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Yokohama National University

A new normal between humans and biosphere toward the post pandemic -30 by 30 challenge for nature conservation

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(Yokohama National University)

Exercise

Please discuss your personal views on the following questions:

If possible, please indicate which answer that you guess is the majority in your country. (This is not a question with a correct answer)

- What is the situations of COVID-19 in your country?（e.g., the number of infected deaths, what are people's opinions about infection control measures, -and its impact on the economy).
- In your opinion, which should be prioritized under the pandemic situation: human life or the economy? Why?

Do you eat wild mammals, livestock or only vegetable?

- Will your top priority be nature conservation or benefit to people?
- Do you think all people should adopt your predictions described above, or do you allow freedom of choice among people? Please share your reason why you think so.

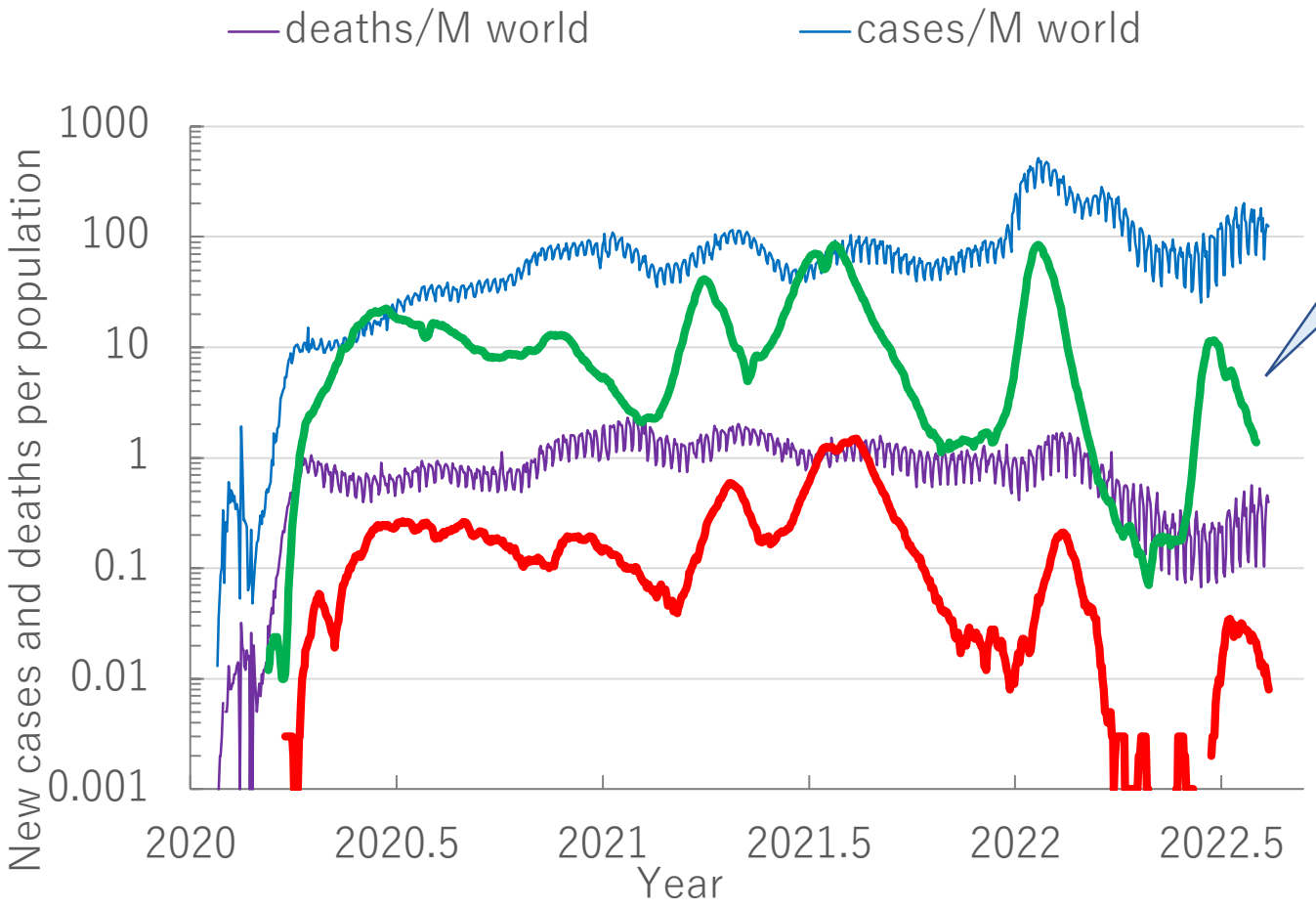
Overview and Keywords

1. Epidemic control should be included in a major goal of the post SDGs.
   - SDGs – Environment, Economy, Society (inclusiveness)
   - New normal beyond the SDGs
2. Seek SMART > over-ambitious, unrealistic goals
   - From nature protection (NP) to comprehensive SDGs
   - NP is not an end, but a measure of good QoL
3. Living with COVID-19, Zoonosis, wildlife
   - Animal welfare is under development; human-wildlife conflict
   - Ecological distancing > no use of wildlife
   - Economic benefit and ecological/health risks; antibiotics, plastics
4. Keypoints for Post SDGs –
   - UNESCO's Man and the Biosphere (MAB)
   - Respect both biodiversity and cultural diversity (Biocultural diversity)

World pandemic of Covid-19 new cases and new infected deaths

(Jan. 22 2020 – Aug. 11 2022)

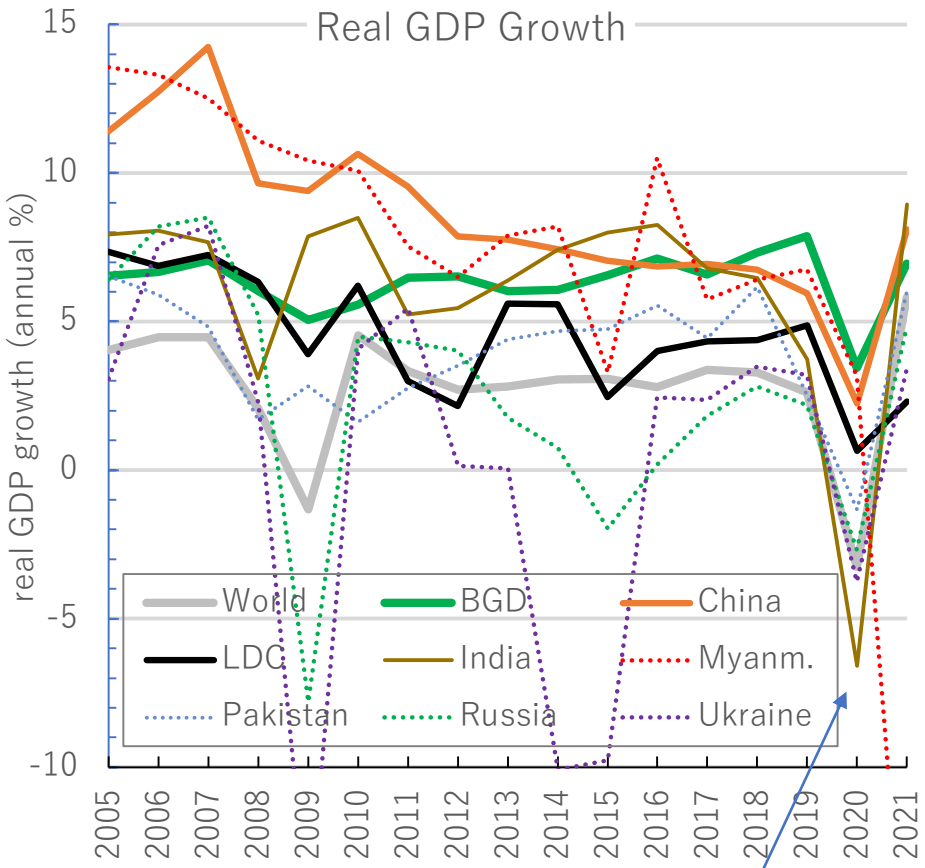
Please draw the lines of your country



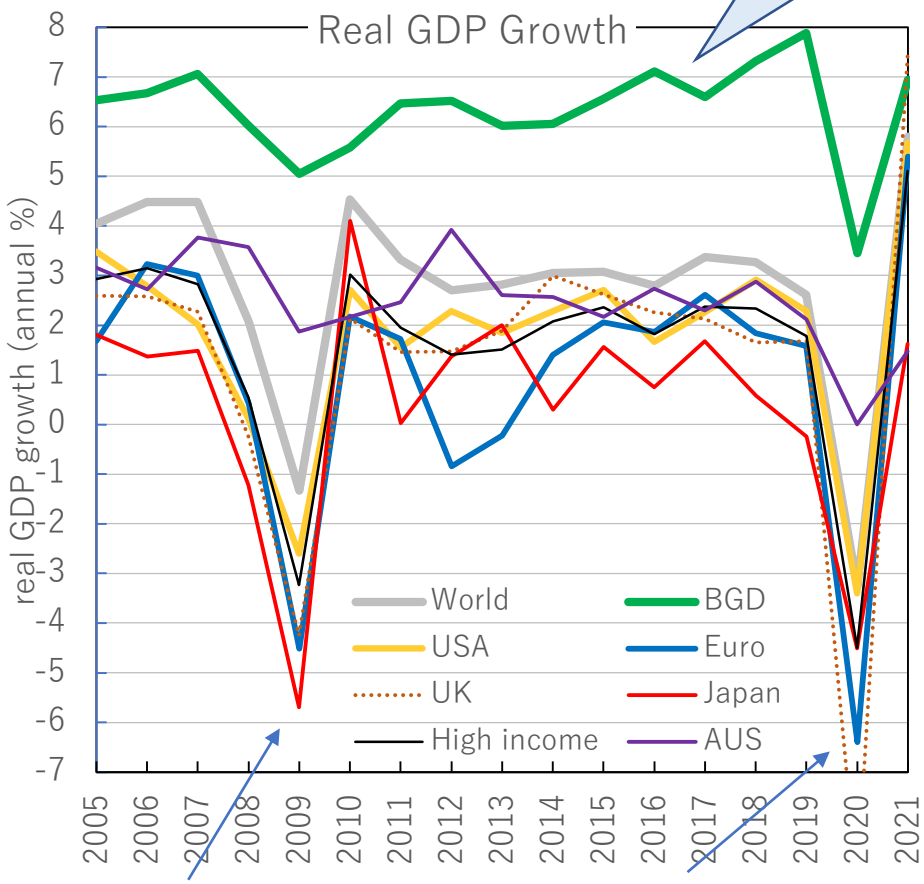
Source: https://ourworldindata.org/covid-cases

Trends in Real GDP Growth

Please draw the line of your country



Covid-19 crisis



Subprime mortgage crisis

Covid-19 crisis

Source: World Development Indicators (as of July 2022)

https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG

New Normal beyond the SDGs

- The SDGs are targets for 2015-2030, but the SDGs did not fully anticipate the COVID-19 pandemic and no countermeasures were prepared for it.
  - The economic and human toll of the COVID-19 pandemic stands to further delay action beyond the SDGs' 2030 target date. (Olsen et al. 2021)
- The transition to a new normal of hygiene practices, such as wearing masks, was forced.
- Remote conferences and lectures became common, and opportunities for international travel have decreased.
- Note: it would be progressed even without the pandemic.
- For climate change mitigation, the frequency of air travel should be reduced. (Please forgive me this time)

https://www.freepik.com/premium-vector/back-school-new-normal-lifestyle-concept_11009194.htm

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（1） SDGs（Sustainable Development Goals）

- Adopted at the UN Summit in September 2015 (predecessor of the Millennium Development Goals (MDGs)).
- The SDGs are 17 international goals (169 targets and 232 indicators are defined under the goals) for the realization of a sustainable, diverse, and inclusive society that "leaves no one behind" by the year 2030.

No population control in major goals

No major goal against the pandemic

- SDGs are more integrated than MDGs (I support!)
- I say, SDGs are a bit over-ambitious.
- I recommend more realistic goals for post SDGs

Source: Japan Ministry of Economy https://www.meti.go.jp/shingikai/economy/sdgs_esg/pdf/001_05_00.pdf

I recommend SMART Goals

Initials	Meaning
Specific	Specify and clarify what to accomplish. Leave no room for misunderstanding.
Measurable/Testable	Define metrics and indicators to see if the current attainment is in line with the goal.
*Ambitious**	*Be ambitious but it has to be reasonably achievable. Plans are often rejected due to over-ambitious goals.*
Achievable/ Realistic	Focus on what is achievable and describe the course of action to realize the goal successfully.
Relevant	Align with values, visions, future strategies, or wider goals that are essential to various stakeholders.
Time-bound	Define a time frame for achieving the goal.

*modified from https://merakimusings.org/smart-goals/
Modified from Miller 2022 https://crowjack.com/blog/strategy/smart-goals

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The Tragedy of the Mitigation Policy in climate change. How to avoid it?

- Mitigation works globally, but adaptation works locally.
  - It is optimal for a nation if it focus on adaptation and the other nations focus on mitigation.

1. Commons should be divided into private property (It is impossible for GHG)
2. Forcing global policy (international legally binding instrument) (Kyoto Protocol 1997/2005)
3. Co-management, Bottom-up approach in global commons*
   1. CBD, and Paris Agreement in UNFCCC
4. Incentive by Carbon Credit, Cap and Trade,
   - $V_i = B_i - D(\Sigma M_j, A_1) - M_i - A_i + \lambda(\Sigma M_j)\,(M_i - M_i^{cap})$

*Global commons = resource domains or areas that lie outside of the political reach of any one nation State. (def. by UNEP)

Millennium Ecosystem Assessment (MA) scheme

National Biodiversity Strategy of Japan

Human Well-being
- Security
- Basic material…
- Health
- Good relationship…
- Freedom of choice..

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Indirect DFs
- Demographic
- Economic
- Sociopolitical
- Cultural & Religious
- Science & Technology

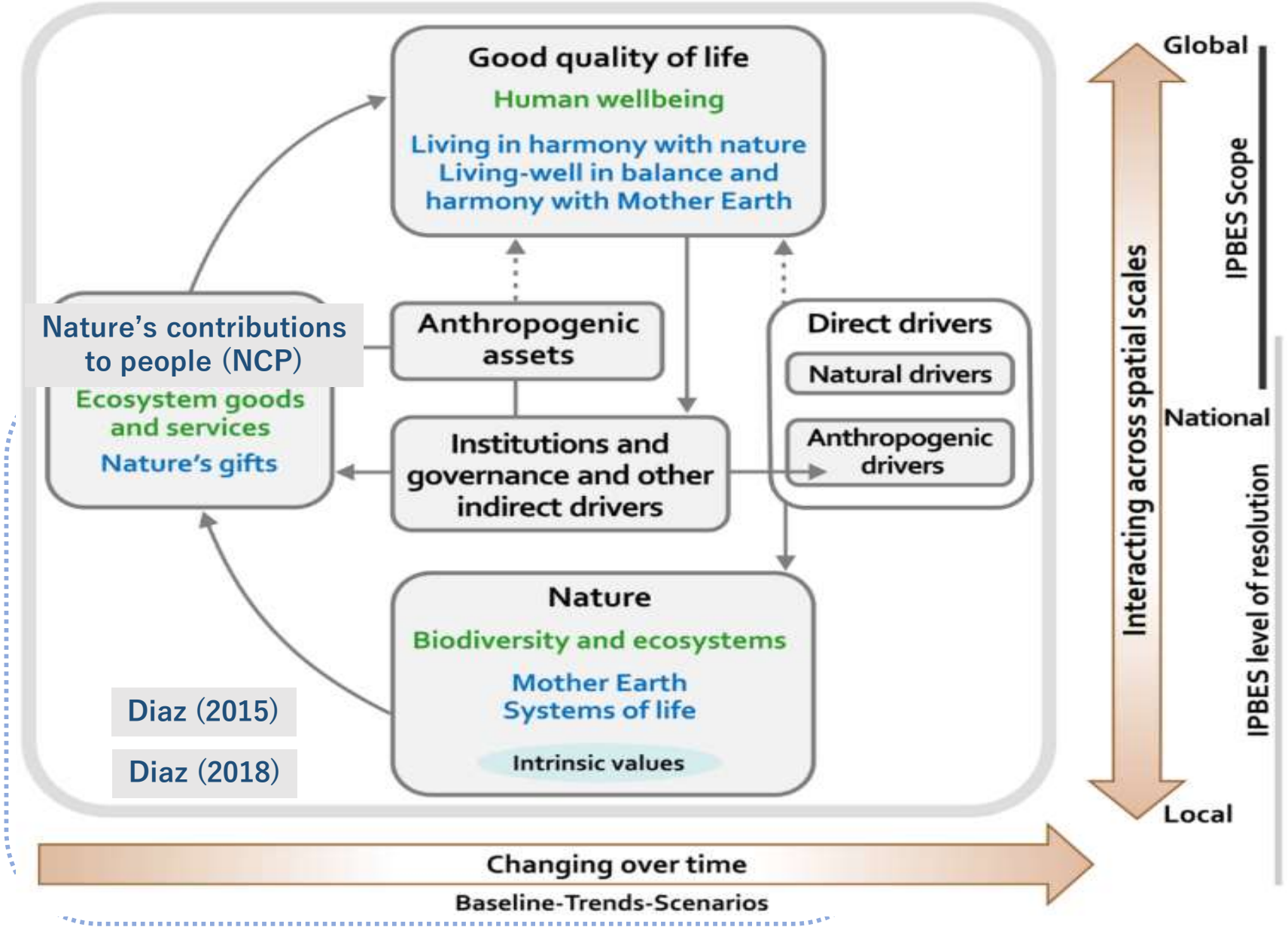
Japan NBSAP*
1. Over-use
2. Under-use
3. Disturbance
- Climate Change

Direct DFs
A) Habitat change
B) Climate change
C) Invasive species
D) Over-exploitation
E) Pollution

Ecosystem S.
- Biodiversity
- Supporting S.
- Provisioning S.
- Regulating S.
- Cultural S.

*NBSAP = National Biodiversity Strategy & Action Plan

Why do we conserve nature?



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The Changing Global Standard for Biodiversity

- From ecosystem services to nature's contributions to people
  - Ecosystem services are divided into Flow and Stock (United Nations University Satoyama Sea Assessment 2011)
  - Nature brings disasters as well as blessings (dis-service concept of pollinators and animal damage, JBO2, 2016)
    (Nevertheless, nature is essential for humans)
- Dasgupta Report (2021) "The Economics of Biodiversity“
  - Looking to the future in terms of inclusive wealth (stock)
    not in terms of GDP (Flow)
  - Living in harmony with nature

What is “nature’s detriments to people“?

- “Negative ecosystem services" or “ecosystem dis-services”
  - Natural disasters/ wildfire, tsunami
  - Human-wildlife conflict:
  - Pollinosis / allergy in natural foods and materials

Nevertheless, nature is indispensable to people.




Does mitigation/nature conservation pay?

- The cost of mitigation measures is enormous now. The benefits of global warming mitigation will not be noticeable until more than half a century from now (← taking into account the economic discount rate…)

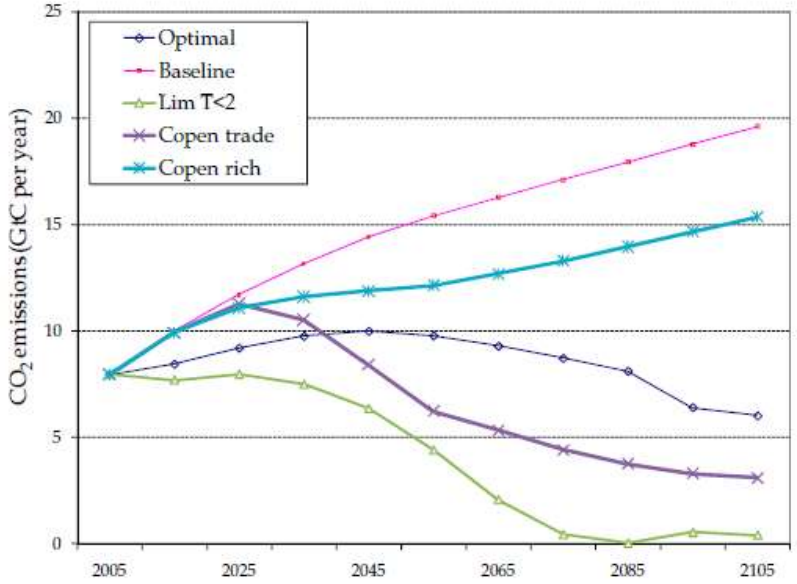


Fig. 1. Projected emissions of CO_2 under alternative policies. Copen, Copenhagen.

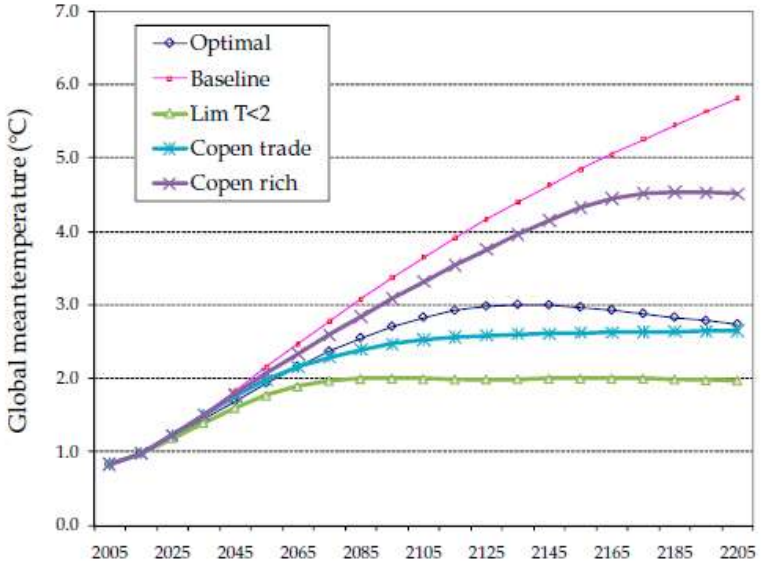
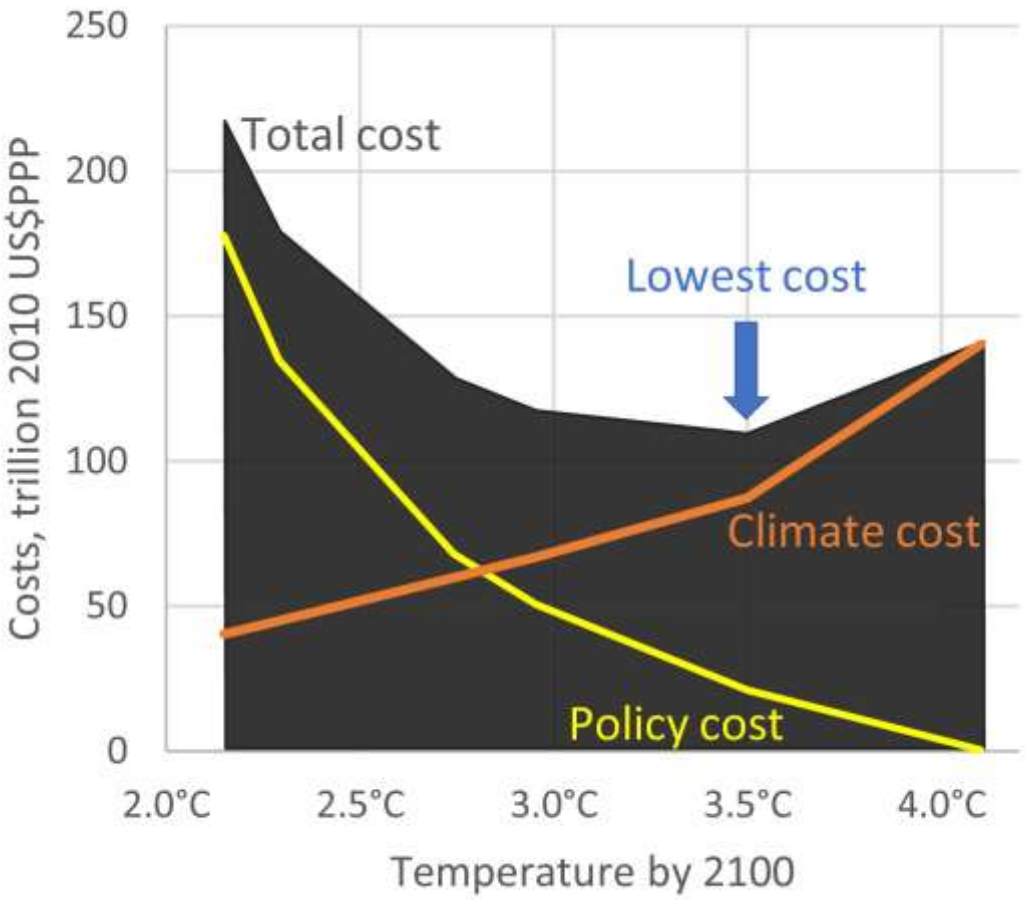


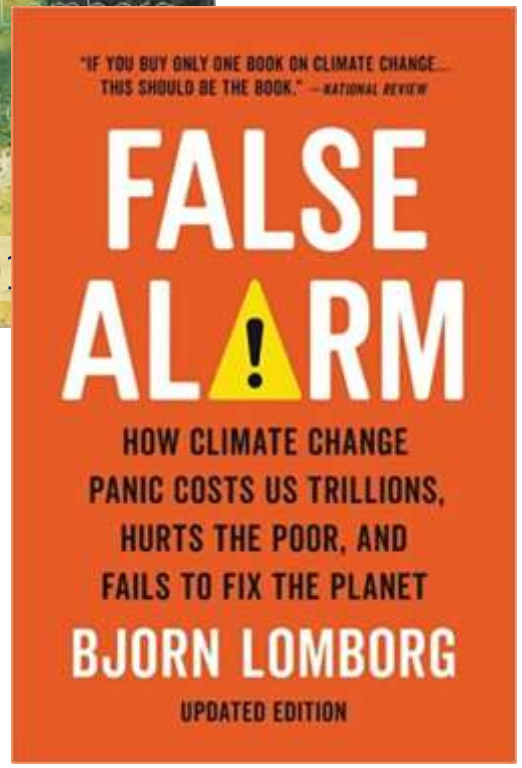
Fig. 3. Global temperature increase (°C from 1900) under alternative policies. Copen, Copenhagen.

Nordhaus (2010: PNAS 107:11721-)

Do the cost of mitigation measures outweigh benefits?

(Bjørn Lomberg 2020 Technol. Forecast. Soc. Change.)

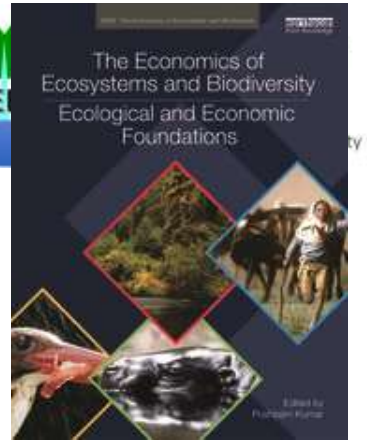




PPP＝Purchasing Price Parity

- Fig. 24. Total, discounted climate costs and policy costs for different temperature outcomes by 2100, along with the total cost (the sum of climate and policy cost). All use base (4.1° C) discount rates for comparability. DICE-2016R2 from 2017 (Nordhaus 2018a) run on GAMS,. The results for 4.1° C, 3.5° C and 2.3° C are near-identical to the runs in (Nordhaus 2018b).

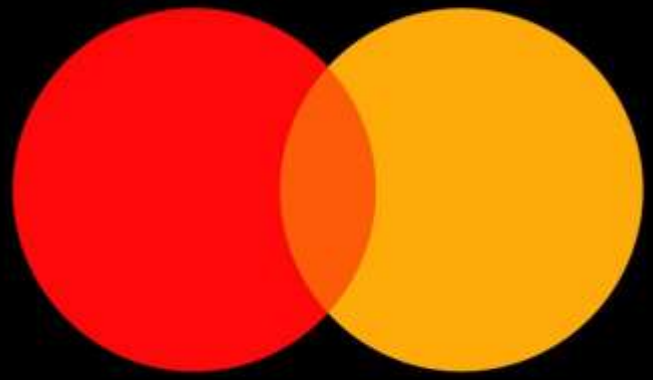
Discounting, ethics, and options for maintaining biodiversity and ecosystem integrity



- There are no purely *economic* guidelines for choosing a discount rate. Responsibility to future generations is a matter of ethics…
- A variety of discount rates, including zero and negative rates, should be used, depending on the time period involved, the degree of uncertainty, and the scope of project or policy being evaluated.
- …A 5% discount rate implies that biodiversity loss 50 years from now will be valued at only 1/7 of the same amount of biodiversity loss today.
- The rich and poor differ greatly in their direct dependence on biodiversity and ecosystem services and bear different responsibilities for their protection.

Gowdy et al. (2012) https://doi.org/10.4324/9781849775489

Mastercard's 1997 "There are some things money can't buy. For everything else, there's Mastercard."



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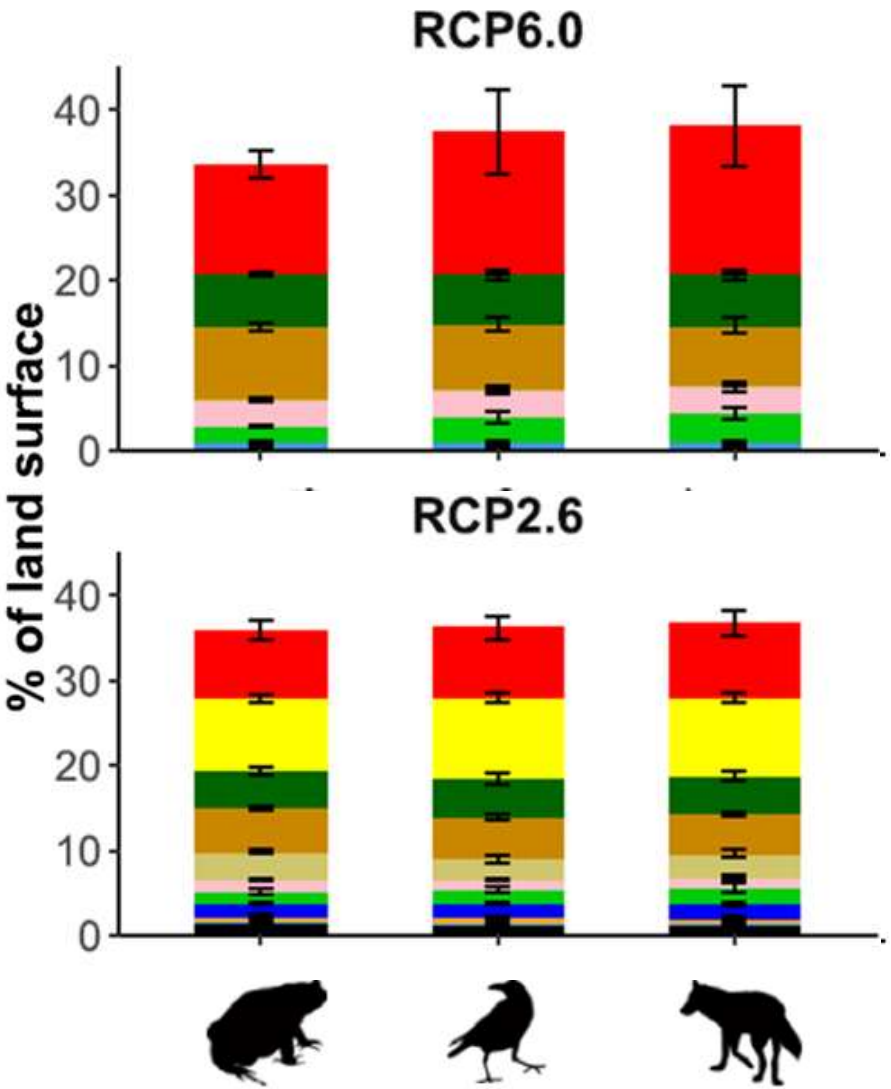
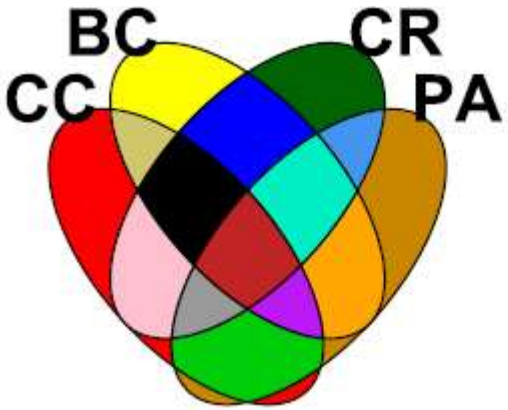
Bioenergy cropland expansion may offset positive effects of climate change mitigation for global vertebrate diversity



Hof et al. (2018：PNAS 115)

- Biofuel farmland has a significant negative impact on biodiversity.

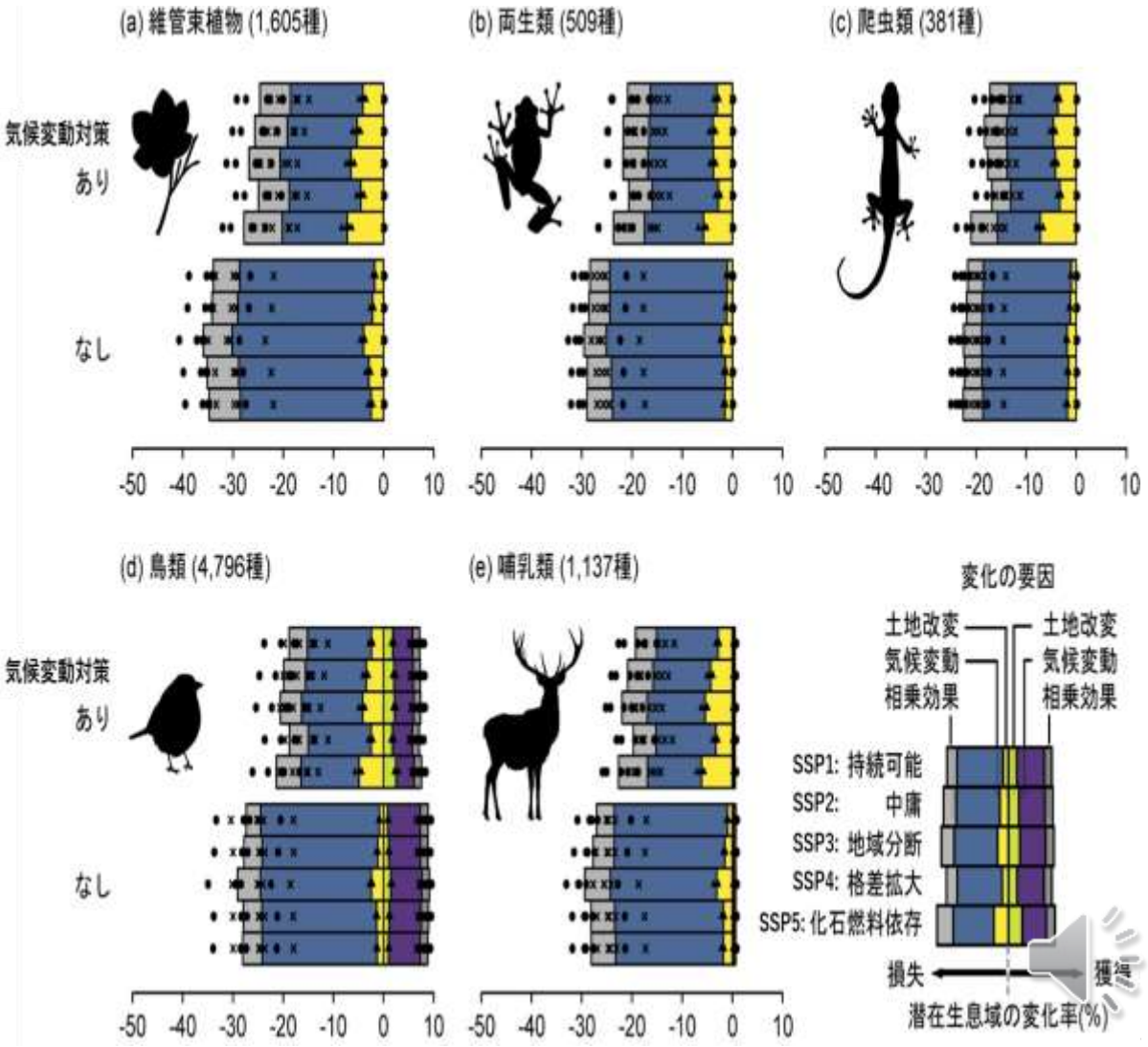
BC, Biefuel cropland
CC, Climate Change
CR, non-biofuel Cropland
PA, Pastures area



Biodiversity loss can be halted through climate mitigation efforts

(Ohashi *et al*. 2019, Nature Communications)

- In order to limit the temperature increase due to global warming to within 2 degrees Celsius, measures that involve land modification, such as new afforestation and cultivation of crops for biofuels, are necessary. However, land modification due to global warming may deprive wildlife of their habitats and reduce their diversity. This study shows that keeping the temperature increase within 2° C is effective in halting the loss of biodiversity, even when the effects of land modification are taken into account.



What is 30 by 30?

- 30 by 30 (or 30x30) is a worldwide initiative for governments to designate 30% of Earth's land and ocean area as protect areas and OECMs (other effective area-based conservation measures) by 2030. This target was proposed by a 2019 article in Science "A Global Deal for Nature", highlighting the need for expanded nature conservation efforts to mitigate climate change.
- The 30 by 30 target is a global target, which aims to halt the accelerating loss of species, and protect vital ecosystems that are the source of our economic security.
- It is important that all 195 countries adhere to the High Ambition Coalition by 2025, and that the 30 by 30 initiative be promoted at all major UN meetings.
- Countries can contribute to achieve 50% of the challenge by nominating additional sites to UNESCO.

FIRST DRAFT OF THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK (CBD)

- The framework has 21 action-oriented targets for urgent action over the decade to 2030…
- Target 3. Ensure that at least 30 per cent globally of land areas and of sea areas, especially areas of particular importance for biodiversity and its contributions to people, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes. (p.6)

www.cbd.int/doc/c/abb5/591f/2e46096d3f0330b08ce87a45/wg2020-03-03-en.pdf

Aichi Biodiversity Targets 2010-2020

- Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

https://www.biodic.go.jp/biodiversity/about/aichi_targets/index_03.html

Categories of Portected Areas by IUCN (N.Dudley 2008)

	Category of protected areas	Areas managed mainly for
Ia	Strict nature reserve	Strict protection
Ib	Wilderness area	Strict protection
II	National park	Ecosystem conservation and protection
III	Natural monument or feature	Conservation of natural features
IV	Habitat / species management area	Conservation through active management
V	Protected landscape / seascape	Landscape / seascape conservation and recreation
VI	Protected Area with sustainable use of natural resources	Sustainable use of natural resources

Definition of PA (Dudley 2008)

- "protected area" – An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means – and six categories:

https://portals.iucn.org/library/sites/library/files/documents/pag-021.pdf

Kyoto Prefecture's snow crab fishery persuaded the Kyoto Fisheries Experiment Station to establish a voluntary permanent no-take zone → First MSC-certified fishery in Asia

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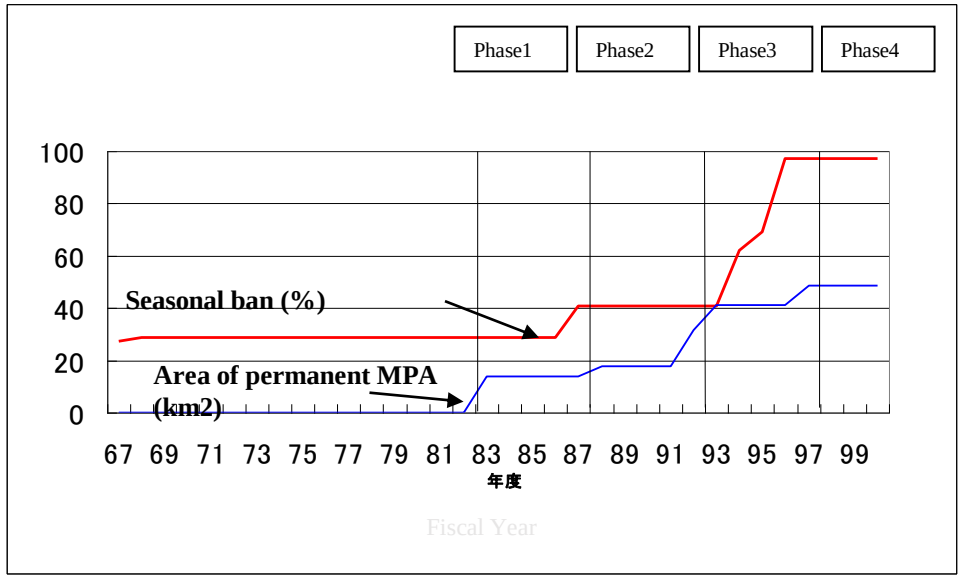

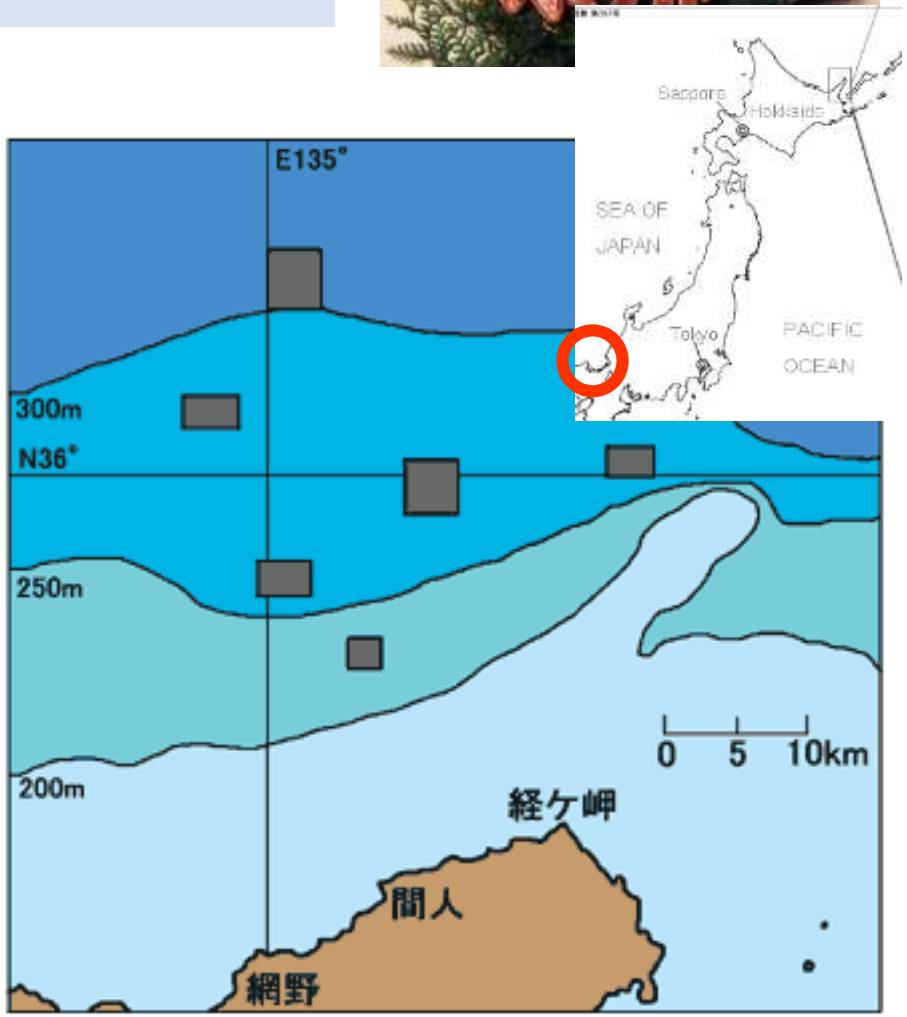

M. Makino

Legal restrictions are not the only way to protect areas (Yagi et al.2010)

- Japan has 1,161 marine protected areas
- Among these, 1055 are (seasonal) no-take zones.
- >30% are not legally defined MPAs but autonomously regulated by fisheries cooperative associations.

Other Effective Conservation Measures

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Marine Policy ▮ (▮▮▮▮) ▮▮–▮▮▮

Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

Marine protected areas in Japan: Institutional background and management framework

Nobuyuki Yagi, Akira P. Takagi*, Yukiko Takada, Hisashi Kurokura

Graduate School of Agricultural and Life Sciences, The University of Tokyo, 1-1-1 yayoi, bunkyo-ku, Tokyo 113-8657, Japan

Recent definition of OECM

"other effective area-based conservation measure" means

- "a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the *in situ* conservation of biodiversity, with associated ecosystem functions and services and, where applicable, cultural, spiritual, socioeconomic, and other locally relevant values";

CBD/SBSTTA/22/L.2 6 July 2018

3 types of OECMs

1. **Ancillary conservation:** areas delivering *in-situ* conservation as a by-product of management, i.e. where biodiversity conservation is not an objective (e.g. some military training grounds).
2. **Secondary conservation**: active conservation of an area where biodiversity outcomes are a secondary management objective (e.g. some watershed management areas);
3. **Primary conservation**: areas meeting the IUCN definition of a protected area, but where the governance authority does not wish the area to be reported as a protected area. This is likely to be a relatively rare category of OECM, and would be used to avoid unintended consequences, such as in countries where government regulations forbid human occupation in a protected area [religious sanctuary]

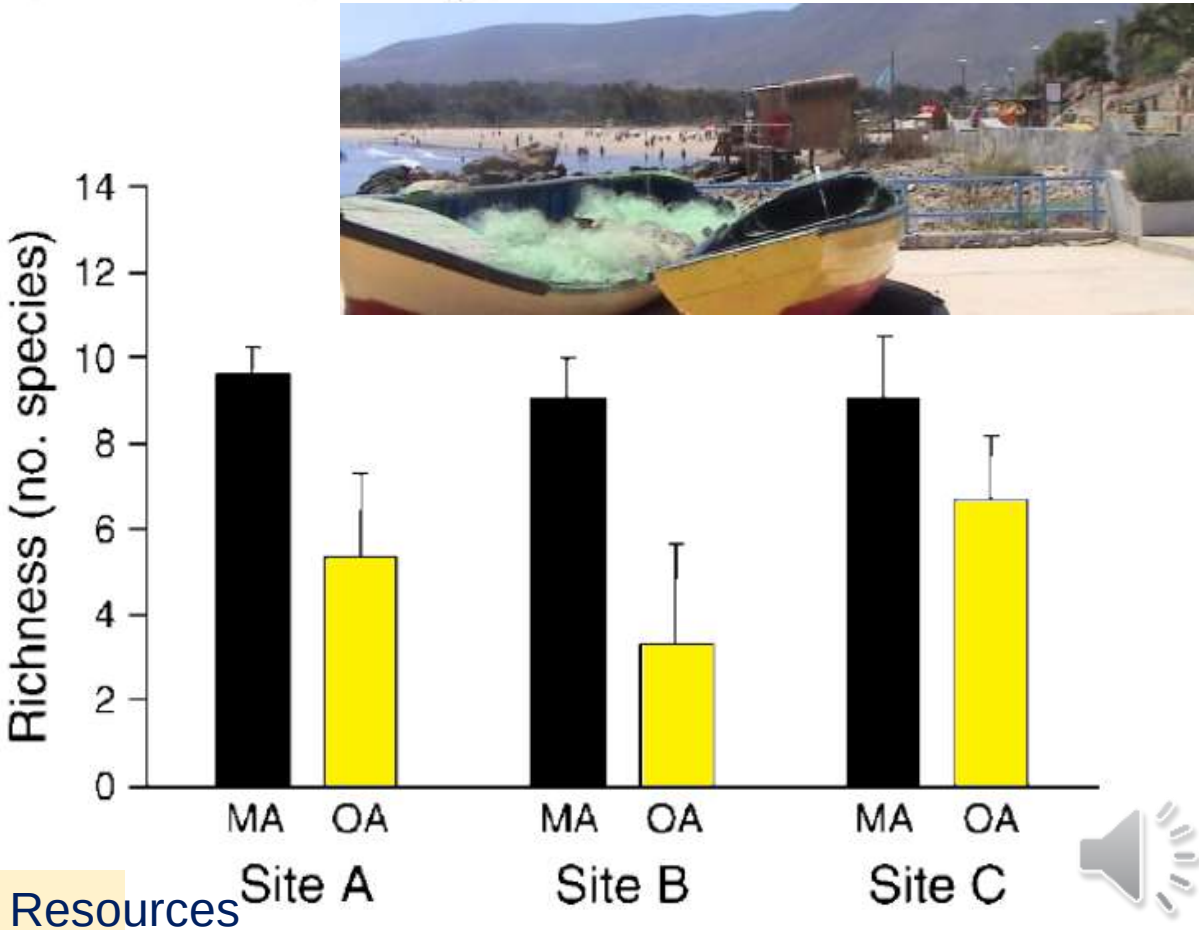
https://www.iucn.org/sites/default/files/2022-08/01_iucn_wcpa_technical_note_series_no._1.pdf

ADD-ON CONSERVATION BENEFITS OF MARINE TERRITORIAL USER RIGHTS FISHERY POLICIES IN CENTRAL CHILE

STEFAN GELCICH, NATALIO GODOY, LUIS PRADO, AND JUAN CARLOS CASTILLA[1]

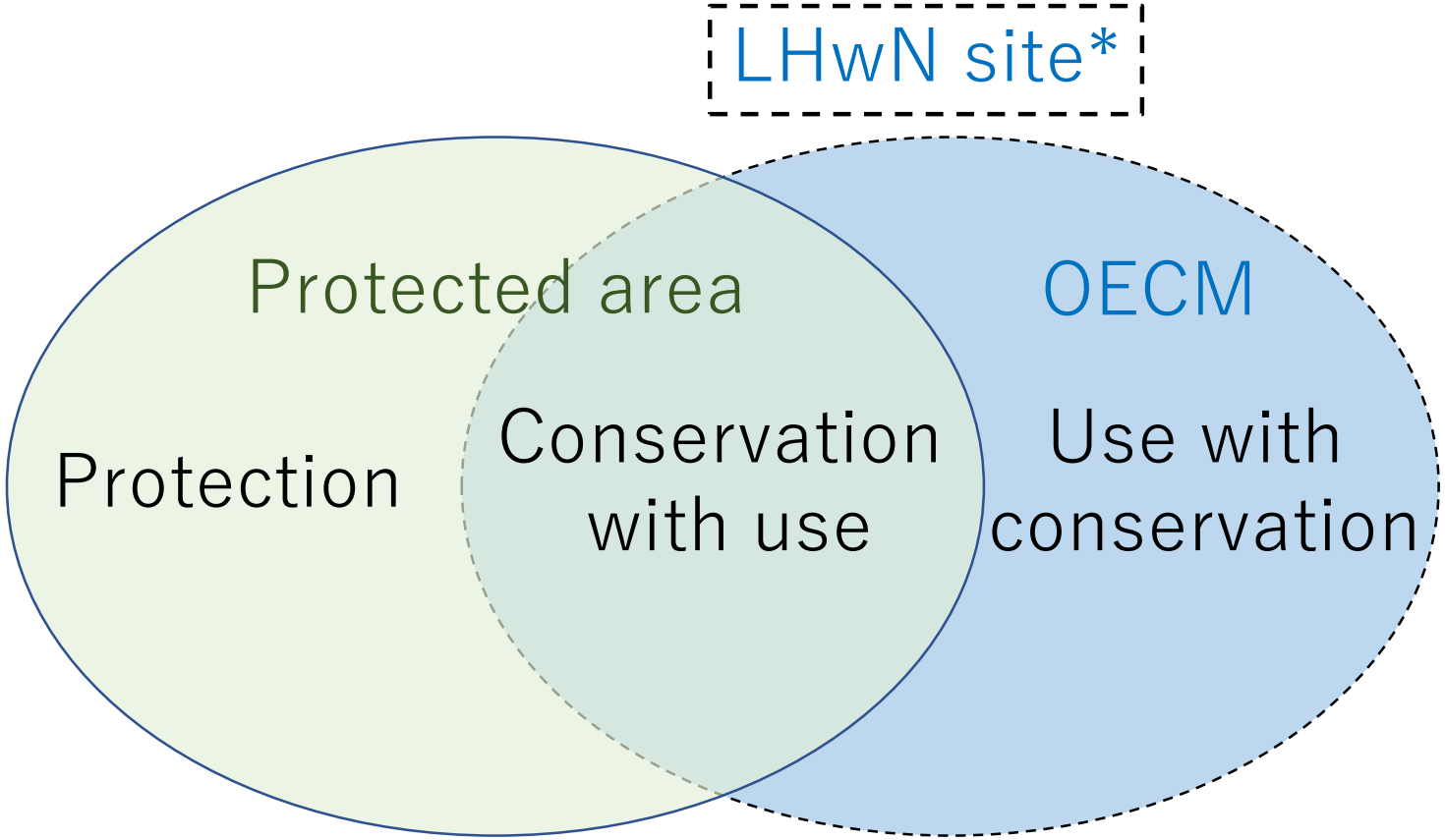
Centro de Estudios Avanzados en Ecología y Biodiversidad, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Casilla 114-D, Santiago, Chile

- FIG. 5. Reef-fish species richness (mean number of species present þ SD). Solid columns represent areas inside MEABRs, and open columns represent areas outside MEABRs. Richness includes:



MEABR = Management and Exploitation Areas for Benthic Resources

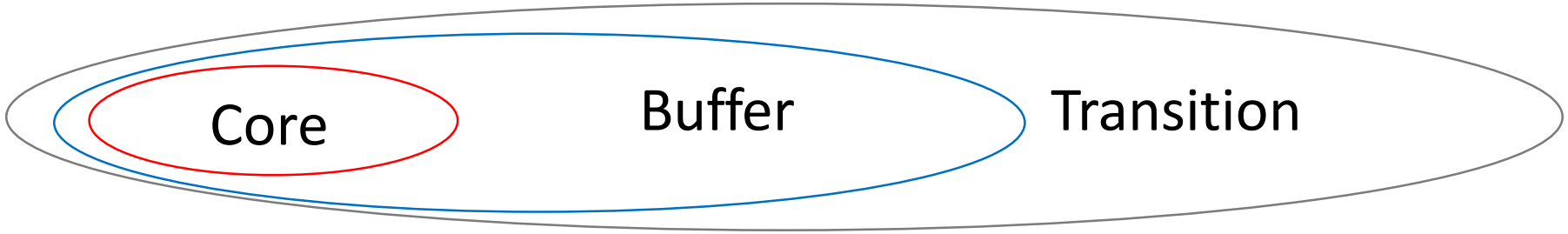
Idea on the relationship between Protected Area and OECM*



* LHwN = “Living in harmony with nature” site

* OECM = Other effective area-based conservation measures

Zoning of biosphere reserve



松田の整理

Candidates of OECM (discussed in Japan)

- It is desirable to organize marine areas where sustainable industrial activities contribute to biodiversity conservation as OECMs, referring to the findings of important marine areas (Ministry of the Environment panel*).
- OECMs in marine areas should have a mechanism for monitoring and adaptive management that reflects the evaluation results.
- (Ministry of the Environment Panel*) "It should be noted that offshore wind power plant could also be considered as an OECM if scientific monitoring and assessment is conducted after the installation of power generation facilities and the positive impacts on marine biodiversity are clarified." (Ocean Policy Society Volunteers 2022.5#)

*令和３年度第１回「民間取組等と連携した自然環 境保全（OECM）の在り方に関する検討会」資料3 海域におけるOECM 検討方針　https://www.env.go.jp/nature/oecm/r3-dai-1-kai-kentokai.html

https://www.env.go.jp/council/content/12nature03/000049585.pdf

OECM encourages mainstreaming of biodiversity

- Biodiversity could be a matter of all stakeholders who are not primarily concerned with nature conservation but “care for biodiversity” by addressing the OECMs in addition to protected areas.
- Climate change has become a matter of concern for a very large number of stakeholders affected by climate change by addressing adaptation measures in addition to mitigation measures.

2 different strategies for mainstreaming of biodiversity

1. More people will recognize conservation as a top priority.
2. Explain that there is a positive effect on "biodiversity conservation“ even in the areas, the primary purpose of which is not the nature conservation. (OECM)

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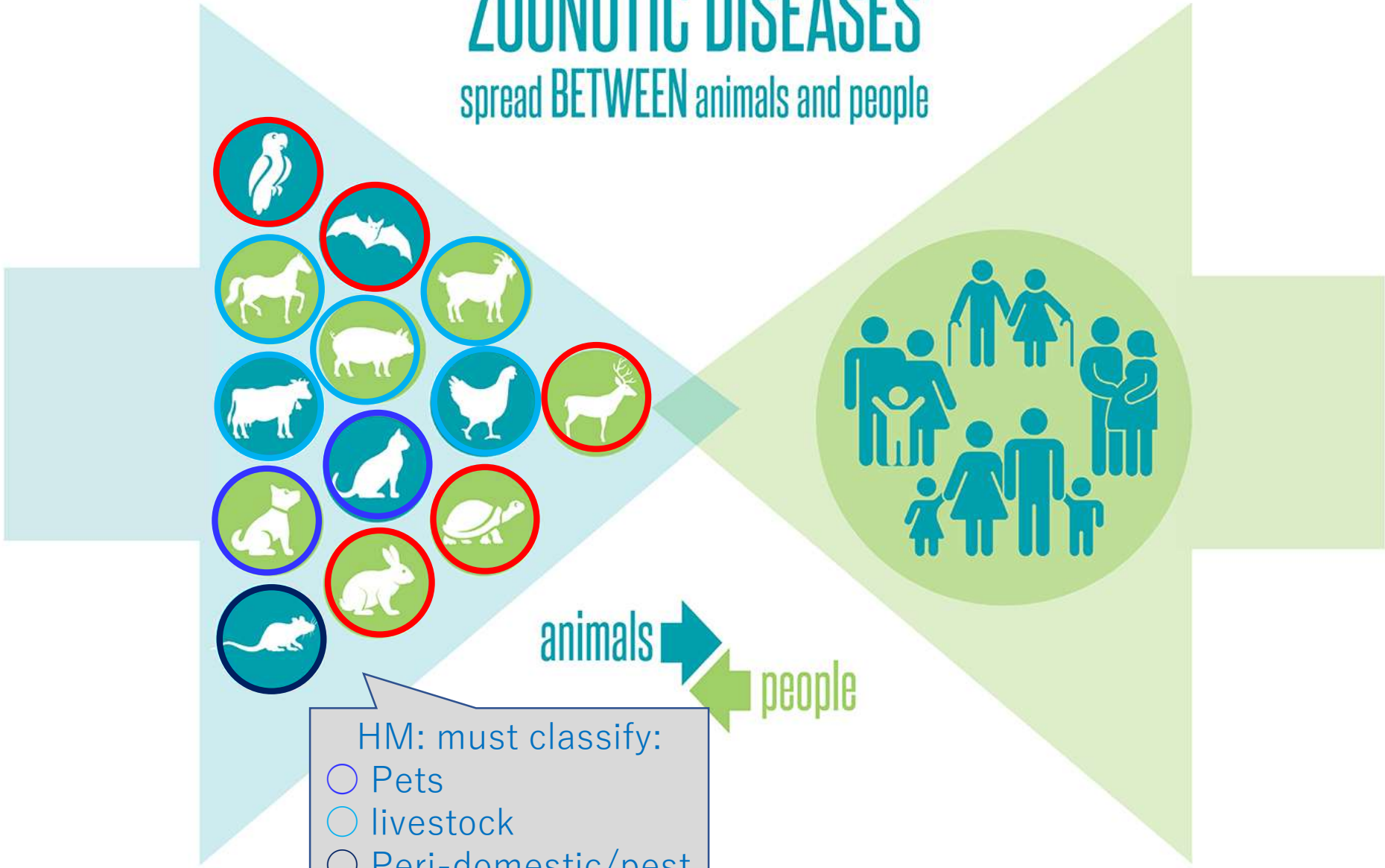
ZOONOTIC DISEASES

spread BETWEEN animals and people



HM: must classify:

- Pets
- livestock
- Peri-domestic/pest
- Wild animals

https://www.cdc.gov/onehealth/basics/zoonotic-diseases.html

How do germs spread between animals and people?

https://www.cdc.gov/onehealth/basics/zoonotic-diseases.html

Be aware of the common ways people can get infected with germs that can cause zoonotic diseases. These can include:

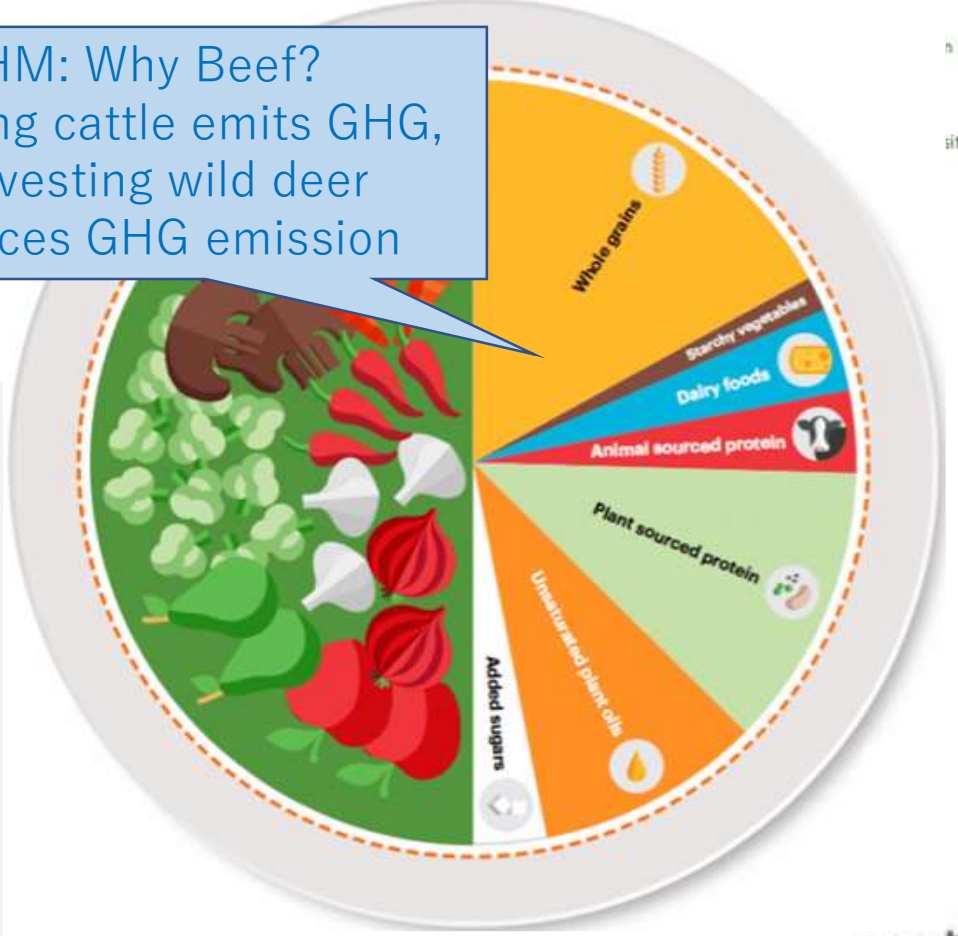
- **Direct contact:** with the saliva, blood, urine, mucous, feces, or other body fluids of an infected animal…
- **Indirect contact:** with areas where animals live and roam, or objects or surfaces that have been contaminated with germs…
- **Vector-borne:** Being bitten by a tick, or an insect like a mosquito or a flea.
- **Foodborne:** Each year, 1 in 6 Americans get sick from eating contaminated food. Eating or drinking something unsafe…. Conta-minated food can cause illness in people and animals, including pets.
- **Waterborne:** Drinking or coming in contact with water that has been contaminated with feces from an infected animal.

HM: We should consider the relationship between the benefits and risks of using animals. Pesticides and antibiotics also have health risks.

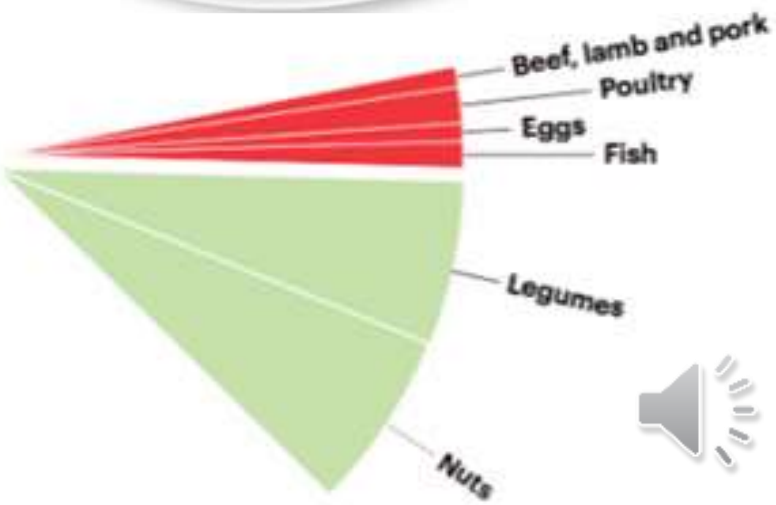
Planetary Health Diet

EAT-Lancet Commission 2019

HM: Why Beef?
Breeding cattle emits GHG,
Harvesting wild deer
reduces GHG emission



- Transformation to healthy diets by 2050 will require substantial dietary shifts. Global consumption of fruits, vegetables, nuts and legumes will have to double, and consumption of foods such as red meat and sugar will have to be reduced by more than 50%. A diet rich in plant-based foods and with fewer animal source foods confers both improved health and environmental benefits.



https://eatforum.org/content/uploads/2019/07/EAT-Lancet_Commission_Summary_Report.pdf

“Cat wars” controversy

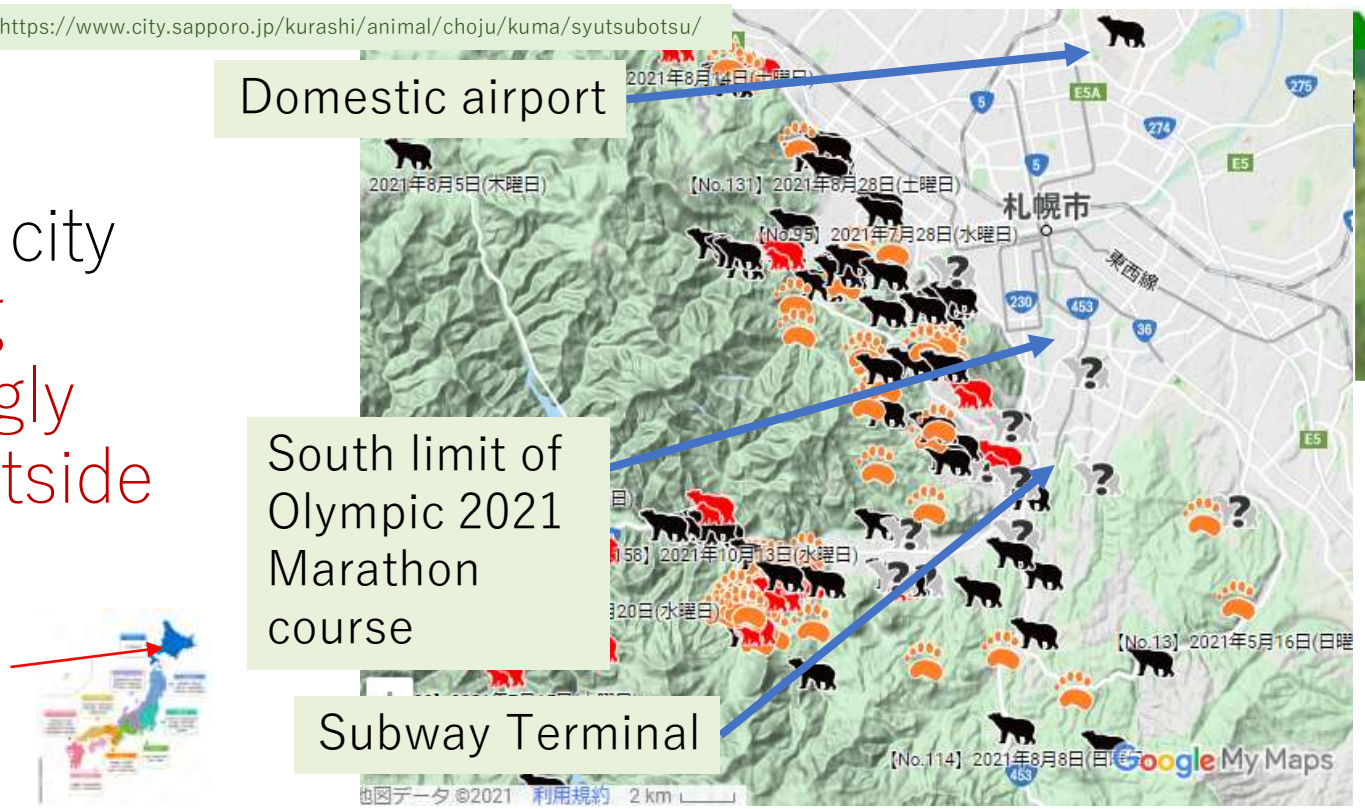
(Marra & Santella 2019)

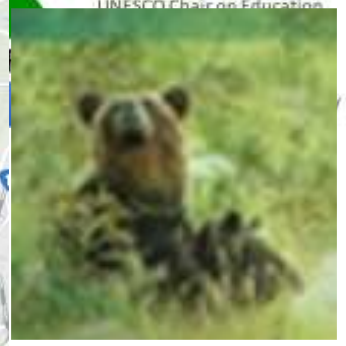
- [Europe and USA] There is a serious conflict between bird-watchers and cat-lovers because wild and free-ranging (pet) cat prey on wild birds.
- The domestic cat is an alien predator in the “World’s 100 Worst Invasive Alien Species”. Predation of cats has become a major cause or cause of the extinction of 33 of the 238 extinct reptiles, birds and mammals in the world. *Toxoplasma*, a zoonotic disease transmitted by cats, poses a significant risk to the fetus if a woman is first infected during pregnancy. Prevalence of women of childbearing age = 63% in Germany and 4% in South Korea.
- Nature protection differs from animal welfare. The lack of agree-ment on how to treat free-ranging cats is a big problem. [The theory of nature conservation is still developing].

Among of 87 women of age 15-45, 25% were seropositive for T. gondii IgG and IgM antibodies in Mymensingh and Rangpur, Bangladesh (Margia et al. 2017)

Map of brown bear appearance in Sapporo city residential areas. Killing nuisance bears is strongly protested by citizens outside Hokkaido island.

https://www.city.sapporo.jp/kurashi/animal/choju/kuma/syutsubotsu/





- Unlike deer, bear may kill people, and appearance of bears in the city area limits children going to school and stopping marathon events.
- Sapporo City wrote, "Before gathering information on brown bear from the websites and stay away from their home range to avoid encountering brown bears", even where in residential urban areas.

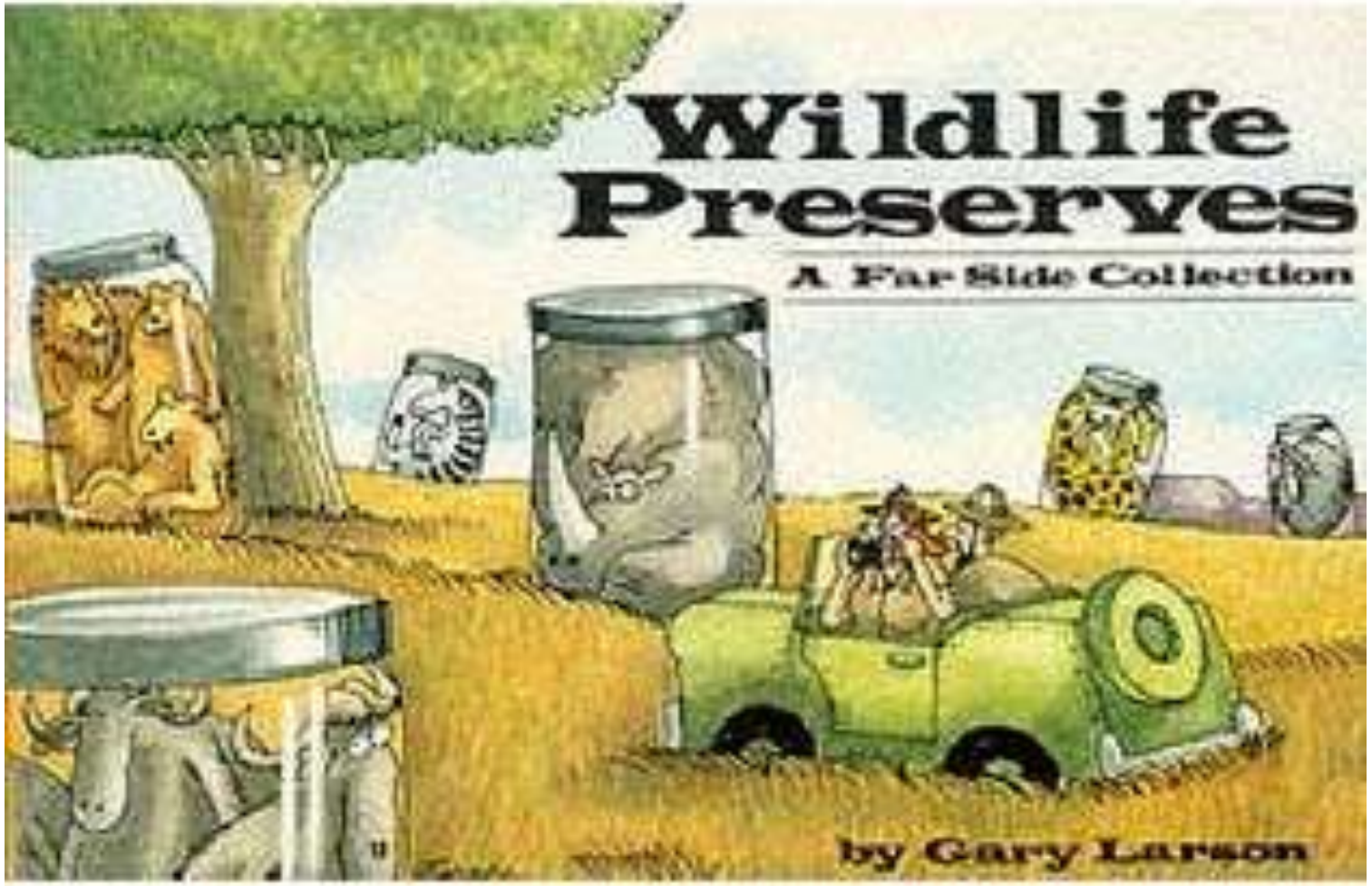
Bear Attacked a Man in an urban area of Sapporo City, Near Okadama Domestic Airport

Sapporo TV News April 21, 2022
https://youtu.be/aTBrEeahAfI?t=75

The relationship between people and nature

- People stands external to nature.
- People are embedded in nature

Preservation (Protection) vs. conservation



by Gary Larson (1989)

Dasgupta Report (2021)

"Correct economic reasoning is entangled with our values. Biodiversity does not only have instrumental value, it also has intrinsic worth – perhaps even moral worth. Each of these senses is enriched when we recognise that we are embedded in Nature. To detach Nature from economic reasoning is to imply that we consider ourselves to be external to Nature. The fault is not in economics; it lies in the way we have chosen to practise it."
(P. Dasgupta, 2021)

Living in Harmony with Nature
UNESCO MAB Programme

和訳　https://www.wwf.or.jp/activities/data/20210630biodiversity01.pdf　P75

www.unenvironment.org

A new deal for Nature (21 May 2019)

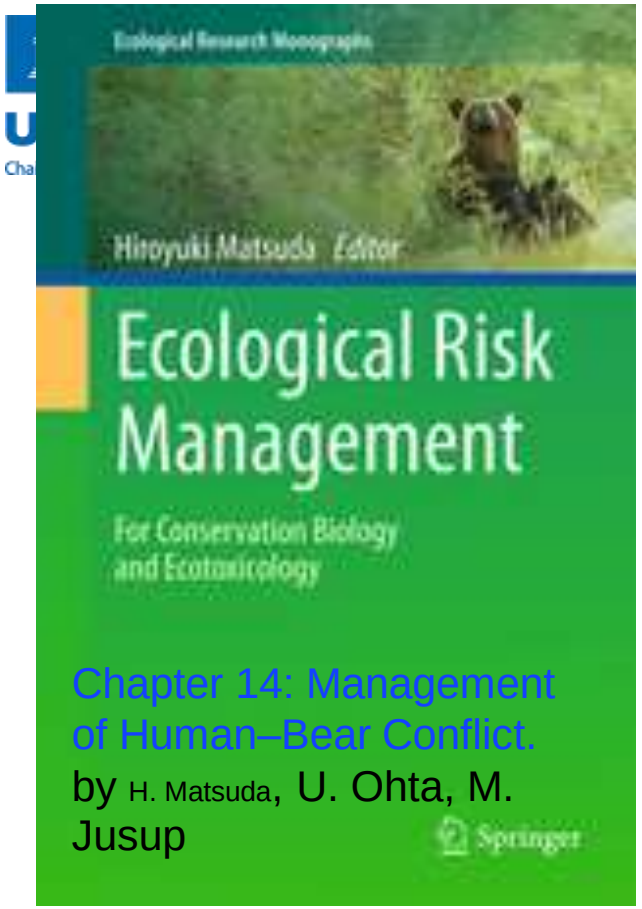
In 2020, world leaders will meet in China to agree on a new set of commitments to conserve nature. They will also review progress towards targets set in 2010; but the news is not all good. Only a quarter of land on Earth is substantively free of the impacts of human activities. This is projected to decline to just one-tenth by 2050.The implications of such drastic changes in nature for human health, well-being, security and economic development are staggering.

Because our current pathway is unsustainable,
humans and nature alike need a new deal - a new way to <u>coexist and thrive.</u>

Five transformations

1. Account for the True Value of Nature
2. Change the Way We Produce and Consume Food
3. Conserve Wildlife and Wild Spaces
   - Enhanced investment in robust biodiversity-based economies that increase benefit flows to **the people** living with and bearing the costs of wildlife.
4. Restore the Degraded Planet
5. Promote a Better Built Environment

HM suspects: The people who do not live with wildlife pay money to the people who live with and bear the cost of wildlife



Biosphere consists of nature and people, [with "ecological distancing"]

- "If farming is to coexists with wild birds and beasts, ⋯ the human–wildlife conflict is inevitable in agriculture, forestry and fisheries."

- People are inseparable from the biosphere, and thus not only use wildlife but are sometimes being used by wildlife too.

unesco Chair

YNU-EBRoSS UNESCO Chair on Education in Biosphere Reserves for Sustainable Societies Yokohama National University

Exercise (no single correct answer for each) How do you predict the future life of your country?

1. Should we suppress coronavirus or accept infection? (and why)
2. Will the number of international flights recover or decline (in the future)? (and why)
3. Will people and wildlife cohabit or separated? (and why)
4. Will we eat bushmeat, livestock or only vegetable? (and why)
5. Are we outside of nature or embedded within it? (and why)
6. 1. Will your top priority be nature conservation or benefit to people?

6.2. Do you think all people should adopt your predictions described above, or do