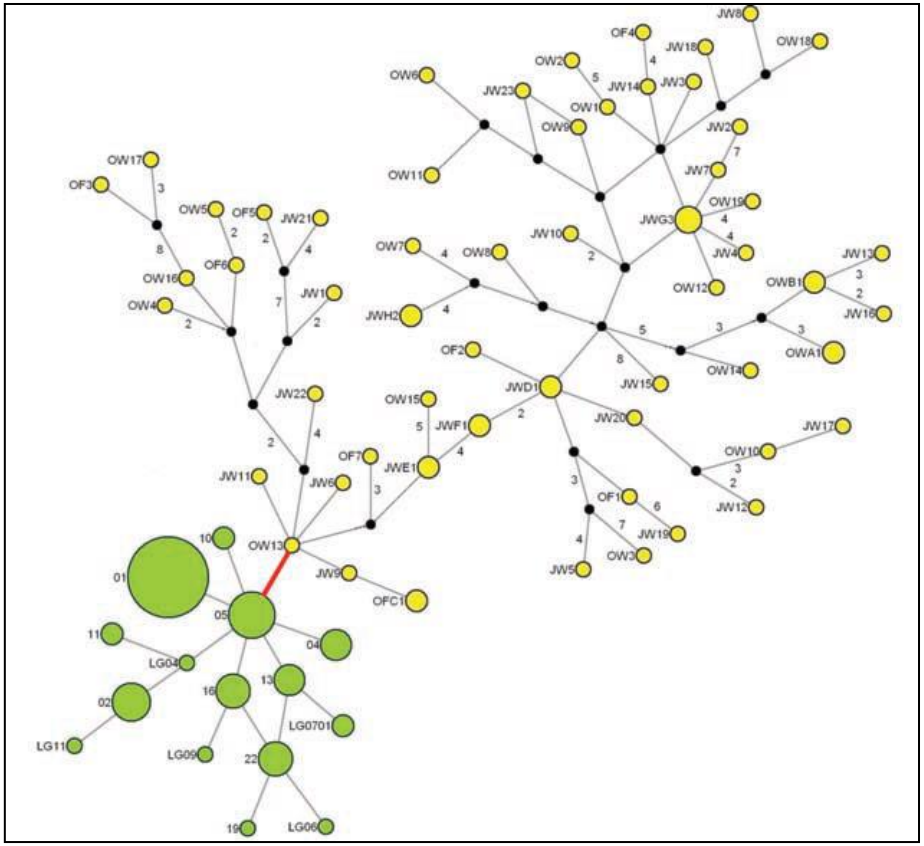
Li *et al*, 2010, Preliminary genetic status of the spotted seal Phoca largha in Liaodong Bay (China) based on microsatellite and mitochondrial DNA analyses. Trends in Evolutionary Biology 2010; volume 2:6

Spotted seal distribution (light blue) and breeding sites (numbered dark blue areas)



Suggestions

Both F-statistics and the haplotypic network indicate a clear differentiation between the Liaodong Bay and Japanese populations separated by a fixed mutation. The observed low genetic diversity in mtDNA and the intermediate levels of nuclear microsatellite diversity, combined with the potential genetic isolation, suggest that the Liaodong Bay population might be at risk



Median-joining network among mitochondrial *Phoca largha* haplotypes of Liaodong Bay (green) and Japan (yellow)

上海日报
ShanghaiDaily.com

Save the spotted seal - At risk in the Bohai Sea

By uo Lingren | October 4, 2010, Monday | PRINT EDITION

A herd of spotted seals relaxes in their winter home: the Shuangtaizi River estuary in Panjin, Liaoning Province. Competition with fishermen for food is the major threat faced by the seals.

FEW people think of China as the home of seals, but Liaoning and Shandong provinces are the winter home of endangered spotted seals, the only seal that breeds in Chinese waters. Zuo Lingren tells the story.

人民网 en.people.cn

100 spotted seal cubs stolen from Liaodong Bay

(People's Daily Overseas New Media) 15:35, February 22, 2019 Follow on Apple News