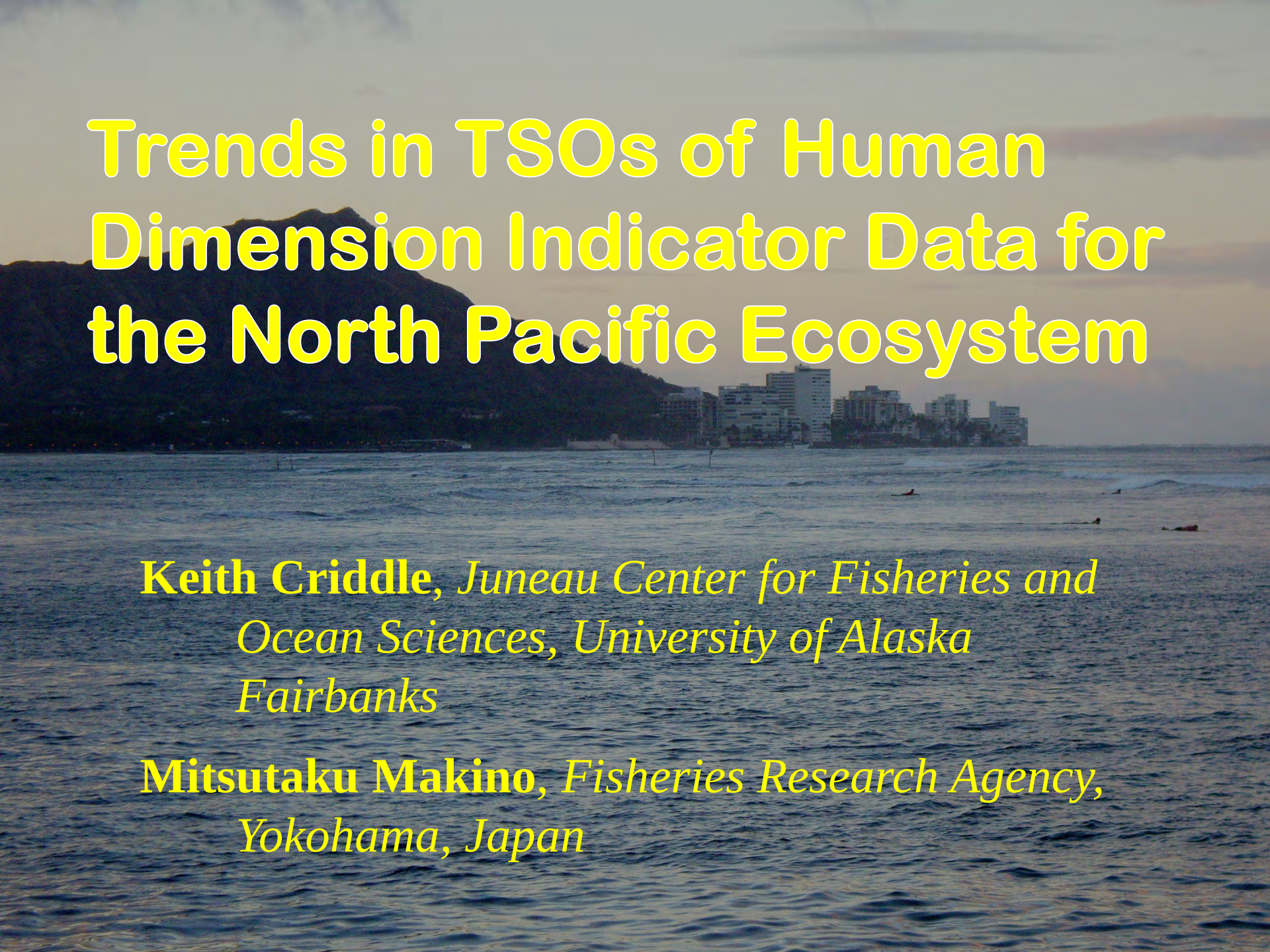

Trends in TSOs of Human Dimension Indicator Data for the North Pacific Ecosystem

Keith Criddle, *Juneau Center for Fisheries and Ocean Sciences, University of Alaska Fairbanks*

Mitsutaku Makino, *Fisheries Research Agency, Yokohama, Japan*

Abstract

Development and analysis of time series observations (TSO) of human dimension (HD) indicators for the North Pacific ecosystem is one of the principal activities of S-HD. A provisional list of indicators was developed during the S-HD intersessional meeting in June, 2013.

S-HD: Objective

To better understand and communicate the societal implications of the conditions and future trends of North Pacific marine ecosystems, to provide a forum for the integration of FUTURE-related studies using social science approaches and tools, and to facilitate the discussion and communication among researchers from the natural and social sciences.

S-HD TOR

- Identify social objectives and stakeholder needs in different sectors and countries.
- Explore consequences to and responses of human systems to, e.g., climate-induced changes in marine ecosystems.
- **Contribute a Human Dimension Chapter to the NPESR.**
- Facilitate cooperative research activities and organize a symposium on human dimensions of marine ecosystems.
- Help identify stakeholders and their communication needs for FUTURE and state of the ocean reports.

Tier 1 Indicators

1) **Quantity and value of catches and landings** of seaweeds, fish, shellfish, and other invertebrates from inside and outside national EEZs;
2) **Quantity and value of mariculture** of seaweeds, fish, shellfish, and other invertebrates;
3) **Number and power of fishing vessels** by gear type, length, and tonnage;
4) **CPUE** by gear type and target fishery;
5) **Employment** in commercial fishing;
6) **Injury and mortality rates** of commercial fishers (absolute and relative to national workforce averages);

Tier 1 Indicators (cont.)

7) **Income** to fishermen (absolute and relative to national workforce averages);

8) **Number of fishing ports**;

9) **Number of fish processing plants**;

10) **Number of fishing villages** or communities;

11) **Number of fishing households**;

12) **Per capita consumption** of seaweeds, fish, shellfish, and other invertebrates; and

13) **Amount and value of seafood** (seaweeds, fish, shellfish, and other invertebrates) **exports and imports**.

Tier 1 Indicators (cont.)

Rashid Sumaila (*Fisheries Centre*, *University of British Columbia*), has offered to query his database on global fisheries to derive North Pacific estimates of time series of:

1) **Number of sport fishers** and the **quantity of their catches**;
2) **Fishing costs** as a % of revenues;
3) **Fishing subsidies**;
4) **Fishing effort** by gear type; and
5) **Value added multipliers** for fishing and processing.

Derived Indicators

1) **Exvessel price** (by major product category)
2) **Net revenues** from fishing
3) **Value added** (by major product category)

Tier 2 Indicators

1) **Employment in fish processing** (numbers; full/part time)
2) **Processed fish products** (amounts by major category)
3) **First wholesale value** (value of processed products sold)
4) **Health/contamination** monitoring (relative to production)
5) **Seafood price to consumers** (% of food expenditures)
6) **Seafood inventories** (amount and value)
7) **Subsistence/home-use fishing** (number of fishers, catch)

Tier 3 Indicators

1) **Fishing companies** (number)
2) **Commercial fishers** (characteristics)
3) **Wholesale markets** (number)
4) **Law and regulatory** structure
5) **International agreements**
6) **Value of ecosystem services**
    - Environmental acct/natural capital
    - Nonmarket values
    - Replacement cost/NRDA
7) **Eco-certification/market access**